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발 간 사

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안녕하십니까?

　고려대학교 간호대학은 1997년 개소한 이래 '만성질환 관리와 건강증진'을 주제로 국내외 학술대회, 교육프로그램, 새로운 연구 분야에 대한 모색 등 다양한 활동을 하였고, 이를 통해 간호학 지식체 발전에 기여해 왔습니다. 특히 2018년에는 최근 국내외 건강관리의 주요 이슈가 되고 있는 만성질환관리에 대한 다각적인 접근을 모색하고자 "Chronic Illness Management: Focused on Innovation, Collaboration & Diversity"를 주제로 5개국에서 우수한 연자들을 초청하여 제 12차 국제학술대회를 개최하여 새로운 연구 분야에 대한 간호학자간 논의의 장을 마련한 바 있습니다.

　또한 2018년에도 간호학연구소 연구위원들은 교육부 한국연구재단, 건강증진재단 및 서울시와 지방자치단체 등으로부터 연구비를 지원받아 내실 있는 연구 성과를 도출하고 있으며, 이를 통해 간호학에서의 만성질환관리 및 건강증진에 대한 지식발전에 기여하고 있고, 간호학연구소 역시 연구위원의 연구 활동을 적극적으로 지원하고 있습니다.

　이러한 지속적인 지원활동과 연구위원의 적극적인 연구 활동의 결실로 간호학연구소는 연구소 개소 후 논문집을 꾸준히 발간해 왔으며, 2018년에도 논문집을 발간하게 되었습니다.

　2019년에도 본 연구소는 연구기관으로서의 소임을 다 할 것이며, 지속적인 관심과 격려를 부탁드립니다. 끝으로 본 논문집이 나오기까지 수고하신 연구소 연구위원들과 임원들께 감사의 마음을 전합니다. 2019년 기해년 새해를 맞아 여러분들의 행운과 학문적 성취를 기원 드립니다.

감사합니다.

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Influence of Health Behaviors and Occupational Stress on Prediabetic State among Male Office Workers

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1. Introduction

The economically active population in Korea has been reported to be 62.3% of about 43 million people aged 15 years or older [1]. According to the 2018 data [1] of the National Statistical Office, male workers constitute 57.7% of the economically active population, and office workers such as managers and professionals, were reported to comprise 60.9% of all occupational clusters. Since office workers perpetually perform document processing, communication, information management, and decision-making tasks mostly in offices [2], not only personal factors but also workplace or environment characteristics affect worker health, as they spend most of their daily time in the workplace [3,4]. Such workplace-related factors also affect the level of personal health and unhealthy health behaviors [3,4]. In particular, a previous study which investigated the health behaviors of office workers in Korea reported that 78.4% of the participants consumed alcohol more than 1‐2 times per week [5], and a study [6] that surveyed 4457 randomly sampled office workers reported that 47.8% of the male workers were smokers. Compared to workers in other types of occupations, office workers have insufficient levels of physical activity due to the sedentary nature of their work [3,4,7], and their average energy intake per 1 kg of body weight per day has been reported to be higher than the standard value for their level of activity, along with a high intake of fat [8,9]. In addition, occupational stress among office workers arising from work-related factors, such as job strain, relationships with superiors and colleagues in the workplace, and anxiety about their positions (e.g., early retirement), have been reported to be relatively higher than that among blue-collar workers [7].

Factors related to occupational stress and health behaviors lead to health problems among office workers, and the prevalence of chronic diseases, such as diabetes, obesity, hypertension, and hyperlipidemia have been reported to be increasing steadily [3,4], according to the data analysis of a national health screening program conducted among workers. Furthermore, occupational stress affects the prevalence of cardiovascular diseases and causes problems with normal metabolism, and in particular, it has been reported to be a major cause of diabetes [10]. Previous studies on workers [10,11] have also reported that the concept of occupational stress, which includes job demands, job strain, and effort‐reward imbalance, is related to the prevalence of diabetes among male workers.

From 2012 to 2016, the prevalence of prediabetic state and diabetes among adults aged 30 years or older in Korea consistently increased from 19.9% to

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24.8%, and from 10.1% to 13.7%, respectively, and the prevalence of diabetic complications was also high [12]. In addition, a 10-year cohort analysis of office workers in large corporations [3] showed health risks of triglyceride and increases in waist circumference as overtime for such workers, and the risk of contracting diabetes was 3.7 times, which was the highest.

According to the criteria of the American Diabetes Association (ADA), the fasting blood sugar level for prediabetic state is between 100 mg/dL and 125 mg/dL [13], and about 5 - 10% of prediabetic people develop diabetes [12,14 - 16]. Prediabetic state not only increases insulin resistance and exacerbates β-cell function, but also affects organs such as the eyes, kidneys, blood vessels, and heart, leading to neuropathy, diabetic retinopathy, and cardiovascular diseases [17]. Progression to diabetes can be prevented, and fasting blood sugar can be returned to the normal range (under 100 mg/dL) by changing health behaviors related to weight control, dietary habits, and physical activity [17]. However, because prediabetic people do not feel the need to control their blood sugar level and change their health behaviors due to their relatively lower knowledge and interest in their own blood sugar level compared to those diagnosed with diabetes, they do not engage in proper health management [15].

Many studies have reported that prediabetic state is related to health behaviors such as smoking [18,19], drinking [20,21], physical activity [22], and dietary habits [23]. Moreover, occupational stress, including job demands and effort - reward imbalance, is also related to the prevalence of diabetes [10,11]. Research that has comprehensively analyzed the relationship among occupational stress, health behaviors, and prediabetic state among office workers, and identified that influencing factors of prediabetic state is nonetheless lacking. Systematic health management of office workers who are exposed to unhealthy health behaviors is needed [3]. In particular, if preventive intervention programs are applied based on the knowledge that the development of a prediabetic state into diabetes can be prevented through proper prevention and early interventions [17], the effect of such health management is expected to be quite large. Accordingly, the present study was conducted on male office workers of one company to analyze the effect of health behaviors and occupational stress on prediabetic state.

2. Materials and Methods

2.1. Methods

The present study is a cross-sectional study conducted on male office workers of a single company located in Seoul, Korea. The subjects of the present study were selected from all the workers currently employed (about 1300 workers in 2017) by the company according to the following procedures.

To collect data on 2014 regular health checkups, and the results of a health screening questionnaire for all the workers, the purpose and efficiency of the study were explained to the health manager of the company, and permission was obtained to acquire the data. Random number IDs were used for all data on regular health checkups and health screening questionnaires before the data were collected, so that no individual could be identified. A health behavior survey was carried out through the company intranet for a total of three months. Only the participants who agreed to the use of the survey data were allowed to respond to the survey, and 764 people (58.7%) of all 1300 employees completed the survey. Among the respondents who completed the survey, 550 (72.0%) were male. Participants who had been diagnosed with diabetes (19 participants whose fasting blood sugar exceeded 125 mg/dL) and 256 participants whose responses were incomplete (74 workers who were in a prediabetic state, 181 workers whose fasting blood sugar was within the normal limits) were excluded. Consequently, a total of 275 participants were included in the analysis of the present study to compare individuals with a normal fasting blood sugar level with individuals in a prediabetic state.

To protect the rights and interests of the participants, the present study was conducted after obtaining approval (KU-IRB-13-12) from the Institutional Review Board.

2.2. Measures

Regular health checkups included blood tests, anthropometric measurements, and blood pressure measurements. Fasting blood sugar was measured by a blood test. Following the criteria of the ADA [13], people whose fasting blood sugar level was between 100 mg/dL and 125 mg/dL were included in the prediabetic state group, and those whose fasting

blood sugar level was less than 100 mg/dL were included in the normal group. Anthropometric measurements included body weight, height, body mass index (BMI), and waist circumference. Body weight and height were used to calculate BMI, which was obtained by dividing body weight (kg) by height (m2). Blood pressure included diastolic blood pressure and systolic blood pressure, and it was measured by health care provider at the time of regular health checkups. Regular health checkups were conducted at a designated health checkup hospital based on the Korean Occupational Safety and Health Act, and all measurements were made according to standardized manuals.

The health questionnaire conducted at the time of the regular health checkups included questions regarding smoking, drinking, and physical activities. Smoking, drinking, and physical activities correspond to four health behaviors (smoking, drinking, physical activities, and dietary habits) related to noninfectious diseases announced by the World Health Organization (WHO) [24]. Smoking was classified according to past and present smoking status (never smoked, smoked before but quit, currently smoking). Drinking is a quantitative concept measured by average daily drinking during the past one year. It was measured by average daily drinking (not drinking or less than one drink, one drink to less than five drinks, five drinks or more) in the light of the criteria of the National Institute of Alcohol Abuse and Alcoholism (NIAAA) [25]. In addition, physical activities were measured by the frequency of exercise intense enough to become damp with sweat per week (5‑6 times (almost every day), 3‑4 times, 1‑2 times, no exercise at all).
The health behavior survey included dietary habits among health behaviors and occupational stress. Dietary habits captured the intake of various seasonal fruits five times or more per week and two or more types of vegetables in various colors per meal during the past week (had both fruits and vegetables, had fruits or vegetables, did not have fruits or vegetables). For occupational stress, the Korean Occupational Stress Scale‑Short Form (KOSS‑SF) was used, which was developed by the Korea Occupational Safety and Health Agency [26]. KOSS‑SF is developed and standardized to measure unique and specific occupational stressors in Korean workers, and used by most domestic businesses [26]. The instrument comprises a total of 24 items in seven subareas, including four items on job demands, four items on lack of job autonomy, three items on interpersonal conflict, two items on job insecurity, four items on the organizational system, three items on lack of reward, and four items on the occupational climate. Each item is measured on a Likert scale (one point for strongly disagree, two points for disagree, three points for agree, and four points for strongly agree), where higher total scores indicate higher occupational stress. The reliability of the instrument at the time of development measured by Cronbach's α was 0.51‑0.85 [26], and Cronbach's α in the present study was 0.82, with α coefficients for the subscales ranging from 0.81 to 0.83. In the present study, the total score and converted score of each domain were converted into a full score of 100 points, and scores were then classified into quartiles based on the evaluation reference values of the KOSS‑SF. Analysis was performed on the 1‑2 quartile (which was formed by combining the 1st and 2nd quartiles), 3rd quartile, and 4th quartile, where the 1‑2 quartile was used for reference [27]. The conversion equation was as follows:

- Converted score of each domain = {(actual score − number of items) ÷(highest predictable score− number of items)} × 100
- Total score of occupational stress = sum of converted scores of seven domains/7

2.3. Statistical Analysis

The Statistical Package for the Social Sciences (SPSS) statistics 23.0 program (IBM Corporation, New York, USA) was used to analyze the data, and the specific analysis method was as follows. Descriptive statistics were calculated to determine the sociodemographic characteristics, health‑related characteristics, health behaviors, and occupational stress characteristics of male office workers. To identify the difference between health behaviors and occupational stress according to the existence of prediabetic state, a t‑test and χ^2 test were performed, and the correlations between prediabetic state and the measured variables were analyzed using Spearman's correlation coefficients. In addition, multiple logistic regression analysis was used to analyze the risk of health behaviors and occupational stress for prediabetic state. To identify the influencing factors of prediabetic state, stepwise

Table 1. Sociodemographic and Health-Related Characteristics in the Study Population.

Characteristics	Total (N = 275)	Normal (N = 183)	Prediabetic State (N = 92)	t/χ²	p-Value
	Mean ± SD or n (%)				
Sociodemographic Characteristics					
Age (years)	38.1 ± 8.15	36.8 ± 7.63	40.9 ± 8.49	−4.06	<0.001
Marital status				8.28	0.004
married	177(53.2)	107(58.5)	70(79.3)		
unmarried	98(35.8)	76(41.5)	22(20.7)		
Education level				3.59	0.058
University graduates	234(85.1)	161(88.0)	73(79.3)		
Graduate school	41(14.9)	22(12.0)	19(20.7)		
Working years (years)	8.63 ± 7.32	7.64 ± 6.80	10.60 ± 7.95	−3.05	0.003
Health-Related Characteristics					
FBS (mg/dL)	95.69 ± 11.00	89.99 ± 6.58	107.03 ± 9.06	−17.79	<0.001
Height (cm)	174.9 ± 5.29	174.7 ± 5.30	175.3 ± 5.30	−0.86	0.388
Body weight (kg)	75.5 ± 10.18	74.2 ± 10.08	78.0 ± 9.95	−2.93	0.004
BMI (kg/m²)	24.63 ± 2.84	24.27 ± 2.82	25.34 ± 2.74	−2.99	0.003
WC (cm)	85.48 ± 8.09	84.53 ± 7.93	87.38 ± 8.10	−2.79	0.006
SBP (mmHg)	120.03 ± 12.23	118.60 ± 11.91	122.87 ± 12.42	−2.77	0.006
DBP (mmHg)	76.66 ± 9.39	75.68 ± 9.12	78.59 ± 9.66	−2.44	0.015

FBS = fasting blood sugar; BMI = body mass index; WC = waist circumference; SBP = systolic blood pressure; DBP = diastolic blood pressure; t = independent t-test; χ² = chi-square test

multiple logistic regression was performed using regression models. Among the statistically significant variables in the descriptive statistical analysis

and risk analysis, working years, marital status, waist circumference, systolic blood pressure, and diastolic blood pressure were included to perform multiple logistic regression, but age, body weight, and BMI were excluded, since working years were highly correlated with age and waist circumference were highly related with body weight and BMI, and working years and waist circumference were important factors for office workers [3,28].

3. Results

3.1. Sociodemographic and Health-Related Characteristics.

The results of the comparison of sociodemographic and health-related characteristics between the normal group and prediabetic group (Table 1) showed that the average working years for the normal group and prediabetic group were 7.64 and 10.60 years, respectively, which indicates that individuals in the prediabetic group have worked longer than those in the normal group (p = 0.003). In addition, the average waist circumference of the prediabetic state group was 87.38 cm, which was greater than the average waist circumference of 84.53 cm for the normal group (p = 0.006).

3.2. Status of Health Behaviors and Occupational Stress

In terms of drinking among health behaviors, about 11% among the participants drank "five drinks or more" in the prediabetic group, which was about five times greater in terms of percentage than the four participants (2.2%) who did so in the normal group. In the case of physical activities, the distribution of "5‑6 times (almost every day)" was found to be about five times higher in the normal group than in the prediabetic state group (p = 0.011). For occupational stress, the total score of 44.67 for the prediabetic state group was higher than the score of 39.11 for the normal group (p < 0.001). The proportion in the 4th quartile, which signifies high occupational stress, for the prediabetic state group was higher than that for the normal group, while the proportion in the 1‑2 quartile, which signifies low occupational stress, was lower for the prediabetic state group than for the normal group.

Table 2. Correlation of Health Behaviors and Occupational Stress.

Variables	Total (N = 275)	Normal (N = 183)	Prediabetic State (N = 92)
	r (p-Value)		
Health behaviors			
Smoking	0.22(<0.001)	0.16(0.032)	0.37(<0.001)
Alcohol consumption	0.30(<0.001)	0.21(0.004)	0.53(<0.001)
Physical activity	0.12(0.041)	−0.16(0.031)	0.34(0.001)
Diet	0.28(<0.001)	0.09(0.232)	0.58(<0.001)
Occupational stress			
Short form total	0.19(0.002)	0.11(0.136)	0.31(0.003)
Subscales			
Job demand	0.11(0.082)	0.09(0.218)	0.21(0.043)
Insufficient job control	0.08(0.217)	0.04(0.573)	0.05(0.641)
Interpersonal conflict	0.15(0.012)	−0.03(0.643)	0.25(0.017)
Job insecurity	0.13(0.031)	−0.05(0.512)	0.21(0.049)
Organizational system	0.28(<0.001)	−0.01(0.873)	0.27(0.010)
Lack of reward	0.06(0.301)	−0.06(0.402)	0.40(<0.001)
Occupational climate	0.11(0.072)	−0.08(0.288)	0.20(0.059)

3.3. Correlation of Health Behaviors and Occupational Stress

In the case of health behaviors, the prediabetic state group showed stronger correlations with all subfactors of smoking (r = 0.37, p < 0.001), drinking (r = 0.53, p < 0.001), physical activities (r = 0.34, p = 0.001), and dietary habits (r = 0.58, p < 0.001) than the normal group. In terms of occupational stress, the prediabetic state group showed stronger correlations with the total score and scores of all subscales than the normal group (Table 2).

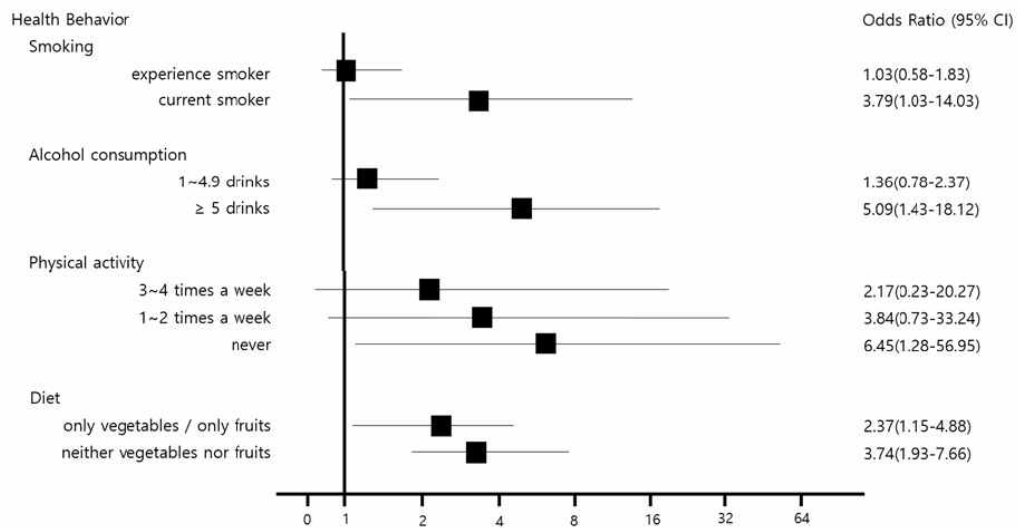### 3.4. Odds ratio of Health Behaviors and Occupational Stress

The results of the analysis of the risk of health behaviors and occupational stress for prediabetic state are shown in Figures 1 and 2. For occupational stress, the risk in the 4th quartile was higher for the total occupational stress score and the scores of each subscale than the risk in the 1‐2 quartile. The risk of interpersonal conflict, job insecurity, organizational system, and occupational climate among the subscales was statistically significant.

3.5. Factors Influencing Prediabetic State

Table 3 shows the results regarding the influencing factors of office workers' health behaviors and occupational stress for prediabetic state. For Model 1, regression analysis was performed by including only the significant variables in the risk analysis for each explanatory variable to consider the effect on other explanatory variables. For Model 2, analysis was performed by adding working years, marital status, waist circumference, and diastolic and systolic blood pressure. Both models were statistically significant (Model 1: χ2 = 45.96, p < 0.001, Model 2: χ2 = 58.87, p < 0.001), and the explanatory power of Models 1 and 2 according to the Nagelkerke coefficient of determination were 21.4% and 26.7%, respectively. The classification accuracy of Models 1 and 2 was 74.5% and 73.8%, respectively, and the goodness of fit of the models performed using the Hosmer‐Lemeshow test failed to reject the hypothesis that there is no difference between the observed value and predicted value of the model, (Model 1: χ2 = 5.11, p = 0.746, Model 2: χ2 = 11.30, p = 0.185), which indicates that the presented models coincide with the data well.

In Model 1, drinking and dietary habits among health behaviors and job insecurity and

Figure 1. Odds ratio (OR) of health behaviors including smoking, alcohol consumption, physical activity, and diet. The OR was marked to the square points, and adjusted for working years, marital status, waist circumference, systolic blood pressure, and diastolic blood pressure. References were "Never" on smoking, "None or <1 drink" on alcohol consumption, "5~6 times a week" on physical activity, and "Both vegetables and fruits" on diet. CI = confidence interval.
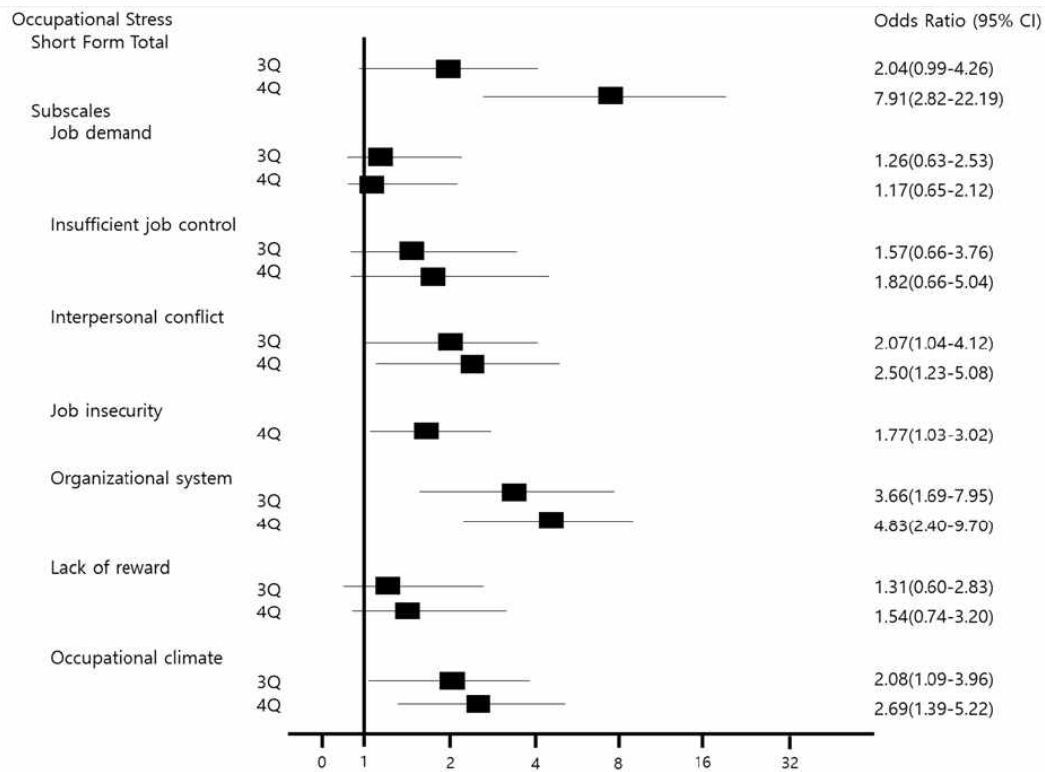
Figure 2. Odds ratio (OR) of occupational stress. The OR was marked to the square points and adjusted for working years, marital status, waist circumference, systolic blood pressure, and diastolic blood pressure. References were 1–2 Quartile (1–2 Q). CI = confidence interval; 3 Q = 3 Quartile; 4 Q = 4 Quartile.

Table 3. Factors Influencing Prediabetic State ($N = 275$).

Variables	Model 1			
	B	SE	Wald F	p-Value
Health behaviors Alcohol consumption				
None or <1 drink	0.00			
1~4.9 drinks	0.17	0.30	0.30	0.584
≥5 drinks	1.65	0.70	5.57	0.018
Diet				
Both vegetables and fruits	0.00			
Only vegetables/only fruits	0.74	0.37	3.98	0.046
Neither vegetables nor fruits	0.93	0.38	6.00	0.014
Occupational stress				
Job insecurity				
1~2 Q	0.00			
3 Q	-	-	-	-
4 Q	0.53	0.29	3.39	0.065
Organizational system				
1~2 Q	0.00			
3 Q	1.01	0.39	6.67	0.010
4 Q	1.41	0.36	15.36	<0.001
Variables	Model 2			
	B	SE	Wald F	p-Value
Health behaviors Diet				
Both vegetables and fruits	0.00			
Only vegetables/only fruits	0.77	0.39	3.97	0.046
Neither vegetables nor fruits	1.20	0.39	9.64	0.002
Occupational stress				
Short form total				
1~2 Q	0.00			
3 Q	0.15	0.42	1.16	0.048
4 Q	1.33	0.59	3.78	0.024
Organizational system				
1~2 Q	0.00			
3 Q	1.07	0.41	4.90	0.009
4 Q	1.13	0.43	6.84	0.009
Working years (years)	0.52	0.02	6.29	0.009
Waist circumference (cm)	0.47	0.19	6.37	0.012

Model 1 was nonadjusted and Model 2 was adjusted for working years, marital status, waist circumference, systolic blood pressure, and diastolic blood pressure. B = Unstandardized beta coefficient; SE = standard error; OR = odds ratio; CI = confidence interval; 1–2 Q = 1–2 Quartile; 3 Q = 3 Quartile; 4 Q = 4 Quartile.

organizational system among the subscales of occupational stress were found to be significant influencing factors of prediabetic state. In Model 2, dietary habits, total occupational stress score, organizational system, working years, and waist circumference were found to be significant influencing factors of prediabetic state. In particular, total occupational stress score and organizational system within the 4th quartile and "did not have fruits or vegetables" were found to act as significant influencing factors of prediabetic state.

4. Discussion

Of the 550 male office workers who completed the survey, 166 workers were in a prediabetic state,

which indicates a prevalence of 30.4%. This figure is higher than the average prevalence of 24.8% [12] among Korean adults aged 30 years or older. In addition, the prevalence of prediabetic state in the present study is higher than that of previous studies that did not consider gender and occupation, since the prevalence of prediabetic state is generally higher among males than among females and in office jobs than in manufacturing jobs [29].

Many previous studies [14,30‑32] have considered BMI, body weight, and physical activity as the main influencing factors in workplace-based diabetes prevention programs. However, the results of the present study showed that dietary habits, total occupational stress score, organizational system, working years, and waist circumference are the main influencing factors of prediabetic state among workers.

