The Impact of Hygiene Status on Caregiving for Older Adults among Certified Nursing Assistants in China Nursing Facilities: Occupational Ethics and Working Attitudes as Mediators in Parallel

Yanyan Zhao[1], Hongzhao Wang[1,*], Qing Sun[2]
[1]School of Physical Education, Huainan Normal University, Huainan, Anhui, China
[2]Huaren Pension apartment, Huainan Huaren Hospital, Huainan, Anhui, China
**Corresponding Author.*

Abstract: Certified nursing assistants' quality of caregiving for older adults exerts a positive impact on their occupational careers. Hygiene status of certified nursing assistants in nursing facilities may protect QOCD from positive working achievement. The impact of hygiene status of certified nursing assistants on QOCD for older adults were proved in the observational cross-sectional study. Care giving appraisal were used to survey 104 certified nursing assistants. Arbitrating effects were in-depth analyzed by SPSS 25.0 and Process V3.5. Hygiene status definitely unraveled quality of care delivery. Meanwhile, it was also found that hygiene status, and quality of care delivery were arbitrated in parallel by occupational ethics and working attitudes. Value of 0.469 was total indirect, explaining 49.5%. The innovative study introduces how hygiene status influences caregivers' quality of care delivery in pension apartment. Hygiene status could provide certified nursing assistants with a favorable supervising and assessing positive occupational quality, enhance the occupational ethics and working attitudes, ultimately improve their quality of care delivery.

Keywords: Hygiene Status; Occupational Ethics; Working Attitudes; Quality of Care Delivery; Certified Nursing Assistants

1. Introduction

By 2030, There will be 16.7% older adults over 65 years predicted by World Health Organization[1]. Similarly, the population of China is experiencing unprecedented longevity and older adults inevitably experience complex and chronic conditions that results in a increased demand for geriatric caregivers to meet their daily needs[2]. In recent years, the problem of aging in China has become increasingly serious, and older adults living in facilities have become the current trend. Therefore, the contradiction between the rigid demand and insufficient supply of seniors who are staying in old-age care facilities has become a major challenge for the older adults care industry in China[3]. As an effective attempt to solve this problem, the "Medicine and Health Care" pension institution is in an evolving stage. This article focuses on the analysis of certified nursing assistants' hygiene status and quality of care delivery in pension facilities under the model of medical care and support, and is committed to improving older adults' quality of life and providing them with a comfortable nursing environment, and at the same time improving the service efficiency of the nursing staff, reducing the operating costs of the buildings, and achieving comprehensive services and protection for the older adults.

Obviously, the certified nursing assistants and their care for older adults have to face unparalleled changes. Pension facilities in China are undoubtedly one of the main senior service industries[4]. Therefore, strong and scientific partnerships are are needed between Chinese nursing facilities and their certified nursing assistants for older adults to provide sustainable and meaningful quality care. Care giving for older adults is often occupation - specific and particularly in nursing institution settings where drive the care giving to more specialization than residential care communities' goal setting and attainment[5]. Therefore, it is an inevitable trend to pay attention to the appraisal of certified nursing assistants.

Therefore, we propose the assumption:

Assumption (1): Hygiene status significantly

predicts caregiving qualities of elderly person. Assumption (2): Occupational ethics might mediate the relationship between hygiene status and caregiving qualities of elderly person. Assumption (3): Working attitudes might mediate the relationship between hygiene status and caregiving qualities of elderly person, too. While former researches have apart individually scanned the correlation of hygiene status, occupational ethics, working attitudes, and caregiving qualities of elderly person, few studies have depicted how hygiene status effects caregiving qualities of elderly person through occupational ethics and working attitudes. Hence, the cutting edge research intends to track the conceivable innermost mechanism among factors, then proceed to certify the bridging character of occupational ethics and working attitudes.

2. Participants and Methods

2.1 Participants

Participants were all certificated caregivers of nursing assistant in pension apartments. Meanwhile, participants need to have pass the annual physical examination as well as having right to be informed. Based on this, they provided written informed consent during the study. All of 113 certified nursing assistants participated the observational study, of which 104 were reputed credible, and the efficacious rejoined ratio was 92%. Table 1 shows the participants' Basic representatives of participants are displayed on Table 1.

2.2 Variables

All of critical elements of the qualitative materials and quantitative data derived from the annual care giving appraisal of socialized operating pension facilities (2022) in Huainan City. The report was filtered the core indexes of the appraisal by two times Delphi Method by two rounds of investigation, and the mean of authority modulus is 0.83.

The hygiene status scale includes 12 items in 2 sub-scales. The total score is 20 points and the upper bull points recommending the better personage's hygiene status. The occupational ethics scale includes 9 items in 3 sub-scales. The total score is 13 points and the upper bull points recommending the better personage's occupational ethics. The working attitudes scale includes 15 items in 4 sub-scales. The total score is 40 points and the upper bull points recommending the better personage's working attitudes. The quality of care delivery scale includes 21 items in 9 sub-scales. The total score is 65 points and the upper bull points recommending the better personage's quality of care delivery.

