

Review on Diagnosis and Management of Dehydration in children and Adolescent Age between (6 To 18)’’

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Abstract:- Dehydration, a potentially life-threatening condition, occurs when the body lacks sufficient water. Various factors, including diarrhea, vomiting, fever, excessive sweating, and certain medical conditions, can cause it. This review provides an in-depth look at dehydration, covering its types (isotonic, hypertonic, and hypotonic), symptoms, diagnosis, and treatment. We'll discuss how to identify and manage dehydration, including replacing fluids, correcting electrolyte imbalances, and addressing underlying causes. Additionally, we'll explore dehydration's connection to related diseases like diarrhea, fever, and increased urination. The goal is to provide a comprehensive understanding of dehydration, emphasizing the importance of prompt recognition and treatment to prevent complications and improve patient outcomes. Key Words: Dehydration, children, diarrhea, fluid intake, body weight, electrolyte imbalance, water loss.

I. INTRODUCTION

Dehydration is a common problem caused by fluid imbalances in the body. Dehydration occurs when the body has insufficient water content owing to fluid loss, reduced intake, or a combination of both factors (Wea *et al.*, 2024). Dehydration is the result of increased loss of water and electrolytes (sodium, chloride, potassium, and bicarbonate) than normal. High losses without appropriate replacement can lead to severe dehydration (Florez *et al.*, 2023). Dehydration in children is a worry because their increased body water content makes them more susceptible to water, salt, and potassium loss during acute illnesses (Freige *et al.*, 2020). Dehydration is categorized as isotonic, hypertonic, or hypotonic.

Isotonic dehydration causes loss of extracellular fluid (ECF) via balancing water and salt level (Bandara *et al.*, 2023). Isotonic dehydration, which is a lack of water with an associated drop in salt (e.g., produced by diarrhoea) that does not raise extracellular osmolality (Frith *et al.*, 2023).

Hypertonic dehydration is an uncompensated, primarily pure water shortage (e.g., insufficient water intake or excessive loss) that causes an increase in extracellular osmolality (Frith *et al.*, 2023). Hypertonic dehydration occurs when the body's total water content decreases owing to decreased intake, pathologic fluid loss, or both.

Hypernatraemia in the ECF causes water loss from the intracellular fluid (ICF) (Bandara *et al.*, 2023).

Hypotonic dehydration results from salt and water depletion, with sodium loss leading to an ECF loss (Bandara *et al.*, 2023). Dehydration is a major cause of pediatric morbidity and mortality. Diarrheal illness and dehydration account for 14% to 30% of baby and toddler fatalities worldwide (Vega *et al.*, 2022).

➤ Dehydration

Maintaining fluid equilibrium is crucial for metabolic integrity and physiologic functioning, as water is the body's primary ingredient (Faidah *et al.*, 2021). Dehydration occurs when the body loses more than 3% of its weight due to water or salt depletion, causing electrolyte disturbances (Bandara *et al.*, 2023). The human body requires water as a medium for metabolism and other biological activities. Many organ functions require the presence of water (Lukito *et al.*, 2021). Dehydration is a major cause of death among children with wasting and diarrhea (Tsegaye *et al.*, 2023). Dehydration happens in the summer as a result of high heat, excessive perspiration, and not drinking or drinking too little water. The human body cannot function correctly if it does not have enough water (Ithadi *et al.*, 2022).

Water accounts for around 75% of an infant's body weight and up to 60% of an adult's body weight, ensuring cellular equilibrium (Alsayed *et al.*, 2024). Infants and young children are especially vulnerable to diarrheal illness and dehydration because of their faster metabolic rates, inability to communicate needs or hydrate themselves, and greater insensible losses. Dehydration can be caused by a variety of diseases, including infective gastroenteritis, diabetic ketoacidosis (DKA), diabetes insipidus, burns, excessive sweating, and third spacing. In addition to Total Body Water (TBW) losses, electrolyte problems are common (Vega *et al.*, 2022).