In particular, in the case of dietary habits, previous studies have confirmed that the intake of fruits and vegetables is an important factor that reduces the prevalence of diabetes [23,33]. Yin et al. [23] reported findings similar to that of the present study in that the risk of prediabetic state, and diabetes increases when fruits and vegetables are rarely consumed or not consumed at all, compared to when they are frequently consumed. The slight difference in the risk of prediabetic state between the present study and previous studies appears to be due to the differences in the recommended standards for dietary habits. Meanwhile, the results of a meta-analysis of type 2 diabetes mellitus showed that the intake of fruits or vegetables, especially green leafy vegetables, reduces the risk of diabetes, but no significant benefit of consuming fruits and vegetables together was found [34]. This divergence in the findings may be due to the use of a different instrument from that of the present study since the analysis was conducted after standardizing the intake of fruits or vegetables to daily intake (106 g). Therefore, not only the simple act of consuming fruits or vegetables but also the amount of intake per day needs to be considered in future studies.

Regarding the total occupational stress score, Djindjic et al. [10] reported a significant association between occupational stress and diabetes. Particularly, in the case of male workers, higher occupational stress was associated with a higher prevalence of diabetes, and it was found that the level of occupational stress was the highest among bank employees who have relatively longer working hours in a sitting position. A study that examined the association between work stress and diabetes and prediabetic state found that higher occupational stress is associated with diabetes and prediabetic state [35]. In addition, a closer look at the differences in occupational stress by diabetes status indicated that, particularly among men, workers with diabetes did not have the highest level of work stress; instead, the occupational stress of workers in the prediabetic state was the highest. Based on the findings of the present and previous studies, it is important that employees with diabetes, and those in prediabetic state, try to manage and reduce occupational stress as a preventive measure.

Regarding organizational system, which is a subscale of occupational stress, previous studies that have analyzed the relationships between organizational system and fasting blood sugar level or prediabetic state are lacking other than a study [36] carried out on Korean workers employed in various workplaces. A previous study conducted on 2097 workers who received health examinations at the health examination center of a university hospital reported that the multivariable-adjusted OR (95% CI) of the incidence of diabetes among those with job insecurity was 0.44 (95% CI = 0.25‑0.76) in the "high" group (the group with above median value) group compared with the reference "low" (the group with below median value) group, but the influence of other subareas was nonsignificant [36]. This is a somewhat different finding from that of the present study, which found that organizational system is a major influencing factor of prediabetic state. This difference in the results may be attributed to the use of office workers as subjects in the present study, as the aforementioned study did not take social and occupational characteristics into consideration. Furthermore, the findings regarding the subareas of occupational stress that lead to significant increases in fasting blood sugar level were also somewhat different. Such differences may be due to the use of a different instrument from that used in the present study, which used the KOSS-SF, an occupational stress measurement instrument developed for Korean workers, as the previous study defined occupational stress using job-demand control (JDC) and effort-reward imbalance (ERI).

According to a 10-year cohort analysis of office workers in large corporations [3], the OR of those

who worked for over 20 years, compared to those who worked 1 to 2 years, were 2.70 (95%CI = 1.63 – 4.45) in waist circumference (male ≥90 cm), and the risk of contracting diabetes was 3.7 times, which was the highest. In addition, previous studies [28,37] reported that it was important to monitor and prevent increases in waist circumference to reduce the increasing burden of prediabetes, diabetes, and its complications. These are similar to the results of the present study and highlight the need for further studies to consider working years and maintaining waist circumference.

In addition to dietary habits, total occupational stress score, and organizational system that were identified as major influencing factors of prediabetic state, the analysis of the risk of health behaviors and occupational stress for prediabetic state showed that the risk of prediabetic state is high if the individual is currently smoking, drinks five or more drinks, and does not engage in physical activity, as well as if the scores on the subscales of occupational stress (i.e., interpersonal conflict, job insecurity, and occupational climate) are high.

A previous study [19] that aimed to identify the relationship between smoking behavior among male workers and the prevalence of prediabetic state reported that the prevalence of prediabetic state is 1.12 times higher for those who have smoked 100 or more cigarettes during their lifetime, or those who are current smokers, than for nonsmokers, but the result was not statistically significant (p = 0.06). A study conducted on adults [18] reported that current smoking significantly increases the risk of prediabetic state (p < 0.001). This result is consistent with the results of the present study that the risk of prediabetic state for current smokers is higher than that for nonsmokers. Meanwhile, because the risk of prediabetic state increases when the amount of smoking is greater, and the duration of smoking cessation is shorter [38], it is necessary for future studies to consider not only smoking behavior in the past or present but also the amount of smoking and the duration of smoking cessation in the past or present.

Huang et al. [20] analyzed the risk of prediabetic state among current drinkers and nondrinkers, and determined that current drinking behavior increases the risk of prediabetic state. In addition, it has been reported that as the amount of drinking increases, the risk of diabetes increases up to 1.63 times, and the added risk for diabetes and prediabetic state increases up to 1.54 times [21,39], which suggest that moderate drinking is an important health behavior to prevent prediabetic state.

Research on the direct association between physical activities and prediabetic state has been somewhat insufficient, but most studies have reported that moderate physical activity for 30 min or more every day reduces the risk of diabetes [22,40]. In particular, a previous study [22] conducted to identify the risk factors of diabetes among American males reported that the risk of diabetes decreases as the frequency of engaging in moderate physical activity for 30 min or more every day increases. That is, moderate physical activities for 30 min or more may have a positive effect on preventing prediabetic state and glycemic control. Meanwhile, Nakanishi, Takatorige, and Suzuki [41] reported that diabetes and prediabetic state progressively decreased by increasing energy expenditure on daily life activity, such as occupational physical activity, brisk walking, riding vehicles (standing position) to and from work. Therefore, it is necessary for future studies or interventions to consider not only moderate physical activity, but also daily life activities that are beneficial for managing fasting glucose.

Previous studies [10,11] conducted to determine the relationship among occupational stress, fasting blood sugar level, and risk of diabetes have reported the following results. Djindjic et al. [10] found that the high demand, strictness, and conflict/uncertainty are not associated with diabetes. However, a study that investigated the possible influence of work stress on diabetes reported that in men, high work demands and high job strain decrease the risk for diabetes, as did an active job (high demands and high decision latitude) [42]. These findings are somewhat different from the results of the present study, which found that subjects with high scores on the subscales of occupational stress (interpersonal conflict, job insecurity, and occupational climate) had a high risk for prediabetic state. That is, there is conflicting evidence regarding the subscales of occupational stress; therefore, it is necessary to carry out repeated research to determine whether its subscales are associated with diabetes or prediabetic state, and how they are related.

Since the present study performed an integrative analysis on data from regular health examinations,

health questionnaires, and a health behavior-related survey of all the employees of a company, it can be used as the results of a basic analysis for the development of a prediabetic intervention program. In particular, the significance of the present study lies in the determination of risks and correlations among health behaviors, occupational stress, and prediabetic state, as well as a systematic analysis of the influencing factors among male office workers who have been reported to have difficulties in practicing health behaviors and have experienced a high level of occupational stress. Nevertheless, the present study has the following limitations. First, since the study was conducted on male office workers working at a company at one point in time, the ability to identify cause-and-effect relationships accurately, or generalize the results, is somewhat limited. However, it would help to examine the associations among occupational stress, health behaviors, and prediabetic state of office workers and the influencing factors of prediabetic state. Second, the study sample was relatively small, and the response rate was low, since participation in the survey was voluntary. However, the results are meaningful because this study was conducted on all employees of a company. Finally, since the working environment and health characteristics of office workers could differ, repeated and further studies are needed to overcome such limitations, and in particular, repeated research through analysis of government-based datasets is needed.

5. Conclusions

The prevalence of prediabetic state among male office workers who were the subjects of the present study was 30.4%, which was higher than the prevalence (24.8%) among general Korean adults aged 30 years or older. This finding implies the necessity of health promotion programs for high-risk groups for chronic disease, which is especially applicable to prediabetic state among the various health problems of office workers. Furthermore, based on the analysis of the present study, which showed a significant influence of dietary habits among health behaviors, total occupational stress score, and organizational system among the subscales of occupational stress on prediabetic state, organized changes of not only individual workers, but also workplaces, are needed for the systematic

prevention and management of diabetes. In other words, comprehensive changes that include individual workers and the work environment need to be induced by preponderantly reflecting on matters related to dietary habits, total occupational stress score, and the organizational system in intervention programs targeting prediabetic state. The development of comprehensive intervention programs with considerations given to health behaviors and occupational stress-related variables for male office workers in a prediabetic state is also necessary, and large-scale expanded research is needed to identify the influencing factors of prediabetic state among Korean office workers. Finally, active and systematic interventions by the government are necessary for people in a prediabetic state who lack knowledge on health management compared with people who already have a chronic disease. The present study is the first study to collectively analyze health behaviors, occupational stress, and prediabetic state among office workers, and it is expected to be effectively utilized in workplace-based intervention programs conducted for office workers in the future.

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Reference

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Influence of Health Behaviors and Occupational Stress on Prediabetic State among Male Office Workers

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Abstract: This study examined the influence of health behaviors and occupational stress on the prediabetic state of male office workers, and identified related risks and influencing factors. The study used a cross-sectional design and performed an integrative analysis on data from regular health checkups, health questionnaires, and a health behavior-related survey of employees of a company, using Spearman's correlation coefficients and multiple logistic regression analysis. The results showed significant relationships of prediabetic state with health behaviors and occupational stress. Among health behaviors, a diet without vegetables and fruits (Odds Ratio (OR) = 3.74, 95% Confidence Interval (CI) = 1.93 - 7.66) was associated with a high risk of prediabetic state. In the subscales on occupational stress, organizational system in the 4th quartile (OR = 4.83, 95% CI = 2.40 - 9.70) was significantly associated with an increased likelihood of prediabetic state. To identify influencing factors of prediabetic state, the multiple logistic regression was performed using regression models. The results showed that dietary habits (= 1.20, p = 0.002), total occupational stress score (= 1.33, p = 0.024), and organizational system (= 1.13, p = 0.009) were significant influencing factors. The present findings indicate that active interventions are needed at workplace for the systematic and comprehensive management of health behaviors and occupational stress that influence prediabetic state of office workers.

Keywords: prediabetic state; health behavior; occupational stress; male; office worker

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Trajectories of change in cognitive function in people with chronic obstructive pulmonary disease

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1. INTRODUCTION

Although chronic obstructive pulmonary disease (COPD) has long been characterised as a progressive, irreversible loss of airflow to the lungs, clinicians now consider it to be a systemic disease as well (Agusti & Soriano, 2008; Vestbo et al., 2013). This extrapulmonary characteristic has been amply demonstrated by the comorbidities associated with it (Schnell et al., 2012). Cognitive impairment is one such comorbidity (Corsonello et al., 2011). A meta-analysis has shown that people with COPD have a higher risk of cognitive impairment than control subjects (Zhang et al., 2016). The prevalence of cognitive impairment has been reported to be 12% – 88% in people with COPD (Hynninen, Breitve, Wiborg, Pallesen, & Nordhus, 2005). Such individuals have been reported to have cognitive impairment in the domains of attention, memory and executive function (Dodd, Getov, & Jones, 2010; Schou, Østergaard, Rasmussen, Rydahl-Hansen, & Phanareth, 2012). Poor performance in cognitive testing is a significant concern for people with COPD because it is closely associated with increased disability and mortality and poor adherence to medication regimens, which may affect self-management of the disease (Antonelli-Incalzi et al., 2006; Cleutjens, Janssen, Ponds, Dijkstra, & Wouters, 2014; Incalzi et al., 1997; Martinez, Richardson, Han, & Cigolle, 2014).

Complementing cross-sectional studies, a recent longitudinal study has reported that COPD was significantly associated with more rapid cognitive decline over 3 years in patients than in control subjects (Zhou et al., 2012). Not only does COPD increase the risk of cognitive impairment over time, but individuals who have had COPD more than 5 years had a greater risk of developing cognitive impairment (Rusanen et al., 2013; Singh et al., 2014). In addition to the significant impact of cognitive function measured at one time point on health-related outcomes, longitudinal changes in cognitive function appear to be significantly associated with functional decline in healthy older adults over time (Royall, Palmer, Chiodo, & Polk, 2005). Decline in executive function has been significantly associated with change in instrumental activities of daily living in healthy older adults over 3 years (Royall, Palmer, Chiodo, & Polk, 2004; Sloan & Wang, 2005). However, how cognitive function changes in people with COPD over time is not well known, despite the fact that it declines rapidly in this population and significantly impacts functional decline in healthy older adults. Furthermore, most studies have used only mean scores of cognitive tests to describe changes in cognitive function, which may limit individual variations (Incalzi et al., 1998; Zhou et al., 2012). Although several cross-sectional studies have identified factors associated with cognitive function in people with COPD (Dodd et al., 2010; Park & Larson, 2015), few studies have examined factors associated with cognitive change over time. Examining the characteristics of people

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with COPD whose cognitive function has declined cannot be underestimated because it has such a significant impact on changes in health-related outcomes. Thus, this study examined the trajectories of change in cognitive function and associated factors in people with COPD over 3 years, focusing on executive function, as measured by the trail making test (TMT). Executive function is one of the common cognitive domains in which people with COPD experience cognitive impairment.

2. LITERATURE REVIEW

2.1. Changes in cognitive functions in healthy older adults and people with COPD

Changes in cognitive function in healthy older adults over time have been described in the literature. As measured by the TMT, longitudinal changes in executive function and processing speed occur throughout adulthood, becoming more negative as people age (Salt-house, 2011). Executive function and global function, as measured by the Mini Mental State Examination (MMSE), deteriorated in healthy older adults over 3 years, using latent growth curve analysis (Royall et al., 2004, 2005). Significant decline in processing speed and MMSE scores was also found in 2,938 people aged 72 over 6 years (Welmer, Rizzuto, Qiu, Caracciolo, & Laukka, 2014). Cogni-tive decline over 10 years, as measured by MMSE, was also reported in healthy older adults (Tilvis et al., 2004). Overall, global cognitive function, executive function and processing speed have declined over 2.5 – 10 years in healthy older adults.

Few studies have described changes in cognitive function in people with COPD. As measured by the MMSE, cognitive function significantly declined in people with COPD (mean age of 68 years) over 2 years (Incalzi et al., 1998). A recent longitudinal study has shown that people with COPD with a mean age >80 years had a more rapid rate of cognitive decline over 3 years, based on MMSE scores, word list recall, delayed recall, animal category fluency and symbol digit modalities (Zhou et al., 2012). Cognitive decline in people with COPD was also reported over 6 years, using a data set from the Health and Retirement Study (Hung, Wisnivesky, Siu, & Ross, 2009). However, few studies have been conducted to describe detailed patterns of change in cognitive function in people with COPD over time. Most of the COPD studies reviewed have shown changes using mean scores of cognitive function in all samples; however, this may

not be the best way to describe change in cognitive function over time. This mean-based statistical approach could not capture individual variations over time.

Trajectories of change in cognitive function have not been examined in people with COPD but have been in people with other chronic disease. Alosco et al. (2014) found stable change in attention and executive function over 1 year in people with heart failure but identified three classes in changes of attention and executive function using latent class growth analysis: average, low average and moderately impaired. In a study of people with heart failure, Riegel, Lee, Glaser, and Moelter (2012) also found little change in processing speed over 6 months and identified two classes, using growth mixture modelling (GMM): average and below average. Likewise, examining trajectories of change in cognitive function may enable heathcare providers to better understand individual variations in cognitive changes over time.

2.2. Factors affecting changes in cognitive function in healthy older adults and people with COPD

The literature identifies factors associated with changes in cognitive function in healthy older adults. Age and executive function at baseline were significantly associated with decline in executive function over 3 years (Royall et al., 2004). Comorbidity was a strong predictor of cognitive decline over 1 year and impaired cognition measured by the MMSE at baseline predicted further cognitive decline (Tilvis et al., 2004). Cognitive decline was associated with apolipoprotein E 4, slightly elevated calcium levels and a feeling of loneliness (Tilvis et al., 2004). The level of objectively measured physical activity was also associated with the rate of global cognitive decline in healthy older adults over 4 years (Buch-man et al., 2012)

However, few studies have examined sample characteristics for changes in cognitive function in people with COPD. Only one study has found that patients who experienced a decline on the MMSE over 2 years had a lower, per centpredicted value of forced vital capacity (FVC) and less depression at baseline (Incalzi et al., 1998). Thus, examining the sample characteristics of those who exhibit cognitive change over time in people with COPD is necessary and may identify those at greater risk of developing cognitive decline over time..

The purposes of this study were (i) to describe

changes in cognitive function, as measured by the TMT; (ii) to identify distinctive patterns of change in cognitive function; and (iii) to examine predictors of change in cognitive function in people with severe COPD, using a data set from the National Emphysema Treatment Trial (NETT). Factors that might predict changes in cognitive function in people with COPD were based on Dodd et al.'s (2010) framework and past studies of people with COPD and healthy older adults (Incalzi et al., 1998; Royall et al., 2004; Tilvis et al., 2004). Predictors of interest included pulmonary function test results, exercise capacity, dyspnoea, depression and health-related quality of life.

3. METHODS

3.1. Design

This longitudinal study and secondary data analysis used a data set from the NETT, a study that was planned by the Centers for Medicare and Medicaid Services, the National Institutes of Health and the Agency for Healthcare Research and Quality. The NETT was a multicenter, longitudinal, randomised controlled trial; its aim was to evaluate the effect of lung volume reduction surgery vs. medical therapy on survival and exercise capacity in people with severe emphysema (NETT, 1999; Weinmann, Chiang, & Sheingold,(2008)

3.2. Sample, settings and procedures

Seventeen clinics participated in the original study (NETT, 1999). Subjects were either self-referred for evaluation at a clinical site or referred by a physician. To be included in the original study, subjects had to have radiological evidence of bilateral emphysema, severe airflow obstruction and hyperinflation, and the ability to complete pulmonary rehabilitation (NETT, 1999). Persons were excluded if they were at high risk of perioperative morbidity or mortality, considered to be unsuitable for lung volume reduction surgery, or unlikely to complete the trial (NETT, 1999).

At each clinical site, after enrolment and pulmonary rehabilitation, subjects were randomised into either a medical therapy group or a medical therapy group who had undergone lung volume reduction surgery (NETT, 1999). In total, 3,777 subjects were evaluated, 1,218 underwent randomisation, 610 subjects were assigned to the medical therapy group, and 608 were assigned to the

surgery group (NETT, 2003). In our study, we included only subjects who had data for all study variables, regardless of their group. Subjects in both groups participated in pulmonary rehabilitation before and after randomisation. Several demographic and clinical measures were administered at baseline and re-examined at 6 months, 12 months and every year thereafter. Besides primary outcomes (i.e., survival and maximum exercise capacity), quality of life, disease-specific symptoms and pulmonary function, radiological studies have also been assessed throughout the study. Except for TMT data, baseline data for all study variables were used in the current analysis. All baseline measures in the current analysis were obtained before randomisation and pulmonary rehabilitation. TMT was measured at baseline, 1, 2 and 3 years. Informed consent was obtained from each subject, and the study was approved by the institutional review board at each clinic site in the original study. Because this study was a secondary data analysis, it was exempted from institutional review board approval at the principal investigator's institution.

3.3. Instruments

3.3.1 Demographic and clinical data
Age; gender; marital status; income level; employment status; smoking history; oxygen use; and use of oral steroids, inhaled steroids and antidepressants were collected by patient interview using standardised instruments. Body mass index (BMI) was calculated by measuring weight and height.

3.3.2 Pulmonary function testing
Patients underwent spirometry and plethysmographic lung volume measurement after albuterol was administered. All tests adhered to American Thoracic Society guidelines (1995a, 1995b). Forced expiratory volume in one second (FEV1), FVC and diffusing capacity of the lungs for carbon monoxide (DLCO) were used for this analysis; all values were calculated for predicted value (Crapo & Morris, 1981; Crapo, Morris, & Gardner, 1981). Arterial blood gas (ABG), partial pressure of oxygen in arterial blood (PaO2) and partial pressure of carbon dioxide in arterial blood (PaCO2) were all measured and used for the analysis.

3.3.3 Exercise capacity
The cycle ergometer and 6-min walk test were used to assess exercise capacity. Before the cycle

ergometer test began, subjects rested for 10 min. The test included supplementary oxygen for all subjects and included 3 min of unloading pedalling before increasing watts. Breathlessness and leg fatigue were assessed. Workload on the cycle ergometer was increased by 5 or 10 watts per minute. Tests were terminated when cadence dropped to 40 rpm, subjects requested to stop, or safety was concerned. Maximum work load was used for this analysis. The 6-min walk test was started after a 10-min rest. Subjects were asked to wear loose clothing and comfortable shoes and were allowed to have oxygen, as prescribed. This analysis used the maximum distance subjects walked during 6 min.

3.3.4 Dyspnoea

Dyspnoea was quantified by the University of California, San Diego Shortness of Breath Questionnaire. This 24-item instrument asks questions about the degree of breathlessness during various activities (21 items) and the effect of breathlessness on daily life (three items) for an average day during the past week. Answers can range from 0 (not at all)‑5(maximally or unable to do because of breathlessness). Total scores were calculated; higher scores mean patients had more difficulty in breathing. Adequate internal consistency has been reported in the literature (a = .96; Eakin, Resnikoff, Prewitt, Ries, & Kaplan, 1998). Validity of this instrument has also been reported with FEV1 (r = ‑.50) and the 6-min walk test (r = ‑.68; Eakin et al., 1998). Internal consistency for this study (Cronbach's a) was .94.

3.3.5 Depression

The Beck Depression Inventory was used to measure degree of depression. This self-administered instrument comprises 21 items on a Likert scale that ranges from 0 (absence)‑3(most severe; Beck, Steer, & Garbin, 1988). Total scores are calculated by summing the ratings given to each item. Scores range from 0‑63. Higher scores indicate greater depression. Excellent internal consistency has been reported for psychiatric patients (a = .86; Beck et al., 1988). The validity of this instrument with the Hamilton Psychiatric Rating Scale for Depression was high (r = .74) in nonpsychiatric patients (Beck et al., 1988). Internal consistency for this study (Cronbach's a) was .82

3.3.6 Health-related quality of life

The St. George's Respiratory Questionnaire (SGRQ) was used to measure health-related quality of life. This instrument was developed to assess impaired health and perceived well-being in patients with respiratory diseases (Jones, 2009). It comprises 50 items and three subscales (symptoms, activity and impacts). The symptoms subscale asks patients to recall the frequency and severity of respiratory symptoms over the past year; the activity subscale addresses activity-related dyspnoea and its effect on physical activity; and the impacts scale evaluates psychosocial disturbances due to disease. Total scores were also calculated. Scores range from 0 (best health status)‑100 (worst health status). Other investigators have examined the adequate coefficient of variance for paired measurement over 2 weeks and the validity of this instrument with the 36-Item Short Form Survey in people with COPD (r = ‑.5 to ‑.67; Jones, Quirk, & Baveystock, 1991; Pickard, Yang, & Lee, 2011). Internal consistency for total score was Cronbach's a = .68.

3.3.7 Executive functions

Executive function is defined as "a higher order cognitive ability that controls basic, underlying cognitive functions for purposeful, goal-directed behavior and that has been associated with frontal lobe activity" (Etnier & Chang, 2009, p. 470). Individuals with impaired executive function are not able to do satisfactory self-care, perform usual work independently, or maintain normal relationships (Lezak, Howieson, Bigler, & Tranel, 2012). The TMT comprises two parts: Part A and Part B, but only TMT Part B was used to evaluate executive function. Developed in 1944, this test was originally part of the Army Individual Test of General Ability and is currently one of the most commonly used neuropsychological tests and reported to be sensitive to brain damage (Reitan & Wolfson, 1994). It has been proposed that Part B performance is indicative of executive function (Arbuthnott & Frank, 2000; Bowie & Harvey, 2006; Pontius & Yudowitz, 1980).

In using the TMT Part B, subjects are asked to draw a line that connects 25 circles that contain numbers and letters, alternating circles that contain 13 numbers and 12 letters (e.g., 1, A; 2, B; 3, C). Scores represent the time required to complete the task. Studies have reported adequate test‑retest reliability with an interval of 3 weeks (r = .55‑.75, Bornstein, Baker, & Douglass, 1987) and validity of Part B with the Symbol Digit Modalities Test (r = ‑.39, Royan, Tombaugh, Rees, & Francis, 2004). Gasquoine (2011) has suggested various cutpoints for cognitive impairment. Cognitive impairment was defined as a Part B score that was 1.5 SDs above

the normative means of Part B in the current study. Thus, cutpoints for Part B were 134.66s for people with fewer than 12 years of education and 81.09s for people with more than 12 years of education, respectively, to determine cognitive impairment, based on normative data from Tombaugh's (2004) study. In addition to age and education-specific norms for Part B, raw Part B scores were also used in this analysis because analytic technique requires continuous scores and the trajectory of raw scores was this study's main focus of interest.

3.4 Data analysis

IBM SPSS Statistics for Windows version 23.0 (IBM Corporation, NY, USA) was used to analyse all data for descriptive statistics and comparison of variables between groups, and MPLUS 7.4 was used for GMM. Categorical variables were presented as percentage and frequency. All continuous variables were expressed as mean and standard deviation. GMM was used to identify distinct TMT trajectories using longitudinal cohort data over 3 years. GMM identifies heterogeneous differences in growth trajectories over time (Nylund, Asparouhov, & Muth □en, 2007) and examines inter-individual differences in intra-individual change, considering heterogeneity in a population (Jung & Wickrama, 2008). A maximum of five classes was posited, based on fit indices, theoretical justification and limited sample size. The number of latent classes was determined by the best combination of fit indices with Akaike's information criterion (AIC); Bayesian's information criterion (BIC); and Lo, Mendell and Rubin's likelihood ratio test (LMR-LRT; Nylund et al., 2007). Entropy was also used to determine the accuracy of classification (Jung & Wickrama, 2008). Smaller AIC and BICs and significant LMR-LRTs would suggest that model fit better when additional latent classes were included (Nylund et al., 2007). Entropy ranges from 0 - 1; values close to 1 indicate better trajectory separation (Jung & Wickrama, 2008). Also, the number of latent classes was determined by a minimum sample size for each class (more than 5% of total sample; Jung & Wickrama, 2008; Nylund et al., 2007). After deciding the number of latent classes, intercept and slope were estimated for each trajectory.

