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Acupressure to reduce vomitus in children with dehydration

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Abstract
Children are individuals who are in a range of developmental changes starting from infancy to adolescence. Children are unique individuals and have needs according to their stage of development. Children's needs can include physiological needs such as nutritional and fluid needs, activity and elimination, sleep rest, and others, children are also individuals who need social and spiritual psychological needs. Nausea and vomitus in children are a problem for parents. Parents' lack of understanding of digestive tract diseases is considered normal by parents. Protracted and poorly managed nausea and vomitus in children have an impact on nutritional problems, especially weight loss, severe dehydration, and hypovolemic shock. The existence of this case study research is expected that this final scientific work can be used as additional knowledge for the health care profession, especially nursing and provide an understanding of nursing care with vomitus in children who get complementary therapy, namely acupressure therapy, which must be carried out by combining massage techniques with storytelling techniques and playing with children to reduce fear. As for management using pharmacology and non-pharmacology, one of which is acupressure therapy which is carried out 2 times a day and carried out 30 times round in a clockwise direction in the massage, it has proven effective in reducing nausea and vomiting in children, especially with cases of dehydration, acupressure therapy is very effective given as a supporting therapy in addition to using pharmacological therapy in these patients.

Keywords: Acupressure, complementary therapy, nursing care, paediatric nursing, vomitus

Introduction
Vomiting is a complex reflex mediated by the vomiting centre in the medulla oblongata of the brain (Zhong et al., 2021). Vomiting is the forced expulsion of most or all of the stomach contents through the mouth, accompanied by gastric and abdominal contractions (Zhang & Wang, 2025). Vomiting is the ejection of stomach contents exclusively through the mouth with the help of contractions of the abdominal muscles. Nausea is a feeling of discomfort in the throat or stomach that results in vomiting (Singh et al., 2016). According to the World Health Organization (WHO), one of the highest cases of digestive system disorders is gastritis, according to WHO the incidence of gastritis in the world is around 1.8 - 2.1 million people each year in the UK (22%), China (31%), Japan (14.5%), Canada (35%), and France (29.5%). In Southeast Asia around 583,635 of the total population each year. The causes of vomitus include gastrointestinal infections such as gastroenteritis can cause vomiting and diarrhoea (Graves, 2013). This condition is a common cause of vomitus due to infection by bacteria, viruses, or parasites, food poisoning contaminated food. It can cause food poisoning symptoms include profuse vomiting, diarrhoea, and fever, serious (Argudín et al., 2010). Traumatic head injury can cause nausea, vomiting, and profuse vomitus. Diabetes can cause ketonemia or ketonuria, leading to nausea and profuse vomiting (Takai et al., 2021). Kidney disease can cause a buildup of toxin residue in the body, leading to nausea and vomiting. Complications that can occur if vomiting is not treated immediately include moderate to severe dehydration, the risk of shock and hypovolemic shock (Heckroth et al., 2021).

Management of dehydration is rehydration, monitoring fluid balance, monitor the patient's vital signs (body temperature, pulse, blood pressure, and respiratory rate), nutrition and rest support, advise rest and avoid strenuous activities. Regulate food and fluid intake to suit the patient's needs. Collaboration with the medical team providing fluid therapy according to the patient's clinical condition (Malbrain et al., 2020). Administration of additional drugs such as antipyretics (eg paracetamol) if there is a fever, as well as antiemetic drugs to treat vomiting (Hartono et al., 2021). The reason the author took this case is because the number of vomitus cases every month reaches 30% in RSUD Merah Putih Magelang. If vomitus is not treated immediately, the child will be at risk of weight loss, dehydration and hypovolemic shock (Anigilaje, 2018). The application of implementation using pharmacological therapy has been going well, but in the application of non-pharmacological therapy using acupressure has not been running or has not been applied in this hospital. Appropriate and rapid management is needed in children to reduce vomiting so as to minimize the adverse effects that occur by using complementary therapy, namely acupressure therapy, this therapy is a very

effective, easy choice as a non-pharmacological therapy that can be applied at home or in the hospital in addition to medical treatment.

This study on using acupressure to reduce vomiting in children with dehydration is highly significant because it investigates a non-pharmacological, easily implementable, and low-cost intervention for managing a common, debilitating symptom in a vulnerable population. Vomiting exacerbates dehydration, potentially leading to electrolyte imbalances and requiring more invasive or expensive hospital care. With offering a proven, safe method like acupressure to control emesis, the study provides healthcare providers, particularly nurses and parents, with a simple, accessible tool to stabilize the child's condition earlier. This can reduce the need for antiemetic drugs (avoiding potential side effects), improve fluid retention, shorten hospital stays, and enhance the overall quality of care for dehydrated children, making it a valuable addition to paediatric management protocols globally.

