



Work stress among nursing home care attendants in Taiwan: A questionnaire survey

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Abstract

Background: Care attendants constitute the main workforce in nursing homes, but their heavy workload, low autonomy, and indefinite responsibility result in high levels of stress and may affect quality of care. However, few studies have focused on this problem.

Objectives: The aim of this study was to examine work-related stress and associated factors that affect care attendants in nursing homes and to offer suggestions for how management can alleviate these problems in care facilities.

Methods: We recruited participants from nine nursing homes with 50 or more beds located in middle Taiwan; 110 care attendants completed the questionnaire. The work stress scale for the care attendants was validated and achieved good reliability (Cronbach's $\alpha = 0.93$). We also conducted exploratory factor analysis.

Results: Six factors were extracted from the work stress scale: insufficient ability, stressful reactions, heavy workload, trouble in care work, poor management, and working time problems. The explained variance achieved 64.96%. Factors related to higher work stress included working in a hospital-based nursing home, having a fixed schedule, night work, feeling burdened, inconvenient facility, less enthusiasm, and self-rated higher stress.

Conclusion: Work stress for care attendants in nursing homes is related to human resource management and quality of care. We suggest potential management strategies to alleviate work stress for these workers.

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Keywords: Care attendants; Nursing homes; Psychological stress; Human resource management

What is already known about the topic?

- Studies have focused on the work stress experienced by nurses, but only the high turnover rate of care attendants has been noted for this category of worker.
- Care attendants are main caregivers in nursing homes or long-term care institutions, but an appropriate and effective quantitative scale to measure work stress in care attendants was little found.

- Taiwan is under rapid population aging and changing long-term care environment, and there is urgent need to explore the work stress for care attendants in nursing homes and how to manage the potential problem.

What this paper adds

- We explore the work stress for care attendants of nursing homes in Taiwan by developing and analyzing the work stress scale.

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- We find the related factors to different dimensions of work stress for care attendants.
- We offer suggestions for long-term care institution managers or policy makers.

1. Introduction

Care attendants constitute the main workforce in nursing homes. However, work-related stress in care attendants, which may affect the quality of care they provide, has received little attention by the administrators. With a rapidly aging population in Taiwan, quality of care and staffing for long-term care institutions are becoming critical issues. This study examines the work stress and related factors experienced by care attendants in nursing homes.

Care attendants in hospitals and long-term care facilities have a variety of titles, including nursing aids, nursing assistants, care assistants, and nursing attendants. We use the term care attendants for this study because, in long-term care facilities, these employees mainly provide personal care and assist with nursing care.

Stress is the non-specific response of the body to any demand (Selye, 1956), and occupational stress is associated with a disruption of an employee's psychological or physiological homeostasis (Margolis and Kroes, 1974). Work stressors may stem from problems with the role an employee plays in the organization, his/her career stage, interpersonal conflict, or organizational characteristics. Work stress in health setting may also result in a physical or psychological reaction, absenteeism, burnout, turnover, and quality of care problems (Bowers and Becker, 1992; Michie and Williams, 2003).

Although many studies have focused on the work stress experienced by nurses (McVicar, 2003), only the high turnover rate of care attendants has been widely noted for this category of worker (Castle, 2005; Fitzpatrick, 2002; Sung et al., 2005). Actually, the work stress of care attendants may also affect the quality of care in nursing homes (Bowers and Becker, 1992). For the head nurses in long-term care facilities, they have to supervise the nursing assistants and to maintain a good quality of care for the residents, and also to resolve the work stress problems from care attendants. The human resource management is crucial for long-term care institution managers. Most long-term care facilities try to develop effective retention strategies for care attendants, but to do so means having a good understanding of the work stressors they encounter. Until this study, this information was not readily available. Additionally, although many stress scales have been developed to examine occupational stress, an appropriate and effective quantitative scale to measure work stress in care attendants and used for developing strategies of stress problems was not found to our knowledge. Thus,

developing a scale to explore the work stress experienced by care attendants in long-term care facilities and the factors related to it are important.

Work stress is related to the characteristics of a given occupation, such as the variety, accuracy, challenge, complexity, skill mastery, scheduling, over-time requirements or options, rotation, repetition, and speed (Greenberg and Baron, 1997; Institute of Occupational Safety & Health, 1997). For care attendants, the job emphasizes personal care of residents, which requires less professional training than nurses or other health professions, and is usually under the supervision of nurses or other professionals. In hospitals or acute care facilities, the function of care attendants is limited. However, in long-term care facilities, many residents need a great deal of personal and nursing care, and their care lasts for a long period of time and must be performed everyday. Thus, repetition and a heavy workload characterize the job.

