Factors Affecting Caregivers' Perceptions of Residents' Oral Health in Long-Term Care Facilities in Taiwan

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The purpose of this study was to investigate the differences between resident oral care policies provided by 2 types of long-term care (LTC) institutions. The study also investigated factors affecting LTC institutional caregivers' perceptions of the residents' oral health. Overall, 103 completed questionnaires were returned. Of these, 44 were from senior citizen welfare institutions, and 59 were from nursing homes. The variables affecting these perceptions included institution type and whether the residents attended hospital dental clinics or consulted a hospital doctor regarding oral health problems. The research results showed that institution type and whether an oral care–related professional was available in an institution were correlated with an increase in institutional caregivers' perceptions of oral care. (*Geriatr Nurs* 2012;33:350-357)

The provision of oral care for residents in long-term care (LTC) facilities is an important issue. A number of studies have indicated that poor oral health may increase the risk of stroke, heart disease, and pneumonia for residents in LTC institutions who are already afflicted by certain diseases.[1-6] Studies have also verified that LTC residents' chewing ability, oral condition, denture condition, and oral hygiene all affect their quality of life.[7-10]

There are 2 types of LTC institutions in Taiwan. The first comprises senior citizen welfare institutions, which are managed by the Department of Social Affairs. These institutions mainly provide services to senior citizens with chronic diseases who require nursing services. Data from 2011 indicate that there are 1053 senior citizen welfare institutions in Taiwan.[11] Most of these facilities are managed by the private sector (86.9%), followed by juridical persons (10.4%). The second type comprises nursing homes that are managed by the Department of Health. In 2011, 408 nursing homes in Taiwan[12] provided services mainly for persons with stable disease conditions or severe disabilities and those in need of technical and general nursing care. In other words, the degree of disability of residents living in nursing homes is more severe than that of those living in senior citizen welfare institutions. Most of these institutions are managed by the private sector (86%), with 14% managed by the public sector. Both institution types in Taiwan are primarily managed by the private sector.

Although the evaluation items of oral care for residents have been established in institutional accreditation systems, the regulations governing the establishment of LTC institutions in Taiwan do not stipulate the requirements for establishing relevant oral health equipment, staffing, and training. Consequently, the baseline for managing the oral health of residents in the 2 types of institutions is consistent.

Caregivers in LTC institutions play an important role in the promotion of oral health for their residents; however, studies have indicated that

caregivers are deficient in oral care–related education. After caregivers are provided with oral care-related educational training, their knowledge and skills improve, which is helpful for reducing the incidence of respiratory infections in residents.[13-18] Therefore, caregivers' oral care–related knowledge and skills is important and beneficial for the maintenance and improvement of residents' physical and psychological status.[19]

Significant differences have been found between the oral health–related educational training courses provided by caregivers in relevant existing studies and that in the LTC system that is under development in Taiwan. First, a dental hygiene system has not been developed in Taiwan, and there are no professional dental hygienists guiding the LTC caregivers who provide oral health–related educational training courses. Second, dentists are the main promoters of oral health in Taiwan. In 2010, there were 6209 dental clinics in Taiwan,[20] translating to a ratio of 5 practicing dentists for every 10,000 people.[21] Although national health insurance has been established in Taiwan, oral health–related systems have yet to be developed in LTC institutions. As a result, dentists' promotion of oral health for residents in LTC facilities is an unpaid volunteer service, resulting in low incentive for dentists to see patients in LTC facilities.

Therefore, owing to a limited number of oral health professionals and the lack of oral health systems in LTC facilities, the maintenance or promotion of residents' oral health in more than 85% of private LTC facilities is dependent on each facility's self-implementation of oral care policies.

This study suggests that only the self-implementation of oral care policies by LTC facilities can provide direction for the future establishment of oral care systems in LTC facilities. This study has 2 purposes: to investigate 1) whether oral care policies vary according to facility characteristics and 2) whether the oral care policies of LTC facilities have any effect on the caregivers' perceptions of their residents' oral conditions.

Setting and Sample

In 2010, there were 56 LTC facilities (34 senior citizen welfare institutions and 22 nursing homes) in Taichung City.[11] Telephone calls were placed to all 56 LTC facilities, and 22 facilities were willing to participate in this study (13 senior citizen welfare institutions and 9 nursing homes). All of the participating facilities were managed by the private sector. The questionnaires were distributed to the LTC facilities that were willing to participate, and they all agreed with the contents. Ten questionnaires were distributed to each facility, thus, 220 questionnaires were distributed.

Inclusion criteria for the caregivers were that they had to be Taiwan citizens, had to personally provide residents with physical care, and were willing to participate in the questionnaire survey. Foreign caregivers and those who refused to participate in the study were excluded. The questionnaires were distributed from September to November 2010.