Case Description

The assessment was conducted by the author on Monday, December 30, 2025, at 13.00 WIB. The subject of the assessment was a 3-year-8-month-old male child of Islamic faith, not yet attending school, and residing in Salaman. The patient has a medical history of hospitalization due to dehydration and urinary tract infection (UTI). At the time of assessment, the patient came to the Emergency Room (ER) accompanied by his mother with complaints of abdominal pain, nausea, and vomiting approximately five times a day. The vomitus was described as brownish-yellow liquid. The mother reported that the patient refused to eat and drink, experienced difficulty sleeping, and often woke up after only a few minutes of rest. The child appeared fussy and irritable, seemed to be holding back nausea, and had vomit stains on his clothing. Prior to coming to the hospital, the patient had been examined at Kauman Clinic, but his condition did not improve. On examination, the vital signs were as follows: pulse rate 130 beats per minute, body temperature 37.2°C, respiratory rate 22 times per minute, and oxygen saturation (SpO_2) 98%. The pulse rate was elevated, while other parameters remained within normal limits. A nutritional assessment was carried out using the ABCD (Anthropometric, Biochemical, Clinical, and Dietary) approach. Based on anthropometric data, the patient's body weight before illness was 16 kg, but it decreased to 14.1 kg during the illness. The patient's height was 98 cm, resulting in a Body Mass Index (BMI) of 14.6 kg/m^2, which falls within the normal range for age according to WHO growth standards. The biochemical assessment showed a haemoglobin level of 11.6 g/dL (normal), leukocyte count of 3.4 × 10^3/µL (low), monocyte percentage of 14.1% (high), eosinophil percentage of 0.5% (low), and absolute lymphocyte count of 0.92 × 10^3/µL (low). These results indicate leukopenia, monocytosis, eosinopenia, and lymphopenia, suggesting a possible viral infection or post-infectious condition. From the clinical assessment, the patient's hair appeared black, clean, and not falling out. The patient appeared weak, nauseated, and irritable, with visible vomit stains on clothing. Skin and mucosal assessments were not described and should be evaluated further to determine hydration status. Based on the overall findings, the patient was diagnosed with acute gastrointestinal symptoms characterized by nausea, vomiting, and abdominal pain, leading to reduced appetite and weight loss (from 16 kg to 14.1 kg). Although the BMI remains within the normal range, the current illness poses a risk of acute malnutrition due to decreased food and fluid intake accompanied by vomiting. Continuous monitoring of nutritional intake, hydration status, and laboratory parameters is recommended to prevent further deterioration.

Discussion

The author obtained subjective data from interviews with the client and the client's family, and objective data was obtained from direct observation of the patient. The patient's complaints include a lack of appetite, no interest in eating or drinking, and vomiting five times a day, with the vomit being yellowish-brown in colour. Objective data was obtained from observations and vital sign measurements include: Pulse: 130 beats per minute, Temperature: 37.2°C, Respiratory rate: 22 breaths per minute, Oxygen Saturation: 98%. The patient appears to be holding back nausea and occasionally cries, with traces of vomit on their clothing. They have experienced weight loss, difficulty sleeping, and are easily awakened, consuming only 2-3 spoonful of food. The patient's complaints align with the theoretical concepts regarding signs and symptoms of dehydration. Nausea was identified as the primary diagnosis by the author, as fluctuations in the patient's condition caused hormonal responses in the nervous system, leading to nausea and vomiting. During the assessment process, the author identified supporting and hindering factors. Supporting factors during the assessment were the openness of the client and family, which facilitated the author's assessment. Hindering factors during the assessment were the numerous activities conducted during clinical practice, requiring adequate rest time. The administration of acupressure therapy to the child was one of the non-pharmacological strategies proven to be effective; however, the author also employed play and storytelling methods to build trust with the patient and prevent fear and fussiness.

Based on the assessment data obtained by the author, there is one diagnostic focus that can be identified from the patient, namely the first diagnosis of nausea related to unpleasant food or drink, evidenced by complaints of nausea, feeling like vomiting, and lack of interest in eating (D.0076), and the second diagnosis is a sleep pattern disorder related to lack of sleep control, evidenced by complaints of difficulty sleeping, frequent awakenings, and insufficient rest (D.0055). The author prioritizes the diagnosis of nausea because basic human needs must be met

immediately, and if not addressed promptly, it can lead to dangerous complications such as moderate to severe dehydration, risk of shock, and hypovolemic shock.