Drwiega (1999) described three myths about nurse's aide work: it provides high pay and fewer working hours, a fixed work schedule, and a stepping stone to more desirable kinds of work. In reality, care attendants work long hours and earn only the humblest kind of living, they work in understaffed nursing homes with unfixed schedules, they must work overtime, and they have little opportunity to advance to a more skill-demanding job position.

Work stress for care attendants comes from a variety of sources. Lin et al. (2002) reported that the work stressors experienced by nurse's aides included general job tasks, patient care tasks, coworker relationships, supervisor relationships, workload/scheduling, and facility design/maintenance; they also found that the patient care task was the most stressful. Factors related to these stressors included age, nationality, identity, resident care time, and the number of residents for which a nurse was responsible. In another study (Curry et al., 2000), certified nurse's aides reported their perception of barriers in the job, which included inadequate staffing, poor team communication, staff attitudes, and a lack of knowledge and training. Both of these studies used only descriptive analysis or bi-variate tests to explore the relationship of related factors to work stress, rather than using multivariate analysis for controlling of confounders. Using content analysis, Monahan and McCarthy (1992) found that people become nurse's aides because of interest in the health field and monetary needs, and the work stress comes from the demands of the tasks (such as scheduled hours, physically and mentally demanding tasks, lack of equipment and supplies) and decision-making by others. They also concluded that the attachment to others and the gratification of the job were helpful in retention of nurse's aides.

1.1. Care attendants in Taiwan

According to Taiwan's "The Regulation of the Nursing Institution" from 1993, there should be at least one

“ward helper” for every six beds in a nursing home. The title was changed to “patient helper” and the requirement became at least one person for every five beds. This makes the care attendants more in demand. In 2001, the “Welfare Industry Promoting Group” was initiated and included members from the Department of Health and the Council of Labor Affairs as well as academic professionals and representatives from private providers. This group suggested that care workers should be trained by a public organization with consistent contents and standards to establish a qualified formal service of long-term care system. All types of care personnel, including hired care at home (home helpers) and nurse’s aides in hospitals, nursing homes, or other nursing institutions, are regulated under the law management. In 2002, all of these care helpers (i.e., home helpers, nurse’s aides) were renamed “care attendants.” Every care attendant has to be trained by taking a 50-hour course and must have 40 practice hours to obtain care attendant certification.

Although the training of care attendants in long-term care facilities has been studied in Taiwan, the work stress experienced by care attendants and the resulting problems with patient care have received less attention. Lin et al. (2003) explored whether nurse’s aides were satisfied with the pre-job training programs provided by long-term care facilities and found that the aides were happy with the lecturers and the clinical application but were less satisfied about the tuition, class size, and practice hours. However, the effectiveness of the pre-job training program and whether pre-job training can reduce work stress are still unknown.

The purpose of this study was to examine the work stress and its dimensions experienced by care attendants in nursing homes in Taiwan and to investigate any related factors. We explored the usual difficulties encountered by care attendants and their potential effect on quality of care in long-term care facilities in order to provide suggestions for long-term care management and policies.

2. Methods

2.1. Study participants

The survey was conducted from July to August 2004. Native care attendants in nursing homes with 50 or more beds in middle Taiwan were the targets of this study. Fourteen nursing homes were eligible to participate and were recruited by telephone invitation and written documents. Nine nursing homes (six hospital based, three freestanding) chose to participate. All care attendants in the participating nursing homes were potential samples, but the foreign care attendants and those from Mainland China were excluded because they could not read and answer the questionnaire in traditional Chinese by themselves.

Interviewers were trained before interviewing those care attendants. Interviewers made an appointment with the manager of a nursing home and took the questionnaires to the appointment. Because of the limited free time available during working hours, the questionnaire was self-written by the care attendants after the interviewer’s explanations. All the participants were well-informed about the contents in the questionnaire, and anyone of them could choose to finish it or not. All the individual data were assured to be confidential and only used for the study analysis. The interviewer collected the completed questionnaires at a subsequent appointment with the manager. The total number of eligible care attendants was 144 (already excluding any foreign or Mainland Chinese care attendants), and 110 participated and completed the survey (completion rate of 76.4%).