After identifying distinct classes for the TMT, one-way analysis of variance (ANOVA) or chi-square tests were used to determine whether significant differences in demographic and clinical characteristics existed among distinct classes of participants. Post hoc analyses were conducted using the Bonferroni procedure to control the overall alpha level of the possible pairwise contrasts at 0.05.

Four classes were combined into two clusters (one cluster with improving cognitive function over 3 years [Classes 1 and 4] vs. one cluster with worsening cognitive function over 3 years [Classes 2 and 3]). Unadjusted and adjusted logistic regressions were then used to determine which factors predicted a trajectory of worsening cognitive function over 3 years. Study variables with a p value of at least .1 in unadjusted logistic regression were entered together into adjusted logistic regression to examine the independent relationship of sample characteristics on the trajectory of worsening cognitive function over 3 years.

Four classes were again combined into two different clusters (one cluster with an average TMT Part B score over 3 years [Classes 1 and 2] vs. one cluster with below-average TMT Part B scores over 3 years [Classes 3 and 4]). Unadjusted and adjusted logistic regressions were then used to determine which factors predicted below-average TMT Part B scores over 3 years. Study variables with a p value of at least .1 in unadjusted logistic regression were also entered together into adjusted logistic regression to examine the independent relationship of sample characteristics on the trajectory of below-average cognitive function over 3 years. Odds ratio (OR) and 95% confidence interval (CI) were calculated for each model factors. A p < .05 was considered to be statistically significant,

4. RESULTS

4.1. Sample characteristics

Sample characteristics are presented in Table 1. The mean age of the total sample was 66.21. Half were men and highly educated; most were married. The sample's spirometric test results were poor: 32.6% had cognitive impairment at baseline. Changes in TMT Part B scores for the total sample over time are presented in Table 2. TMT Part B results slightly worsened over time. Repeated measures of ANOVA showed that cognitive function changed significantly over 3 years (F = 7.63; p = .01; TMT Part B test results at 2 years <baseline, 1 year, and 3 years) but did not show significant differences in TMT Part B test results between the medical group (n = 137) and surgical group (n = 170) over time. Thus, all cognitive function data from these two groups were combined for the further analysis

TABLE 1 Sample characteristics at baseline and differences in sample characteristics according to four classes

Study variables (range of possible score)	Total sample (N = 307) Mean ± SD, Frequency (%)	Class 1 (n = 109)	Class 2 (n = 122)	Class 3 (n = 56)	Class 4 (n = 20)	Test, statistical significance, and significant post hoc comparisons
Age	66.2 ± 5.7	66.7 ± 6.1	66.7 ± 5.4	67.2 ± 5.5	68.5 ± 1.3	$F_{3,303}$ = 4.36, p = .01; class 1 < 4
Male	183 (59.6)	64 (58.7)	72 (59.0)	32 (57.1)	15 (75.0)	χ^2 = 2.16, p = .54
Education						
High school or less	160 (52.1)	45 (41.3)	66 (54.1)	35 (62.5)	14 (70.0)	χ^2 = 10.30, p = .02; class 1 > 3, p = .01; class 1 > 4, p = .03
More than college	147 (47.9)	64 (58.7)	56 (45.9)	21 (37.5)	6 (30.0)	
Income						
<$29,999	159 (52.3)	52 (48.1)	63 (52.5)	36 (64.3)	8 (40.0)	χ^2 = 5.19, p = .12
>$30,000	145 (47.7)	56 (51.9)	57 (47.5)	20 (35.7)	12 (60.0)	
Marital status						
Never married, separated, divorced	102 (33.2)	41 (37.6)	36 (29.5)	20 (35.7)	5 (25.0)	χ^2 = 2.47, p = .48
Married	205 (66.8)	68 (62.4)	86 (70.5)	36 (64.3)	15 (75.0)	
Currently employed	30 (9.8)	10 (9.2)	12 (9.8)	6 (10.7)	2 (10.0)	χ^2 = 0.10, p = .99
Pack years	63.5 ± 29.4	63.4 ± 27.3	63.3 ± 27.7	62.5 ± 33.9	67.9 ± 38.3	$F_{3,302}$ = 0.17, p = .92
BMI	25.4 ± 3.7	25.5 ± 3.6	25.5 ± 3.6	25.4 ± 3.8	25.2 ± 4.5	$F_{3,303}$ = 0.04, p = .99
FEV1% pred.	28.3 ± 7.5	28.3 ± 7.4	27.6 ± 7.1	29.1 ± 8.3	30.4 ± 7.8	$F_{3,303}$ = 1.10, p = .35
FEV1/FVC	32.4 ± 6.3	32.2 ± 6.5	32.3 ± 6.2	32.6 ± 6.0	33.5 ± 7.0	$F_{3,303}$ = 9.59, p = .87
DLCO % pred.	30.0 ± 9.8	29.8 ± 8.9	30.2 ± 10.2	29.2 ± 10.0	32.2 ± 11.8	$F_{3,303}$ = 0.52, p = .67
PaO₂ (mmHg) [kPa]	64.6 ± 10.4 [8.6 ± 1.4]	65.0 ± 10.6 [8.7 ± 1.4]	54.1 ± 11.0 [8.5 ± 1.5]	64.1 ± 9.0 [8.5 ± 1.2]	66.3 ± 10.1 [8.8 ± 1.4]	$F_{3,303}$ = 0.39, p = .76
PaCO₂ (mmHg) [kPa]	42.1 ± 5.1 [5.6 ± 0.7]	41.1 ± 5.0 [5.5 ± 0.7]	42.9 ± 5.2 [5.7 ± 0.7]	42.5 ± 5.0 [5.7 ± 0.7]	42.4 ± 5.0 [5.7 ± 0.7]	$F_{3,303}$ = 2.46, p = .06
Peak workload (watt)	41.7 ± 23.3	44.5 ± 24.3	40.2 ± 22.0	40.5 ± 22.1	40.3 ± 28.6	$F_{3,303}$ = 0.73, p = .54
Six-minute walk distance (feet)	1,186.8 ± 292.1	1,265.4 ± 295.7	1,139.5 ± 276.1	1,123.2 ± 308.0	1,240.5 ± 229.0	$F_{3,289}$ = 7.45, p = .01; class 1 > 2, 1 > 3
Use of oxygen at rest	140 (45.6)	45 (41.3)	55 (45.1)	29 (51.8)	11 (55.0)	χ^2 = 2.41, p = .49
Use of oral steroids	81 (26.4)	21 (19.3)	38 (31.1)	17 (30.4)	5 (25.0)	χ^2 = 4.74, p = .19
Use of inhaled steroids	212 (69.1)	78 (71.6)	79 (64.8)	41 (73.2)	14 (70.0)	χ^2 = 1.84, p = .61
Use of antidepressants	38 (12.4)	15 (13.8)	13 (10.7)	6 (10.7)	4 (20.0)	χ^2 = 1.74, p = .63
UCSD-SOBQ (0–120)	62.0 ± 19.5	59.8 ± 18.5	63.0 ± 19.9	64.9 ± 19.1	60.4 ± 19.2	$F_{3,297}$ = 0.99, p = .40

(Continues)

TABLE 1 (Continued)

Study variables (range of possible score)	Total sample (N = 307) Mean ± SD, Frequency (%)	Class 1 (n = 109)	Class 2 (n = 122)	Class 3 (n = 56)	Class 4 (n = 20)	Test, statistical significance, and significant post hoc comparisons
Depression on BDI (0–63)	8.6 ± 5.9	9.0 ± 5.8	8.0 ± 5.8	8.9 ± 6.4	10.0 ± 5.0	$F_{3,303} = 1.04, p = .38$
Cognitive impairment in TMT Part B	100 (32.6)	16 (14.7)	31 (25.4)	34 (60.7)	19 (95.0)	$\chi^2 = 74.42, p = .01$; class $1 < 3, 1 < 4, 2 < 3$, and $2 < 4, p = .01$; class $3 < 4, p = .01$
TMT Part B (second)	98.4 ± 38.1	77.0 ± 21.5	88.3 ± 19.9	130.7 ± 19.5	185.9 ± 52.2	$F_{3,303} = 162.63, p = .01$; All post hoc analysis were significant
SGRQ total	52.7 ± 13.0	50.6 ± 13.4	53.5 ± 12.1	54.3 ± 13.2	54.5 ± 15.7	$F_{3299} = 1.51, p = .21$
Symptoms (0–100)	54.4 ± 20.0	51.4 ± 19.7	56.5 ± 19.3	55.6 ± 20.7	53.9 ± 22.2	$F_{3299} = 1.30, p = .27$
Activity (0–100)	78.6 ± 13.7	76.9 ± 13.2	80.3 ± 13.5	78.9 ± 13.9	75.6 ± 15.6	$F_{3299} = 1.47, p = .22$
Impacts (0–100)	37.3 ± 16.3	35.2 ± 17.0	37.1 ± 15.3	39.8 ± 15.9	42.6 ± 18.7	$F_{3299} = 1.76, p = .16$
Surgical group	170 (55.4)	54 (49.5)	69 (56.6)	34 (60.7)	13 (65.0)	$\chi^2 = 2.97, p = .40$

BMI, body mass index; BDI, Beck Depression Inventory; DLCO, diffusion capacity of carbon monoxide; FEV1, forced expiratory volume in 1 s; FVC, forced vital capacity; PaO₂, partial pressure of oxygen in arterial blood; PaCO₂, partial pressure of carbon dioxide in arterial blood; SGRQ, St. George's Respiratory Questionnaire; TMT, Trail making test; UCSD-SOBQ, University of California, San Diego Shortness of Breath Questionnaire.

The higher number indicates the more dyspnoeic in UCSD-SOBQ, the more depressed in BDI, having worse functioning in SGRQ.

TABLE 2 TMT Part B (second) over 3 years by total sample and by four classes

	Baseline Mean ± SD	1 year Mean ± SD	2 years Mean ± SD	3 years Mean ± SD
Total sample (N = 307)	98.4 ± 38.1	100.4 ± 35.3	91.5 ± 34.9	100.1 ± 39.7
Class 1 (n = 109)	76.9 ± 21.5	79.0 ± 22.8	65.7 ± 13.9	69.0 ± 11.9
Class 2 (n = 122)	88.3 ± 19.9	95.0 ± 22.0	91.8 ± 23.3	104.5 ± 22.3
Class 3 (n = 56)	130.7 ± 19.5	129.1 ± 27.0	122.8 ± 35.1	135.8 ± 51.3
Class 4 (n = 20)	185.9 ± 52.2	169.6 ± 41.0	142.3 ± 45.1	142.5 ± 50.0

TMT, trail making test.

TABLE 3 Model fit statistics for GMM with TMT Part B over 3 years (N = 307)

Fit statistics	Class 2 model	Class 3 model	Class 4 model	Class 5 model
AIC	11,522.0	11,496.3	11,473.9	11,465.2
BIC	11,945.9	11,935.5	11,935.5	11,934.2
Log-likelihood	−5,992.0	−5,932.4	−5,913.3	−5,899.0
Entropy	0.57	0.70	0.71	0.74
Group size n (%)				
Class 1	229 (76.8)	227 (76.2)	109 (35.5)	102 (34.2)
Class 2	69 (23.2)	53 (17.8)	122 (39.7)	80 (26.8)
Class 3		18 (6.0)	56 (18.2)	69 (23.2)
Class 4			20 (6.5)	35 (11.7)
Class 5				12 (4.0)

AIC, Akaike's information criterion; BIC, Bayesian information criterion; GMM, growth mixture modelling; TMT, trail making test.
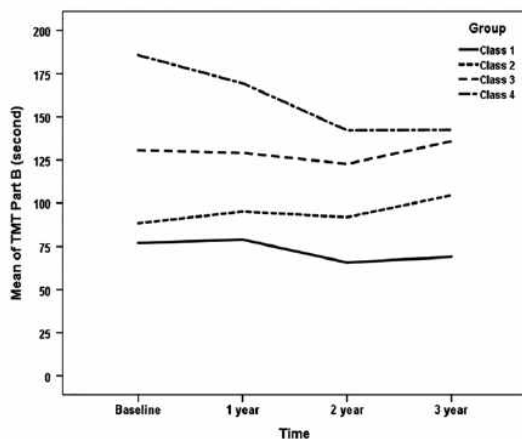
FIGURE 1 Four classes of trajectories in cognitive function measured by trail making test Part B

TABLE 4 Intercepts and slopes in class 4 model

	Intercept (SE)	Slope (SE)
Four Class models		
Class 1	78.8 (3.4)*	−3.5 (0.9)*
Class 2	88.5 (2.5)*	2.8 (1.1)*
Class 3	126.3 (3.2)*	3.3 (4.0)
Class 4	176.2 (10.5)*	−15.6 (4.5)*

*p-value < .05.

4.2 Classes of TMT Part B

In GMM, 2, 3, 4 and 5 class models were identified using TMT Part B test results, which were measured in four timeframes (Table 3). However, we chose four distinct class models for the TMT Part B, based on fit indices, theoretical justification and sample size (Figure 1). Specifically, four-class models were chosen because of smaller AICs and BICs, significant LMR-LRTs, higher entropy and having at least 15 samples in each class(5% of total sample). In these four-class models most initial levels (intercept) and changes (slope) for each class were significant over time (Table 4). The first class (n = 109, improving with low intercept) represented patients with low TMT Part B scores at baseline and improving scores over time (Table 2, Figure 2). The second class (n = 122, worsening with low intercept) represented patients with worsening TMT Part B scores over time but with low scores at baseline (Figure 3). The third class (n = 56, worsening with high intercept) represented patients with worsen-ing TMT Part B scores over time but with high TMT Part B scores at baseline (Figure 4). The fourth class (n = 20, improving with high intercept) represented patients with high TMT Part B scores at baseline but improving scores over time (Figure 5).

4.3 Comparison of sample characteristics in four classes at baseline

Demographic and clinical characteristics (mean age, proportion of higher education, 6-min walk distance, proportion of cognitive impairment based on TMT Part B scores and TMT Part B scores at baseline) were significantly different between the four classes (Table 1). Post hoc analyses showed that those in Class 4 were older than those in Class 1. Those in Class 1 were more educated than those in Classes 3 and 4. Those in Class 1 walked farther for 6 min than those in Classes 2 and 3. Most of those in Class 4 had cognitive impairment at baseline and the worst TMT Part B scores of all classes.
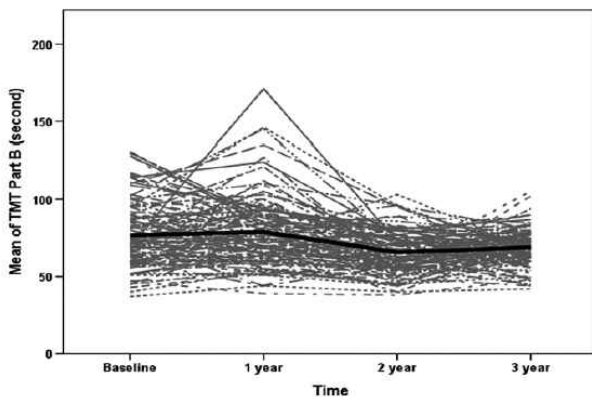
FIGURE 2 Individual trajectories of cognitive function as measured by trail making test Part B for class 1 (*n* = 109)
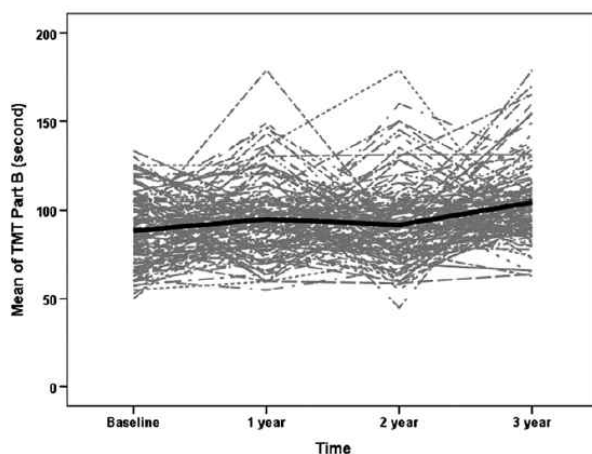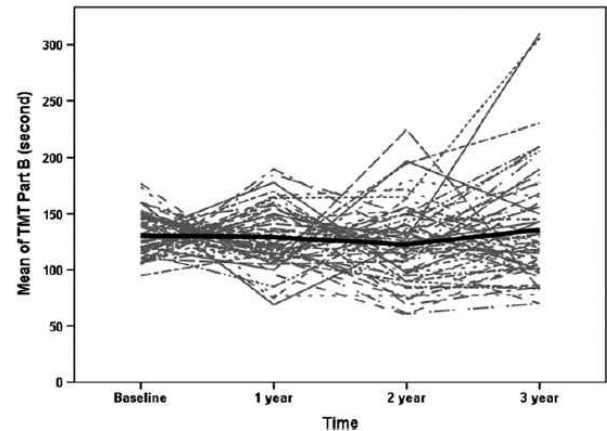

FIGURE 3 Individual trajectories of cognitive function as measured by trail making test Part B for class 2 (*n* = 122)

FIGURE 4 Individual trajectories of cognitive function as measured by trail making test Part B for class 3 (*n* = 56)

FIGURE 5 Individual trajectories of cognitive function as measured by trail making test Part B for class 4 (*n* = 20)

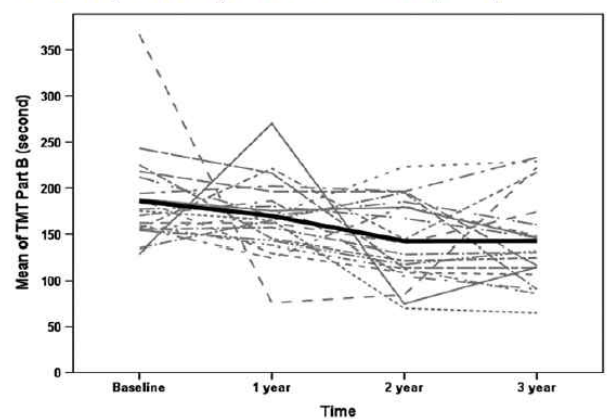## 4.4 Predictors of clusters of combined classes for cognitive function

Four classes were combined into two clusters (one cluster with improving cognitive function over 3 years [Classes 1 and 4] vs. one cluster with worsening cognitive function over 3 years [Classes 2 and, 3]) to examine which factors predicted trajectory of worsening cognitive function over 3 years (Table 5). In unadjusted logistic regression, age, $PaCO_2$, 6-min walk distance, use of oral steroids and activity subscale scores on the SGRQ were significant predictors of worsening cognitive function over 3 years. Variables that showed a p value < .1 in unadjusted models were entered together into an adjusted logistic model. Adjusted logistic regression showed that age, education and 6-min walk distance were significant predictors of worsening cognitive function over 3 years. Those who aged more, had less education and walked shorter distances for 6 min were more likely to have worsening cognitive function over time.

Four classes were again combined into two clust-

ers (one cluster with average TMT Part B scores over 3 years [Classes 1 and 2] vs. one cluster with below-average TMT Part B scores over 3 years [Classes 3 and 4]). Unadjusted and adjusted logistic regressions were then used to determine which factors predicted below-average TMT Part B scores over 3 years (Table 6). In unadjusted logistic regression, age, education, cognitive impairment in TMT Part B scores at baseline, TMT Part B scores at baseline and impacts subscale scores on the SGRQ were significant predictors of below-average cognitive function over 3 years. Variables that showed a p value of <.1 in unadjusted models were entered together into an adjusted logistic model. Adjusted logistic regression showed that age, education and cognitive impairment in TMT Part B scores at baseline were significant predictors of below-average cognitive function over 3 years. Those who aged more, had less education and had cognitive impairment in TMT Part B scores at baseline were more likely to have below-average cognitive function over 3 years.

TABLE 5 Baseline sample characteristics according to improving and worsening cluster; results of unadjusted and adjusted logistic regression

Study variables	Improving cluster (Class 1, 4) (n = 129) Mean ± SD Frequency (%)	Worsening cluster (Class 2, 3) (n = 178) Mean ± SD Frequency (%)	Improving cluster (Class 1, 4) vs. worsening cluster (Class 2, 3) Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Age	65.3 ± 6.1	66.9 ± 5.4	1.05 (1.01–1.09)*	1.06 (1.01–1.11)*
Gender (male)	79 (61.2)	104 (58.4)	0.89 (0.56–1.41)	
Education (more than college)	83 (64.3)	77 (43.3)	0.64 (0.41–1.02)	0.55 (0.32–0.96)*
Income (>$30,000)	68 (52.7)	77 (43.3)	0.67 (0.43–1.08)	
Marital status (married)	83 (64.3)	122 (68.5)	1.21 (0.75–1.95)	
Currently employed	12 (9.3)	18 (10.1)	1.10 (0.51–2.37)	
Pack years	64.1 ± 29.1	63.1 ± 29.7	1.00 (0.99–1.01)	
BMI	25.4 ± 3.7	25.4 ± 3.6	1.00 (0.94–1.06)	
FEV1% pred.	28.6 ± 7.5	28.0 ± 7.5	0.99 (0.96–1.02)	
FEV1/FVC	32.4 ± 6.6	32.4 ± 6.1	1.00 (0.96–1.04)	
DLCO % pred.	30.1 ± 9.4	29.9 ± 10.1	1.00 (0.98–1.02)	
PaO_2 (mmHg) [kPa]	65.2 ± 10.5 [8.7 ± 1.4]	64.0 ± 10.4 [8.5 ± 1.4]	0.99 (0.97–1.01)	
$PaCO_2$ (mmHg) [kPa]	41.3 ± 5.0 [5.5 ± 0.7]	42.7 ± 5.2 [5.7 ± 0.7]	1.06 (1.01–1.11)*	1.04 (0.99–1.01)
Peak workload (watt)	43.8 ± 25.0	40.3 ± 21.9	0.99 (0.98–1.00)	
Six-minute walk distance (feet)	1,261.5 ± 285.6	1,134.3 ± 285.9	0.99 (0.99–0.99)*	0.99 (0.99–1.00)*
Use of oxygen at rest	56 (43.4)	84 (47.2)	1.17 (0.74–1.84)	
Use of oral steroids	26 (20.2)	55 (30.9)	1.77 (1.04–3.02)*	1.33 (0.74–2.38)
Use of inhaled steroids	92 (71.3)	120 (67.4)	0.83 (0.51–1.36)	
Use of antidepressants	19 (14.7)	19 (10.7)	0.69 (0.35–1.37)	
UCSD-SOBQ	59.9 ± 19.2	63.6 ± 19.6	1.01 (1.00–1.02)	
Depression on BDI	9.2 ± 5.6	8.3 ± 6.0	0.97 (0.94–1.01)	
Cognitive impairment in TMT Part B	35 (27.1)	65 (36.5)	1.55 (0.94–2.53)	1.79 (0.98–3.25)
TMT Part B (second)	93.8 ± 48.6	101.7 ± 27.9	1.01 (1.00–1.01)	
SGRQ total	51.2 ± 13.8	53.7 ± 12.4	1.02 (1.00–1.03)	
Symptoms	51.8 ± 20.1	56.2 ± 19.7	1.01 (1.00–1.02)	1.01 (1.00–1.03)
Activity	76.7 ± 13.6	79.8 ± 13.6	1.02 (1.00–1.03)*	1.00 (0.98–1.02)
Impacts	36.4 ± 17.4	38.0 ± 15.5	1.01 (0.99–1.02)	
Surgical group	67 (51.9)	103 (57.9)	1.27 (0.81–2.01)	

BMI, body mass index; BDI, Beck Depression Inventory; CI, confidence interval; DLCO, diffusion capacity of carbon monoxide; FEV1, forced expiratory volume in 1 s; FVC, forced vital capacity; OR, odds ratio; PaO_2, partial pressure of oxygen in arterial blood; $PaCO_2$, partial pressure of carbon dioxide in arterial blood; SGRQ, St. George's Respiratory Questionnaire; TMT, trail making test; UCSD-SOBQ, University of California, San Diego Shortness of Breath Questionnaire.

*p-value < .05.

5. Discussion

Cognitive function has been found to be stable in people with COPD over 3 years. However, four distinct patterns of change in cognitive function have been identified. Age, education and 6-min walk distance were significant predictors of worsening cognitive function over 3 years. Age, education and cognitive impairment based on TMT Part B scores at baseline were significant predictors of below-average cognitive function over 3 years.

Unlike healthy older adults and people with COPD in other studies (Royall et al., 2005; Zhou et al.,

2012), our participants had relatively stable cognitive function, as measured by the TMT Part B, over 3 years. This may be due to the fact that they were younger and had relatively fewer comorbidities than the people with COPD in other studies. Our participants were rigorously screened to exclude those who had a high risk of perioperative morbidity or mortality for lung volume reduction surgery in the original study.