Overall, 103 questionnaires were returned, for a return rate of 46.8%: 59 completed questionnaires were returned from the nursing homes (a return rate of 65.5%), and 44 completed questionnaires were returned from the senior citizen welfare institutions (a return rate of 33.8%).

Most of the caregivers (95) were female (only one was male), and their mean (SD) age was 42.1 (10.9) years. Most of the caregivers (57.3%) served in the nursing homes, whereas 42.7% served in the senior citizen welfare institutions. Most of the caregivers (48.5%) were high school graduates, whereas 22.3% were college or graduate school graduates. Most of the caregivers were nurse's aides (71.8%), and 20.4% were nurses (Table 1).

Measurement and Methods

This study developed self-edited questionnaire items according to the oral health-related data from the LTC institutions.[22-25] After the questionnaire was developed, 3 experts (including dentists volunteering in LTC facilities for more than 6 years and nursing professionals familiar with the LTC facility care models) were invited to test and amend the questionnaire according to item importance, appropriateness, and comprehensibility. After the experts amended the questionnaire twice, the final version included 9 items concerning the implementation of oral care policies by facilities and 4 items concerning the caregiver's perceptions of oral care for the residents.

Among the 9 items concerning the facilities' implementation of oral care policies, 2 were

Table 1.
Sociodemographics of the Participants

Characteristic	*N*	%
Gender		
Male	1	1.0
Female	95	92.2
Missing	7	6.8
Job title		
Nurse	21	20.4
Nurses aides	74	71.8
Missing	8	7.8
Served institutions		
Nursing home	59	57.3
Senior citizen welfare institutions	44	42.7
Marital status		
Not married	28	18.5
Married or common-law wife	108	71.5
Separated/divorced	15	10.0
Education level		
Literate/elementary school	5	4.9
Primary high school	17	16.5
Senior high school	50	48.5
College or graduate school	23	22.3
Missing	8	7.8

questions about the facilities' self-implemented oral health examinations for residents and the number of actual daily instances of caregivers assisting the residents in brushing their teeth and rinsing their mouths to help us understand the facilities' practical measures for implementing oral health policies. The other 7 items are shown in Table 2. Among these items, 4 were questions about the facilities' implementation of their oral health policies (Items 1, 3, 6, and 7 in Table 2), and 3 were questions about the facilities' relevant resources for managing residents' oral care (Items 2, 4, and 5 in Table 2). The caregivers' responses to the items in Table 2 were either "Yes" or "No" to evaluate whether oral care policies were implemented in facilities.

The following 4 items were used to measure the caregivers' perceptions of oral care for their residents: "the current oral condition of the residents," "the importance for residents to undergo oral examinations semiannually," "the importance of oral health to the residents," and "the residents' oral health is relevant to their physical health." These items were used as the basis for understanding caregivers' perceptions of the residents' oral health. A 5-point Likert scale, with scores ranging from 1 (*not important at all*) to 5 (*very important*), was applied. The Likert scale was primarily used to measure attitudes and subjective or objective perceptions. Existing studies on oral health perceptions were also comprehensively used.[26-28]

The total score of the previously mentioned 4 items (20 points maximum) was used to measure the caregivers' perception of oral care. Correlation coefficients were used to test the correlation between these 4 items and the total score, and a significant correlation was found between all 4 items and the total score.[29] The correlation of Item 1 was .478, suggesting that it was moderately correlated with the total score. The scores of the other items were all >.80 (highly correlated), suggesting that the total score shared high homogeneity with all four items. The total score was considered the overall caregiver perception. Moreover, reliability analysis was used to test whether the reliability of the 4 items, and the total score was acceptable. Cronbach's α value was .795, suggesting overall acceptable reliability.

Statistical Analysis

The data were analyzed using SPSS (version 12: SPSS Inc., Chicago, IL). A chi-square test was used to test whether there was a significant difference between the caregivers' self-perceived implementations of the institutions' oral care policies for residents. Moreover, an adjusted residual was used to determine the differences in the implementation guidelines for oral care between caregivers at different institutions. This study used multiple regression analyses to investigate the factors affecting caregivers' perceptions of residents' oral health.