2.2. Development of work stress scale (WSS)

By reviewing past studies (Alexander et al., 1998; Curry et al., 2000; Hsu, 2002, 2003; Lin et al., 2002; Monahan and McCarthy, 1992; Sung et al., 2005), we designed the first draft of the work stress scale (WSS) to evaluate the stress score created by work stressors and their stress reactions. The work stress items included the characteristics of the tasks (eight items), working environment and management (nine items), interactions with patients and family (four items), knowledge and skills of the task (five items), and stress reactions (two items). The characteristics of the tasks mean the nature of the care assisting job; this part could be the less modifiable one. Working environment and management is related to structural quality and management problems, and this is more easily to resolve by long-term care institution management. Knowledge and skills of the task indicate the gap of ability and requirement in the job. And interaction with patient and family and stress reactions are related to feelings, coping situation, and personal problems among the care attendant. The score of each item ranged from 1 to 5, and a higher score indicated a more frequent situation.

The validity of the WSS for care attendants was first examined by three professionals in the fields of gerontology, survey research, and health behavior, who scored the importance, appropriateness, and accuracy of each item. After modification of the WSS based on the experts’ suggestions, we pre-tested the questionnaire on 50 care attendants in other nursing institutions in middle Taiwan. Based on the results of the pre-test, we revised the WSS again to generate the final edition of the questionnaire, which includes 28 items of work stress (please see the Appendix).

2.3. Related variables

The variables related to work stress that we examined in this study included individual characteristics and

Table 1
Characteristics of the sample

Characteristics	Persons	(%)
<i>Individual characteristics</i>		
Age		
21–30	10	(9.1)
31–40	19	(17.3)
41–50	57	(51.8)
51+	24	(21.8)
Gender		
Male	4	(3.6)
Female	106	(96.4)
Education		
Illiterate/elementary school	15	(13.6)
Junior high school	25	(22.7)
Senior high school	56	(50.9)
College or university	14	(12.7)
Marital status and child number		
No kids	10	(9.1)
Married with kids	85	(77.3)
No spouse with kids	15	(13.6)
Self-rated health		
Poor or fair	52	(47.3)
Good or excellent	58	(52.7)
Salary per month (NT dollars)		
15,000–19,000	12	(10.9)
20,000–24,999	40	(36.4)
25,000–29,999	38	(34.5)
30,000–34,999	17	(15.5)
35,000+	3	(2.7)
<i>Institutional characteristics</i>		
Nursing home type		
Hospital-based	73	(66.4)
Freestanding	37	(33.6)
Experience for care attendant		
<1 year	17	(15.5)
1 year	26	(23.6)
2–3years	33	(30.0)
4 years or over	34	(30.9)
Schedule		
Rotated	72	(65.5)
Fixed	38	(34.5)
Night work		
No	56	(50.9)
Yes	54	(49.1)
Care loads (persons)		
<10	39	(35.4)
10+	71	(64.5)
Pre-job training		
No	19	(17.3)
Yes	91	(82.7)
On-the-job training		
Ever attended	67	(60.9)
Never attended	7	(6.4)
No course in this facility	17	(15.5)
Missing	19	(17.2)
Appropriateness of salary		
Less than reasonable	48	(43.6)
Reasonable	62	(56.4)

Table 1 (continued)

Characteristics	Persons	(%)
Reward system		
None or don't know	40	(36.4)
Yes	70	(63.6)
Enjoyment of work		
Not really	11	(10.0)
Fair	69	(62.7)
Like it	30	(27.3)
Self-rated work stress		
Mild	3	(2.7)
Moderate	49	(44.5)
Heavy	54	(49.1)
Cannot bear anymore	4	(3.6)

N = 110.

institutional characteristics (see Table 1). Individual characteristics included age, gender, educational level, and marital status (with number of children), self-rated health, and salary per month. Institutional characteristics included objective and subjective work environment factors. Objective work environment characteristics are the characteristics of the work in a nursing home, including nursing home type (hospital-based or freestanding), experience of care attendant (years), working schedule (rotated or fixed), whether there is a fixed night schedule (yes/no), care loading (number of caring residents), pre-job training (yes/no), and on-the-job training (attended, never attended, no course available in nursing home). Subjective work environment characteristics refer to how the care attendant feels about his/her work in the nursing home, including the appropriateness of salary (score 1–5), the reward system (no/yes), enjoyment in work (score 1–5), and overall work stress (score 1–5).