Four distinct patterns of change in cognitive function have been found using GMM analysis for 307 participants, although changes in cognitive function for the total sample were stable over

TABLE 6 Baseline sample characteristics according to average and below-average cluster; results of unadjusted and adjusted logistic regression

Study variables	Average cluster (Class 1, 2) (n = 231) Mean ± SD Frequency (%)	Below-average cluster (Class 3, 4) (n = 76) Mean ± SD Frequency (%)	Average cluster (Class 1, 2) vs. below-average cluster (Class 3, 4) Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Age	65.8 ± 5.8	67.5 ± 5.4	1.06 (1.01–1.11)*	1.06 (1.01–1.12)*
Gender (male)	136 (58.9)	47 (61.8)	1.13 (0.67–1.93)	
Education (more than college)	120 (51.9)	27 (35.5)	0.51 (0.30–0.87)*	0.52 (0.30–0.91)*
Income (>$30,000)	113 (48.9)	32 (42.1)	0.74 (0.44–1.25)	
Marital status (married)	154 (66.7)	51 (67.1)	1.02 (0.59–1.77)	
Currently employed	22 (9.5)	8 (10.5)	1.12 (0.48–2.63)	
Pack years	63.4 ± 27.5	64.0 ± 35.0	1.00 (0.99–1.01)	
BMI	25.5 ± 3.6	25.3 ± 4.0	0.99 (0.92–1.06)	
FEV1% pred.	27.9 ± 7.2	29.4 ± 8.1	1.03 (0.99–1.06)	1.03 (0.99–1.07)
FEV1/FVC	32.3 ± 6.3	32.8 ± 6.3	1.01 (0.97–1.06)	
DLCO % pred.	30.0 ± 9.6	30.0 ± 10.5	1.00 (0.97–1.03)	
PaO_2 (mmHg) [kPa]	64.5 ± 10.8 [8.6 ± 1.4]	64.6 ± 9.3 [8.6 ± 1.2]	1.00 (0.98–1.03)	
$PaCO_2$ (mmHg) [kPa]	42.0 ± 5.2 [5.6 ± 0.7]	42.4 ± 5.0 [5.7 ± 0.7]	1.02 (0.97–1.08)	
Peak workload (watt)	42.2 ± 23.2	40.5 ± 23.7	1.00 (0.99–1.01)	
Six-minute walk distance (feet)	1,198.2 ± 291.6	1,153.3 ± 292.8	1.00 (1.00–1.00)	
Use of oxygen at rest	100 (43.3)	40 (52.6)	1.46 (0.87–2.45)	1.53 (0.87–2.67)
Use of oral steroids	59 (25.5)	22 (28.9)	1.19 (0.67–2.12)	
Use of inhaled steroids	157 (68.0)	55 (72.4)	1.23 (0.70–2.19)	
Use of antidepressants	28 (12.1)	10 (13.2)	1.10 (0.51–2.38)	
UCSD-SOBQ	61.5 ± 19.3	63.7 ± 20.2	1.01 (0.99–1.02)	
Depression on BDI	8.5 ± 5.8	9.1 ± 6.1	1.02 (0.98–1.06)	
Cognitive impairment in TMT Part B	47 (20.3)	53 (69.7)	9.03 (5.03–16.19)*	8.26 (4.52–12.09)*
TMT Part B (second)	83.0 ± 21.4	145.2 ± 39.6	1.12 (1.09–1.15)*	
SGRQ total	52.1 ± 12.8	54.4 ± 13.8	1.01 (0.99–1.03)	
Symptoms	54.1 ± 19.6	55.2 ± 21.0	1.00 (0.99–1.02)	
Activity	78.7 ± 13.5	78.0 ± 14.3	1.00 (0.98–1.02)	
Impacts	36.2 ± 16.1	40.6 ± 16.6	1.02 (1.00–1.03)*	1.06 (0.99–1.03)
Surgical group	123 (53.2)	47 (61.8)	1.42 (0.84–2.42)	

BDI, Beck Depression Inventory; BMI, body mass index; CI, confidence interval; DLCO, diffusion capacity of carbon monoxide; FEV1, forced expiratory volume in 1 s; FVC, forced vital capacity; OR, odds ratio; PaO_2, partial pressure of oxygen in arterial blood; $PaCO_2$, partial pressure of carbon dioxide in arterial blood; SGRQ, St. George's Respiratory Questionnaire; TMT, trail making test; UCSD-SOBQ, University of California, San Diego Shortness of Breath Questionnaire.
*p-value < .05.

3 years: two worsening trajectories and two improving trajectories of cognitive function. This study is among the first to evaluate trajectories of change in cognitive function in people with COPD, using GMM statistical analysis. GMM enables one to examine different homogenous groups of individuals having similar patterns in growth trajectories over time (Nylund et al., 2007). Our finding indicates that changes in cognitive function over time are not uniform in individuals during the chronic disease process. We combined classes to form two sets of clusters: one set of worsening and improving clusters and another set of average and below-average clusters. This finding was inconsistent with studies of people with heart failure (Alosco et al., 2014; Riegel et al., 2012). The heart failure literature reports stable trajectory of change in attention, executive function and processing speed over 6 months to 1 year (Alosco et al., 2014; Riegel et al., 2012). Unlike those studies, we found two worsening trajectories and two improving trajectories of executive function because we followed patients for longer periods of time than studies of patients with heart failure.

Significant predictors of worsening trajectories in cognitive function and below-average cognitive function over 3 years were identified. Age was one such predictor, which is consistent with studies of healthy older adults (Royall et al., 2004), people with

COPD (Liesker et al., 2004) and people with heart failure (Riegel et al., 2012). Our finding offers additional evidence of the significant association between age and cognitive function, because it supports the finding of a cross-sectional study, which found that age was positively cor-related with cognitive function (Liesker et al., 2004) and another study, which found that age was significantly associated with decline in cognitive function over time (Royall et al., 2004). This finding may be due to the fact that people tend to develop comorbid conditions as they age, which affect cognitive function over time. Unfortunately, we did not have information on other comorbidities in our COPD sample that might have affected trajectories of cognitive function over time.

Education was a significant predictor of cognitive decline and below-average cognitive function over 3 years. This finding is consistent with studies of people with heart failure (Riegel et al., 2012). Riegel et al. (2012) found that a low level of education was a significant predictor of below-average processing speed over 6 months. Qiu, B€ackman, Winblad, Ag €uero-Torres, and Fratiglioni (2001) also found that educational attainment was associated with a reduced risk of cognitive impairment in later life. Likewise, our finding supports the moderating effect of education on trajectories of change in cognitive function over time.

Among the variables that affect trajectories of cognitive function over time, only the 6-min walk distance was potentially modifiable. A significant positive association between exercise capacity and cognitive function in people with COPD has been reported in a cross-sectional study (Etnier et al., 1999). This relationship was supported in our study. Our finding suggests that improving exercise capacity may moderate trajectories of cognitive function longitudinally. A recent meta-analysis of randomised controlled trials of certain types of exercises in older adults has shown improvement in cognitive function, especially in reasoning, attention and processing speed(Kelly et al., 2014). Past studies of people with COPD have suggested that short- and long-term exercise interventions improved their cognitive function (Aquino et al., 2016; Etnier & Berry, 2001). Thus, improving exercise capacity in people with COPD may lead to better cognitive trajectories over time and eventually improve their health status.

One of this study's strengths is the use of data from a ran-domised trial with well-characterised people with COPD. This study is the first to examine patterns of change in cognitive function in people with COPD over time, using GMM. The study, however, has limitations. No history of psychiatric or neurologic diseases or other comorbidities was available in our data set, which might influence this study's findings. Because we used only the TMT, which measures one cognitive domain, further study with instruments that cover all domains of cognitive function may be warranted. Generalisation may be limited because the original study's sample was rigorously screened for other risk factors and was severely ill. We analysed cognitive function at four time points and did not control for other variables that might affect trajectories of cognitive function over 3 years. We included 32.6% of the total sample at baseline who had cognitive impairment based on TMT Part B scores. Although this might affect our findings, this variable was controlled in the analysis.

6. CONCLUSION AND RELEVANCE TO CLINICAL PRACTICE

Four distinct patterns of change in cognitive function were identified in the same group. Age, education, 6-min walk distance and cognitive impairment based on TMT Part B test results at baseline were significant predictors of worsening cognitive function and below-average cognitive function over 3 years. Understanding the trajectories of change in cognitive function may suggest that different and individualised approaches are needed to improve cognitive function over time, according to different trajectories of change in cognitive function. Examining predictors of worsening cognitive function over time and below-average cognitive function over 3 years may enable healthcare providers to identify patients at greatest risk of developing mental deterioration and those who would benefit from interventions. For patients with COPD, cognitive abilities, especially executive function, enable them to comply with complicated medication regimens, self-manage their disease and manage comorbidities (Cleutjens et al., 2014; Schillerstrom, Horton, & Royall, 2005). Cognitive impairment often leads to poor compliance with treatment regimens and increases resistance to care, which in turn may cause their health to deteriorate (Dodd, Charlton, van den Broek, & Jones, 2013; Schillerstrom et al., 2005). Thus, healthcare providers should periodically assess and frequently screen people with COPD for cognitive function of over time. This may enable them to detect those with cognitive decline earlier

and to initiate early interventions to prevent cognitive decline. Identifying effective interventions that can improve or delay cognitive decline is critically important. Increasing exercise capacity may improve their cognitive function and delay its deterioration, based on this study's findings. Because mechanisms of cognitive decline in people with COPD are multifactorial (Dodd et al., 2010), further study is warranted to examine the relationship between cognitive change and changes in other associated factors longitudinally. Decline in various subdomains of cognitive function should also be examined in people with COPD.

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CONTRIBUTIONS

Study design: SKP; data analysis: SKP and manuscript preparation: SKP.

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Trajectories of change in cognitive function in people with chronic obstructive pulmonary disease

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Aims and objectives: To describe changes in cognitive function, as measured by the trail making test; to identify distinct patterns of change in cognitive function; and to examine predictors of change in cognitive function in people with severe chronic obstructive pulmonary disease.

Background: How cognitive function changes in people with chronic obstructive pulmonary disease and what factors influence those changes over time is not well known, despite the fact that it declines rapidly in this population and significantly impacts functional decline in healthy older adults.

Design: A secondary analysis and longitudinal study with a follow-up period of 3 years.

Methods: A data set from the National Emphysema Treatment Trial provided participant data. Patients with severe chronic obstructive pulmonary disease (n = 307) were recruited at a clinical site. Several demographic and clinical measures were assessed at baseline. Trail making test scores were measured at baseline, 1, 2 and 3 years.

Results: Cognitive function was stable for 3 years in people with chronic obstructive pulmonary disease. However, four distinct patterns of change in cognitive function were identified. Age, education, 6-min walk distance and cognitive impairment scores at baseline on the trail making test Part B were significant predictors of worsening cognitive function and below-average cognitive function over 3 years.

Conclusions: These findings suggest that increasing exercise capacity improves cognitive function and delays deterioration of cognitive function in people with COPD.

Relevance to clinical practice: Understanding the trajectories of change in cognitive function and predictors of change in cognitive function over 3 years may enable health care providers to identify patients at greatest risk of developing mental deterioration and those who might benefit from interventions to improve cognitive func-tion. Health care providers should periodically assess and frequently screen people with COPD for cognitive function

Keywords: chronic obstructive pulmonary disease; cognitive function; National Emphysema Treatment Trial; trail making testbetic state.

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서론

1. 연구의 필요성

최근 장기요양등급체계가 치매특별 5등급이 신설되어 심신의 기능 상태와 일상생활에서 도움이 얼마나 필요로 하는지에 따라 1-5등급으로 확대 개편됨으로써 노인요양시설에 거주하는 노인의 수는 2008년 장기요양보험제도 도입 시 56,140명이 2017년 170,926명으로 빠르게 증가하고 있다[1]. 이러한 빠른 증가는 평균수명증가에 따른 노인층의 인구유입이 늘어감에 따른 결과이기도 하고, 과거에 비해 확대된 노년기로 인해 노인요양시설에 거주하게 되는 초고령층의 증가로 인한 결과이다[2]. 따라서 길어진 노년기를 관리하는 실무자는 기존의 노인의 신체적 쇠퇴, 사회적 고립, 심리적 부적응과 같은 부정적 측면에서 보다 긍정적 측면을 강조하여, 노인 여생의 삶의 질을 증가시키는 접근이 필요로 되고 있다. 즉 노화는 더 이상 쇠퇴만의 개념을 내포하는 것이 아니라 성장할 수 있다는 긍정적인 관점이 노인 관련 학계에 대두되고 있다[3].

노년기의 긍정적인 측면을 강조하는 관점으로 성공적인 노화(successful aging), 노년초월(gerotranscendence), 자아통합감(ego-integrity)이 대두되고 있는데, 성공적인 노화가 노년기의 건강하고 활동성 있는 상태를 강조하는 것이라면, 죽음까지도 포괄하는 인생주기의 노년기 통합을 의미하는 자아통합감은 건강하지 못하고, 죽음이 임박한 노인도 추구할 수 있는 인생주기 통합의 의미로 인식되고 있다[4,5]. 그리고 노년초월은 자신의 삶에 대하여 주관적으로 인식하는 것으로 현재 삶에 대한 긍정적인

방향으로 나아가게 하는 개별적 관리인 반면[6], 자아통합감은 주변인과의 관계형성에 초점을 두어 간호실무자가 관리해야 하는 특히 생의 마지막을 시설에서 보내게 되는 초고령층 노인의 사회·심리적 적응에서 중요한 의미를 갖고 있기 때문에[5] 구별되어져야 할 필요가 있다.

노인요양시설은 치매, 중풍 등 노인성질환 등으로 심신에 상당한 장애가 발생하여 도움을 필요로 하는 노인을 입소시켜 급식, 요양과 그밖에 일상생활에 필요한 편의 제공을 목적으로 하는 시설을 의미하고[7], 전통적으로 노인요양시설에서의 간호실무자는 거주노인의 신체적 및 인지적 장애를 관리하는 데 초점이 맞추어져 왔었다[8]. 그러나 생의 마지막을 노인요양시설에서 보내는 고령층이 증가하고 시설에서의 여명이 길어지면서, 노인요양시설의 간호 실무는 노인의 사회 · 심리적적응도 중요한 간호업무로 통합하여 관리하여야 한다[9].

현재 장기요양보험제도에서의 간호실무자의 역할은 간호사 또는 간호조무사로 규정하고 있으며[10], 노인요양시설 간호사는 거주노인의 간호계획을 포함한 질병예방 및 처치, 기록보관 및 보고, 의료기관 및 보건조직과의 협조체계 유지, 거주노인의 일상적 건강관리, 부상, 발병 등 긴급사태 발생 시 적절한 조치, 투약, 통증관리를 비롯한 건강관리를 하도록 규정되어 있다[8]. 따라서 간호실무자의 역할은 거주노인과 함께 일상을 같이 하는 것을 전제로 하고 있으며, 간호실무의 질은 거주자와의 관계의 질이 포함됨을 내재하고 있다.

Erikson [11]에 의해서 제기되는 노인의 자아통합감은 노인이 생의 과정을 통해서 성취해야 하는 과제로 그간

의 이전 연구에서 노인의 자아통합감 개념분석[12]부터 노인이 자아통합을 얼마나 성취하고 있는가를 측정하는 도구개발[13], 노인의 자아통합감 자가 평가 사정도구를 활용하여 신체적, 심리적, 사회적 측면의 변수와의 상관관계 연구, 특히 노인 자신의 자아통합감과 영향요인 [14-16]에 대한 연구로 연구되어 왔다.

그러나 자아통합감 관리는 실무자가 어떻게 노인의 자아통합감을 성취시키는데 역할을 수행하는가에 관한 실무적 관점이며, 노인요양시설 거주노인의 자아통합감 관리는 노인요양시설 맥락에서 거주노인의 자아통합감 성취를 위해 실무자는 어떻게 역할을 하는가에 초점이 맞추어져야 하며, 노인요양시설 간호실무지식을 위해 확인하고 개발해야 하는 개념이다. 또한 최근 성공적 노화, 노년초월과 같은 긍정적 개념의 문헌들이 나오기 시작하면서 실무자에 의해 관리되어져야 하는 자아통합감 관리의 개념이 명확하게 정의되어야 한다.

이에 본 연구는 선행 문헌을 분석하고 종합하여 노인요양시설에서 거주노인의 자아통합감 관리 개념을 Walker와 Avant [17]의 개념분석의 틀에 근거하여 체계적인 개념을 분석하고자 한다.

2. 연구목적

본 연구의 목적은 노인요양시설 거주노인 자아통합감 관리의 개념을 Walker와 Avant의 개념분석으로 노인요양시설 거주노인 자아통합감 관리에 대한 명확한 속성 규명으로 개념을 명료화하기 위함이다.

연구방법

문헌조사의 범위는 '노인요양시설', '거주노인', '자아통합감', '관리'에 관한 사전적 정의, 관련된 이론, 간호학에 중점을 두었지만 심리학, 사회복지학, 미술치료학, 원예학 등에서 자아통합감 관리에 관한 연구 내용을 포함하고자 하였다. 국내 문헌 검색의 경우 국회도서관, 한국교육학술정보원 및 한국학술정보, DBpia 등의 학술지와 학위논문 정보를 검색하였고, 국외 문헌은 Pubmed, CINAHL, EmBase, Medline에서 nursing home, nursing home resident, ego-integrity, assessment, intervention, management 등을 주제어로 Erick-son [11]에 의해 자아통합감의 용어가 언급되어 진 1963년부터 2018년까지의 문헌 중 제목과 초록을 확인하여 광범위한 문헌고찰을 통해 자아통합감 관리의 속성과 결과를 분석하고 자아통합감 관리에 대한 작업적 정의를 제시하였다. 1차적으로 총 64편의 논문을 대상으로 분석하였으나 개념적 정의가 명확하지 않은 논문이나 본질적인 의미 탐색이 부적합하

다고 판단한 논문을 제외하여 최종적으로 42편의 논문을 분석 대상으로 선정하였다(Table 1). 노인요양시설에서 거주노인의 자아통합감 관리의 개념적 속성을 확인하기 위해 분석대상의 문헌들을 읽으며 문헌에서 나타나는 개념들의 특징들을 분류하고 확인하였다. 문헌 내 개념의 정의는 명확한 형식으로 제시되지 않으므로 실마리가 될 수 있는 문장들을 찾아 정리하였다. 본 연구에서는 개념분석을 위해 Walker와 Avant [17]의 방법을 적용하였고, 구체적인 과정은 다음과 같다.

- 개념을 선정한다.
- 개념분석의 목적을 설정한다.
- 개념의 모든 사용을 확인한다.
- 정확한 속성을 결정한다.
- 모델 사례를 제시한다.
- 부가 사례(경계 사례, 반대 사례, 연관 사례)를 제시한다.
- 선행 요인과 결과를 확인한다.
- 경험적 준거를 결정한다.

연구결과

1. 개념에 대한 문헌고찰

1) 사전적 정의

노인요양시설에서 거주노인 자아통합감 관리에 대한 사전적 정의를 살펴 본 결과 전체 단어에 대한 정의는 찾을 수 없어 각각의 단어에 대한 정의를 살펴보았다.

'노인요양시설'이란 노인복지법 제34조 노인의료복지시설 1항에 규정된 치매ㆍ중풍 등 노인성 질환 등으로 심신에 상당한 장애가 발생하여 도움을 필요로 하는 노인을 거주시켜 급식, 요양과 그밖에 일상생활에 필요한 편의 제공을 목적으로 하는 시설을 말한다[7].

'거주노인'은 신체적 또는 정신적으로 심한 장애가 있어 상시 요양보호서비스가 요구된다. 2008년 7월 노인 장기 요양보험제도 시행에 따라 신체 및 인지 등의 손상 기능 정도를 1~3등급으로 구분하였고, 2014년부터는 치매특별 5등급이 신설됨에 따라 심신의 기능 상태와 일상생활에서 도움이 얼마나 필요로 하는지에 따라 1~5등급으로 분류하여 타인의 도움이 필요한 치매, 중풍, 파킨슨 등 노인성 질환을 앓고 있는 대상자이다[18].

'자아통합감 관리'에 대하여 국립국어원 표준국어대사전[19]에서는 '자아통합'이라는 개념은 '자아의 하부구조와 기능이 하나의 전체로서 동일된 목표를 성취하는 방향으로 균형과 조화를 이루고 있는 상태'를 일컫는 말로 이를 자아와 통합을 구분하여 각각의 의미를 고찰하였을 때, '자아'의 사전적 의미는 '자기 자신에 대한 의식이나 관념,

대상의 세계와 구별된 인식으로 행위의 주체이고, 체험내용이 변화해도 동일성을 지속하여 작용, 반응, 체험, 사고, 의욕의 작용을 하는 의식의 통일체'이며, '통합'은 '여러 요소들이 조직되어 하나의 전체를 이루는 것'이라는 의미로도 사용되고 있다. 또한 '관리'라는 말은 '어떤 일을 맡아 처리하는 것, 시설이나 물건의 유지, 개량 따위의 일을 맡아 하는 것, 사람을 통제하고 지휘하며 감독하는 것' 즉 '수준 및 능력을 사정하여 이에 대한 중재와 감독을 제공하는 것'으로 정의되고 있다. 따라서 '자아통합감 관리'라는 것은 '자아의 하부구조와 기능이 하나의 전체로서 동일된 목표를 성취하는 방향으로 균형과 조화를 이루고 있는 상태를 이룰 수 있도록 수준 및 능력을 사정하여 이에 대한 중재와 감독을 제공하는 것'이라고 정의내릴 수 있다.

2) 개념의 사용범위

(1) 간호문헌에서의 개념사용

간호학에서는 노인요양시설 자아통합감 관리는 거주노인의 삶의 질을 향상시킬 수 있는 중요한 영역으로 제시되고 있다[20]. Lim 등[9]의 연구에서 노인요양시설 거주노인의 자아통합감은 잔존기능 관리와 연관이 있다. 거주노인 잔존기능 관리는 신체적, 정신적, 사회적 요구의 사정이 주요 관점이 되며, 그 중 주변인과의 조화로운 관계, 자기실현 요구, 영적 요구는 자아통합감 실현과 연계된다. 특히 노인요양시설에서의 영적 요구는 노인의 임종까지 관리하는 임종간호가 시설간호에 포함되기 때문이다. 간호학에서는 영적 안녕이 중요한 관점이며, 죽음에 임하는 순간까지 영적 기능에 초점을 두어 평화로운 죽음을 맞게 하는 부분이 포함되어 있고, 이는 노인의 자아통합감 과업수행의 한 부분이 된다[9,21,22].

그리고 노인요양시설 간호실무자들이 인지하는 거주노인의 자아통합감 성취에 대한 연구[5]에서는 노인요양시설 거주노인의 타인에 대한 배려하는 마음, 긍정적 수용반응, 삶을 즐기는 행동, 주변인과의 긍정적 관계 형성을 통해 실무자는 거주노인의 자아통합감 성취정도를 인지하는 것으로 나타났다. 또한 노인요양시설에서 간호실무자와 거주노인 간의 좋은 상호작용이 거주노인에게 어려운 문제 등을 표현하는데 큰 영향을 끼치므로, 거주노인과 간호실무자의 관계를 증진시키기 위한 전략들이 요구되며, 거주노인과 가족과의 관계를 증진시키기 위한 전략도 중요하다고 하였다[23]. 노인요양시설 환경관리 측면에서도 집과 같은 인테리어, 향수를 찾는 음악은 치매거주노인에게 문제행동을 감소시키는 것으로 보고된다[24]. 이렇듯 타학문에서는 노인 스스로 자신의 자아통합감 성취를 연구하거나 노인요양시설에서 거주노인의 자아통합감 증진을 위한 중재 연구가 대부분인 반면, 간호학에서는

노인요양시설 간호실무자가 거주노인의 자아통합감 성취를 위한 관리 연구가 지속되고 있는 실정이다.

(2) 타 학문에서의 개념사용

심리학과 사회복지학에서는 Erikson [11]의 심리사회발달이론에서 마지막 단계인 노년기를 자아통합감 대 절망이라는 발달과제로 제시하였다. 자아통합감이란 성공과 실패에 순응하면서 이전의 단계를 성공적으로 거쳐 온 사람들이 거둘 수 있는 인생의 결실이며, 통합성, 일관성, 만족감으로 그 속에서 지혜를 얻게 된다[16]. 이를 통해 과거, 현재, 미래의 질서와 자신의 생의 의미를 깨닫게 되며 이 단계에서 중요한 심리적 자원으로 개인이 나는 무엇을 다르게 해야 했는지, 할 수 있었는지 후회 없이 살아온 인생을 받아들이는 것과 완벽하지는 않지만 최선을 다했으며 사랑할 가치가 있고 다가오는 죽음을 받아들이는 것을 포함한다[25]. 이처럼 심리학과 사회복지학에서는 노년기의 성공적인 적응의 결과로, 일생을 후회 없이 수용하고 현재생활에 만족하며 과거, 현재, 미래 간에 조화된 견해를 가지고 궁극적으로 죽음에 대한 공포가 없는 상태로서 심리적 안녕상태를 반영하는 일반적이고 포괄적인 개념으로 제시되는 Erikson [11]의 개념과 크게 다르지 않음을 확인할 수 있었다.

또한 노인요양시설에서의 거주노인을 위한 자아통합감 관련 관리적 측면에서는 안전한 환경관리를 통한 노인요양시설 구성에 초점을 두며[26], 거주노인의 신체적, 심리적, 사회적 영역뿐만 아니라 영적인 영역까지도 고려한 통합적 사정과 거주노인들의 맞춤형 중재가 필요함을 강조하였다[15].

그리고 미술치료학과 원예학에서는 노인요양시설 거주노인의 자아통합감 증진을 위한 중재로 미술요법과 원예요법이 필요하며, 이러한 중재를 통해 노인요양시설 거주노인의 심리적 안정, 대인관계 능력, 생활에 대한 만족도를 증가시키고, 생에 대한 태도를 긍정적으로 바꾸어 주며, 지나온 일생에 대해서도 수용할 수 있는 능력을 키워준 것으로 나타났다. 또한 성취감이 있어 자신감과 자부심이 증가하면서 불안과 우울증 감소, 자아존중감의 증가, 죽음에 대한 수용 능력도 증가시키는 효과가 있는 것으로 나타나 자아통합감 관리 측면에서의 중재에 초점을 두고 있다[27-29].

2. 노인요양시설에서 거주노인 자아통합감 관리의 잠정적 기준 목록과 속성

노인요양시설에서의 거주노인 자아통합감 관리 개념이 사용되고 있는 다양한 범위의 문헌을 고찰한 결과 다음의 잠정적인 기준 목록과 속성을 확인하였다.