The author diagnosed nausea based on an assessment of the child's poor eating habits, as the child was not eating or drinking. This is consistent with the findings which indicate that poor eating habits can make it difficult for the stomach to adapt to the secretion of gastric acid (Brooks, 1985). Poor eating habits are also one of the causes of increased gastric acid production from a histaminergic factor perspective, which affects the function of G cells in producing gastrin hormone and also causes mucosal barrier effects and H+ ion back diffusion, stimulating histamine to influence the oxintic glands in gastric acid production. If this persists over time, stomach acid production may increase excessively, irritating the stomach mucosa and causing gastritis. If these symptoms are not addressed promptly, the risk of severe dehydration and hypovolemic shock may occur (Hinestrosa et al., 2007). At this stage, the author develops an action plan based on the existing issues. The plan is tailored to the problem, situation, conditions, and the author's capabilities, aligned with the criteria for achieving the desired outcomes. Therefore, the author conducts nursing planning to address the client's issues. The author sets a 2x24-hour target to reduce and resolve nausea, with outcome criteria including improved appetite, reduced nausea complaints from 1 to 4, reduced urge to vomit from 1 to 4, improved pallor, and improved tachycardia through the planned nursing interventions, including teaching patients and the patient's family on complementary therapy, specifically acupressure therapy to reduce the patient's nausea. The interventions related to nausea management 1.03117 include monitoring the patient's nausea by asking about the severity and duration of the nausea experienced, providing small but frequent meals such as biscuits, teaching non-pharmacological techniques to manage nausea using acupressure therapy, with the acupressure points being SP 6 (San Yin Jiao) and ST 36 (Zusanli), and collaborating on the administration of the antiemetic ondansetron 1.5 mg intravenously to reduce the nausea. This aligns with the findings of study that acupressure points SP 6 (San Yin Jiao) and ST 36 (Zusanli) can reduce nausea and vomiting and improve appetite (Kong et al., 2024). When these points are stimulated through acupressure or massage, it improves blood circulation in the lymphatic and gastrointestinal systems, which are directly influenced by the hypothalamus through the production of ghrelin, a hormone that regulates hunger and appetite.

This acupuncture therapy is performed 30 times on each point, accompanied by stories and games to build trust with the child. The massage is performed clockwise. This aligns with research conducted by Rahayu (2018), where before the massage, the nurse demonstrated the acupuncture points, then removed the patient's clothing, applied white camphor oil to the massage area, and finally cleaned the remaining oil with tissue. During the acupuncture therapy session, the family was taught how to perform the therapy. Although they initially felt afraid and lacked knowledge about acupuncture, they were able to perform it successfully. After receiving education about acupuncture and its benefits, the patient's family understood and knew about acupuncture and performed it correctly. According to the research findings, the functions of these points, including ST 36 and SP 6, include regulating stomach function and motility, as well as stimulating growth hormone (Centis & Dewi, 2023). These acupuncture points are easier to use on paediatric patients compared to other positions because the pressure points are easily accessible, easy to learn, non-invasive, and recommended for digestive tract recovery (Amelia et al., 2023). Acupressure is considered effective because stimulation of the massage area activates pain receptors, which then transmit pain impulses involving local substances released during tissue injury. This process can trigger a localized inflammatory response that stimulates the production of nitric oxide, thereby enhancing intestinal motility and helping to alleviate nausea.

In addition to acupressure therapy, the author collaborated with physicians to administer the antiemetic drug ondansetron at a dose of 1.5 mg every 12 hours to help further reduce the patient's nausea. Among available antiemetic medications, ondansetron is the most widely used due to its high efficacy and safety profile, although its cost remains relatively high. The evaluation was conducted on December 30–31, 2025. On the first day, a noticeable reduction in nausea was observed in paediatric patients following the implementation of non-pharmacological interventions—specifically acupressure at SP6 and ST36 points—alongside pharmacological treatment with ondansetron. This combination led to a slight decrease in vomiting intensity, based on the patients' subjective reports. Acupressure therapy proved to be an effective strategy for managing nausea in paediatric patients—not only in cases of dehydration and chemotherapy-induced nausea and vomiting, but also in other clinical scenarios. On the second day, further evaluation was conducted through interviews and assessment of patient complaints. Both the patient and their family reported a continued reduction in nausea and vomiting compared to the previous day. Although the patient's appetite remained low, clinical signs showed improvement, including moist mucous membranes, reduced skin pallor, and a healthier, more energetic appearance. The combination of antiemetic administration and acupressure therapy was effective in alleviating nausea and vomiting symptoms. These particular acupressure points are especially suitable for paediatric patients due to their accessibility, ease of application, non-invasive nature, and their recommendation for promoting gastrointestinal recovery.

Conclusion

In conclusion, the integration of acupressure therapy in managing vomiting among pediatric patients with dehydration demonstrates promising outcomes, particularly when combined with pharmacological interventions such as

ondansetron. The application of acupressure at SP6 (San Yin Jiao) and ST36 (Zusanli) points has shown to stimulate physiological responses that enhance gastrointestinal motility and reduce nausea, offering a non-invasive, accessible, and culturally adaptable approach to symptom relief. This method not only complements conventional antiemetic treatment but also empowers caregivers and healthcare providers with an alternative strategy that is safe and well-tolerated by children. Clinical improvements observed—such as reduced vomiting intensity, improved mucosal hydration, and increased patient vitality underscore the therapeutic potential of acupressure in paediatric dehydration cases. However, future studies are recommended to explore the long-term efficacy of acupressure across diverse paediatric populations, compare its effectiveness with other non-pharmacological interventions, and evaluate its role in different clinical settings, including outpatient care and community health programs. Rigorous randomized controlled trials and multicentre studies would help establish standardized protocols and strengthen the evidence base for integrating acupressure into paediatric nursing practice.

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