2.4. Analysis

The WSS was first analyzed by item analysis and reliability test. The item analysis and reliability test were used to realize the internal consistency of the scale, and the overall scale internal consistency usually measured by Cronbach's alpha (Cronbach, 1951). Cronbach's alpha measures how well a set of items (or variables) measures a single uni-dimensional latent construct. The value of Cronbach's alpha over 0.8 or over means a good internal consistency. And then exploratory factor analysis (Kim and Mueller, 1978) was used to explore the construct of work stress experienced by care attendants. Factor analysis is a tool for exploring the dimensions of a construct, and usually used for reducing multiple variables to less factors. Finally, a linear regression was used to examine the related individual and institutional factors to work stress by care

attendants. We used stepwise variable selection in linear regression analysis to get a reduced model.

3. Results

3.1. Sample description

Table 1 shows the description for sample characteristics. 73.6% of the participants were 40 years old or older, and most were female. 63.6% of them had at least a high school educational, and 77.3% were married with children. Near half rated themselves of poor or fair health. Their working salary per month ranged from New Taiwan dollars (NT) 15,000–35,000 (about US\$ 468–1094) or over.

Three of the nine nursing homes in this study were freestanding institutions, and six were hospital based. More than 60% of the participating care attendants had worked for their institution for two or more years. 65.5% had a rotating work schedule and 34.5% had a fixed schedule, but half of them had to work at night at least some of the time. More than 64.5% of participants cared for more than 10 persons at the same time. Regarding job training, 82.7% of participants had been trained before the job began, but only 60.9% had attended on-the-job training.

56.4% of the participants were satisfied with their salary or thought it was at least reasonable, but only 27.3% of them enjoyed their job and 62.7% rated job enjoyment as just fair. Half of the participants considered their work stress to be heavy (49.1%); some could not bear it anymore (3.6%).

3.2. Work stress scale: reliability and factor analysis

A description of WSS and the mean and standard error for each item based on the answers given by the 110 participants are shown in the appendix. Each item was scored from 1 to 5, and a higher score indicated a higher stress. The top six work stressors, as numbered in the appendix and tables, were: (7) insufficient workforce, (8) too much work, (4) strict requirements makes you nervous, (11) difficulty of time arrangement with family, (21) nervous about taking care of severely ill residents, and (20) afraid of causing damages. These items indicated that the heavy workload and the mastery of taking care of residents produced a high level of work stress for the care attendants.

The item analysis and the reliability of the WSS are shown in Table 2. Except for the first item (stress comes from conflicts with nursing home rules), the correlations for all other items were higher than 0.3. The Cronbach's alpha for the 28 items was 0.929. After deleting of the first item, the Cronbach's alpha of the 27-item scale was 0.930.

We also examined the work stress experienced by care attendants using exploratory factor analysis, extracted by principal component analysis and Varimax rotation (please see Table 3). Six factors were extracted and together they explained 65.0% of the variance. We named these six factors as follows: insufficient ability, stressful reactions, heavy workload, care trouble, poor management, and the working time problem. Insufficient ability described the inability or lack of confidence in caring for residents, and it included the following WSS items: lack of skills, inability to handle the resident's emotional or care problems, fear of explaining the care situation or interacting with the family, and insufficient interaction with coworkers. Stressful reactions included being bored with repetitive tasks, wanting to quit the job, being afraid of sudden changes in resident's health, feeling nervous about taking care of severely ill residents, being afraid of causing damages, and feeling a lack of autonomy in the job. Heavy workload encompassed the strict requirements of nursing homes, insufficient workforce in the institutions, a heavy physical burden caused by moving residents, difficulty of time arrangement with family, too much work, and lack of help from coworkers. Work trouble included things that are difficult for care attendants to change, such as bad temper and incontinence of the residents, and unfair evaluation of job performance, and unclear duty obligation to the nurses. Poor management referred to management problems in the nursing homes, such as no clear duty turnover, little support from the institution, and hoping to work in a different nursing home. The last factor, the working time problem, included having to work overtime unreasonable scheduling. However, the two items encompassing the last factor did not show good factor loading compared to the other factors.

3.3. Factors related to work stress for care attendants

A linear regression with stepwise variable selection was used to explore factors related to overall work stress and to the six factors found with factor analysis. The overall stress was scored by added the 27-item of WSS, and the score of each dimension of stress was according to the items by factor analysis. The results are shown in Table 4.