Table 1. Ego-Integrity Management in Literature Review

Author (year)	Conceptual attributes
Torges CM, Stewart AJ & Duncan LE (2008)	In order to allow the residents who suffer from health issues and withering to take benefits from an integrity life, we must first assist increasing their willingness to achieve ego integrity through systematic assessment and individualized intervention
Brandburg GL et al. (2013)	It's crucial to improve the quality of life of the residents through analyzing and managing their physical, mental and social status and interacting with them accordingly
Lim SY et al. (2014)	Harmonious relationships with other residents, will for self-actualization, and spiritual needs required when actualizing and utilizing ego integrity, palliative care needed in a nursing home
Ali WGM & Ayoub NS (2010)	Important spiritual peace, acceptance of a peaceful death is a phase of ego integrity actualization for the residents
Vitale SA et al. (2014)	The quality of the relationship with resident's family and transcendent thoughts affect the residents in actualizing ego integrity leading to successful aging - a significant role for the nurses
Lim SY & Chang SO (2018)	Identifying clues to residents' positive acceptance of their whole life span, identifying residents' ways of enjoying their current life, referencing residents' attitudes and competencies toward harmonious relationships, and identifying residents' integrated efforts to establish self-esteem
Chao SY et al. (2008)	Enhance ego integrity by resolving residents' issues from the past through reminiscence therapy assessment
Hazen TM (1997)	Horticulture therapy to increase social skills and contentedness with life creating a positive attitude towards life and helping the residents to accept their past confidently, crucial assessment for ego integrity
McGuire DL (1997)	Horticulture as an achievement increasing confidence, self-respect, decreasing depression and helping residents to accept their aging and death
Cohen-Mansfield J et al. (2010)	Art therapy helps the residents to increase their self-respect and gives meanings to their life, decreasing depression and anxiety
Jung HY (2014)	Self-control on morality and willingness of the residents is essential as an assessment for ego integrity
Jang HS (2013)	Assessment of human relationships of the residents including the relationships between family and other residents having a significant impact on contentedness of life and ego integrity
Lee HJ & Song EH (2012)	Human relationship is an important perimeter for successful aging, support from family and maintaining friendship are an assessment of ego integrity
Seong KO (2016)	Contentedness of life and self-completeness, consistence, satisfaction, determination for life by determining whether success or failure are consideered the key point to obtain wisdom of life
Byeon HS (2005)	Adaptation for change of lifestyle, pursuit of a new ideal self or acting as the ideal self accordingly is a sign of self actualization
Byeon HJ & Lee YY (2016)	The past life and ideal self of the residents, as meaningful and valuable existence, is used to judge the ego integrity
Choi MA (2016)	As an essential element of achieving ego integrity, gratitude helps the residents to obtain mental peace and self-respect while decreasing depression and resistance to accepting the past, as well as finding positive meanings in negative situations
Jang IH & Choi SJ (2004)	Positive resilience to the mistakes of their past life, the virtue and wisdom of letting go, acceptance of the reality and death with ease
Fan MY & Young Y (2002)	Relationships increasing ego integrity of the residents: positive interaction with nurses, frequent family visits
Krause N & Borawski-Clark E (1995)	Family provides economic, mental and practical aids to the residents, frequent family visits determine the contentedness and peace of life and ego integrity of the residents

Table 1. Ego-Integrity Management in Literature Review (Continued)

Author (year)	Conceptual attributes
Jo KH & Lee HJ (2011)	Acceptance of both past life and death is essential in ego integrity
Aleksandrova YS & Have HT (2013)	Preparation for the process of ego integrity actualization and positive acceptance of death: reflections and a positive attitude toward life, important management for a positive death
Kim SJ et al. (2014)	Job requirements for the nurses in a nursing home: palliative care, assistance to the residents to actualization ego integrity determines whether the residents can achieve a peaceful death
Shim JJ (2015)	Attitude towards death: positive acceptance of death
Kim KS (2012)	Assessment of a positive attitude towards death achieved by accepting the past, finding meaning during the process of accepting the reality as what the residents want is essential
Santor DA & Zuroff DC (1994)	Critical element for ego integrity: positive acceptance of the past or content with the past
Kim JA (2012)	Viewpoint on assessment of physical dimensions of residents by staff members in a nursing home: assessment for signs of remaining functions, change of food consumption and appetite, ADL, number of chronic conditions, health status and minimum effort for personal activities are considered
Kayser-Jones J & Schell E (1997)	Nurses should only provide basic assistance to residents when having meals, provide gentle orders when residents can't understand and allow the residents to eat by themselves
Kim HJ (2016)	Residents should not keep lying in bed in the same position, and become unable to utilize their remained functions to the fullest when lying in bed
Boltz M et al. (2011)	Regulations responsible for assisting the residents to achieve their best condition, care focused on function management
Resnick B et al. (2007)	Restorative care, the nurses evaluate the restoration of the residents
Park CH (2010)	The most important factor in a nursing home: providing a home-like convenient and safety environment
Yoo YS (2009)	Providing a home-like facility suitable for health status, a safe environment sustainable for physical and mental peace leading to a daily life of convenience
Seong KW (2005)	Management required when resistance by residents to living in a nursing home shows their difficulty in adapting to living in the facility
Amella EJ, Grant AP & Mulloy C (2008)	Management in a nursing home requires home-like environment with conveniences and music reminding the elders of good memories requires and, leads to reduction in problem behaviors
Hick-Moore SL (2005)	Home-like interior, music reminders of home town of the residents reduces problem behaviors of residents with dementia
Jang HS et al. (2011)	Efficient personnel to provide care and relative service to the residents achieving physical, mental and social peace, knowledge and skills required for working in a nursing home, equipment and guidelines for safety in a nursing home are required
Oh EJ (2000)	Consideration of individual differences in physical and mental ability of residents, management required according to physical and mental deterioration
Shin DM (2013)	Assessment required not only for physical, mental and social aspects, but also for the spiritual dimension, assessment appropriate to different situations and needs
Kim JC (2016)	Important mental support: acceptance of a life without regret, a life lived to the fullest, acceptance of death
Kim HS & Hwang HW (2018)	Old age psychosocial adjustment is a factor that has a great influence on ego-integrity and gerotranscendence, A high ego-integrity of integration contributes to heightening the gerotranscendence
Wadensten B (2010)	Life reviews and thoughts about residents lives, Managing residents in a holistic and individualized way for the gerotranscendence of the residents

1) 노인요양시설에서 거주노인 자아통합감 관리의 잠정적 기준목록

① 건강하지 못하고, 죽음이 임박한 거주노인도 추구할 수 있는 과거, 현재, 미래 간에 조화된 인생주기 통합을 위해 체계적인 사정과 개별화된 중재를 통해 거주노인이자아통합감을 성취하도록 도와야 한다[4,20].

② 거주노인의 삶의 질을 향상시킬 수 있는 중요한 영역으로 인생의 종말까지도 초월적인 생각을 가질 수 있도록삶과 죽음의 연장선에서 죽음을 객관화하여 수용할 수있도록 유도하는 것은 간호실무자의 중요한 역할을 말한다[21,22].

③ 집과 같은 편안함을 주며 가정적이며 건강상태에 적합한 노인요양시설의 안전한 환경관리는 거주노인에게 신체적, 심리적으로 안녕을 도모한다[24,26].

④ 노인요양시설에서는 거주노인의 최상의 기능 상태에 도달하고 유지하는 책임을 갖도록 기능관리에 초점을 두고 사회·심리적 잔존기능을 활용하는 것이 중요하다[30].

⑤ 거주노인을 방문하는 다양한 사람들을 보면서 평소에도 주변인과의 관계를 잘 형성한 분으로 판단하여, 인생과정을 통한 인간관계를 잘 다져나가는 것을 사정하는 것이다[5].

⑥ 원만한 가족지지가 거주노인의 삶의 질, 성공적 노후생활을 결정하는 주요한 변수이므로 가족과의 의미 있는 관계 수립을 위해 간호실무자가 지속적인 연결을 도와주는 것이다[23].

⑦ 개별화된 접근으로 간호전략에 따른 거주노인의 남아있는 동작 및 기능에 대해서 충분히 본인 스스로 사용할 수 있는 중재를 제공하는 것이다[9].

⑧ 노인요양시설에서 거주노인의 회상요법, 미술요법, 원예요법과 같은 자아통합감을 증진시키는 중재는 거주노인의 삶의 연속선상에서 과거의 미해결 문제들을 해결해주고, 생에 대한 태도를 바꾸어 주며, 삶에 대한 의미를 부여해 주기 때문에 간호실무자의 효과적인 전략이 중요하다[27,28].

⑨ 거주노인 자신의 삶의 유의미성과 중요성을 느끼도록관리하고, 상실감을 받아들이도록 도움을 주는 영적안녕이 중요하므로 거주노인들이 지니고 있는 영적욕구의사정에 따른 영적안정 도모가 중요하다[6,15].

2) 노인요양시설에서 거주노인 자아통합감 관리 속성 확인

노인요양시설에서 거주노인 자아통합감 관리에 대한 문헌을 고찰한 결과 자아통합감 관리는 '노인요양시설에서 간호실무자가 거주노인 인생 여정의 관점과 주변인과의 관계형성의 질을 사정하고 죽음을 객관화하여 긍정적인 노인 초월적 인식을 수용하도록 유도하며 사회·심리적 잔존기능을 최대한 활용할 수 있는 중재를 통해 거주노인이 자아통합감을 최대한 성취하도록 돕는 것'으로 확인되었다. 따라서 본 연구에서 확인된 노인요양시설에서의 자아통합감 관리는 사정영역과 중재영역으로 구분된다. 노인요양시설에서의 자아통합감 관리의 사정과 중재 영역별 속성은 다음과 같다.

● 사정:
(1) 거주노인 인생 여정의 관점사정: ①,⑧
(2) 거주노인의 주변인과의 관계형성의 질 사정: ⑤,⑥
● 중재:
(1) 거주노인의 초월적 인식 수용 유도: ②,⑨
(2) 거주노인의 사회·심리적 잔존기능의 활용을 조력: ③,④,⑦

3. 개념의 모델 사례 구성

모델 사례란 연구자가 분석하고자 하는 개념의 중요한 속성을 모두 포함하는 예를 말하며[17], 그 개념을 정확하게 사용할 수 있도록 개념의 필수양상이 무엇인지를 보여주는 것이다. 본 연구를 통해 도출된 노인요양시설에서 자아통합감 관리의 4가지 주요 속성에 근거하여 모델 사례를 다음과 같이 구성하였다.

노인요양시설 간호사 K씨는 거주노인들과 웃음 치료 프로그램을 진행하고 있다. 항상 활발하고 적극적으로 어울리는 할머니가 있는 반면에, 옆에 앉은 할머니의 등 마사지를 하는 동작에서도 소심한 동작을 하는 할머니도 관찰하고 있다(사정 2). 성격이 소심해서 주변 거주노인들과 잘 어울리지 못하는 소극적인 거주노인들도 있지만, 신체적 기능 상태 장애로 동작에 제한을 받는 거주노인들이 많기 때문에 프로그램을 진행하면서 거주노인들에게 남아있는 동작이나 신체적 기능을 최대한 스스로 할 수 있도록 충분한 시간을 주는 동작을 프로그램에 많이 활용하고 있다(중재 2). 다음날은 거주노인들과의 회상요법 시간이다. 지나간 과거를 회상하면서 거주노인들로 하여금 자신이 경험한 과거 사건들은 어떠했는지(사정 1) 그 중 긍정적이고 유쾌한 경험을 기억해내어 다른 거주노인들과 이야기를 통해 생의 의미 발견을 해주기 위해 노력하고 있다. 그러나 과거 삶에 대해 부정적인 이야기만 하는 거주노인들이 계시는데 같이 이야기를 공유하는 긍정적인 거주노인들의 이야기가 많다보면 계속 부정적인 일만 이야기하다가 결국엔 좋은 일 한가지씩은 나오니깐 이렇게 좋은 일도 있었는데 이런 좋은 일을 더 많이 기억하고 되뇌이면 남은 생이 더 좋은 일만 가득하고

죽음에 대해서도 의연해 질 수 있다고 마무리를 해 준다(중재 1). 또한 간호사 K씨는 노인요양시설에 일주일에 두 번 오셔서 성경을 동화처럼 이야기 해주시는 목사님을 손꼽아 기다리는 거주노인분들의 마음을 잘 헤아려 많은 분들이 참여하도록 하며, 식사 시에도 테이블마다 기도하는 시간을 가지려고 하고 찬송가를 흥얼거리기는 것을 좋아하시는 분은 요양보호사님께 같이 해달라고 해서 쉬운 찬송가를 같이 부르고 같이 흥얼거리도록 항상 교육한다(중재 2).

4. 개념의 부가 사례들

다음 사례들은 경계 사례, 반대 사례, 연관 사례들로 어떠한 이유로 모델 사례가 될 수 없는가를 보여줌으로써 노인요양시설에서 자아통합감 관리의 속성을 보다 명확히 하고자 하였다.

1) 경계 사례

경계 사례는 모델 사례에서 제시된 개념에 관한 모든 속성을 전부 포함하지 않으나 일부 중요한 속성을 포함하는 사례를 말한다[17]. 본 사례는 노인요양시설에서 자아통합감 관리의 속성 중 중재영역의(1),(2)만 포함된 경계사례이다.

간호사 L씨는 매일 같은 방에 와상으로 나란히 누워있는 할머니 두 분을 서로 마주보고 웃도록 하고 있다. 혼자 웃는 것이 아니라 함께 웃는 것이 이왕이면 행복한 관계 형성이기 때문에 이 와상 노인분들에게는 이 웃음 한번이 어울림에 해당 될 수 있다. 노인요양시설에 누워만 있다고 관계형성이 아예 없어진다고 생각하게 하면 더 우울해지고 외롭기 때문이다. 또한 가족과도 지속적인 연계를 위해 노력하고 있다. "할머니, 아드님이 비싼 한약 보냈는데 잘 드셔야 해요! 우리는 자녀분 대신 제일 잘 모시는 분들이니 서운해 하지 마시고 잘 생활해야 되요! 자녀분들이 꼭 물리치료 받으라고 했어요!"라고 거주노인들에게 우리는 가족 대신이라는 것을 항상 인지시켜 주고 있으며 그간의 지낸 이야기나 이벤트를 가족들이 오면 일일이 이야기를 해 주고 있다. 여기에서는 가족들이 같이 살지 않지만 가족이 관심이 계속 있다는 것을 지속적으로 연결해 주고 있다(중재 1). 간호사 L씨는 요양보호사들에게 항상 식사시간에 거주노인들이 직접 수저를 최대한 사용할 수 있도록 교육하고, 식사 시간에 직접 라운딩을 하면서 관찰하며, 수저를 손에 맞춰서 구부려주어 거주노인이 떠먹을 수 있는 정도를 관찰하고 격려한다. 그리고 손으로 할 수 있는 자잘한 것들을 라운딩할 때마다 하루에 한가지씩은 시범을 보이고 거주노인들이 하도록 한다. 리모콘으로 채널을 돌려보도록 하고, 가

위바위보로 내기해서 부채로 10번씩 부쳐주는 것, 거주노인 주위는 직접 치우도록 물티슈를 쥐어주는 것 등 최대한 직접 손으로 할 수 있는 기능을 끝까지 유지하도록 하는 중이다(중재 2).

2) 반대 사례

반대 사례는 연구자가 분석하고자 하는 개념의 속성이 전혀 나타나지 않고 오히려 반대되는 속성으로 제시되는 사례를 말한다. 반대사례를 제시함으로써 연구자가 설명하고자 하는 개념의 속성들을 분명히 이해시키고 명확하게 할 수 있다[17]. 본 사례는 노인요양시설에서 자아통합감 관리 속성이 포함되지 않아 반대사례에 해당된다.

간호사 C씨는 근무일과 중 다른 일이 너무 바빠 201호에 계시는 할머니 두 분의 산책을 시켜야 하는데 다음 근무자가 올 시간이 임박해지고 있어 요양보호사에게 빨리 식사를 마치고 휠체어로 산책을 5분만 시키고 오라고 지시하고 있다. 할머니 두 분은 수저사용을 할 수 있지만 시간이 촉박하다는 핑계로 요양보호사들에게 빨리 떠먹여주라고 한다. 그리고 부축해주면 워커로 천천히 걸을 수 있음에도 요양보호사에게 들어서 휠체어에 앉혀 빨리 한 바퀴 돌고 오라고 하는 중이다. 인계 전 마지막 라운딩을 하는데 항상 불평불만이 많은 할아버지가 그 날도 어김없이 짜증만 내고 부정적인 말만 내뱉으니 간호사 C씨는 그냥 무시하고 다른 방으로 들어간다.

3) 연관 사례

연관 사례는 분석하고자 하는 개념의 중요 속성이 포함되지 않는 사례를 말한다. 분석하고자 하는 개념 간에는 유사한 관계가 있지만 분석하고자 하는 결정적 속성과는 차이가 있기에 개념분석에 있어 다른 의미를 가진다[17].

간호사 E씨는 금일 노인요양시설에서 가장 비싼 1인실로 입원한 88세 김할머니와 이야기를 나누고 있다. 비록 입원은 집안 운전사와 가사도우미가 시켜주었으나, 간호정보력을 살펴보니 할머니는 모여대 약학과를 나와 약국을 운영하셨고, 의사인 남편은 5년 전 별세하였다. 가족으로는 같이 살지 않지만 국회의원 아들과 대학교 교수인 딸이 있다. E 간호사는 "할머니 집이 굉장히 부유하셨나 봐요. 그 시대에 대학교 나오시고 의사인 남편과 자녀들도 너무 훌륭하게 잘 키우셨네요. 그러니 이런 호화로운 1인실로 입원하셨죠. 할머니는 아무런 어려움 없이 탄탄대로인 성공적인 삶을 사셨네요. 이곳에서 이렇게 돈 많으신 분은 할머니 밖에 없어요."

5. 노인요양시설에서 거주노인 자아통합감 관리 개념의 선행요인과 결과

선행요인은 개념의 발생 전(antecedent)에 일어나야만 하는 사건이나 일들을 말하며, 결과는 그 개념의 결과로 발생하는 일이나 사건들을 의미한다. 따라서 개념의 선행요인과 결과를 결정하면 그 개념의 속성을 더욱 명확하게 분석하는 데 도움이 된다[17].

노인요양시설에서 거주노인 자아통합감 관리의 선행요인으로는 다음과 같은 것들이 있다.
- 노인요양시설에서 여생을 보내는 입소기간이 길어짐
- 노인장기요양보호법에서 간호사 역할 대두
- 사회가 부정적 측면에서 보다 긍정적 측면을 강조하며 노인의 삶의 질을 증가시키는 접근이 필요함을 인식
- 간호실무자와 거주노인과의 긴밀한 관계성: 심리사회적 적응 관리

다음으로 바람직한 노인요양시설에서 거주노인 자아통합감 관리의 결과로 다음과 같은 것들이 있다(Figure 1).
- 거주노인의 삶의 질 향상
- 우울감소, 문제행동 감소
- 노년 초월
- 간호사를 포함한 주변인과의 긍정적 관계 형성

6. 경험적 준거

개념분석의 마지막 단계인 경험적 준거는 개념의 속성이 실제 현장에서 존재함을 보여주는 것이다. 개념이 추상적일때 그 개념이 실제 현장에서 구체적으로 관찰할 수 있고 측정할 수 있는 지시물 또는 참조물이 있어야 한다. 실제 현장의 구체적인 지적을 통해 그 개념이 존재한다는 것을 확인하게 해 주고, 한 개념이 가진 관찰 할 수 있는 특성을 지적하는 것은 언어를 사실에 연결 짓게 하므로 그 뜻을 정확하게 전달해 준다[17]. 본 연구에서의 경험적 준거는 노인요양시설 간호실무자측면과 거주노인 측면으로 구분할 수 있다. 노인요양시설 간호실무자인 간호사가 거주노인 자아통합감 관리를 수행한 결과, 노인요양시설 간호사는 노인의 삶에 대한 적극적이고 긍정적인 회상을 격려하는 것, 노인요양시설 간호사는 거주노인과의 친밀한 관계를 통해 거주노인의 정신·사회·심리적 긍정적 상태 변화를 따라가며 격려한다는 것, 그리고 거주노인이 남은 삶의 과정을 통합하여 통합된 시각을 갖도록 하는 것이라고 할 수 있다[4,5,9,20]. 즉 간호실무자측면에서의 노인의 자아통합감 관리 준거는 1) 거주노인의

삶에 대한 긍정적 회상을 격려한다, 2) 거주노인의 정신·사회·심리적 긍정적 변화상태를 격려한다. 반면, 거주노인의 측면에서 자아통합감 관리를 통해 자아통합감을 성취한 결과 통합된 시각을 갖게 되는 경험적 준거는 노인의 자아통합감 성취 개념개발을 연구한 Chang 등[12,13]의 연구에서 제시된 자아통합감을 이룬 노인의 경험적 준거, 즉 1) 지금의 삶에 만족한다, 2) 타인과 관계에서 친밀감을 느낀다, 3) 살아온 여건에 감사한다, 4) 생에 대한 가치감을 느낀다, 5) 죽음에 대해 초연하다, 6) 살아온 삶을 수용한다가 될 수 있다.

논의

최근 노년기의 긍정적인 측면을 강조하는 관점으로 성공적인 노화, 노년초월, 자아통합감이 대두되고 있다. 먼저 성공적인 노화는 지역사회에서 질병과 장애가 없고, 신체적 기능과 인지적 기능을 유지할 수 있는 건강하고 활동성 높은 노인을 대상으로 사회·심리적 통합의 관리를 하고 있다[3]. 또한 노년초월은 노인 자신의 삶에 대해 긍정적인 방향으로 나아가게 하는 주관적 인식이자, 성인기 중반이후에 나타나는 발달적인 과정으로, 노인이 되면서 최고조로 발달하게 되며 노인 자신의 개인적 평화로움과 관련되는 개별관리에 초점을 두는 것이다[6]. 그러나 죽음까지도 포괄하는 인생주기의 노년기 통합을 의미하는 자아통합감은 건강하지 못하고, 죽음이 임박한 노인도 추구할 수 있는 인생주기 통합의 의미로 인식되고 있으며, 주변인과의 관계형성에 초점을 두어 삶의 마지막까지 성숙하고 조화로운 삶을 지향하는 자아통합감 관리가 간호실무자 역할의 한 기능이 되며, 노인요양시설에서의 자아통합감 관리 현상은 간호실무내용 구성, 중재의 연속성 및 중재효과의 확인을 위해서 명확히 규명되어야 하는 영역으로 거주노인의 사회·심리적 적응관리에서 중요한 의미를 갖고 있다[4,5,9].

본 연구는 이러한 긍정적 측면에서의 개념들을 구별하고자 노인요양시설 거주노인 자아통합감 관리의 개념을 파악하고 명확히 하는 데 도움을 주는 Walker와 Avant[17]의 방법을 사용하여 국내에서는 처음으로 개념을 분석하였다는데 의의가 있다. 또한 본 연구에서 자아통합감 관리는 실무자가 어떻게 노인의 자아통합감을 성취시키는데 역할을 수행하는가에 관한 실무적 관점이며, 노인요양시설 거주노인의 자아통합감 관리는 노인요양시설 맥락에서 거주노인의 자아통합감 성취를 위해 실무자는 어떻게 역할을 하는가에 초점이 맞추어지므로, 노인요양시설에서 활용할 수 있는 거주노인의 자아통합감 사정과 중재 가이드라인 개발에 기여할 수 있을 것으로 사료된다.

Figure 1. Concept analysis of ego-integrity management in nursing home.

본 연구의 개념은 노인요양시설에서의 자아통합감 관리이며, Erikson [11]이 제시한 개념은 노인의 심리사회적 성공적인 적응으로써의 자아통합감이다. 본 연구의 개념분석은 노인요양시설 간호실무자가 수행하는 자아통합감 관리의 측면이며, Erikson이 제시한 자아통합감은 인생주기에서 노년기에 노인이 스스로 성취하는 성공적 사회·심리적 적응 현상을 지칭한 것이다. 본 연구의 자아통합감 관리는 간호실무자에 의해서 의도적으로 구성되는 사정과 중재의 관점이며, Erikson의 자아통합감은 노년기 노인이 스스로 구성하는 적응상태로 본 연구 개념과 Erikson의 자아통합감은 접근방면에서 다른 관점을 취한다. 그러나 Erikson의 자아통합감을 노년기 대상자를 돌보는 노인요양시설에서 노인의 심리사회적 적응에 대한 간호의 달성목표로 하여 이를 위해 간호실무자가 적극적으로 사정하고 중재하는 간호의 한 영역으로써 자아통합감 관리의 현상을 개념분석으로 규명하고자 한 것은 실무적인 관점에서 의의를 갖는다고 볼 수 있다.

본 연구는 노인요양시설에서 거주노인 자아통합감 관리의 개념을 명확히 파악하여 속성을 추출하였다. 연구결과 노인요양시설 거주노인 자아통합감 관리는 '노인요양시설에서 간호실무자가 거주노인 인생 여정의 관점과 주변인과의 관계형성의 질을 사정하고 죽음을 객관화하여 긍정적인 노인 초월적 인식을 수용하도록 유도하며 사회·심리적 잔존기능을 최대한 활용할 수 있는 중재를 통해 거주노인이 자아통합감을 최대한 성취하도록 돕는 것'으로 확인되었다. 따라서 본 연구에서 확인된 개념적 특징은 노인요양시설에서의 자아통합감 관리는 간호실무자의 사정영역과 중재영역으로 구분되는 것을 알 수 있었다.

노인요양시설 거주노인 자아통합감 관리는 간호실무자의 객관적 관찰을 통해 거주노인의 자아통합감을 사정하고 중재를 계획하여 수행하는 일련의 과정으로, 이를 통해 간호실무자는 거주노인의 신체적, 정신적, 사회 심리적 상태를 더 잘 파악할 수 있으며 거주노인의 개별화 된 맞춤형 중재를 할 수 있는 자아통합감을 관리하는 업무

에 핵심적인 역할을 수행할 수 있고, 거주노인은 마지막 생애 단계의 삶의 질을 향상시킬 수 있겠다[5,9].