➤ Previous Study on Dehydration

The findings from the study of Koziol-kozakowska *et al.*, (2020) indicated that over half of the children analyzed were not adequately hydrated throughout the school day. The study verified that body fat percentage and being younger are important factors that increase the risk of dehydration (Koziol-kozakowska *et al.*, 2020).

Collaboration among interprofessional health team members is vital in the global fifth against pediatric dehydration and diarrheal illnesses, which are the main causes of infant death globally, especially in children under the age of five (Daley *et al.*, 2024).

This clinical investigation found that combining oral rehydration with a galantine complex medication is more effective than monotherapy (oral rehydration alone). There were no adverse events recorded during the research (Nematovna *et al.*, 2024).

Digital technology have significantly improved healthcare management and delivery. Digital technologies, such dehydration management papers, can help health personnel avoid and manage patient dehydration more effectively (Kolodziej *et al.*, 2024).

II. DIAGNOSIS OF DEHYDRATION

Diarrheal illnesses, which frequently induce severe dehydration, are the greatest cause of infant death globally, particularly among children under the age of five (Vega *et al.*, 2022). To avoid dehydration, take care and provide the body with a necessary amount of water (Itthadi *et al.*, 2022).

The diagnosis of dehydration in children includes indications that are widespread among children with wasting, regardless of their hydration state, implying that children with severe wasting may commonly be misdiagnosed with dehydration. These children may also be more susceptible to fluid overload than other children, implying that misdiagnosed dehydration in severely malnourished children may result in avoidable complications, such as pulmonary edema and mortality (Tsegaye *et al.*, 2023). Symptoms of severe dehydration include moodiness, a lack of urinating, and dark yellow urine, lack of energy, fainting, dizziness, nausea, sunken eyes, tiredness, disorientation, quick pulse and breathing, difficulty breathing, hoarseness of voice, and rapid heartbeat (Itthadi *et al.*, 2022). Individual water intake varies based on age, climate, physical activity, and health status (Faruqui *et al.*, 2023).

➤ Management of Dehydration

The goal of treating dehydration is to promptly replace lost fluids and identify the source of the loss (Srivastav *et al.*, 2024). Primary outcomes.

- Hospital length of stay
- Death toll. Secondary outcomes.
- More Fluid requirements
- Total amount of Fluid intake
- Time to resolve metabolic acidosis (plasma pH > 7.35 or bicarbonate > 19.9 mmol/L)
- pH and bicarbonate corrections
- Sodium and chloride corrections
- Potassium and potassium corrections
- Creatinine corrections
- Acute kidney damage (AKI) can occur at any time, as defined by the authors (Florez *et al.*, 2023).

III. DISEASE AND DEHYDRATION:

➤ Diarrhea:

- Diarrhea causes a loss of water and electrolytes. Thus contributing to dehydration. The most serious concern to a patient suffering from diarrhea is dehydration (Faruqui *et al.*, 2023).
- Acute diarrhea is a common health concern among children, particularly those under the age of five (U5). This disorder causes severe morbidity and mortality in many low-income countries globally (Vorlasane *et al.*, 2023).

➤ Fever

Increased body temperature caused by fever is connected with increased water loss, leading to dehydration. When fever is accompanied by diarrhea and vomiting, the issue of dehydration becomes more serious (Faruqui *et al.*, 2023). Childhood fever can be caused by dangerous bacterial illnesses like urinary tract infections, septicemia, meningitis, and pneumonia. Complications may include convulsions, seizures, and dehydration (Chilambarasan *et al.*, 2023).

➤ Increased Urination

Frequent urination is a common symptom in people with untreated and uncontrolled diabetes, which can lead to dehydration (Faruqui *et al.*, 2023).

IV. CONCLUSION

Dehydration is a critical and potentially fatal condition in children, necessitating prompt recognition and management. Understanding its causes, effects, and management is crucial for healthcare professionals and caregivers to prevent complications and ensure optimal outcomes. Accurate diagnosis, appropriate fluid replacement, and monitoring of electrolyte imbalances are vital to address dehydration effectively. By prioritizing dehydration management, we can reduce morbidity and mortality in children and improve their quality of life.

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