2.3 Observational Flow Route

All participants were examined by face-to-face interviews. Moreover, everybody filled in the questionnaires indicating the purpose of the investigation and commitment to the principle of confidentiality. The approvals of the Ethics Committee of Huainan Normal University were obtained prior to this study.

2.4 Statistical Dissection

All data were statistically analyzed by SPSS 25.0 and Process. The statistical descriptions of hygiene status, occupational ethics, working attitudes and quality of care delivery was performed using the mean and SD of variance. Pearson's correlation was used to conduct on both factors of hygiene status, occupational ethics, working attitudes and quality of care delivery. Consequential outcomets were evaluated by Process V3.5 Model 4. Significant differences of the arbitrating values were tested by Bootstrap with 5,000 repeated sampling.

3. Results

Characteristics of certified nursing assistants' quality of care delivery scores in nursing facilities are listed in Table 1. 104 certified nursing assistants conformed to the involvement definitions, the differences in quality of care delivery scores among subgroups with different hygiene status, and occupational nursing title were statistically significant.

Table 2 shows Pearson's correlation analysis.

The result indicated that hygiene status is definitely correlated with occupational ethics, working attitudes and quality of care delivery. Occupational ethics is definitely associated with working attitudes and quality of care delivery. Meanwhile, working attitudes is also definitely associated with quality of care delivery. In a word, occupational ethics and working attitudes play intermediary effects in parallel between certified nursing assistants' hygiene status and

quality of care delivery.

Table 1. Characteristics of Caregivers' Care Delivery Scores (n = 104)

Variables	Frequency	Quality of care delivery	T/F	p
Gender			-4.79	0.679
Male	25 (24)	58.82 ± 3.94		
Female	79 (76)	59.18 ± 3.97		
hygiene status (year)			12.01	0.000
≤40	22 (21)	61.55 ± 2.50		
41-49	39 (38)	59.79 ± 3.65		
≥50	43 (41)	57.19 ± 3.95		
Educational levels			-0.21	0.837
junior middle school	77 (74)	59.04 ± 3.92		
Technical secondary school and above	27 (26)	59.22 ± 4.08		
working years			-1.52	0.133
<10	40 (38.5)	58.35 ± 4.04		
≥10	64 (61.5)	59.55 ± 3.85		
Care giving title			-2.37	0.02
Primary	82 (79)	58.62 ± 3.94		
Intermediate and above	22 (21)	60.82 ± 3.51		

Table 2. Associations among Study Variables (n=104)

	Mean	SD	One	Two	Three	Four
hygiene status	18.34	1.96	__			
occupational ethics	11.68	1.18	0.446**	__		
working attitudes	36.66	2.30	0.519**	0.444**	__	
quality of care delivery	59.21	3.88	0.481**	0.474**	0.477**	__

Table 3. Logistic Regression Analysis among Variables(n=104)

Variables	β	t	p	LLCI	ULCI	R2	F
Outcome variable: OE							
Predictor HS	0.268	5.026	0.00	0.162	0.374	0.199	25.263
Outcome variable: WA							
Predictor HS	0.606	6.128	0.000	0.410	0.802	0.269	37.554
Outcome variable: QOCD							
Predictor HS	0.478	2.477	0.015	0.095	1.312	0.861	18.176
Mediator OE	0.854	2.790	0.006	0.247	1.461		
Mediator WA	0.397	2.403	0.018	0.069	0.724		
Outcome variable:QOCD							
Independent HS	0.947	5,545	0.00	0.608	1.286	0.232	18.176

HS: Hygiene status; PE: occupational ethics; WA: working attitudes; QOCD: Quality of care delivery

The parallel intermediary effects of occupational ethics and working attitudes are tested through the Bootstrap method with repeated sampling of 5000, with a 0.469 total consequential impacts [95% CI: 0.220, 0.788], excluding 0 (Table 3 and 4). Notably, the 95% CI of the two consequential effective routes did not contain 0.

Firstly, the effective magnitude of route route1 (hygiene status → occupational ethics → quality of care delivery) is 24.2%, and the consequential outcome (occupational ethics = 0.229, 95% CI = 0.064–0.492) is significantly different. Secondly, the route2 (hygiene status → working attitudes → quality of care delivery) accounted for 25.3%, and the consequential outcome (working attitudes=0.240, 95% CI = 0.034–0.500) was significantly different.

The comparative estimate performed to verify whether there were significant differences in consequential outcome routes, the result showed that none of the comparisons were significant, with the Bootstrap's 95% CI contain 0.

Table 4. Routes Analysis of the Consequential Models(n=104).

route		Effect	Boot SE	95%CI		Effect Ratio
				LLCI	ULCI	
Total Effect	HS→QOCD	0.947	0.171	0.608	1.286	100%
Direct Effect	HS→QOCD	0.478	0.193	0.095	0.861	50.5%
Total consequential outcomet	HS→QOCD	0.469	0.144	0.220	0.788	49.5%
consequential outcomet route1	HS→OE→QOCD	0.229	0.107	0.064	0.492	24.2%
consequential outcomet route2	HS→WA→QOCD	0.240	0.118	0.034	0.500	25.3%
Comparsion: route1 and route2		-0.012	0.174	-0.359	0.339	
HS: Hygiene status; OE: occupational ethics; WA: working attitudes; QOCD: Quality of care delivery.						