결론

본 연구는 Walker와 Avant의 방법을 이용한 개념분석 연구로, 분석결과 노인요양시설 거주노인 자아통합감 관리는 노인요양시설에서 간호실무자가 거주노인 인생 여정의 관점과 주변인과의 관계형성의 질을 사정하고 죽음을 객관화하여 긍정적인 노인 초월적 인식을 수용하도록 유도하며 사회·심리적 잔존기능을 최대한 활용할 수 있는 중재를 통해 거주노인이 자아통합감을 최대한 성취하도록 돕는 것이다.

본 연구를 통해 밝혀진 노인요양시설 거주노인 자아통합감 관리의 속성은 간호실무자의 사정영역과 중재영역으로 구분된다. 사정영역에서는 첫째, 거주노인 인생 여정의 관점 사정, 둘째 거주노인의 주변인과의 관계형성의 질 사정이며, 중재영역에서는 첫째 거주노인의 초월적 인식 수용 유도, 둘째 거주노인의 사회·심리적 잔존기능의 활용 조력이다. 이처럼 노인요양시설 거주노인 자아통합감 관리는 간호실무자의 사정과 중재를 통한 관리가 필요한 개념으로, 지역사회에서 신체적으로 건강하고 활동성 높은 노인을 대상으로 관리되는 성공적 노화와 성인기 중반이후에 나타나는 발달적인 과정으로, 노인 자신의 삶에 대해 스스로 긍정적인 방향으로 나아가게 하는 주관적 인식이자, 노인 자신의 개인적 평화와 관련되는 개별관리에 초점을 두는 노년초월과는 차이가 있었다. 따라서 이상의 연구결과를 바탕으로 다음과 같이 제언하고자 한다.

첫째, 노인요양시설에서 간호실무자의 거주노인 자아통합감 관리 경험 과정을 밝힐 수 있는 질적 연구의 수행이 필요할 것이다.

둘째, 본 연구에서 확인된 노인요양시설에서 간호실무자의 거주노인 자아통합감 관리 개념의 속성을 토대로

노인요양시설에서 활용할 수 있는 거주노인의 자아통합감 사정과 중재 가이드라인 개발 연구의 수행을 제언한다.

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Ego-Integrity Management of Residents in Nursing Homes: A Concept Analysis based on the Method by Walker and Avant

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Purpose: The aim of this study was to analysis the concept of ego-integrity management in nursing homes residents. **Methods:** Walker and Avant's process of concept analysis was used in this study. **Results:** The defining attributes of the concept of ego-integrity management within nursing home residents included (a) overall process in life assessment of residents, (b) quality assessment of the relationship of residents with people around them, (c) inducing transcendental recognition in the residents and (d) use of the remaining psycho-social functional ability of the residents. In consideration of these defining criteria, antecedents to the concept of ego-integrity man-agement include (a) longer period of stay in the nursing home, (b) expanding the role of nurses in long-term care laws, (c) emphasizing positive aspects and recognizing the need to increase the quality of life of elders, (d) close relationship between nurses and residents: psycho-social adjustment management. Consequences include a marked improvement in the quality of life of elder residents, decreased depression, reduced problem behavior, gerotranscendence, and a positive relationship to people around them including nurses. **Conclusion:** Nursing management in these homes to maintain residents' ego-integrity includes evaluation of residents' ego-integrity through objective observation, as well as planning appropriate interventions as needed.

Keywords: Nursing homes, Aged, Ego

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Exploring Subjective Frames of Patients on Hemodialysis on Acquiring Resilience: A Q Methodology Study

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Patients with end stage renal disease (ESRD) require renal replacement therapy to survive. The majority of patients with ESRD are treated with hemo dialysis. In 2015 in the United States, 87.3% of all incident individuals with ESRD began renal replacement therapy with hemodialysis (United States Renal Data System [USRDS], 2017). During long-term hemodialysis, patients must deal with many annoyances, such as restricted diet, blood vessel management, exercise and rest, medication, blood pressure management, diabetes management, and body weight management, to minimize the discomfort and complications caused by ESRD (Cho & Choe, 2007). In addition, they have difficulty in physical, psychological, and social adaptation, which results in low self-esteem (Chun et al., 2000).

These patients have strict medical limitations (Sadala & Lorençon, 2006). What makes this all the more difficult is that hemodialysis is not a cure; it is a machine-dependent extension of the patient's life. Patients on hemodialysis have expressed their situation as an existential struggle, indicating encroachment of time and space (Hagren, Pettersen, Severinsson, Lutzen, & Clyne, 2005). Unfortunately, it is necessary to overcome these difficulties, which if not overcome, will lead to death.

Resilience

Resilience plays an important role for patients on hemodialysis to accept their situation positively and make a positive adaptation through actions focusing on their strength.(Kim, 2002; Kong, 2009; Park, 2016). Resilience includes personal competencies and strengths that emphasize capabilities and positive attributes rather than human weaknesses or pathologies (Werner, 1993), a process whereby people bounce back from adversity and go on with their lives (Dyer & McGuinness, 1996) and have successful stress coping ability (Connor & Davidson, 2003). Effects of prompting patients to identify their strengths can be more positive than those attempting to reduce their maladjustment factors (Fergusson & Lynskey, 1996; Robertson & Cooper, 2013).

High resilience can help with self-management and prevent depressive symptoms (Chang, Wu, Chiang, & Tsai, 2017), and resilience is a driving force for increasing self care skills (Jung, 2012; Park, 2016). If a nurse helps patients on hemodialysis maintain high resilience, they can avoid problems arising from the lack of self management.

Members of healthcare teams, especially nurses, have meaningful effects on patients' belief in hemodialysis treatment, and the relationship between nurses and patients positively influences resilience of patients on hemodialysis (Cha & Yi, 2015; Kwak, 2016). To increase resilience, nurses need to help patients find their own strengths rather than intervening directly. The person in the best position to help is the nurse, and improving resilience is one of the most important interventions nurses can make for patients on hemodialysis.

Resilience is based on individual experience in struggling with illness; therefore, it is perceived

differently by different patients (Truffino, 2010). It is necessary to understand more deeply the phenomenon of acquiring resilience through subjectivity analysis to grasp the subjective frames through which patients on hemodialysis acquire resilience.

Subjectivity can be defined as judgment based on personal impression, feelings, and opinions rather than external facts. It is valuable because it represents human perception in spite of being hard to measure (Akhtar-Danesh, Baumann, & Cordingley, 2008). Q methodology is useful to explore subjectivity issues (Chinnis, Summers, Doerr, Paulson, & Davis, 2001) using a combination of quantitative and qualitative methodology (Akhtar-Danesh et al., 2008). Q methodology is an approach to 'understanding internally' rather than 'explaining externally' human psychological characteristics. It starts from the aspect of the subjects and not the researchers, and focuses on the inner meaning of the individual rather than on individual differences (Kim & Won, 2000)

In this study, we promote an in-depth understanding of the resilience of patients on hemodialysis. We lay a foundation on which to develop nursing intervention strategies by using Q methodology to explore subjectivity frames of patients on hemodialysis acquiring resilience and by explaining the characteristics of resilience of patients on hemodialysis.

Methods

The aim of this study was to explore the subjectivity frames of reference for the resilience of patients on hemodialysis. Q methodology is a unique psychometric and operational principle researching human subjectivity with systemically and rigorously quantitative means, using specialized statistical method that includes correlation and factor-analysis techniques (Cordingley, Webb, & Hillier, 1997; McKeown & Thomas 1988).

In Q methodology, in-depth interviews are conducted with participants. Researchers construct a set of statements that express resilience with the interview content. Participants are given the set of statements and asked to sort them using a quasi-normal distribution pattern table. Participants are asked to distribute a preference for or agreement with one statement over the other on a scale from "strongly agree" to "strongly disagree." The Q methodology sorting technique requires participants to make these delicate differences by arranging their statements into a forced distribution of scores. This method helps to quantify the subjective understanding that participants have about the concept under investigation (McKeown

& Thomas, 1988). Q methodology allows the researcher to systematically explore a variety of perspectives about the problem and identify essential areas that overlap or differ (Akhtar-Danesh et al., 2008; Kim & Won, 2000). The salience of an essential area can also be explored, and it can provide new perspectives into a phenomenon by opposing opinion (Akhtar-Danesh et al., 2008).

Data Collection

Constructing a Q population. The Q population is the list of statements gathered for a study utilizing Q methodology and is representative of a topic (Kim, 2007a). Therefore, for acquiring every available statement relating to resilience of patients on hemodialysis, in-depth interviews were conducted to delineate the Q population. Interviews were conducted from October to November 2016 with 12 subjects in a university hospital hemodialysis unit in Seoul, South Korea. Subjects were patients who visited the hospital's hemodialysis unit regularly to get hemodialysis treatment two to three times a week and could communicate and read. Interviews for each participant were conducted in an education room, which provided a quiet environment.

Semi-structured questions were based on patterns of resilience (Polk, 1997). Resilience is explained by four patterns: dispositional, relational, situational, and philosophical patterns. The dispositional pattern refers to the pattern of physical and ego-related psychosocial attributes that contribute to the manifestation of resilience. The relational pattern represents the characteristics of roles and relationships that influence resilience. The situational pattern refers to the characteristic approach to situations or stressors, and is manifested as cognitive appraisal skills and problem solving. The fourth pattern, the philosophical pattern, applies to manifested personal beliefs (Polk, 1997).

The following questions were considered:
- "What do you think about your situation with dialysis?"
- "What do you think about your change in social position?"
- "What do you think about your relationships with those around you?"
- "How did you accept your hemodialysis situation?"
- "When you suffer from difficulties related to hemodialysis, how did you resolve the problems?"

In gathering statements on resilience, interviews started slowly, with the interviewer doing most of the talking, progressing until few or no new statements were obtained, and ending when the interviewee's supply of self-referent statements on resilience appeared to be exhausted. The gath-ered data included 95 self-referent descriptions (Q population) on resilience.

Selection of the Q sample. The next step was to condense the list by clarifying statements to reduce ambiguity of meaning and by removing statements to eliminate repetition. This finalized list of statements is known as the Q sample (Akhtar-Danesh et al., 2008), which is a selection of items from the Q population. The object in Q sampling is to provide the individual with a selection of meaningful phrases participants can order to reflect what they think (Cordingley et al., 1997). The researcher read the Q population repeatedly and classified them according to the inherent perspectives on which the statements are based. From the 95 self-referent descriptions as Q population, 53 descriptions that conveyed characteristic meanings of resilience were selected as the Q samples.

Selection of the P sample. The P sample is the group of participants who participate in Q sorting in a Q study (McKeown & Thomas, 1988). The size of the P sample is related to the aim of the study. If the aim of a study is basically exploration, a relatively small sample is sufficient (Kim, 2007b).

The objective in a Q study is to be able to describe typical representations of different viewpoints rather than find the proportion of individuals with specific viewpoints (Simons, 2013). Therefore, two inclusion criteria were applied to the P sample: 1) a person who is particularly interested in the subject (Thompson, 1966), and 2) literate d competent adults to ensure they can sort the cards in a forced distributive manner. The selected P sample was composed of 16 males and 19 females.

Q sorting. Subjects selected for the P sample were required to sort the Q samples. The forced distribution system (i.e., Q sorting) used in this research involved a 9-tier scale in the form of a quasi-normal distribution. Members of the P sample were asked to sort the Q samples into three macro levels: agree, disagree, and neutral. These three items were then resorted into nine specific agreement levels. The Q sort table is presented in Figure 1. The researcher performed in-depth interviews with every member of the P sample about the Q samples. In these interviews, each member of the P sample was required to explain why he or she strongly agreed or strongly disagreed with a selected Q sample. With the consent of subjects, all interviews were recorded in writing and on tape to allow subsequent interpretation of the Q factor. The Q sorting and interviews with the 35 P sample members were conducted during December 2016.

Ethical Consideration

The study was approved by the hospital, and permission was obtained for the research from facility authorities. The purpose of the study was explained to participants, who were informed that participation was voluntary. All study participants completed the consent form after a complete explanation.

Figure 1
The Q Sorting Table
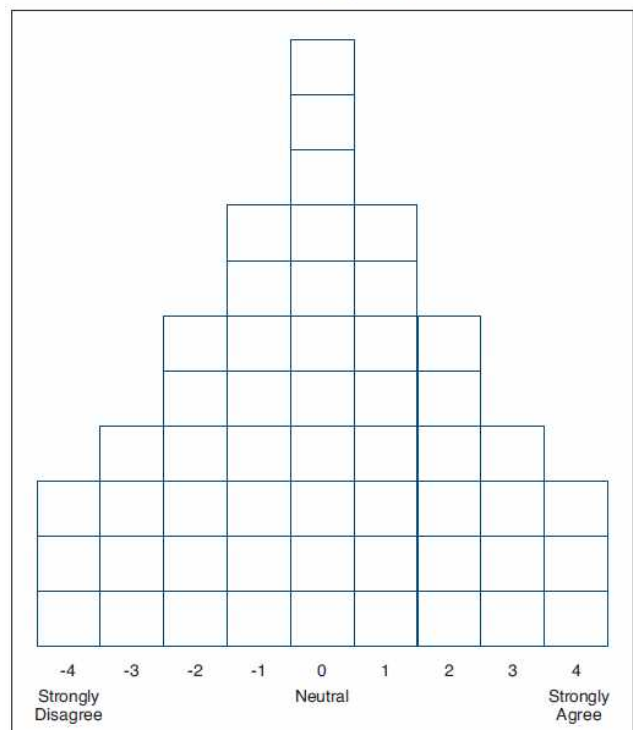
Data Analysis and Interpretation

A statistical program frequently used in and tailored to requirements of Q methodology studies is the

PQ-Method (Schmolck, 2002). Unlike general factor analysis based on the correlation between variables, traits, or statements, factor analysis in Q methodology is based on the correlation between P samples in the study represented by the Q sorts (Valenta & Wigger, 1997). This method calculates the correlation coefficients between Q sorts that correlate significantly with each other to form a group, which is known as a "factor" in statistical terminology. Each factor represents a group of people with similar perspectives, feelings, or experiences with regard to the theme of the study(Akhtar-Danesh et al. 2008).

For analyzing and denominating each factor, a distinguishing statement is a statement whose score on that factor is significantly different from its score on any other factor. Strongly agree and disagree statements, matching statements between factors, pertinent literature, demographic characteristics, and thoughts and experiences suggested for reasons of strongly agree and disagree are very meaningful (Kim, 1992).

Based on these analysis results, the naming of types that can implicitly indicate the factor of resilience of patients on hemodialysis was done through the analysis of qualitative data and discussion with a nursing professor who had experience in nursing instruction using Q methodology.

Results

As a result of entering the number of factors in various ways and analyzing them, five factors that together represented 60% of the variance were identified (see Table 1). Factor loadings and demographic characteristics of subjects by factor are shown in Table 2. In Q methodology, four to five subjects are sufficient to explain each factor, and an eigenvalue above 1.0 is statistically sufficient (Brown, 1980). In this study, because all types of eigenvalues were 1.0 or more, and at least five individuals belonged to each type, results are significant. Z scores in the Q sample for each factor are presented in Table 3.

Table 1
Factor Correlations and Statistics

Factor Correlations	Factor I	Factor II	Factor III	Factor IV	Factor V
Factor I	—				
Factor II	0.18	—			
Factor III	0.27	0.44	—		
Factor IV	0.39	0.31	0.32	—	
Factor V	0.33	0.29	0.20	0.24	—
Variance (%)	16	10	9	12	13
Cumulative Variance (%)	16	26	35	47	60
Eigenvalue	8.88	3.70	3.22	2.66	2.06

Factor I: Finding the Value of Life by Focusing on the Meaning of a New Life Through Hemodialysis

Factor I was named "finding the value of life by focusing on the meaning of a new life through hemodialysis," and 10 subjects are included in Factor I. The subjects of Factor I want to try to concentrate on life itself, find the meaning of life, and do not want to evaluate their situation negatively or to regret it. They try to perceive the hemodialysis situation positively and accept it (Q-1, Q-13, Q-16, Q-17, Q-43; Q-sample numbers are shown in Table 3). They think deeply about the value of themselves and try to figure out why they must have hemodialysis (Q-3, Q- 16, and Q-36). They gain power to live by overcoming hemodialysis (Q-27) and find meaning of life from presence of the family (Q-36). They disagree with the religion-dependent life (Q-2, Q-4). The P sample with the highest loading score for Factor I was a 67-year-old male whose duration of hemodialysis was two years; he is currently unemployed. The meaningful content of the interview with him included:

> Before the hemodialysis, my condition was not very good, but after I started dialysis, my body became much lighter and better. Because I felt that my body had improved, I became naturally positive about hemodialysis. If I have not started hemodialysis, I already may have died. I have been through dialysis, and I have been living my second life. I am grateful and loving toward all things in the world. (P-1)

Table 2
Factor Loading and Demographic Characteristics of the Subjects

Factor	Subject No. (Q Sort)	Factor Loading	Sex	Age (Years)	Perceived Economic Status	Religion	Occupation	Marital Status	Duration of Hemodialysis
Factor I (N=10)	1	0.92	M	67	Low	Atheist	None	Married	2 years
	2	0.52	M	49	Low	Atheist	None	Divorced	6 years
	4	0.86	M	59	Low	Atheist	None	Married	2 years
	5	0.91	F	48	Moderate	Christian	None	Married	3 years
	14	0.37	M	55	High	Christian	Businessman	Married	2 years
	15	0.59	M	56	Low	Atheist	None	Married	2 years
	16	0.52	M	32	Low	Christian	Services occupation	Divorced	3 years
	17	0.83	F	42	Low	Atheist	None	Divorced	6 years
	19	0.42	F	60	Low	Buddhist	Businessman	Widower	3 years
	24	0.38	M	67	Low	Christian	None	Married	1 year
Factor II (N =7)	10	0.54	M	40	Low	Christian	Businessman	Unmarried	5 years
	11	0.51	F	40	Low	Atheist	Businessman	Married	3 years
	22	0.58	F	63	Low	Christian	None	Widow	2 years
	23	0.56	M	52	Low	Atheist	None	Married	2 years
	28	0.64	F	31	Low	Atheist	None	Unmarried	3 years
	29	0.53	M	65	Moderate	Atheist	Businessman	Divorced	1 year
	32	0.58	M	52	Low	Buddhist	None	Divorced	4 years
Factor III (N =5)	8	0.71	F	67	Moderate	Christian	None	Married	2 years
	13	0.72	F	40	Moderate	Christian	None	Married	7 years
	18	0.64	M	53	Moderate	Christian	None	Married	1 year
	21	0.60	F	49	Moderate	Buddhist	None	Married	3 years
	25	0.54	F	43	High	Christian	None	Married	2 years
Factor IV (N =7)	3	0.72	M	57	Low	Atheist	None	Married	2 years
	6	0.75	F	67	Moderate	Christian	None	Married	2 years
	7	0.70	F	51	High	Christian	None	Married	20 years
	9	0.59	M	66	Low	Christian	None	Married	4 years
	12	0.36	F	48	Moderate	Atheist	Businessman	Married	9 years
	30	0.61	F	67	Low	Buddhist	None	Widow	2 years
	35	0.63	M	56	Low	Atheist	Businessman	Married	5 years
Factor V (N =6)	20	0.86	F	53	Moderate	Christian	None	Divorced	8 years
	26	0.85	F	62	Low	Christian	None	Married	3 years
	27	0.59	M	62	Low	Buddhist	None	Married	10 years
	31	0.56	F	71	Low	Christian	None	Married	1 year
	33	0.67	F	74	Low	Atheist	None	Bereaved	1 year
	34	0.71	F	72	Low	Christian	None	Married	3 year

Note: Bold/underlined = subjects with the greatest factor value.

Table 3
Z Scores in the Q Sample for Each Factor

Each factor represents a group of individuals with similar views, feelings, or experiences in relation to the theme of the study.					
Q Sample	Factor I	Factor II	Factor III	Factor IV	Factor V
1. I try to think positively because I could continue to live due to hemodialysis; if not, I might have already died.	1.54	-0.78	0.61	0.23	0.58
2. I started hemodialysis and I felt relief from God because I felt that nobody was there for me, and I turned to religion.	-2.17	-0.26	-1.68	-0.46	-1.55
3. I think I am the most important being and believing in myself is the most important thing because I have to start hemodialysis and overcome this adversity and suffering on my own.	1.79	-0.30	-1.45	1.51	-0.10
4. I was able to overcome this difficult situation by learning to appreciate life through faith in God, so religion was the backbone of my being able to overcome dialysis.	-2.01	-0.66	0.02	2.27	-2.00
5. I think hemodialysis is the best way to survive, and I think the most important thing is to adapt quickly to hemodialysis life.	-0.07	1.60	1.35	1.03	2.02
6. When I first got diagnosed with chronic kidney failure and found out that I needed to have hemodialysis, I blamed God for what was happening to me.	-1.35	-1.03	0.02	-0.07	0.57
7. I believe that I have ability to overcome the trials of hemodialysis because I believe that God only gives me trials that I have the ability to withstand.	-0.27	-2.33	0.40	0.25	-0.39
8. I think that human beings can die at any time, so I have to always be prepared for death, and I do not think I am unhappy with the current hemodialysis situation.	0.58	-0.28	0.53	0.45	0.61
9. I am relieved to think that some people (such as the disabled who are always in need of someone's help or who are in a situation where they must be hospitalized) are in a situation worse than me.	0.07	0.40	1.05	-0.33	-0.01
10. After my body has been destroyed, I am grumbling with the thought of why am I suffering if there is a God.	-1.83	-1.57	-0.52	-2.16	-1.13
11. The reason I live this life is because of my responsibility and duty to my family and people around me, rather than my attachment to life.	0.24	-1.35	-1.50	0.49	1.64
12. When I started hemodialysis and wanted to die, but I could overcome it because I had the belief that I could overcome.	-0.50	1.37	-0.59	0.88	1.47
13. I think that life now is a bonus, so I think life should be more valuable.	1.79	0.65	1.58	1.28	1.12
14. I think I had this result because I did not manage my body regarding alcohol, tobacco, and food control before I started hemodialysis.	-1.21	-0.19	-1.30	-2.07	1.53
15. I have had a long period of illness, and I seem to be able to tolerate the difficulty of the present because I had some preparation for hemodialysis.	0.25	-1.91	-1.73	0.13	0.62

Table 3 (continued)
Z Scores in the Q Sample for Each Factor

Each factor represents a group of individuals with similar views, feelings, or experiences in relation to the theme of the study.					
Q Sample	**Factor I**	**Factor II**	**Factor III**	**Factor IV**	**Factor V**
16. Since hemodialysis makes my condition better, I think of hemodialysis positively as a way to maintain my body.	1.98	1.05	0.89	-0.04	0.54
17. I had a lot of difficulties with various diseases (diabetes, hypertension, cancer, and heart disease) before hemodialysis, so I was well trained in such treatment and I was able to accept the hemodialysis treatment course well.	1.06	-1.39	-0.99	-1.53	0.48
18. I think the depression experienced from hemodialysis can be overcome by making a meaningful relationship.	0.92	-0.84	-1.18	-1.04	0.37
19. I am unable to withstand the anxiety that my body will collapse from the secondary complications of hemodialysis.	-1.69	0.78	-0.36	-1.23	0.32
20. I am regretting I did not manage my body, and I feel uncomfortable thinking that my life has failed.	-1.37	-0.66	-0.12	0.18	-0.17
21. I started hemodialysis and then my face changed to black and my appearance looked shabby, so I got a lot of stress and found it hard to accept the treatment.	-1.20	-1.19	0.11	-1.07	0.19
22. When I was diagnosed with chronic kidney failure, I thought it was a disease that could be cured. And I had hope at that time, but after learning there was no way to full recovery, I was in despair.	-0.70	0.69	-0.20	0.16	0.69
23. I think this situation of hemodialysis is not bad because my body is much better after starting hemodialysis than before it.	0.76	-0.45	-1.23	-0.47	0.49
24. When I think deeply, I tend to think in a negative direction, so I try not to think about it.	-0.06	-0.31	0.39	0.60	0.47
25. Because I have seen many cases of medical treatment not working, I have an antipathy to hospital treatment, and it is still hard to accept hemodialysis.	-1.11	-1.52	-1.51	-1.79	-1.02
26. I was assisted by government subsidies, which helped me develop a positive attitude toward hemodialysis because the dialysis and medication costs were economically less burdensome.	0.03	-0.87	0.20	0.99	-0.32
27. I feel like I have the ability to overcome any hard work that I suffered from—difficult and hard things while undergoing hemodialysis.	1.05	0.44	-0.86	0.18	-0.01
28. I think I should manage myself and make myself stronger because nobody can help with body management or replace my body.	0.66	1.20	0.20	1.86	1.43
29. After I started dialysis, I had many limitations on my social life, so I lost confidence in human relationships.	-0.64	0.36	0.26	-1.12	-0.14
30. After I started hemodialysis, I shared information with my colleagues at the hospital, talked about the hardship, and established my relationships, which helped me adjust to hemodialysis.	-0.15	0.30	-1.24	-0.55	0.22

