

Dental Care Utilization among Patients with Dementia: An Analysis of Data from Taiwan's National Health Insurance Database

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The numbers of patients with different types of dementia will grow each year as the elderly population increases worldwide. Impairment of cognitive abilities and concomitant limitations on daily living activities contribute to a worsening of oral health in demented patients. Results of published studies have indicated poor oral health in patients with dementia [1-3]. Poor oral health can adversely affect speech, chewing ability and nutritional status, which in turn could potentially compromise the cognitive functioning, quality of life and general health of demented patients [4]. Moreover, a growing body of evidence suggests that periodontal disease is related to the occurrence of systemic diseases [5], aspiration pneumonia [6], cardiovascular disease [7] and ischemic stroke [8], which can lead to morbidity and earlier mortality in frail older people with dementia. Despite its importance, there is a tendency among demented patients to not adhere to good oral hygiene practices without assistance. Oral health and oral hygiene can decline as dementia progresses [9,10]. As such, regular dental check-ups play a vital role in oral health maintenance in this disadvantaged group of patients.

There is evidence indicating that neglecting dental care visits might contribute to poor oral health among patients with dementia [11]. However, compared to the attention given to the higher utilization of medical care among this population [12], their dental care utilization has not been well explored. Our previous study found that patients with severe mental illness received less dental care than the general population [13]. Using the same database, we analyzed a national representative sample derived from Taiwan's National Health Insurance Research Database to determine if demented patients visited dentists less often than their non-demented elderly counterparts. A total of 85,981 elderly subjects were recruited for the analysis. Only 26.2% of patients with dementia visited the dentist within a 12-month period. This is significantly lower than the dental visit rate of 37.3% among the elderly control (odds ratio, 0.66, 95% CI, 0.62-0.71; $P < 0.001$), after controlling for potential confounders. In a regression model analysis limited to the demented patients (Table 1) (N=4,316), females, older persons, those hospitalized for more than one month, and those with low income and a middle socioeconomic status (SES) were less likely to visit dentists. However, subjects residing in areas with more dentists and high SES and those who visited more outpatient clinics, had a higher likelihood of visiting dentists.

Our results are in agreement with those in the literature, which indicated that patients with dementia or older adults with cognitive impairment were at risk of lower use of dental care [11,14,15]. The work of Fereshtehnejad et al. [16] further revealed that dental care utilization markedly declines following a dementia diagnosis. There are several explanations for this lower utilization. First, dementia patients might not be able to verbalize their dental needs as a result of cognitive deficits [17]. Second, caregivers may become frustrated in their efforts to help demented patients receive dental care [18] and as a result, they may be hesitant to take them to visit the dentist [19]. Third, in later stages of dementia, dental treatment may be extremely difficult to perform because of the uncooperative behavior of patients [20] and dentists may then reduce the treatment intensity as a patient's dementia progresses [14].

Variable	Unadjusted odds ratio		Adjusted odds ratio ^a	
	Estimate (95% CI)	P value	Estimate (95% CI)	P value
Gender				
Female	1		1	
Male	1.15 (1.00-1.31)	0.051	1.17 (1.02-1.35)	0.028
Age ^b	0.95 (0.94-0.96)	<0.001	0.95 (0.94-0.96)	<0.001
Socioeconomic status				
Low	1		1	
Middle	0.75 (0.64-0.88)	<0.001	0.82 (0.69-0.97)	0.019
High	1.76 (1.06-2.9)	0.028	1.35 (0.79-2.3)	0.267
Dentist/population ratio ^c				
Low	1		1	
Middle	1.26 (1.05-1.51)	0.013	1.31 (1.08-1.58)	0.006
High	1.85 (1.55-2.21)	<0.001	1.94 (1.6-2.34)	<0.001
Hospitalization bed days				
Less than 30 days	1		1	
30 days or more	0.43 (0.32-0.56)	<0.001	0.45 (0.34-0.59)	<0.001
Low income				
No	1		1	
Yes	0.42 (0.25-0.71)	0.001	0.41 (0.24-0.69)	0.001
Healthcare utilization ^d				
Low	1		1	
Middle	4.03 (1.62-10.05)	0.003	3.93 (1.57-9.86)	0.004
High	8.86 (3.6-21.8)	<0.001	9.05 (3.65-22.44)	<0.001

^aMultiple logistic regression model

^bEach year of increased age

^cLow: less than 3.43, middle: 3.43-6.5, high: 6.51 or more

^dNumbers of outpatient visits in the year 2009; low: less than 18, middle: 19-48, high: 49 or more

Table 1: Predictors of dental care utilization among patients with Dementia.

A study by Lee et al. [11] found that a perceived greater social network was associated with increased dental utilization in older adults with cognitive impairment. However, we found that dementia patients who underwent longer hospitalization received less dental care, indicating that dental care might not be a priority in the care of these individuals, especially those living in institutions or lacking social support. Fereshtehnejad et al. [16] also suggested that living alone and receiving home care were two risk factors for a decline in dental care

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utilization. These findings show that, given that patients with dementia may be unable to express their dental discomfort, formal and informal caregivers should be educated on the benefits of regular dental check-ups in facilitating the dental health of dementia patients, especially those patients lacking adequate family support [2,11].

Taiwan's National Health Insurance (NHI) program is a single-payer compulsory health insurance plan for all Taiwan residents that guarantees equal access to healthcare for all residents. The NHI now has a coverage rate of 96%. Nearly all dental service providers contract with the NHI and provide basic dental services with inexpensive co-payments. Although the availability of dental insurance is not a barrier to receiving dental care in Taiwan, evidence from the present study shows that financial issues and residing in areas with few dentists are key system-level barriers to dental care for demented patients. One study indicated that although dementia is associated with high levels of out-of-pocket spending, this is not the case with dental care use [14]. For those patients under a financial strain, spending for health care may hamper their ability to pay for dental care. Therefore, the NHI should organize and supplement dental care professionals to provide affordable dental care for demented patients with a low income and residing in areas lacking adequate dental care facilities.

In summary, encouraging the maintenance of oral health among patients with dementia would lead to a better overall quality of life, contribute to their maintaining adequate nutrition and help prevent comorbid medical conditions. Besides promoting oral hygiene through patient self-care, regular dental care utilization remains an irreplaceable way to prevent or treat oral diseases and achieve better oral health. Healthcare authorities should organize dental care systems and provide reimbursement to facilitate meeting the dental needs of patients with dementia. Given that demented patients may be unable to express their dental care needs, health care providers, including psychiatrists, dentists, hospital nursing staffs and home caregivers should encourage dementia patients to visit the dentist regularly, so as to maintain and/or improve their oral health.

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