Significant factors related to overall work stress included an unfixed work schedule, problems with the lack of proper care equipment, and lack of enjoyment in the job. Insufficient ability was related to younger age and lack of pre-job training. Stressful reaction was related to night rotation, equipment problems, and less enjoyment in the job. Heavy workload was related to a rotating schedule and less enjoyment of the job. Stress derived from work trouble was related to working in a hospital-based nursing home, lack of pre-job training,

Table 2
Item analysis and reliability of the work stress scale

Item	Scale mean if deleted	Corrected item-total correlation	Alpha if item deleted
1. Conflicts due to NH rules	59.94	0.26	0.93
2. Unreasonable scheduling	59.82	0.49	0.92
3. Unfair evaluation in job performance	59.87	0.46	0.93
4. Strict requirements make you nervous	59.19	0.44	0.93
5. Little support from NH	59.49	0.45	0.93
6. No clear job transferring	59.98	0.37	0.93
7. Insufficient workforce	59.12	0.58	0.92
8. Too much work	59.12	0.63	0.92
9. Trouble with Rt's incontinence	60.00	0.45	0.93
10. Rt's bad temper	59.76	0.51	0.92
11. Difficulty of time arrangement with family	59.20	0.55	0.92
12. Heavy burden in moving Rt	59.55	0.72	0.92
13. Bored in repetitive tasks	59.96	0.61	0.92
14. Unclear duty obligation to nurses	59.73	0.42	0.93
15. No autonomy	59.71	0.62	0.92
16. Lack of help from coworkers	59.85	0.64	0.92
17. Insufficient interaction with coworkers	59.85	0.48	0.93
18. Thought of changing to other NH	59.77	0.67	0.9
19. Rt's family asks too much	59.60	0.63	0.93
20. Afraid of causing damages	59.33	0.35	0.93
21. Nervous about take care of severely ill Rt	59.31	0.57	0.92
22. Unable to handle Rt's emotional problems	59.73	0.62	0.92
23. Afraid of explaining care situation	59.56	0.64	0.92
24. Feeling lack of care skills/knowledge	59.51	0.59	0.93
25. Unable to care well	59.55	0.61	0.92
26. Afraid of sudden change in Rt's health	59.46	0.70	0.92
27. Thoughts of quitting CA job	59.76	0.67	0.92
28. Overtime work	59.61	0.47	0.93

$N = 110$.

Note 1: Adjusted alpha of the 28 items is 0.9287. After deleting item 1, "institution rule conflicts," the adjusted alpha of the 27 items is 0.9300.

Note 2: Rt (residents), CA (care attendants), NH (nursing homes).

having to attend in-job training, equipment problems, and less enjoyment of the job. Stress about poor management was only significantly related to the rotation schedule. Finally, the stress about time problems was related to the rotation schedule, night work, and equipment problems.

4. Discussion

In this study, we developed a WSS for care attendants and explored work stressors and related factors experienced by care attendants working in nursing homes in Taiwan. The internal consistency of the WSS was very high, with Cronbach's alpha of 0.93. Six factors were extracted from the WSS by factor analysis: insufficient ability, stressful reactions, heavy workload, work trouble, poor management, and the working time problem. The explained variance of factor analysis was

65.0%. In our study, we used multiple regression models with stepwise variable selection to analyze the significant related factors. After controlling for individual and institutional characteristics, variables related to overall work stress for care attendants included rotation schedule, equipment problems, the lack of enjoyment of the job, the lack of pre-job training, and having to work at night. By the findings of work stressors and related factors, this study contributes to the managerial level and policy level of nursing home management, including the care attendant's wellbeing and stress coping, quality of care in nursing homes, and management effectiveness for the managers.

4.1. Work stress for care attendants

The six factors extracted from the WSS by factor analysis were similar to the previous study (Lin et al., 2002). In our study, the most stressful items among the

