

Letters

RESEARCH LETTER

Tube Feeding in US Nursing Home Residents With Advanced Dementia, 2000-2014

Over the last 2 decades, research has failed to demonstrate benefits of tube feeding in patients with advanced dementia.^{1,2} Expert opinion and position statements by national organizations increasingly advocate against this practice.³ This study was conducted to describe feeding tube insertion rates from 2000-2014 among US nursing home residents with advanced dementia. Racial disparities were examined because black race has been strongly associated with greater feeding tube use.⁴

Methods | The Brown University institutional review board approved this study with a waiver of informed consent. Data were derived from federally mandated Minimum Data Set (MDS) assessments completed quarterly, as required, on all residents in US nursing homes between January 1, 2000, and October 31, 2015. First, residents with the following criteria on an initial MDS assessment completed nearest to April 1 (± 60 days) in each year from 2000-2014 were selected: (1) Alzheimer disease or other dementia, (2) severe cognitive impairment,⁵ (3) not dependent for eating, and (4) no feeding tube. Second, residents meeting these criteria who became totally dependent for eating on any MDS assessment completed within 120 days after their initial assessment were identified. Third, the proportion of residents with advanced dementia and recent eating dependency who had a new feeding tube indicated on any MDS assessment during the next 12 months was determined. Poisson regression models were used to estimate the linear time trend of annual changes in insertion rates using all years of data, controlling for age, sex, race (white, black, and other), and stroke. The cumulative change over 14 years was calculated from annual changes, and presented as a comparison of insertion rates between 2000 and 2014 with adjusted risk ratios (ARRs) and 95% CIs. Separate models were generated for white and black residents controlling for age, sex, and stroke. Data were analyzed using SAS (SAS Institute), version 9.4, and Stata (StataCorp), version 14.

Results | Between 2000 and 2014, 71 251 residents with advanced dementia and recent dependence for eating were identified with the following characteristics: mean age, 84 years (SD, 9); women, 76.4%; white, 85.6%; black, 9.5%; and prior stroke, 13.6%. These characteristics were similar across years. The proportion of residents receiving feeding tubes over the next 12 months declined from 11.7% in 2000 to 5.7% in 2014 (ARR, 0.41 [95% CI, 0.38-0.45]) (Table 1 and Table 2). Insertion rates declined between 2000 and 2014 among white residents (8.6% to 3.1%; ARR, 0.37 [95% CI, 0.33-0.41]) and black residents (37.5% to 17.5%; ARR, 0.47 [95% CI, 0.41-0.55]). However, black residents were more likely to get tube fed in 2000 (ARR, 4.4 [95% CI, 4.0-4.7]) and 2014 (ARR, 5.6 [95% CI, 5.0-6.2]) than white residents.

Discussion | The proportion of US nursing home residents with advanced dementia and eating dependency receiving

Table 1. Feeding Tube Insertion Rates Among US Nursing Home Residents With Advanced Dementia in 2000 to 2014

Year	Residents With Advanced Dementia	
	With Recent Onset of Total Dependence for Eating, No.	With Feeding Tubes Over Subsequent 12 Months, No. (%)
2000	7029	820 (11.7)
2001	6738	774 (11.5)
2002	6239	701 (11.4)
2003	5518	577 (10.5)
2004	5194	462 (8.9)
2005	4628	398 (8.6)
2006	4389	393 (9.0)
2007	4110	357 (8.7)
2008	3890	331 (8.5)
2009	3842	297 (7.7)
2010	3794	283 (7.5)
2011	4538	264 (5.8)
2012	4246	235 (5.5)
2013	3685	207 (5.6)
2014	3411	193 (5.7)

Table 2. Comparison of Feeding Tube Insertion Rates Among US Nursing Home Residents With Advanced Dementia in 2000 and 2014

	Residents With Advanced Dementia Receiving a Feeding Tube Within 12 Months of Becoming Dependent for Eating, %			Risk Ratio (95% CI)	
	2000	2014	Difference (95% CI)	Unadjusted	Adjusted
All	11.7	5.7	-6.0 (-7.6 to -4.5)	0.45 (0.41 to 0.50)	0.41 (0.38 to 0.45) ^b
White ^a	8.6	3.1	-5.5 (-7.0 to -4.3)	0.37 (0.31 to 0.43)	0.37 (0.33 to 0.41) ^c
Black ^a	37.5	17.5	-20.1 (-25.5 to -10.2)	0.47 (0.40 to 0.55)	0.47 (0.41 to 0.55) ^c

^a Race data were obtained from the Minimum Data Set, which categorized race as white, black or African American, Asian, American Indian or Alaska Native, Native Hawaiian or other Pacific Islander, other, and unable to determine. For this study, race data were categorized as white, black, or other.

^b Adjusted for age, sex, race, and prior stroke.

^c Adjusted for age, sex, and prior stroke.

feeding tubes decreased by approximately 50% between 2000 and 2014. This decline parallels the emergence of research,^{1,2} expert opinion, and recommendations by national organizations³ discouraging this practice. Feeding tube use decreased across racial groups, but remained relatively higher among black residents, consistent with prior research.^{2,4}

This study has limitations. The number of reported feeding tube insertions are specific to the cohort definitions. The actual number of tubes inserted in all US residents with advanced dementia is likely much higher. Moreover, the reported number of residents with advanced dementia and eating problems declined from 2000 to 2014, reflecting the shifting composition of US nursing homes, such that patients with chronic illnesses, including dementia, are being increasingly maintained in the community with greater access to services.⁶ However, given the analyses applied the same definitions to the numerator and denominator in each year, the comparison of annual insertion rates is reasonable. Power was inadequate to examine factors associated with tube feeding use.

To ensure the message from existing evidence and expert recommendations is disseminated and disparities are reduced, fiscal and regulatory policies are needed that discourage tube feeding and promote a palliative approach to feeding problems in patients with advanced dementia.

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COMMENT & RESPONSE

Pain and Physical Function Following Bariatric Surgery

To the Editor The study by Dr King and colleagues¹ concluded that pain and self-reported and objectively measured physical function improved significantly over a period of 3 years following bariatric surgery. A number of relevant factors associated with pain and physical function improvements were identified. However, the authors did not consider the potentially important influence of the patients' participation in physical activity and exercise during the follow-up period as a factor related to improvement in pain and function. Exercise can enhance weight reduction, reduce pain intensity, and improve self-reported physical function in overweight and obese patients with knee osteoarthritis.² Furthermore, physical activity in morbidly obese patients following bariatric surgery has been shown to enhance weight loss,³ which might benefit physical function and knee pain.⁴ Thus, participation in physical activity or exercise programs following bariatric surgery might be associated with improvement in physical function measures such as the 400-m test used by King and colleagues.¹ We suggest that future observational studies might benefit from assessing presurgery-to-postsurgery changes in physical activity levels.

Another interesting finding in the study that corroborated previous observations was that Roux-en-Y gastric bypass resulted in a larger weight loss percentage compared with laparoscopic adjustable gastric banding (34.1% vs 14%, respectively, at 1 year; 34.1% vs 16.1% at 2 years; 31.5 vs 16.2% at 3 years). Because it has been shown that weight loss following bariatric surgery promotes significant improvements in physical function,⁵ it is surprising that the type of surgical procedure was not associated with any outcome in the study.

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