4. Discussion

This clearly defined scope research indexed that hygiene status is definitely effective for quality of care delivery, which proved tentative 1. The findings of this study revealed that occupational ethics partially arbitrated the relationship between hygiene status and caregiving delivery to aged, confirming the tentative (2). The arbitrating effect account for 24.2%. The finding in the study also detected that working attitude partially arbitrated between hygiene status and quality of care delivery for older adults, supporting tentative (3). The arbitrating effect account for 25.3 %. There is obvious that the relationship between the attitude of caregivers and mental health, and perceived stress can promote the formation of negative attitudes[6]. The attitude of nursing staff in nursing facilities towards the older adults directly affects the quality of care received by the older adults, and the research on the attitude of nursing staff in nursing facilities is helpful to build a high-quality older adults care service system[7].

In this study, the assumption that hygiene status affects quality of care delivery circuitously, go by its values on occupational ethics and working attitude, are underlying over the assumption that hygiene status has a directive performance on quality of care delivery and the proportional sizes of route coefficients in the output route diagram show that the hygiene status → occupational ethics → quality of care delivery and the hygiene status → working attitude → quality of care delivery are better supported by the data. route analysis is a straight forward extension of multiple regression. Its aim is to provide estimates of the magnitude and significance of assumption of causal connections between sets of variables. Interpretation of the route way analysis results: the route way coefficient, after the standardized estimated value, the number on the one-way arrow represents the route coefficient, that is, the standardized regression coefficient. The one-way arrow points from the independent variables to the dependent variables, and its route coefficient values indicate the direction and magnitude of the direct effect of the independent variables on the dependent variables. Plenty of studies have proposed that hygiene status has a direct effect on quality of car delivery for older adults [8]. However consequential out comets of hygiene status on quality of care delivery for older adults are also suggested; hygiene status affects occupational ethics which in turn affects quality of care delivery for older adults, hygiene status affects working attitude which in turn affects quality of care delivery for older adults. Occupational ethics and working attitude have direct affects on quality of car delivery for older adults. The consequential outcomes are calculated by multiplying the coefficients for each route from hygiene status to quality of car delivery for older adults e.g. route 1:Hygiene status → occupational ethics → quality of care delivery is $0.268 \times 0.854 \approx 0.229$; route 2:Hygiene status → working attitude → quality of care delivery is $0.606 \times 0.397 \approx 0.240$; Total consequential outcome ≈ 0.469. The result tells us that the total consequential outcomes of hygiene status on quality of care delivery for older adults are positive and the total effect is then $0.478 + 0.469 \approx 0.352$.

Although it has been demonstrated that occupational ethics and working attitude played a partially intermediary effect between hygiene status of certified nursing assistants and quality

of care delivery, there are still some limitations. First, the possible impact of the biases generated by self-reporting on the accuracy of the data should not be ignored. Second, route analysis can evaluate causal hypotheses, and in our study can test between two or more causal hypotheses, but it cannot establish the direction of causality, because cross-sectional data cannot be correlated causally, no causal conclusions can be drawn, although we believe that causal inferences extracted are more than a form of statistical fantasy. Basically, correlational data are still correlational, but route way analysis expresses only one-way causality. Within a given route diagram, route analysis can tell us which are the more significant routes, and this may have implications for the plausibility of pre-specified causal hypotheses. But route analysis cannot tell us which of two distinct route diagrams is to be preferred, nor can it tell us whether the correlation between hygiene status and quality of care delivery represents a causal effect of hygiene status on quality of car delivery for older adults, a causal effect of quality of car delivery for older adults on hygiene status, mutual dependence on other variables occupational ethics, working attitude etc, or some mixture of these. No program can take into account variables that are not included in an analysis. However, route analysis of this study is most likely to be useful when a clear assumption that hygiene status affect on quality of car delivery for older adults has been tested. In addition, all of indicators in this study were from national physical fitness and health examining and monitoring, which all are manifest variables or observational variables and are suitable for routeway analysis.

5. Conclusion

The observational study indicated that hygiene status definitely predicted caregiving for the aged among certified nursing assistants in China nursing institutions. Moreover, it illustrated that occupational ethics and working attitude played meddle effectiveness between hygiene status and quality of care delivery. According to the study, the influence of hygiene status, occupational ethics and working attitude on quality of care delivery decline should not be ignored. This study reveals how hygiene status affects quality of care delivery among care giving workers in China nursing institutions. On the one hand, the results have inevitable predicting for certified nursing assistants to better equilibriums the personal hygiene and working performance. On the other hand, managers of Chinese nursing facilities should provide all certified nursing assistants with favourable working conditions and environment, and occupational staffing and training enhancing the capacity to cope with challenges.

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