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Do Clinicians Recommend Multivitamin and Mineral Supplements to Long-Term Care Residents According to Nutritional Status?

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(nutrition, cognition, physical function) to the overall effect on AD prevention. However, MAPT and FINGER provide novel models for trials of cognitive decline prevention that can be tested and adapted in various populations, such as the Chinese population.

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Do Clinicians Recommend Multivitamin and Mineral Supplements to Long-Term Care Residents According to Nutritional Status?

To the Editor:

Malnutrition is associated with a range of poor health outcomes in long-term care facilities (LTCFs).^{1,2} Pooled analyses of LTCF data

indicate 52% (range 0%–82%) of residents may be malnourished when screened using the Mini-Nutritional Assessment (MNA).³ Malnutrition is associated with a higher risk of macronutrient and micronutrient deficiencies in LTCFs.^{4,5} Evidence for multivitamin and mineral supplements is mainly limited to residents with established micronutrient deficiencies. A recent systematic review reported 2.7% to 68.3% of residents use multivitamin and mineral supplements.⁶ Although the overall risk of adverse events is likely to be low, supplements contribute to polypharmacy,⁶ potential drug-nutrient interactions, and in rare cases may pose a choking risk.⁷ It is unclear whether clinicians selectively recommend multivitamin and mineral supplements to residents who are at risk of malnutrition or are likely to be malnourished. The objective of this study was to investigate whether the prevalence of multivitamin and mineral supplements differs according to residents' nutritional status.

Method

We conducted secondary analyses of cross-sectional data for 383 residents in 6 residential aged care facilities (RACFs) in South Australia in 2014. RACFs are synonymous with “nursing homes” or LTCFs and refer to supported accommodation for people with care needs that can no longer be met in their own homes. The study methods have been described previously.⁸ In brief, participants were similar to all residents of the RACFs in terms of age (mean [SD] 87.5 years [SD 6.2] vs 87.3 years [SD 6.4], $P = .66$), sex (77.5% female vs 78.5% female, $P = .90$), and diagnosed dementia (44.1% vs 46.8%, $P = .72$). Records of all multivitamin and mineral supplements administered in the previous 24 hours were extracted from each participating resident's medication chart. We categorized multivitamins and minerals using the Anatomical Therapeutic Chemical (ATC) classification system. These categories were vitamins, including multivitamin combinations, thiamine, vitamin B complex, ascorbic acid with or without calcium, and pyridoxine (ATC code A11); Vitamin D and analogues with or without calcium (A11CC); other minerals, including calcium, zinc, potassium, and magnesium (A12); and anti-anemic preparations, including iron, vitamin B12, and folic acid (B03). We excluded preparations specifically prescribed for macular degeneration from A11, and folic acid co-prescribed with methotrexate from B03. Nutritional status was screened using the Mini-Nutritional Assessment Short Form (MNA-SF).³ Complete medication and MNA-SF data were available for 382 residents. The prevalence of each of the 4 micronutrient categories was plotted against MNA-SF categories.

Results

Overall, 76% ($n = 291$) of residents used 1 or more multivitamin and mineral supplement. In total, 13% ($n = 51$) used vitamins, 60% ($n = 230$) used vitamin D and analogues, 14% ($n = 52$) used other minerals, and 24% ($n = 91$) used an anti-anemic preparation. There were 43% ($n = 166$) of residents who were screened as having “normal” nutritional status, 47% ($n = 178$) of residents who were screened as being “at risk of malnutrition,” and 10% ($n = 37$) of residents who were screened as having possible “malnutrition.” Figure 1 shows the prevalence of micronutrient supplementation according to MNA-SF categories.

Discussion

The main finding of our study was that there were minimal differences in multivitamin and mineral use in residents with normal nutritional status and those at risk of malnutrition, with a

Fig. 1. Prevalence of micronutrient supplementation according to MNA-SF categories.

lower prevalence among those who were screened as having possible malnutrition. This suggests that clinicians do not selectively recommend multivitamin and mineral supplements to residents according to nutritional status. This may be because residents or caregivers request supplements regardless of nutritional status, because supplements are perceived to have a favorable benefit-to-risk ratio, or because clinicians presume that all residents are likely to be micronutrient deficient. Encouragingly, there was a low percentage of residents who were screened as having possible malnutrition compared with previous studies.³ This may be because the aged care provider uses a structured approach to identify and address possible malnutrition through fluid and food fortification followed by dietician referral and review. Similarly, the prevalence of vitamin D was higher than in previous studies.⁹ This may be due to recent Australian and New Zealand initiatives to encourage routine vitamin D supplementation in long-term care.

There is clinical uncertainty regarding the effectiveness of most multivitamin and mineral supplements. A randomized controlled trial found that multivitamin and mineral supplementation does not reduce the incidence of infections.¹⁰ A recent systematic review and meta-analysis of randomized controlled trials found no evidence that vitamins prevent cognitive decline.¹¹ Conversely, there is good evidence for routine prescription of vitamin D supplements to reduce the number of falls.¹²

Our study has a number of strengths and limitations. The study sample was representative of all residents in the 6 RACFs, although the findings may not be generalizable to other settings. The MNA-SF is a screening tool, and the results do not necessarily

indicate clinical diagnoses of malnutrition. It is possible that residents who were screened as having normal nutritional status were nutrient deficient and residents at risk of malnutrition had adequate nutrient intake. Anecdotally, residents with advanced dementia and limited mobility may screen positive for malnutrition despite having stable weight. These residents may have been more likely to use high-protein/high-energy supplements that were not analyzed in the present study. These high-protein/high-energy supplements often also contain vitamins and minerals. Finally, we did not record specific indications for each supplement.

In conclusion, 76% of residents used 1 or more multivitamin and mineral supplement. The prevalence of vitamin D and analogues was higher than in previous Australian and international studies. However, clinicians do not appear to selectively recommend multivitamin and mineral supplements to residents at risk of malnutrition or with possible malnutrition. Further research is needed regarding the benefit-to-risk ratio of routine supplement use in this population.

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