Table 3
Exploratory factor analysis of work stress for care attendants

Items	Factors					
	Insufficient ability	Stressful reactions	Heavy workload	Work trouble	Poor management	Working time problem
Feeling lack of care skills/knowledge	0.765	0.157	0.212			0.146
Unable to handle Rt's emotional problems	0.725	0.211	0.222			0.200
Afraid of explaining care situation	0.712	0.416	0.128	0.104		
Unable to care well	0.692	0.190			0.361	0.153
Rt's family asks too much	0.632	0.223	0.100	0.305	0.200	
Insufficient interaction with coworkers	0.523		0.212	0.397	0.291	−0.147
Bored in repetitive tasks	0.208	0.756		0.230	0.208	
Thoughts of quitting CA job	0.239	0.721		0.104	0.336	0.255
Afraid of sudden change in Rt's health	0.438	0.697	0.170	0.137	−0.223	0.116
Nervous about taking care of severely Rt	0.434	0.613	0.170	0.137	−0.223	0.116
Afraid of causing damages	0.246	0.575	0.380	−0.207	−0.108	−0.288
No Autonomy		0.533	0.262	0.222	0.447	
Strict requirements make you nervous	0.120		0.798		0.111	
Insufficient workforce	0.216	0.141	0.786	0.152		0.110
Heavy burden in moving Rt	0.262	0.372	0.574	0.378		0.113
Difficulty of time arrangement with family	0.164	0.255	0.539		0.156	0.505
Too much work	0.187	0.353	0.539	0.244		0.223
Lack of help from coworkers	0.345	0.198	0.424	0.344	0.314	
Rt's bad temper	0.197	0.267		0.739		
Unfair evaluation of job performance	0.221	−0.126	0.153	0.576	0.391	0.132
Unclear duty obligation to nurses		0.101	0.341	0.551		0.288
Trouble with Rt's incontinence		0.469	0.246	0.486		
No clear job transferring	0.312				0.726	
Little support from NH	−0.123	0.254	0.333		0.691	0.264
Thought of changing to other NH	0.258	0.378	0.212	0.305	0.530	
Overtime work	0.246		0.128	0.250	0.105	0.759
Unreasonable scheduling	0.281	0.127		0.357	0.369	0.387

Note: $N = 110$. Factors were extracted by principal component analysis with Varimax rotation using Kaiser normalization. Explained variance achieved 65.0%. The absolute value of factor loadings that are less than 0.1 are omitted from the table.

WSS items were grouped in the heavy workload factor and included insufficient workforce, too much work, and strict requirements of the nursing home. Heavy workload is related to the inadequate staffing. The consequences of inadequate staffing includes the difficulty for care attendants to deal with routine care tasks, greater distress, inadequate continence care for residents, and other quality of care problems (Bowers et al., 2000). Heavy workload is also related to the care responsibilities of this job. Care attendants are the main providers of care and responsibility for the residents, yet they are also the workers who lack professional training and who are under the supervision of others. Furthermore, the confusion of having to abide by multiple decisions made by other professionals and the lack of attachment with coworkers might add to the stressors in the heavy workload category (Monahan and McCarthy, 1992).

Insufficient ability, poor management, and the working time problem are more related to organizational and policy management. This indicates that the management problem could cause work stress. Even with pre-job training programs, care attendants in nursing homes still felt an insufficient ability to do their job. Thus, the effectiveness of the pre-job training programs needs to be further investigated. Work stress due to insufficient ability might be related to improper training or to the unclear responsibility among care attendants and nurses.

Insufficient ability represented the inability or lack of confidence in performing care work. Although care attendants are not expected to know how to arrange care without guidance or to explain health problems to the family, they are the front line of care and have the most chances or time to be with the residents or family, and thus they may bear more psychological pressure than others. The main source of insufficient ability stress is

Table 4
Factors related to work stress of Care attendants by multiple linear regression

Related factors	Overall stress	Insufficient ability	Stressful reactions	Heavy workload	Trouble in care work	Poor management	Working time problem
Age		−0.238*					
Education							
Salary							
LTC working experience							
Enjoy this job	−0.222*		−0.346***	−0.232*	−0.305**		
Self-rated health							
Care competition							
Reward system							
NH ownership					−0.225*		
Fixed schedule	−0.272**			−0.322***		−0.328***	−0.262**
Night rotation			0.244**				0.232*
Avg. patient load							
Pre-job training		−0.212*			−0.193*		
In-job training					0.267**		
Equipment problems	0.179*		0.212*		0.182*		0.174
R squared	0.183	0.096	0.229	0.179	0.223	0.108	0.217

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Note: The linear regression was modeled by stepwise variable selection. The ordinary independent variables were age groups, education, salary, long-term care (LTC) working experience, and enjoy this job. The reference groups of categorical independent variables were self-rated health (0 = good health), care competition (0 = no children), reward system (0 = no), nursing home ownership (0 = hospital-based), fixed schedule (0 = not fixed), night work rotation (0 = no), average patient load (0 = less than 10 patients), pre-job training (0 = no), in-job training (0 = no), equipment problems (0 = no).

probably from the ambiguity of who is responsible for care—care attendants, nurses, or other health professionals. This problem is similar to the delegation or limiting role problems seen in the United Kingdoms (Perry et al., 2003). The policy and procedure for care of residents and the sense of accountability for registered general nurses and care attendants may overlap, thus making it hard to identify responsibility. In hospital-based nursing homes, nurses do a higher level of professional nursing care than care attendants, but in some of the long-term care facilities, in which the nurse-to-care attendant ratio is low, the difference between care given by nurses and care attendants may not be that much. If the facility hires more care attendants to lower the personnel cost but without appropriate supervision or job training, the quality of care problems might appear.