Table 3 (continued)
Z Scores in the Q Sample for Each Factor

Q Sample	Factor I	Factor II	Factor III	Factor IV	Factor V
31. I feel sad that the people around me have deserted me because I have been having difficulties in hemodialysis and that my social position has suffered as a result.	-0.64	-0.61	-0.77	-0.54	-1.62
32. I was able to overcome the depressed feelings I felt when I first started dialysis because my family greatly comforted me.	0.45	0.64	1.78	1.07	1.78
33. I try to think of my children, husband, and parents whenever I have difficulty with hemodialysis.	0.18	1.65	1.24	0.42	1.31
34. I was more depressed when I was alone, so I endured the difficult times by spending time with my close friends.	-1.02	0.74	-0.38	-1.58	-0.08
35. I always have to be prepared for death, but I always feel sad when I see my children.	-0.61	1.22	1.74	0.35	0.28
36. When I was in trouble, my family was always with me and gave me strength, so I think that I would have died if I had not had a family.	1.95	1.32	1.48	1.66	2.10
37. I think that I naturally estranged from my friends because I was sick and didn't have the power to contact them.	-0.30	0.59	0.31	-0.99	-0.66
38. I think I naturally became distant from people other than my family because I became more dependent on my family.	-0.78	-1.32	0.21	-0.88	-0.72
39. I think I was able to adapt to my life with hemodialysis because I was able to have lots of conversations with my family without having to hide the difficulties I was experiencing with hemodialysis.	0.48	0.85	0.29	1.12	0.17
40. I do not think it is helpful for me to worry about hemodialysis, so I think I should find a solution.	0.03	1.67	0.02	0.40	-0.23
41. After I get hemodialysis I feel so exhausted, so things like housekeeping are handled by my family.	0.70	-0.80	0.76	-1.00	-0.99
42. I try to overcome my fear of complications through dialogues with dialysis patients who started dialysis before me and try to manage my body thoroughly.	-0.23	-0.12	-0.23	0.18	-1.16
43. I felt uneasy and unstable in my life as a result of hemodialysis, but now that I have accepted it as part of my life, I feel stable and have returned to the life I had before dialysis.	1.01	-0.84	0.42	-0.34	-1.55
44. I am uncomfortable and irritable because hemodialysis has placed a lot of restrictions on my life, but I internalize the sadness and accept the situation.	-0.53	1.66	0.12	-0.75	-1.66
45. I am finding the process of hemodialysis very difficult, but it is comforting to see the nurses who come to the dialysis room and work hard for me.	0.92	1.01	1.17	0.68	-0.37
46. I divert my attention to other things, like reading a book, singing, or learning on a computer, to relieve my tired body and mind from dialysis.	0.62	-0.07	-1.99	0.30	-0.37

Table 3 (continued)
Z Scores in the Q Sample for Each Factor

Q Sample	Factor I	Factor II	Factor III	Factor IV	Factor V
Each factor represents a group of individuals with similar views, feelings, or experiences in relation to the theme of the study.					
47. When I go to hemodialysis, I intend to live only for today rather than looking at hope or to the future.	0.93	0.88	1.78	0.42	-0.62
48. I am in a difficult situation, but I think that all the people in the world have a hard time, so I do not think my life is very desperate.	0.82	-0.03	1.68	-0.76	-0.01
49. I think I can have hope and a positive mind even if there is only one person who believes in me.	-0.60	0.58	0.08	-0.13	-0.29
50. I am in a difficult position, but I do not just stay at home. I go outside, take a walk, meet people in the neighborhood, share stories, and feel that I am alive	-0.17	0.42	-0.54	-0.44	-0.85
51. Looking at my colleagues who are doing self-care while on hemodialysis for 20-30 years, I get the hope that I can get well on hemodialysis treatment.	0.73	0.06	-0.01	-0.41	-1.00
52. Because I am deprived of so much time by hemodialysis, time has become very precious and I try to invest it in myself.	0.57	-0.14	-0.33	1.06	-0.61
53. I think I should know about my illness better than anyone else, so I read books about it, go to lectures in the hospital, watch TV, and try to overcome it by studying it as much as I can.	-0.29	-0.31	-0.02	-0.76	-1.33

Factor II: Compromising Actively with the Situation of Hemodialysis

Factor II was named "compromising actively with the situation of hemodialysis" and was a strong tendency to actively try to adapt to living with hemodialysis. Those who loaded on this factor think this situation is not comfortable, but hemodialysis is the best way to live, and they have to accept this situation (Q-5, Q-12, and Q-44). They believe passive worry does not help this situation, and they think they have to seek the way to solve the problem actively (Q-5, Q- 40). The driving force to overcome the hemodialysis situation for them is family (Q-33). They did not agree with the opinion of relying on God or resenting God (Q-7, Q-10), and the opinion that preparation for hemodialysis is helpful for the power to overcome (Q-15). They do not want to rely on religion, and they regard the present not the past as important. The P sample with the highest loading score of Factor II was a 31-year-old female who was unemployed and unmarried. The meaningful content of the interview with her included:

I had to quit my job, and I was not married yet.
It is hard to get married to my boyfriend in such

an unstable state. For my better future, I must accept this trial quickly, even if it is difficult. Instead of worrying, I think that the first thing to do is to accept the best of hemodialysis, to find a solution, to overcome the trials, and to adapt well. (P- 28)

Factor III: Internalizing Sadness and Emphasizing the Meaning of Life Itself

Factor III was named "internalizing sadness and emphasizing the meaning of life itself." Those who loaded on Factor III feel the depressive mood of sadness, but they do not tend to try to solve the problem actively (Q-35, Q-47). They endure the hemodialysis situation with thought about their loving family and people who are in a more difficult situation than them (Q-32, Q-48). They can get the will to live by trying to find the meaning and value of life (Q-13). They disagreed with statements that actively take action in the present or past to resolve the problem (Q-46, Q-15), and rely on religion (Q-2). The P sample with the highest loading score for Factor III was a 40-year-old female. The meaningful content of the interview with her included:

It is up to the mind to overcome the trials. Hemodialysis is certainly a difficult task, but it should be considered fate and accepted. I do not think I have to do anything special to over-come it. However, I live well today and look after my children all day. (P-13)

Factor IV: Finding a Support System to Help Overcome Hemodialysis

Factor IV was named "finding a support system to help overcome hemodialysis." Those who loaded on this factor are trying to find a support system that is helpful to overcome adversity, including religion, family, peers, and themselves (Q-3, Q-4, Q- 28, and Q-36). They think such a support system helps them to better manage themselves and gives them the power to overcome hemodialysis. They focus on finding support systems to help overcome hemodialysis; however, they disagree with statements that the cause of the problem is God, the past, or the hospital (Q-10, Q-14, and Q-25). The P sample with the highest loading score for Factor IV was a 67-year-old female. The meaningful content of the interview with her included:

When I feel hard, I think it is more important to find something to help me than to be alone. If I do nothing, nobody come and help me. I have to find a way to help me by myself. First of all, hospital medical staffs are helping to overcome hemodialysis in many ways. And colleague patients on hemodialysis are very good friends, and conversation with them is vitality of life.(P-6)

Factor V: Building the Will of Life by Getting Strength from Family

Factor V was named "building the will of life by getting strength from family." Those who loaded on this factor think family gave them the strength to live, and the strength gained from family is the driving force to live (Q-36). They feel they live due to obligation and responsibility to family rather than live for themselves (Q-11). They believe they need a family and their family needs them, too, so they want to survive. They are consoled by family when they are in a depressive mood or feeling anxiety (Q-32). Moreover, they regard hemodialysis as the best way to live and believe prompt adaptation is important (Q-5). They strongly disagreed with the statement they were comforted by religion (Q-2, Q-4), and statements that they were separated from their surroundings because of hemodialysis (Q-31). The P sample with the highest loading score of Factor V was a 53-year-old female. The meaningful content of the interview with her included:

Both the kids and my husband were so dedicated to me. Without them, I would have died. The conversations with my family were much more helpful than the ones I had with others. After that, I felt more relaxed, and it helped me adjust to dialysis. (P-20)

Discussion

Q methodology is a technique that measures human subjectivity by applying statistical methods, such as correlation and factor analysis (Kim & Won, 2000). Q factor analysis plays an inductive role and contributes to formulating new hypotheses (Chang et al., 2008).

In this study, five factors of the subjective frame of patients on hemodialysis on acquiring resilience emerged from the Q sort in this study. Factor I of the subjective frame referred to finding the value of life by focusing on the meaning of a new life through hemodialysis, Factor II referred to compromising actively with the situation of hemodialysis, Factor III referred to internalizing sadness and emphasizing the meaning of life, Factor IV referred to finding a support system to help overcome their crisis hemodialysis, and Factor V referred to building the will of life by getting strength from family. The common theme of the five factors was overcoming hemodialysis and moving forward with their lives.

Categories of Subjectivity and Strategies

The five subjectivity frames are divided into two main categories of subjectivity: overcoming adversity by pursuing the value of life itself (Factors I and III), and wanting to live a stable life by actively solving the problems in front of them (Factors II, IV, and V).

Looking at the first category, subjects in Factor I trust in the treatment provided by the hospital, reinterpret the hemodialysis situation in a positive way, and act proactively with a pro-social attitude; therefore, it is possible to consider interventions to strengthen such a positive mind. It would be helpful to utilize the various positive experiences that were experienced during hemodialysis. When an individual's psychological state is unstable and stressful, he or she is more sensitive to self-evaluation and emotional comparisons with others (Chon, 2005; Huh, 2000). However, in situations where the patient's condition is stable and uncertainty is reduced, self-help groups can help improve resilience (Son, 2016). Therefore, it is possible to improve resilience by providing interventions that can actively organize self-help groups for subjects in Factor I showing positive recognition and stable appearance. For example, organizing a variety of hobbies and self-help groups in conjunction with the community and providing opportunities to talk about positive experiences are potential interventions.

Subjects in Factor III tend to believe that present is more important than looking toward the future and want to live meaningfully in the present. They know they can die at any time, but they think positively about the hemodialysis that keeps them alive. Since subjects who report a high meaning of life can tolerate more severe physical symptoms (Haugan, 2014), a strategy that can enhance resilience by using the strength of life as a way to find and recognize meaning in life could be effective. Logotherapy can help patients overcome difficulties by emphasizing, exploring, and discovering the meaning of life in the context of suffering (Kang, Kim, Song, & Kim, 2013; Koo, 2008; Lee, 1997). Therefore, it could be helpful in developing various intervention programs. In this category, interventions that reduce stress, anxiety, and depression, and give hope can be helpful because they tend to accept and internalize passively rather than express sadness. Considering this pas-sive tendency, nurses can help patients find value in life according to their personal beliefs.

In the second category, subjects in Factor II have a strong willingness to compromise with reality and to solve the problems in front of them. Rather than focusing on psychological adaptation, they want to accept their reality from a problem-oriented viewpoint and look for stability. These subjects should be helped to develop a cognitive coping strategy that can assist psychological adjustment. Psycholo gical adaptation helps solve problems they face (Kimmel, Cohen, & Weisbord, 2008), and cognitive coping strategies help in perceiving health status, social functioning, quality of life, hope, depression, and satisfaction with life (Cha & Yi, 2013; Garnefski & Kraaij, 2010; Gillanders, Wild, Deighan, & Gillanders, 2008; Lerma et al., 2017; Schroevers, Kraaij, & Gamefski, 2008).

Subjects in Factor IV try to overcome hemodialysis by looking for, and relying on, what they feel secure about. Such objects of reliance include religion, family, medical staff, colleagues, and oneself. Nurses should guide subjects through many dialogues to help them find what they can and should depend on. Since self-awareness and the will to solve problems are strong, a good relationship with the object of reliance should lead to interventions that can provide a synergy for overcoming hemodialysis. However, nurses need to make sure patients do not become over-dependent.

Subjects in Factor V have a strong willingness to overcome hemodialysis with the help of family members and to draw strength from their families, so it is necessary to help them maintain good relationships with family members. The effectiveness of a coping abilities program employing family members has been verified (Inch & Temel, 2016; Lim & Han, 2013). A nurse can help keep patients in good standing with their families by keeping the lines of communication open and can assist them in overcoming any difficulties by planning a family intervention program.

Conclusion

These results could establish a concrete intervention strategy that can enhance patients' strengths and provide a source of positive adjustment. It is important that nurses discover strengths of each factor and build an intervention strategy, which can play a major role in raising the self-care capacity of patients on hemodialysis.

This study has some nursing significance. Since the

concept of the resilience of patients on hemodialysis is necessary but has not been much studied yet, this study could contribute to understanding the resilience of patients on hemodialysis. By deeply understanding resilience of patients on hemodialysis, nurses can comprehend the strength of patients, and as a result, can suggest strategies to develop an intervention program that reinforces patients' strengths and minimizes their weaknesses. Based on the subjective frame of the resilience of patients on hemodialysis, this study can be a reference for understanding patient needs when planning patient education. Moreover, findings can be used as fundamental data in the study of the resilience of patients on hemodialysis, which may be helpful for further study. Ultimately, this could help the devel-opment of nursing science.

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Exploring Subjective Frames of Patients on Hemodialysis on Acquiring Resilience: A Q Methodology Study

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This study explored subjectivity frames of reference of resilience of patients on hemodialysis by using Q methodology. Participants included 35 patients on hemodialysis. Data were obtained from October to December 2016 and were analyzed by the PQ method. Five factors were identified: 1) finding the value of life by focusing on the meaning of a new life through hemodialysis, 2) compromising actively with the situation of hemodialysis. 3) internalizing sadness and emphasizing the meaning of life itself, 4) finding a support system to help overcome hemodialysis, and 5) building the will to live by getting strength from family. The common theme of the five factors was overcoming hemodialysis and moving forward with their lives. This study can help nurses understand the resilience of patients on hemodialysis and presents strategies that can be used to develop an intervention program to improve the resilience of patients on hemodialysis.

Keywords: Hemodialysis; resilience; Q methodology.

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초기 치매환자 가족 돌봄제공자의
공유 의사결정에 대한 인식:
질적 내용분석 연구*

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Ⅰ. 서론

우리나라의 65세 이상 노인인구는 2016년 기준 686만 명으로 전체 인구의 13.5%를 차지하고 있으며 2025년에는 20%, 2040년에는 32.3%로 초 고령사회에 도달할 것으로 전망되었다(통계청, 2015). 의학기술의 발달로 인한 기대수명이 늘어남에 따라 고령인구가 지속적으로 증가하면서 이에 따른 각종 문제가 증가될 것으로 예상되며 그 중 중요한 문제로 나타난 것이 치매 문제이다.

치매는 인지, 기능, 의사소통의 점진적인 쇠퇴라는 특징이 나타나며 이 요소들은 치매환자들이 의사결정을 하는데 결정적인 장애로 여겨진다(Lichtner, Dowding, Allock, Keady, Sampson, & Briggs, 2016). 따라서 대부분의 치매환자들은 질병이 진행됨에 따라 중요한 결정을 할 수 있는 능력을 잃어버리고 그들의 선호도를 아는 가족 돌봄제공자들을 자주 의사결정에 포함시키게 한다(Lord, Livingston, & Cooper, 2015).

결정 방식을 공유하는 의사결정 포함 범위로서 공유 의사결정은(Samsi & Manthorpe, 2013)인지 기능이 손상됨에 따라 의사결정 능력이 저하되어 도움이 필요한 치매환자들에게 더 유용할 수 있다. 성공적인 공유 의사결정은 케어를 받는 사람들이 정보를 제공받고 권리를 부여받고 그들의 건강과 케어에 관한 토의에 참여가 가능하게 되어 지식과 안녕이 증가하는 긍정적인 결과를 가져오며(Daly, Bunn & Goodman, 2016) 나아가 사회적 건강을 증진시키는 중요한 수단이 된다(Mariani, Vernooij -Dassen, Koopmans, Engels, & Chattat, 2016).

Miller, Whitlatch와 Lyons(2016)에 따르면 치매환자들은 의사결정 능력이 인지 변화로 영향을 받은 이후에도 오랫동안 자신의 가치와 선택에 대해 의사소통을 할 수 있는 능력을 가진다고 하였다. 하지만 현재 우리 사회는 공유 의사결정을 할 때 중요한 치매환자의 의사결정 능력을 평가하는데 필요한 정보는 거의 제공받고 있지 못하다 보니 가족 돌봄제공자들은 환자의 의사결정 능력에 대한 그들의 인식에 근거하여 결정에 대한 환자의 참여를 정당화시킨다(Hirschman, Joyce, James, Xie, & Karlawish, 2005). 따라서 치매환자의 의사결정 능력에 대한 가족 돌봄제공자의 인지가 환자의 의사결정 과정 참여 정도에 중요한 요소이다(Caron, Ducharme, & Griffith, 2006). 하지만 가족 돌봄제공자들은 환자들의 선호도에 대해 솔직하게 서로 대화를 하지 않고 가정한다(Gjerberg, Lillemoen, Førde, & Pedersen, 2015). 이에 치매진단이 내려지고 증상이 보이면 섣불리 치매환자들을 의사결정에서 배제하여 의사결정을 해야 하는 과정에서 진정으로 치매환자가 원하는 것이 제외되는 경우가 많다. 따라서 공유 의사결정에 대한 올바른 이해가 가족 돌봄제공자의 부담감을 감소시키고 치매환자의 자기결정권 침해를 최소화하기 때문에 초기 치매환자 가족 돌봄제공자의 공유 의사결정에 대한 인식을 확인하는 지식체가 필요하다.

한편, 치매환자 가족 돌봄제공자의 의사결정 부담 해결과 치매환자의 자기결정권 존중을 확장하기 위한 방안으로 국내에서는 2013년 7월부터 성년후견제도를 도입하

게 되었다. 성년후견제도는 자기결정권의 존중과 잔존능력의 활용, 본인의 보호를 목적으로 가지고 있는데(김상묵, 윤성호, 2013), 의사결정 능력에 장애가 있는 사람들에게 잔존 능력에 따라 최대한 자율성을 유지하도록 돕고자 하는 제도이다(윤종철, 2013). 현재 후견이 개시되기 위해서 필요한 의사의 감정을 대신할 수 있는 객관적인 자료가 부족한 실태(현소혜, 2013)이지만 치매환자 가족 돌봄제공자들의 공유 의사결정에 대한 인식이 중요한 요소가 된다. 성년 후견제도를 개시하기 전 초기 때부터 가족 돌봄제공자와 치매환자가 함께 효율적인 공유 의사결정을 한다면 제도의 목적을 뒷받침할 수 있을 것이며 후에 제도 이용의 효율성을 높일 것이라고 여겨진다. 또한 인지 기능이 쇠퇴한 치매 환자라도 존엄성을 존중하기 위하여 스스로가 이전에 해두었던 의사결정에 따라 건강하고 행복한 노후를 누리도록 돕기 위해 제도를 이용하기 전 공유 의사결정을 돕는 가족 돌봄제공자들의 인식을 확인하는 것이 필요하다.

공유 의사결정과 관련된 국외 선행 논문은 치매환자와 가족 돌봄제공자의 의사결정 과정과 포함 정도(Smebye, Kirkevold, & Engedal, 2012; Samsi et al., 2013; Miller et al., 2016; Wolfs, Vugt, Verkaaik, Haufe, Verkade, & Verhey, 2012; Chang & Schneider, 2010)에 대한 연구가 대부분 진행되어 왔다. 국내의 논문에서는 2013년 성년후견제도가 개시된 시점으로 치매환자 의사결정에 관해 법조계 중심으로 연구가 이루어졌다(정순량, 2016; 윤종철, 2013; 우국희, 2013). 또한, 주로 치매환자가 아닌 환자들과 의료진들 간의 공유 의사결정에 관한 논문이었고(조계화, 김균무, 2014; 서원식, 이채경, 2010)초기 치매환자 가족 돌봄제공자의 공유 의사결정에 대한 인식이 어떠한지에 대한 연구는 없었다.

따라서 본 연구의 목적은 초기 치매환자 가족 돌봄제공자의 공유 의사결정에 대한 인식을 탐색하는 데 있다. 본 연구의 결과는 건강관리 전문가들이 초기 치매환자 가족 돌봄제공자가 효율적인 공유 의사결정을 하도록 돕기 위한 상담과 교육 및 지지 프로그램 개발을 위한 기초자료로 활용될 수 있을 것이다.

Ⅱ. 이론적 배경

1. 치매환자 자기결정권

자기결정권은 개인이 자신의 삶에 관하여 스스로 결정하고 그에 따라 행동할 수 있는 권리를 말하는데 의사결정 능력이 불충분한 사람에게는 일정한 사항에 관하여 결정을 돕도록 선택에 대한 정보를 주어 자기결정을 하도록 하는 것이 필요하다(김주현, 2012). 또한, 자기결정권의 존중이란 자신과 관련된 것에 대하여 스스로 결정

하고 결정된 것에 대하여 사람들이 존중해야 한다는 것을 의미한다(김상묵, 윤성호, 2013). 자율성을 가진 개인은 자신의 삶에 대하여 선택과 결정을 내리고 다른 사람들에 의해 선택을 존중받을 권리가 있는데 이러한 선택과 결정을 하는 의사결정 능력이 자기결정권의 중심 요소이다(Fetherstonhaugh, Tarzia, & Nay, 2013).

한편, 치매환자들은 인지 변화 때문에 의사결정 능력이 영향을 받은 이후에도 오랫동안 자신의 가치와 선택에 대해 의사소통을 할 수 있는 능력을 가진다. 하지만 의사결정 과정에서 자신의 치료와 돌봄에 관하여 의사결정을 하길 원하여도 경증치매 상태가 되면 대부분은 결정에 참여하지 못하게 된다(Miller et al. 2016). 그 때 그들 중 몇 명은 의사결정에 대한 정보를 자주 듣지 못하고 최종 결정을 내리기 전에 그들의 의견을 적절하게 표현할 수 없기 때문에 소외감을 느낀다고 한다(Boyle, 2013). Tyrell, Genin와 Myslinsk(2006)의 연구에서 역시 치매환자들은 선택을 위해 제공된 정보와 건강관리자와 함께 하는 의사소통 정도에 만족하지 못하였다. 또한 그들이 의사결정을 하는데 적절한 시간이 주어지지 않았고 스스로 표현할 기회들이 제한되었음을 느꼈다고 하였다. 치매환자들은 의사결정에 포함되기가 어렵고 그러한 상황에서 무시당하는 느낌과 소외감을 느낀다. 반대로 그들이 의사결정을 할 수 있도록 지지가 제공되었을 때 자신감이 생기고 자신이 생산적이고 도움이 된다고 여기는 긍정적인 마음을 가진다고 하였다(Fetherstonhaugh et al., 2013).

한편, 치매환자들은 의사결정 과정에서 가족 돌봄제공자에게 의지하는 것과 자신의 자율성을 보호하는 것 사이에 갈등을 가지고 있다(Miller et al., 2016). 갈등 가운데 그들 자신의 자율성을 유지하는 것이 중요하다고 느낄 때 의사결정 과정에 적극 참여하는 반면(Menne, Tucke, Whitlatch, & Feinberg, 2008), 자신의 미래에 인지 기능의 쇠퇴에 대한 두려움이 있으면 자기방어 기전으로 의사결정을 피하는 등(Miller et al., 2016) 다양한 모습을 보이고 있다.

이와 같은 선행연구를 종합해보면 치매환자의 의사결정의 잠재력을 극대화하는 것, 즉 자기결정권을 존중하는 것은 환자의 정체성, 삶의 질을 유지, 증진하는데 중요한 기여를 하는(Menne et al., 2008), 중요한 문제임을 알 수 있다. 자기 결정권의 중심인 의사결정에 영향을 끼치는 많은 요인이 있는데 특히 가족 돌봄제공자의 인식이 치매환자의 의사결정에 중요한 역할이다(Caron et al., 2006).

2. 가족 돌봄제공자와 치매환자의
공유 의사결정

치매환자의 공유 의사결정 과정에 관련하여 대두되는 문제는 치매환자의 의사결정 능력의 상실에 대한 판단과 대리 의사결정자로 가족 돌봄제공자의 책임감을 세우는 것이다. 공유된 의사결정은 결정 방식을 공유하는 의사결정 포함 범위로 설명되며(Samsi et al., 2013), 다양한 정의가 있지만 의료진과 환자의 범위에 한정되어 있는 것이 아닌 다양한 의료직종 간,환자, 가족을 포함하는 의사결정 모형으로 변해가고 있다(Jo, 2012). 즉, 환자를 위해 의료진과 가족, 환자가 서로의 의견을 나누며 최선의 결정에 동의하는 것이다. 또한 공유 의사결정의 상황에 대한 범위는 작게는 매일매일의 돌봄, 의학적 치료에 대해 함께 결정하는 것뿐만 아니라 크게는 서비스 이용 및 장기 요양 입소 여부까지 함께 결정하는 것이 해당된다(Miller et al., 2016). Stacey, Legare, Pouliot, Kryworuchko와 Dunn(2010)의 연구에서 공유 의사결정 과정의 필수 요소는 결정을 해야 할 것이 있음을 인식하고 지식을 교환하며 가치와 선호도들을 표현하고 심사숙고하여 결정을 하고 수행하는 것이라고 하였다.

치매환자의 의사결정 포함 정도에는 많은 결정요인들이 있다(Miller et al, 2016). 중요한 요인으로는 인지손상인데 치매가 진행되어 인지손상이 심해질수록 치매환자의 공유된 의사결정은 감소한다. 인구학적 요소로는 나이, 성별이 중요한 요소인데 치매환자와 가족 돌봄제공자의 나이가 많을수록 치매환자의 공유된 의사결정은 감소한다(Menne et al., 2008). 또한 치매환자의 성별이 남자이면 경제에 관한 공유된 의사결정이 많았고(Boyle, 2013), 성별이 여자이면 일상적인 돌봄에 관한 공유된 의사결정이 많았다(Menne et al., 2008). Menne와 Whitlatch (2007)에 따르면 치매환자의 나이가 어릴수록, 여성일수록, 더 많이 교육을 받을수록, 배우자가 아닌 다른 가족 돌봄제공자일수록, 진단받은 후 더 짧은 기간일수록, 우울증상이 적을수록, 자율성과 정체성에 더 많은 중요성을 둘수록 의사결정에 많이 포함되었다. Groen-van de Ven, Smits, Span, Jukema, Coppoolse와 de Lange(2016)의 연구에서는 치매환자가 좋은 사회적 관계를 맺고 있고 지지적인 네트워크가 잘 형성되어 있다면 의사결정에 더 쉽게 포함되었다.