Results

Overall, 9 items were used to investigate the oral care policies implemented in the 2 facility types. First, the caregivers were asked questions concerning the number of oral health examinations implemented in the facilities and the number of daily instances of assisting residents with brushing their teeth and rinsing their mouths. On an average, the institutions assisted residents in undergoing oral health examinations 0.46 times (SD 0.87) per year. In the LTC institutions

Table 2.
Differences in Oral Care Policies Between the 2 Types of Facilities

Items	Institution Type: Nursing Home	Institution Type: Senior Citizen Welfare Institutions	*N*	χ^2
1. Residents' periodic oral health examination				
No	26 (−2.2)	29 (2.2)	55	4.83*
Yes	33 (2.2)	15 (−2.2)	48	
2. Residents' oral health examination sites				
At the institution				
No	55	42	97	0.23
Yes	4	2	6	
At a dental clinic				
No	34	26	60	0.02
Yes	25	18	43	
At hospital				
No	46	39	85	1.99
Yes	13	5	18	
3. Rules on residents' tooth brushing and mouth rinsing				
No	2	2	4	0.9
Yes	57	42	99	
4. Specially appointed dentists				
No	39	34	73	1.52
Yes	20	10	30	
5. Person with whom to consult about residents' oral health problems				
Private or special doctor in the institution				
No	42	27	69	1.1
Yes	17	17	34	
Dental clinic near the institution				
No	32	29	61	1.42
Yes	27	15	42	
Hospital doctor				
No	37	33	70	2.22
Yes	21	11	32	
6. Promotion of oral health knowledge				
No	8 (−3.5)	18 (3.5)	26	9.99‡
Yes	51 (3.5)	26 (−3.5)	77	
7. Oral cleaning as the content of oral care programs for residents				
No	6 (−2.7)	14 (2.7)	20	7.57†
Yes	49 (2.7)	28 (−2.7)	77	

The parentheses in items 1, 6, and 7 were adjusted residual values.
*$P < .05$.
†$P < .01$.
‡$P < .001$.

in which tooth-brushing and mouth-rinsing policies were implemented, the mean numbers of daily tooth brushing and mouth rinsing instances were 1.79 (SD 1.03) and 2.29 (SD 1.24), respectively. The *t* test showed no significant difference between the 2 facility types, suggesting that their oral care policies regarding oral health examinations and tooth brushing or mouth rinsing were similar.

Moreover, any differences in the 7 items concerning the implementation of oral care policies in these 2 types of facilities is shown in Table 2. Using the chi-square test, we found significant differences in Items 1, 6, and 7. The use of the adjusted residual showed that the frequency of implementation of these 3 oral care policies in the nursing homes was higher than that of the senior citizen welfare institutions.

Table 3.
Regression Analysis Summary Form of the Factors Affecting Caregivers' Oral Health Perception

Order of the Variables to Be Analyzed	R	R^2	Adjusted R^2	R^2 Change	F	β
1. Nursing home vs. senior citizen welfare institutions	.308	.095	.085	.095	9.498*	−.298*
2. Residents undergo oral examinations in hospital vs. not doing so	.391	.152	.133	.057	8.035†	.266†
3. Consulting with the doctor in the hospital where residents frequently visit vs. not doing so	.467	.218	.191	.065	8.204‡	−.260†

*$P < .05$.
†$P < .01$.
‡$P < .001$.

Overall, 4 items were used to measure the caregiver's perceptions of oral care for their residents. The mean score of "the current oral condition of the residents" was 3.20 points (SD 0.83), whereas the mean score of "the importance of oral health to the residents" was 4.10 points (SD 0.71). The mean score of "the importance for residents to undergo oral examinations semiannually" was 4.20 points (SD 0.82), whereas the mean score of "the residents' oral health is relevant to their physical health" was 4.27 points (SD 0.78). Overall, 4 questions addressed the caregivers' perceptions of the residents' oral health. The mean total score was 15.77 points (SD 2.33). These results show that caregivers' oral health perceptions were significantly higher.

To investigate the relevant factors affecting caregivers' oral health perceptions, 4 questions concerning their perceptions of residents' oral health were used as dependent variables; caregivers' ages, job titles, and education levels, as well as the institution type and its oral care policies, were used as the independent variables in multiple regression analyses. The results are summarized in Table 3.

The results of the multiple regression analyses showed that there are statistically significant differences in variables by institution type, whether residents underwent oral examinations in hospitals, and whether caregivers consult a hospital doctor regarding the residents' oral care problems. These 3 variables explained 21.9% of the total variance of caregivers' oral health perceptions. Among them, the institution type affected the maximum variance (as much as 9.5%) of the caregivers' oral health perceptions.

The results of the β coefficient showed that the oral health perception of caregivers in nursing homes was higher than that of those in senior citizen welfare institutions. The perception of those in facilities in which residents could undergo oral health examination in hospitals was higher than that of those in facilities in which residents had to undergo oral health checks in nonhospital institutions. The perception of caregivers who did not consult hospital dentists was higher than that of those who did consult them.

Discussion

This study investigated the differences between the implementation of oral care policies between 2 types of LTC institutions and the relevant factors affecting the oral health perceptions of caregivers in LTC institutions. Because there is limited access to oral health professionals and a complete oral health system is lacking in the field of LTC, the results of this study could be used as a reference to develop and promote oral health policies in LTC facilities.

