

# Dehydration in Community Elders: A Literature Review

Magalie Rowland, FNP-C, MSN

Oceania University of Medicine, Medical Student, July 2014

## Abstract

The purpose of this literature review was to identify relevant studies pertaining to adults 65 year of age and over living in nursing homes, community dwelling, and hospitalized for dehydration related conditions. For this review, dehydration is defined as depletion in total body water content due to pathologic water loss, diminished water intake, or a combination of both<sup>[1]</sup>. Searches were performed using the CINAHL Plus database from 1999 to the present. The relevant studies included adults aged 60 years and over in residential care, acute care, and the community.

## Introduction

Dehydration is the most common fluid and electrolyte imbalance in older adults ages 65 and over<sup>[2]</sup>. For the purposes of this report, dehydration is defined as depletion in total body water content due to pathologic water losses, diminished water, intake, or a combination of both<sup>[1]</sup>.

In 2004, the Centers for Disease Control and Prevention (CDC) reported 245,000 dehydration related hospitalizations for adults ages 65 and over. A 6-month study conducted by Menten<sup>[3]</sup> showed that dehydration remains a substantial problem for nursing home residents where dehydration events occurred in 31% of the residents during the study period. Dehydration is a condition for which hospitalization usually can be avoided through good primary care. Health care outcomes can be improved and hospital expenditures reduced if health care practitioners routinely monitor individuals susceptible to dehydration<sup>[4]</sup>.

According to Hodgkinson et al.<sup>[2]</sup>, older adults have been identified as particularly susceptible to dehydration because of age-related changes such as decreases in renal perfusion, diminished sense of thirst and sensitivity to antidiuretic hormone (ADH). Other age-related problems affecting older adults are mobility, confusion, dementia, and conditions such as hypertension, renal, and heart disease, which increase sensitivity to fluid and electrolyte imbalances. Here, we identify relevant studies and reviews between 1999 and 2007 that examine adults 65 years of age and over living in nursing homes, community dwelling, or were hospitalized for dehydration related conditions.

## Methods

Searches were performed using the CINAHL Plus database from 1999 to the present. The review considered studies that included adults aged 60 years and over in residential care, acute care, and the community.

## Results

In 1999, Holben et al.<sup>[5]</sup> conducted a study to compare fluid intake with the established standards and symptoms of dehydration among elderly residents of a long term care facility. For this study, the authors utilized the minimum Data set Plus (MDS+), a valid clinical tool for identifying situations that may indicate dehydration. Clients must exhibit 2 symptoms of dehydration from the MDS+ tool to begin the dehydration protocol. Of the 121 participants, 56 exhibited symptoms of dehydration. Results of the study suggested that many of the subjects had some degree of cognitive impairment, needed extensive help with physical ambulation, and required help with eating and drinking that ranged from limited assistance to total dependency<sup>[5]</sup>.

Simmons, Alessi, and Schnelle<sup>[6]</sup> conducted a study to evaluate the effects of behavioral intervention in increasing fluid consumption in a sample of incontinent nursing home residents. The intervention, which involved a combination of systematic verbal prompts to drink throughout the day between meals, resulted in a significant increase (81%) in the average daily fluid consumption for the majority of the intervention participants.

In order to monitor hydration status in elderly patients, Wakefield et al.<sup>[7]</sup> conducted research to test a low-cost urine color chart. The purpose was to determine whether urine color, as measured by a urine color chart, accurately reflected hydration status. Results showed significant correlation between urine osmolality and serum sodium and BUN-creatinine ratio. While the researchers acknowledge the need for further testing before the chart could be used in practice, it did demonstrate potential as a useful, low-cost tool for identifying common debilitating conditions in the older population<sup>[6]</sup>.

The ability to monitor hydration status is significant for the elderly, especially for those that are recovering from surgery<sup>[8]</sup>. Pain related discomfort causes immobility, hindering not only the rehabilitation process but the ability to access fluids, thereby resulting in dehydration. Hyponatremia is a common biological disorder in which dehydration primarily results from insufficient water intake. As such, it is directly correlated to water access rather than sudden loss of water<sup>[9]</sup>.