The stressful reactions factors included feeling bored in repetitive tasks, thoughts of quitting, being afraid or nervous about caring for residents, and no autonomy. Stressful reactions also influence the wellbeing and mental health for the care attendants. These stressful reactions may be related to management or training problems, but these reactions also indicated the low level of respect given to care attendants and the unsupportive working environment. What the care attendants need is not only the coping strategy, but more important is to remove the management barriers and improve the unfriendly working environment.

We also identified a factor named “work trouble,” including the items of the resident’s bad temper and incontinence, unfair job evaluation, and unclear duty. It seems that these are the problems that the care attendants unable to handle. This could further influence their quality of care. Bowers et al. (2000) have found that the nursing assistants would define the quality of care by both the clinical outcome and shaped by their relationships with the residents; they believed that some clinical outcomes are preventable if they have a close relationship with the residents and taking good care of them. This “personalization” somehow indicates the care attendant’s attitude of providing care and probably affects their quality of care, such as the way to dealing with the residents’ incontinence care or the emotion problem. Meanwhile, unfair job evaluation and unclear duty indicate their psychological stress towards the management rules in nursing homes. This psychological stress may also affect not only their mental wellbeing and work morale, but in further affect their quality of care.

4.2. Factors related to work stress

Factors significant to overall or specific dimensional work stress for care attendants included rotation schedule, equipment problems, lack of enjoyment of the job, lack of pre-job training, night scheduling, etc.

These findings are similar to those from previous studies (Monahan and McCarthy, 1992; Sung, et al., 2005). Here we discuss these factors according to institutional characteristics and individual factors.

Regarding institutional characteristics, an unfixed schedule was also significantly related to heavy workload, poor management, and the working time problem. The inappropriate work schedule indicates not only poor management of rotation or a day/night schedule, but it also implies insufficient human resources. Equipment problems in the facilities were related to overall stress and to stressful reactions and trouble in providing good care. An equipment problem is a structure quality problem, and it can lead to inconvenience and difficulty in the care process, therefore it influences the work stress experienced by care attendants.

Attending to the pre-job training was related to insufficient ability and trouble in care work, while attending the in-job training was related to care work trouble. This indicates that pre-job training is important to improving the working ability and confidence of care attendants. This job also requires experience to resolve troubles encountered while providing care. The care assistants in hospital-based nursing homes experienced “higher” stress from having trouble with the care work. We did not investigate the health of the residents in hospital-based nursing homes vs. freestanding nursing homes. However, if the care demands of the residents were not different between the two types of nursing homes, the care attendants in a hospital-based nursing home may feel more comfortable because more health professionals are ready if they are needed. It is also possible that the training and management of hospital-based nursing homes is more comprehensive, so the care attendants would not feel stress if they faced some troubles while providing care.

Regarding individual characteristics, care attendants who enjoyed their job experienced less work stress and fewer stressful reactions. This indicates that devotion and passion to this job could help in tolerating or coping with work stress. Salary for care attendants in Taiwan is less than that it is in the United States. According to Yamada (2002), the mean wage for nursing home aides was US\$255.19 per week in 1997–1999, equaling about NT\$33,000 per month. Salary for most care attendants in Taiwan is NT\$20,000–30,000 per month. However, salary was not significantly related to any dimension of work stress.

Most of the demographic characteristics were not related to work stress. The less relevant demographic variables were excluded by the stepwise multiple regression model selection. In addition, most of the participants were female, so the relationship of gender to work stress was not analyzed. Lin et al. (2002) found that the average number of residents taken care of by a care giver was significantly related to every dimension of stressors, but it was not significant in our study.