The research results indicated that the nursing homes performed better than the senior citizen welfare institutions in terms of the following 3 aspects: offering periodic oral health examinations for residents, promoting oral health–related knowledge, and providing oral cleaning and rinsing as part of the resident care program. This study suggested that the results correlated with

the evaluation items for LTC facilities in Taiwan. The number of oral evaluation items for residents in nursing homes was larger than that for residents in senior citizen welfare institutions in Taiwan. Therefore, the research result was consistent with the currently promoted evaluation items in LTC institutions. In other words, the care or relevant education provided by nursing homes is indeed superior to that provided by senior citizen welfare institutions. These result showed that although there are no professional dental hygienists in Taiwan, an oral care evaluation system with multiple items could enhance facilities' oral health programs for their residents. Therefore, this study suggests that the establishment of an evaluation system consisting of an oral care index in places where there are no professional dental hygienists could enable facilities to implement complete oral care programs for their residents.

However, both facility types lacked oral care–related resources for their residents. Such a finding reflects on the lack of oral health–related professionals and relevant resources in LTC facilities in Taiwan. This result is consistent with previous studies showing that it is difficult for LTC residents with higher degrees of disability to attend a dental clinic. Moreover, institutions seldom provide professional oral care equipment or cover relevant expenses.[1,30,31] Consequently, this study suggests that it is necessary to establish a system concerning consultations and clinical visits as well as oral care education within the oral health policies for LTC facilities and oral health professional units.

The second purpose of this study was to investigate whether the oral care polices in facilities affect caregivers' perceptions of their residents' oral conditions. The research result of the relevant factors affecting the caregivers' perceptions of the residents' oral health showed that the institution type had the most significant effect. In other words, caregivers' perceptions of the residents' oral health in nursing homes were higher than that of those of caregivers in senior citizen welfare institutions. This result was consistent with the earlier-noted idea that oral care policies for residents implemented in nursing homes could increase caregivers' perceptions of their residents' oral health.

Allowing residents to receive oral examinations in hospitals has a positive effect on the oral care consciousness of caregivers. When caregivers do not consult practicing physicians in hospitals about oral problems, there is a positive effect on the caregivers regarding their oral care consciousness. Previous studies have indicated that a referral relationship is in place between LTC institutions in Taiwan and nearby hospitals and that contracted doctors serving in medical institutions are often assigned to provide periodic medical service in LTC institutions.[32,33] Past literature has indicated that the residents of LTC institutes seek hospital care mainly for urinary tract infections, rehabilitation, and respiratory illnesses.[34,35] This suggests that only a small percentage of residents at LTC institutes are able to seek oral care at hospitals. In terms of the samples in this study, only 17.4% of the residents attended dental clinics, which might be related to the medical care model provided for residents by LTC institutions in Taiwan. Consequently, most LTC institutions have contracted with medical institutions to provide medical services.[35] Therefore, this study presumed that it would be less likely for LTC institutions to provide direct dental care services, leading to a lower likelihood of caregivers consulting with relevant hospital personnel about oral care issues.

These results show that the manner in which LTC facilities implement health policies is associated with oral health resources and affects caregivers' oral care perceptions. Therefore, this study indicates that more importance be attached to making a connection between LTC facilities and their neighboring oral health professional resources.

Study Limitations

The findings of this study must be interpreted with caution in the context of its design. First, the small sample size limits the generalizability of its findings. Second, this study did not directly assess the residents' oral conditions in the LTC institutions, human resource deployment of institution oral care policies, or institutions' attitudes toward the residents' oral care. These factors might restrict our interpretation of the caregivers' perception level and the implementation of the facilities' oral care policies. Third, because all the facilities willing to participate in this study refused to be a study site for analysis, this study did not conduct a questionnaire survey on them.

Although expert validity and reliability analyses were used to verify the questionnaire acceptability, the questionnaire might not conform to the current conditions of LTC facilities, because it was not used for testing. Future studies should use a larger sample size and conduct a questionnaire survey to assess the factors affecting institutions' oral care policy planning.

Conclusions

This study verified that in facilities in which there are no professional dental hygienists or LTC oral care systems, it is important to stress caregivers' implementation of facility oral care policies for their residents. The establishment of a detailed evaluation system for residents' oral care in LTC facilities is beneficial for improving the facilities' oral care program implementation. The facilities' implementation of oral care and connection with resources also affect caregivers' oral care perceptions. Therefore, future development of oral care policies in LTC facilities should ascribe importance to establishing a complete oral care evaluation system as well as making a connection between facilities and neighboring dental medical units or resources to improve their programs and their residents' oral care.

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