Bennett, Thomas, and Riegel<sup>[10]</sup> examined unrecognized chronic dehydration in older adults via a retrospective review of medical records of 185 older adults who visited an emergency department in June 2000. The findings held significant implications for practice, because documented signs of dehydration were recorded by a physician in only 23 of the 185 dehydrated adults. Because adults may suffer from unrecognized dehydration, nurses should be alert to the possibility of dehydration in community-dwelling older adults, as well as those who live in nursing homes or residential facilities<sup>[10]</sup>. Dehydration of community-dwelling patients contributes to unnecessary hospitalizations, thereby increasing the economic burden associated with hospitalized elderly patients<sup>[4]</sup>.

The result of a 6-month observation study by Menses<sup>[3]</sup> demonstrated that dehydration continues to be a substantial problem for 30% of nursing home residents and the nursing staff who care for them. An examination of nursing staffing and resident outcomes in nursing homes related to weight loss and dehydration found clinical implications<sup>[11]</sup>. For example, nurses armed with appropriate dehydration risk assessment tools, can readily coordinate interdisciplinary care for individual residents before major problems develop

## Discussion

There is a substantial amount of literature and research indicating that dehydration continues to be a problem in the elderly population. Regardless of the setting in which this population resides: home, hospital or community, dehydration and its related conditions persist. Research on staffing and documentation issues, fluid intake standards, monitoring hydration, and economic burden are only a few examples of the many studies conducted that warrant replication. There is no doubt that further research is needed to identify ways in which nurses, healthcare personnel, and family members can improve their assessment skills and recognize early signs and symptoms of dehydration.

The authors recommend further research on community dwelling elders by utilizing a questionnaire that will assist in identifying drinking habits, signs of dehydration, past history of dehydration related hospitalizations, inability to provide self-care, and physical limitations that restrict the activities of daily living. In addition, the authors suggest distribution of calibrated jugs or pitchers to the participants. Finally, there should be an educational component, not only for the participants, but also for the participant's caregivers and/or family members regarding the importance of hydration and health related risks associated with dehydration.

## References

1. Gross, C., Lindquist, R., Anthony, W., Granieri, R., K., & Webster, B. Clinical indicators of dehydration severity in elderly patients. *The Journal of Emergency Medicine* 1992;10:267-74.
2. Hodgkinson, B., Evans, D., & Wood, J. Maintaining oral hydration in older adults: A systematic review. *International of Nursing Practice* 2003;9:19-28.
3. Menten, J. C. A typology of oral hydration: Problems exhibited by frail nursing home residents. *Journal of Gerontological Nursing* 2006;32(1):13-9.
4. Xiao, H., Barber, J., & Campbell, E.S. Economic burden of dehydration among hospitalized elderly patients. *American Journal of Health-System Pharmacy* 2004; 61:2534-40.
5. Holben, D. H., Hassell, J. T., Williams, J. L., & Helle, B. (1999). Fluid intake compared with established standards and symptoms of dehydration among elderly residents of a long-term care facility. *Journal of the American Dietetic Association* 1999; 99(11): 1447-50.
6. Simmons, S. F., Alessi, C., & Schnelle, J. F. An interview to increase fluid intake in nursing home residents: Prompting and preference compliance. *Journal of the American Geriatrics Society* 2001;49(7):926-33.
7. Wakefield, B., Menten, J., Diggelmann, L., & Culp, K. Monitoring hydration status in elderly veterans, *Western Journal of Nursing Research* 2002;24(2):132-42.
8. Mukand, J. A., Cai, C., Zielinski, A., Danish, M., & Berman, J. The effects of dehydration on rehabilitation outcomes of elderly orthopedic patients. *American Journal of Physical Medicine and Rehabilitation* 2003;84: 58-61.
9. Chassagne, P., Druenes, L., Capet, C., Francois Menard, K., & Bercoff, E. Clinical presentation of hypernatremia in elderly patients: A case control study. *Journal of the American Geriatrics Society* 2006;54(8): 1225-30.
10. Bennett, J. A., Thomas, V., & Riegel, B. Unrecognized chronic dehydration in older adults: Examining prevalence rate and risk factors. *Journal of Gerontological Nursing* 2004;30(11):22-8.

11. Dyck, M. J. Nursing staffing and resident outcomes in nursing homes: Weight loss and dehydration. *Journal of Nursing care quality* 2007;22(1): 59-65.