4.3. Study limitations

There are some limitations to this study. First, this survey was done by self-reported questionnaire. Although a face-to-face interview can improve the response rate and be helpful to confirming answers given in the survey, the care attendants could not answer the questionnaire during their working time. Thus, some errors or misunderstanding about the questionnaire might exist. Second, participation in this study was limited to care attendants working in nursing homes in middle Taiwan that had 50 or more beds. Furthermore, we excluded foreign care attendants from the study. The results of this study cannot be generalized to all nursing homes in Taiwan or to the whole care attendant population. Actually, the foreign care attendant workers may bear more work stress and confront more problems in nursing homes, such as low wage and inadequate welfare, communication problem, and cultural differences. Third, the study used a cross-sectional design, thus it cannot ascertain causal relationships among work stress and its related factors. Fourth, the sample size of this study is not large, and that can only almost meet the minimum requirement for multivariate analysis (Osborne and Costello, 2004; MacCallum et al., 2001). Therefore, the estimation of the parameters could be unstable. We suggest that larger samples should be used to test the construct of work stress scale in the future.

4.4. Implications

Work stress experienced by care attendants in nursing homes is not a phenomenon specific to any single country; it is a worldwide problem in aging countries. Work stress may cause high turnover rate, poor organizational climate in working environment, and inappropriate quality or discontinuity of patient care. This study has documented some of the stressors encountered by care attendants, and they may be related to human resource management and quality of care in nursing homes. To reduce the work stress for care attendants in nursing homes, we have provided the following six categories of suggestions according to the factors of work stress discussed in this paper:

- To reduce insufficient ability stress, care attendants should be encouraged to attend pre-job and in-job training courses, which should cover the essential care skills or knowledge of special care needs and the authority/responsibility to do this job.
- To reduce stressful reactions, a supportive and respectful working climate should be encouraged (Chappell and Novak, 1992). Professionals, administrative workers, residents or even family should

realize the contribution of care attendants, show their respect to the care attendants, offer them more help and interaction, and also give them more encouragement in their job.

- To reduce heavy workload stress, adequate staffing is the most important.
- To reduce work trouble stress, a section on caring and coping skills to deal with the resident's should be added to job training.
- To reduce the poor management and working time problem stress, high- and middle-level managers should learn some basic skills about institutional management, such as leadership, operational research, or quality control. The government or

educational institutions may offer such courses for long-term care managers.

- In addition, studies of quality of care and manpower management for the long-term care should be emphasized in the future.

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Appendix. Description of work stress scale (WSS) for care attendants

Work stress scale: The following are some common situations that care attendants may confront in nursing homes. Please answer according to your situation, and answer never, seldom, sometimes, usually, or always (score 1–5). There are no right or wrong answers. Please just comment on your situation	Mean	s.e.
1. Sometimes you have conflicts with residents or family because of the rules in the NH (such as visiting time, fee, diet control, etc.)	1.89	0.78
2. An unreasonable schedule makes you uncomfortable.	2.01	0.81
3. An unfair evaluation in job performance makes you uncomfortable.	1.95	0.86
4. Strict requirements of the NH make you feel nervous.	2.64	0.99
5. There is little support from the NH.	2.34	0.98
6. The duty turnover is not clear and makes you feel uneasy.	1.85	0.80
7. An insufficient workforce in the NH makes you feel exhausted.	2.71	1.08
8. There is always too much work and it seems never to be finished.	2.71	0.98
9. You have trouble dealing with Rt's incontinence.	1.83	0.87
10. You have trouble dealing with Rt's bad temper.	2.06	0.78
11. You have trouble with time arrangements with your own family.	2.63	0.99
12. You have a heavy burden in moving Rts.	2.27	0.83
13. You are bored with repetitive tasks.	1.86	0.86
14. Your duty obligation to the nurses is unclear.	2.10	0.85
15. The CA job lacks autonomy.	2.12	0.81
16. You cannot find helps from coworkers, which causes anxiety.	1.97	0.66
17. You don't have enough personal interaction with coworkers.	1.98	0.89
18. You consider changing to another NH.	2.05	0.90
19. Rt's family members are picky and that makes your nervous.	2.23	0.85
20. You are afraid of causing damages when taking care of Rt.	2.50	1.02
21. You are nervous when taking care of severely ill Rts.	2.52	0.96
22. You are unable to handle Rt's emotional problems (such as their fear or hysteria).	2.10	0.63
23. You are afraid of explaining the care situation to Rt/family.	2.26	0.76
24. You feel lack essential skills/knowledge.	2.32	0.86
25. You are unable to care well for Rt although you would like to.	2.28	0.85
26. You are afraid of sudden changes in Rt's health.	2.36	0.94
27. You consider quitting the CA job.	2.06	0.05
28. You usually need to work overtime	2.22	0.98

$N = 110$.

Note 1: The scale was scored from 1 to 5, indicating never to always.

Note 2: Rt (residents), CA (care attendants), NH (nursing homes).

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