다음으로 가족 돌봄제공자의 인구학적인 요소들 또한 공유된 의사결정에 강한 영향을 미치는데 보호자가 더 높은 교육을 받을수록(Menne & Whitlatch, 2007), 어릴수록(Menne et al., 2008), 의사결정에 많이 포함시킨다. 성별에 관해서는 여성 돌봄제공자가 의사결정에 치매환자를 많이 포함시키는 연구가 있는 반면(Hirschman et al., 2005), 남성 돌봄제공자가 치매환자를 많이 포함시키

는 경우도 있었다(Menne et al., 2008). 의사결정의 종류에 따라 역시 차이가 있는데 매일 집안일을 했던 여성들은 이 영역에서 더 많은 의사결정에 포함이 되고 남성은 재정적인 결정에 많이 포함된다. 또 가족 돌봄제공자가 배우자이면 치매환자에 대해 잘 알고 친밀하고 효과적인 의사소통 접근을 하므로 의사결정에 더 포함 시키는 경향이 있다. 무엇보다도 Caron et al.(2006)에 따르면 의사결정에 참여하는 치매환자의 능력에 대한 가족 돌봄제공자의 인지가 의사결정 과정에 중요한 요소라고 한다. 치매환자가 인지적으로 과부하 된 상태라고 생각하면 나중에 가장 중요한 결정을 하도록 하기 위해 그들은 의도적으로 공유된 의사결정을 제한한다. 반대로 환자가 자신의 예후와 진단에 대해 이해하고 의사결정에 참여할 능력을 가지고 있다고 생각하면 환자를 의사결정에 포함시킨다. 그러므로 의료진들은 가족 돌봄제공자들이 치매환자와 그들의 예후, 증상, 진단에 대해 얘기를 나누도록 격려해야 한다. 정보를 이해하는 환자의 능력을 사정하는 것에 관하여 가족 돌봄제공자에게 교육하는 것은 환자와 돌봄제공자의 의사소통을 증진시킬 수 있으며 환자의 자율성을 보존하도록 돕고 의사결정에 관하여 환자의 포함을 증진시킬 수 있다(Hirschman et al., 2005).

3. 공유 의사결정시 치매환자
가족 돌봄제공자의 역할과 부담감

치매노인은 그 증상이 심해짐에 따라 점차 치매환자 가장 가까이에 있는 돌봄제공자에게 의존하게 된다(김수영, 김진선, 윤현숙, 2004). 가족 돌봄제공자는 의사결정 과정에 중요한 역할을 하는데(Samsi & Manthorpe, 2013), 특히, 가족 돌봄제공자의 포함은 결정에 관한 치매환자의 가치를 해석하는 과정에서 필수적이게 되었다(Miller et al., 2016). 또한,치매환자는 상태가 항상 일정한 것이 아니라 결여,회복 상태가 반복되기 때문에 치매환자의 특성과 상황에 따라(박근수, 이충은, 2015), 의사결정 과정에서 보호자의 역할이 변화된다(Hirschman et al., 2005; Samsi & Manthorpe, 2013).

이러한 공유 의사결정은 치매환자 가족 돌봄제공자의 부담감을 초래하기도 한다. 자율성은 의사결정에 있어 중요한 개념인데 스스로의 판단으로 문제 상황을 인식하고 자신의 신념에 비추어 가장 합리적인 결론을 만들어 행동하는 것을 의미한다(김광수, 2003). 질병이 진행됨에 따라 치매환자들은 자율적으로 결정하기 어렵게 되지만 가족 돌봄제공자들은 치매환자의 자율성을 유지하고 그들의 욕구를 충족시키려고 노력하게 된다. 하지만 이전의 선호도를 고려하여 치매환자를 존중할 책임을 느껴도 많은 장애들 때문에 결국에는 의사결정에서 제외시키기도 한다(Lord et al., 2015). 이러한 과정에서 윤리적 딜레마

가 흔히 나타나는데 가족 돌봄제공자들이 그들의 욕구를 우선시하게 되면 죄책감을 느낀다

반대로 치매환자의 욕구를 충족시키기 위해 자신들의 욕구를 억누르면 가족 돌봄제공자들의 심리적,신체적 건강이 악화되고 가족들 간의 관계에도 부정적으로 영향을 미치게 된다(Webb & Dening, 2016). 이처럼 가족 돌봄제공자들은 의사결정자 역할에 대하여 상당한 감정적인 부담감과 죄책감을 경험함이 보고되었다. 또한, 대부분의 돌봄제공자들은 치매 과정에 대한 지식이 부족하였는데, 치매를 말기질환으로 생각하지 않고, 동반되는 흔한 질환에 대해서도 이해하지 못하였다(Sarabia-Cobo, Pérez, de Lorena, Nuñez, & Domínguez, 2016). 게다가 가능한 대안들과 그 효과들에 대한 정보 부족 때문에(Hirschman et al., 2005), 그들이 대신하여 의사결정을 하는데 부담감을 느끼는 경우가 많다.

이와 같이 공유 의사결정과 관련하여 가족 돌봄제공자의 인식이 중요한 문제임을 알 수 있다. 그러나 현재까지 이루어진 선행연구는 가족 돌봄제공자의 대리 의사결정 경험과 시설 입소 상황에서 의사결정을 내리는 부담감에 대한 연구가 주로 이루어지고 있었고 실제로 초기 치매환자 가족 돌봄제공자의 공유 의사결정에 대한 인식이 어떠한지에 대한 연구는 전무한 실정이다. 따라서 본 연구를 통해 초기 치매환자 가족 돌봄제공자의 공유 의사결정에 대한 인식에 대해 알아보고자 하였다.

III. 연구방법

1. 연구설계

본 연구는 초기 치매환자를 돌보는 가족 돌봄제공자를 대상으로 초기 치매환자 관련 공유 의사결정에 관한 인식을 심층적으로 밝히기 위해 반 구조화된 개별 심층면담을 이용하여 수집된 자료에 대한 내용분석을 시행한 질적 연구이다.

2. 연구참여자

본 연구의 참여자는 서울 소재 치매지원 센터 중 연구 참여에 협조를 수락한 3개 기관에서 선정되었다. 해당 기관에 등록된 치매환자의 주 가족 돌봄제공자 중 본 연구자가 연구의 목적과 내용을 설명한 후 이를 이해하고 연구 참여에 자발적으로 동의한 자를 최종 연구 대상자로 선정하였으며 구체적인 참여자 선정 기준은 다음과 같다: 1) 20세 이상의 성인, 2) 현재 또는 과거에 치매센터에 등록된 CDR 1점 또는 MMSE 20점 이상인 초기 치매환자와 함께 거주하거나, 거주하지 않더라도 치매환자에게 주 1회 이상 방문하여 치매환자와 관련하여 의사결정을 내리는 자, 3) 처음 진단을 받을 때 초기 치매 진단을 받

아 환자와 관련하여 진단 후 2년 이내 공유 의사결정에 대한 정보를 충분히 제공할 수 있는 자.치매환자가 처음 진단을 받을 때 중기, 말기로 진단을 받아 초기 치매환자를 돌본 경험이 없는 자와 신체적, 정신과적 문제로 의사소통에 어려움이 있는 자는 참여자에서 제외하였다.

최종적으로 본 연구에 참여한 가족 돌봄제공자는 총 12명으로 모두 초기 치매환자를 돌본 경험이 있는 자였다<표 1>. 평균연령은 71.4±10.4세였으며 치매노인의 배우자인 경우가 9명으로 대부분을 차지하였다. 치매 노인을 돌본 기간은 평균 3.15±2.59년이었으며, 하루에 18.58±8.51시간을 치매노인을 돌보는데 소요하였다. 이들이 돌보는 치매환자는 10명이 알츠하이머 치매를, 2명은 혈관성 치매로 진단을 받았으며, 평균 연령은 76.42±6.17세, 평균 2.43±1.51년 동안 치매를 앓고 있었다. 연구 참여자들이 경험했던 의사결정 상황은 가사(7명), 경제(2명), 여가 생활(2명), 의학적 치료(2명)등 이었다.

3. 자료수집 방법 및 절차

본 연구는 2017년 3월 20일부터 2017년 4월 30일까지의 기간 동안 개별 심층 면담을 통해 초기 치매환자 가족 돌봄제공자의 공유 의사결정에 관한 인식에 대하여 더 이상 새로운 진술이 나오지 않을 때 까지 자료수집이 이루어 졌으며 연구 참여자에게 면담 목적을 설명하고 동의서를 받은 후 면담을 진행하였다. 심층 면담은 조용하고 분리된 공간인 치매지원센터 상담실에서 시행 하였고, 1회 면담 시 소요시간은 30~60분, 면담횟수는 1~2회로 대상자에 따라 다양하게 실시하였다. 심층 면담에 앞서 설문지를 사용하여 개별적인 인구학적 특성과 그들이 돌보는 치매노인의 특성을 조사하였으며 심층 면담은 본 연구자가 직접 수행하여 현장 노트를 작성하고 면담 내용의 누락을 최소화하기 위하여 녹취하였다.

면담 방식은 개방적이고 반 구조화된 방식으로 공유 의사결정에 대한 인식에 관하여 참여자가 자유롭게 이야기하도록 하였으며 필요시 면담 질문을 하였다. 면담의 질문들로는 '치매환자를 돌보는 가족으로써 귀하가 경험하게 되는 의사결정 상황들은 어떤 상황이십니까? 그러한 상황이 발생했을 때 어떤 방법으로 의사결정을 하시나요? 그러한 방법으로 의사결정을 하시는 이유는 무엇입니까? 치매환자와 의사결정을 하는 과정에서 귀하는 어떤 역할을 한다고 생각하십니까? 왜 그러한 역할을 하신다고 생각하십니까? 치매환자와 공유 의사결정이 가능하다고 생각하시나요? 치매환자와 함께 의사결정을 하는 것에 대해 무엇을 느끼십니까? 치매환자와 함께 의사결정을 할 때 도움이 되는 요인과 방해가 되는 요인은 무엇일까요? 치매환자와 함께 의사결정을 할 때 바람직한

〈표 1〉 가족 돌봄제공자와 치매환자의 일반적 특성 (N=12)

| | 가족 돌봄제공자 | | | | | | | | 돌보는 치매환자 | | | | |
특성	나이	성별	결혼여부	최종학력	월 수입(만원)	환자와의 관계	돌봄기간(월)	하루 돌봄 시간(시간)	나이	성별	최종학력	치매종류	치매중증도(CDR 또는 MMSE)
P1	79	남	기혼	고졸	100미만	남편	48	24	79	여	초졸이하	AD	CDR: 1
P2	81	남	기혼	고졸	100미만	남편	29	24	85	여	고졸	AD	CDR: 1
P3	74	여	기혼	초졸이하	2000이상~300미만	부인	33	24	76	남	고졸	AD	CDR: 1
P4	64	여	기혼	고졸	3000이상~500미만	부인	40	24	68	남	초졸이하	AD	CDR: 1
P5	62	여	기혼	대졸	3000이상~500미만	며느리	24	4	82	여	고졸	AD	CDR: 1
P6	75	남	기혼	대졸	5000이상	남편	18	24	71	여	대졸	AD	CDR: 1
P7	81	여	기혼	초졸이하	100미만	부인	132	24	84	남	고졸	AD	CDR: 1
P8	45	여	미혼	고졸	3000이상~500미만	딸	28	12	79	여	고졸	AD	CDR: 1
P9	78	여	기혼	고졸	100미만	부인	28	24	78	남	대졸	AD	CDR: 1
P10	74	남	기혼	고졸	100미만	남편	12	24	71	여	초졸이하	VaD	MMSE: 22
P11	76	여	기혼	고졸	100미만	부인	36	13	78	남	대졸	AD	CDR: 1
P12	68	여	기혼	중졸	100미만	자매	26	2	66	여	중졸	VaD	MMSE: 23

P=participant, MMSE=Mini-mental state examination, CDR=Clinical Dementia Rating
AD=Alzheimer's disease, VaD=Vascular dementia

의사결정은 어떤 것일까요?' 등의 연구참여자의 생각과 답변을 이끌어 내기 위한 유도 질문, 부가 질문과 주요 질문이 포함되었다.

면담이 종결된 후 즉시 면담 노트를 작성하여 참여자 번호, 면담 일시, 면담 내용 및 면담 시 연구자의 느낌이나 특이사항을 기록하여 추후 결과 분석에서도 활용할 수 있도록 하였다. 혹시 대상자가 다 진술하지 못하거나 인식에 대하여 새롭게 생각나는 내용이 있으면 다시 면담해 줄 것을 요청하였다. 녹음된 내용은 가능한 빠른 시간 내에 반복적으로 들으면서 참여자의 말을 그대로 기록하였고 얻은 녹음 결과 기록과 함께 현장노트의 내용을 참고로 하여 면담 자료를 질적 내용분석 방법을 이용하여 분석하였다.

4. 자료분석

본 연구에서는 귀납적 내용분석 단계에 따라 분석하였다. 분석의 단위를 선택하고 자료에 대한 전체적인 맥락을 파악하며 심층면담에서 나온 자료들을 반복적으로 읽으면서 메모를 하고 제목을 다는 개방 코딩(open coding)을 통해 하위 범주들을 생성하였다.개방 코딩 후 비슷하거나 서로 다른 범주들을 더 높은 차원의 범주로 묶어 그룹화 하는 범주 형성(creating categories) 단계를 진행

하였다. 이후 범주 형성을 통한 연구주제의 보편적인 해석을 나타내는 추상화(abstraction)과정을 시행하였다(Elo & Kyngäs, 2008).본 연구는 자료 분석의 신뢰도와 타당도 확보를 위하여 질적 연구의 평가기준인 신뢰성(credibility),적용성(transferability), 의존성(dependability) 및 확실성(confirmability)을 충족시키기 위한 노력을 하였다(Lincoln & Guba, 1985). 우선 신뢰성을 확보하기 위해 연구 참여자들이 자유롭게 자신의 생각을 진술하도록 하고 면담 후 연구 참여자들과 면담 내용을 다시 한 번 확인하며 2차 면담을 실시하여 분석결과에 대한 연구 참여자들에게 의견을 묻고 피드백을 받았다. 적용성을 확보하기 위해서는 연구의 내용,연구자의 역할, 대상자 모집, 자료수집 절차 등에 관하여 자세하게 기술하였다. 의존성의 확보를 위해서는 이론적 포화에 이르기까지 수집과 분석을 계속하며 동일한 자료 분석 결과가 나올 때까지 자료 분석과정을 시간 간격을 두고 계속 반복하였다. 확실성을 확보하기 위해서는 심층면담 후 바로 현장노트를 기록하여 연구과정과 결과에 있어서 연구자 자신의 가정을 명확히 하고 모든 편견으로부터 해방시키기 위해 노력하였다. 분석 과정의 타당도 확보를 위하여 질적 연구에 경험이 풍부한 간호학 전공교수 1인의 감독 하에 치매환자와 가족들에 대한 경험이 풍부한 간호사 2인이 함

께 확인하는 절차를 가졌다.

5. 윤리적 고려

본 연구는 연구 대상자에 대한 윤리적 고려를 위하여 기관 생명윤리 심의 위원회(1040548-KU-IRB-16-243-A-1) 승인을 받은 후 진행하였다. 연구 설명서를 통해 연구 참여자에게 연구의 목적, 진행절차,면담 녹음 등에 대해 설명하고 악행 금지의 원칙에 따라 참여자의 사생활을 침해하지 않기 위해 면담 내용을 연구 목적 이외에는 다른 어떠한 용도로 사용하지 않을 것과 연구가 종료 된 후 파기할 것임을 설명하였다. 또한 연구 참여 도중 참여자가 원한다면 언제든지 참여를 중단할 수 있으며 참여를 중단하더라도 어떠한 불이익도 받지 않을 것을 설명하고 개인정보는 철저하게 보호하며 익명성과 비밀 유지에 대해 설명하여 전 참여자로부터 연구 동의서를 받았다. 또한 모든 자료는 연구자의 컴퓨터에만 저장하였고 컴퓨터는 비밀번호를 입력해야만 접근이 가능하도록 하였다. 면담 종료 후 참여자에게 감사의 표시로 소정의 답례품을 제공하였다.

Ⅳ. 연구결과

1. 초기 치매환자 가족 돌봄제공자의 공유 의사결정에 대한 인식

초기 치매환자 가족 돌봄제공자의 공유 의사결정에 대한 인식에 관한 면담 자료를 내용 분석한 결과 '치매환자와의 의사소통 촉진 수단', '치매환자의 자율성 보장 수단', '치료촉진 기회', '가족 돌봄제공자의 부담감 증가', '치매환자와 부정적 관계 촉진', '우선순위 변화에 따른 선택 사항'이라는 6개의 범주가 도출되었고 17개의 하위 범주가 나타났다<표 2>. 각 범주별 구체적인 결과는 다음과 같다.

1) 치매환자와의 의사소통 촉진 수단

가족 돌봄제공자들은 치매환자와 공유 의사결정을 할 때 중요한 일에 대한 주제뿐만 아니라 일상생활에 관해 나누게 됨으로 서로 간의 의사소통이 촉진된다고 하였다.

"할머니한테 얘기를 하죠. 주민 센터에서 빨래방이 있어가지고. 일주일에 한 번씩 오니깐 (중략) 그거를 내가 얘기를 하죠."(P2)

또한 평소에 자신의 의사표현을 하지 않았던 치매환자들도 의사결정 상황에서 가족 돌봄제공자들의 지지를 받게 되면 치매환자 스스로 의사표현을 할 수 있는 기회가 상승함으로 의사결정을 하는 주체가 될 수 있다고 하였다. 이 때, 치매환자의 특성이 각각 다르기 때문에 공유

의사결정에 대한 경험을 쌓으면서 그 과정 가운데 각자가 익힌 효율적인 의사소통을 하는 것이 중요함을 제시한다.

"왜 B가 좋아졌는지를 말하게끔 자꾸 유도를 하는 거지. (중략) 이 사람이 하게끔. 나는 알지만 이 사람이 왜 B를 선택하게 된 거를."(P4)

2) 치매환자의 자율성 보장 수단

공유 의사결정을 할 때 치매환자가 감정 또는 생각을 표현하면 구체적으로 물어보며 의사를 반영하고 가족 돌봄제공자와 치매환자의 의견이 반대 된다면 구체적인 설명으로 설득시키기 위해 노력 할때 치매환자의 정서적 만족감이 향상된다고 설명하였다. 공유 의사결정을 할 때 환자와 의견을 교환하고 공감을 하면서 불분명한 치매환자의 생각과 감정을 잘 파악할 수 있고 파악한 후에 가족 돌봄제공자가 치매환자의 생각과 감정에 반응하여 올바른 중재를 할 수 있음을 의미한다.

"돈을 만지다가 안 만지니까 본인은 섭섭하지.(중략) 구체적으로 돈 관계에 대해 얘기하자면 이렇게 기억을 못하니 내가 할 수밖에 없다 이렇게 설명을 해주죠. (중략) 이런저런 몇 번씩 예를 들어서 이해를 시키는 거지." (P1)

특히 공유 의사결정 중 치매환자가 좋아하는 주제를 나누거나 불안해하는 환자들에게 의사결정을 할 수 있도록 지지를 제공하면 치매환자의 감정을 긍정적으로 변화시킬 수 있다고 하였다.

"환자가 그 자기의 변화에 대해서 막연한 불안감을 느끼는 상태에서 더 만약에 뭔가 결정권이 없거나 그렇게 되면 더 불안할거 같아요. (중략) 그다음에 뭔가 있다 라고 볼 수 있는 사람이 있다면 계속 나는 얘기를 해줘야 된다고 생각을 해요. 그래야지 그 불안감이 감소하지 않을까요? (중략) 하나의 작은 선택들이 모여서 결국에는 불안감이 해소되고 자신감이 생기고. 작지만 그 자신감이 생기게 되면 많이 확 바뀌는 생각이 들어요." (P8)

또한, 공유 의사결정을 하게 되면 치매환자의 선호도를 알게 되고 가족 돌봄제공자들이 치매환자의 선호도에 반응하여 상의하고 결정을 내릴 수 있기 때문에 선택의 욕구를 충족시킬 수 있다는 것을 제시한다.

·
"이따금 동네에 나가게 되면은 팩에 2천 원 3천 원 넘어가지고 파는 거 있잖아요. 그럼 여기서 골라봐라 먹고 싶은 거 있으면은. (중략) 그런 거를 골라온 거를 이렇게 보고서..(중략)" (P2)

〈표 2〉 초기 치매환자 가족 돌봄제공자의 공유 의사결정에 대한 인식에 관한 범주 및 하위범주

범주	하위범주
치매환자와의 의사소통 촉진 수단	●치매환자와 일상생활에 관한 대화 촉진 기회 ●치매환자 스스로 의사표현을 할 수 있는 기회 상승
치매환자의 자율성 보장 수단	●치매환자의 생각과 감정 고려를 통한 정서적 만족감 향상 ●치매환자 선택의 욕구 충족 기회 ●치매환자의 바람직한 선택을 위한 안내자 역할 수행 ●미래에 대한 계획을 함께 하여 가족 간의 갈등 대비
치료 촉진 기회	●치유에 대한 의지 및 노력 향상 기회 ●기억력 감소 보완을 통한 인지 상승 기회 ●질병 상태 변화 파악의 기회
가족 돌봄제공자의 부담감 증가 원인	●치매환자와의 심도 있는 의사소통 제한에 대한 좌절감 ●대리 의사결정에 대한 심리적 부담감 ●의사결정 지원자로서의 한계로 인한 낙담
치매환자와의 관계 악화 원인	●치매환자 의견에 대한 불신 강화 ●치매환자의 부정적 감정 자극 ●의사결정 중 치매환자 증상으로 인한 환자에 대한 부정적 인식 축적 ●의사결정 후 치매환자 증상으로 인한 갈등 유발
우선순위 변화에 따른 선택 사항	●변동적 상황에 따른 공유 의사결정 필요성 판단

다음으로 바람직한 선택을 위한 안내자 역할로 공유 의사 결정 상황마다 자세히 반복적으로 설명함으로 치매환자의 의사결정의 잠재력을 증진시킬 수 있다고 설명하였다. 치매환자가 잘못된 선택을 하고 고집하는 경우에도 무조건 그 상황을 회피하고 배제하기보다 치매환자의 생각을 존중해서 그 상황에 대한 간접체험과 설명을 통해 설득을 할 때 올바른 합의점에 도달할 수 있다고 집약해 볼 수 있다.

"엉뚱한 소리가 있잖아요. 말하자면 낚시를 하고 싶을 때 혼자갈 수 있는 형편은 아니니까 만약에 그럴 때 나도 지금 가야되지만 우리 가고 싶지만 둘이 지금 치료하는 병 때문에 먹어야 되는 약도 있고 그래서 이렇게 안 되니까 다음 기회에 가기로 하자 이렇게 설득을 하면 거부하지는 않고 (중략)어떤 것은 요거를 해도 되고 이런 거는 해줄 수 없는 부분이다. 이렇게 납득을 시키죠." (P4)

"결정을 내릴 때 앞에 엄마 뭐가 있고 a가 있고 b가 있고 c가 있어. 계속 얘기를 해주다 보면 결국에는 자기 혼자 보는 때가 와요. (중략)." (P8)

마지막으로 재정 및 치료에 대한 공유 의사결정을 하

게 되면 치매환자의 생각을 앞서 알게 되고 미래에 대해 함께 계획하여 어려움을 대비할 수 있는 좋은 방법이라고 하였다. 치매환자와 치료, 예후에 대한 이야기를 하지 않는다면 후에 의사결정에 대한 가족들 간의 갈등으로 대리결정에 대한 부담감이 발생할 수 있기 때문에 앞으로의 치료 계획을 위해서는 공유 의사결정이 필요하다고 하였다. 현재의 어려움뿐 만 아니라 치매가 진행됨에 따라 나중에 겪게 될 수 있는 가족 돌봄제공자들의 의사결정 부담감을 감소시키기 위해서 공유 의사결정에 대한 교육이 진단 초기 때부터 필요함을 제시한다.

"우리 할아버지하고는 의사를 맞추었어요. 만약에 인제 유사시에 이렇게 됐을 때는 최대한의 노력은 하되 중환자실 들어갔을 때 있는 그거하고 이런 거는 인제 편하게 가겠다. 둘이서 약속을 했어요." (P4)

3) 치료 촉진 기회
치매 치료는 보호자와 의료진만의 대화 주제가 아니라 치매환자와 함께 나누는 주제여야 되는데 증상, 치료의 과정, 결과에 대해 공유하면 이후에 치료의 효과를 경험했을 때 치유에 대한 의지와 노력을 더욱 증가시킬 수 있다고 생각함을 알 수 있다.

"인지시켜줘야 탈피를 빨리 하지. (중략) 아 그럼

나도 희망이 생기는구나. 본인이 이렇게 맘을 먹게 만들어줘야지. 그래야지 빨리 병마에서 벗어날 수가 있지." (P10)

다음으로 공유 의사결정을 할 때 핵심적인 이야기를 하게 되면 어떤 단서를 통해 기억을 함으로 인지 능력 제한을 보상하고 오히려 인지 상승의 기회가 될 수 있다고 하였다.

"핵심적인 얘기를 해주면은 이렇게 들으면서 기억을 한다고요. 그리고 할아버지가 그런 얘기를 한 것이 생각이 난다 이러면서 내 얘기를 긍정적으로 받아들이더라고요." (P2)

"초기 치매환자 돌보는 것도 몇 번이라는 답은 없지만 되게 지속적으로 얘기를 해주면 결국에는 기억해요." (P8)

또한 평소에 공유 의사결정을 잘 하던 환자가 선택을 하는데 지속적인 문제를 나타내면 환자의 질병 상태 변화를 조기에 인식하게 되어 치료를 하는데 도움이 되는 중재 방법을 사용하게 된다고 하였다.

"근데 그게 그런 게 지속이 되다보면 나중에는 선택을 하는데 있어서 문제가 생기는 것 같다고 느끼는 건데. 그럴 때가 안 좋을 때인 것 같아요. 시기적으로." (P8)

4) 가족 돌봄제공자의 부담감 증가 원인
가족 돌봄제공자들은 처음에 계속적인 설명을 통해 공유 의사결정을 하려고 노력하였지만 치매환자의 기억력, 판단력 감소와 성격변화 때문에 심도 있는 의사소통의 제한에 대한 좌절감을 경험하게 된다고 하였다. 적극적인 교육 참여와 상황에 대한 적절한 대처를 통해 공유 의사결정을 하려고 노력하였지만 치매 단계가 진행됨에 따라 부담감은 여전히 남아 있어 가족 돌봄제공자에게 어려운 문제임을 알 수 있다.

"근래 와서는 자주 잊어버리는 거라. 얘기를 나누던 거 물어 보면 잘 모르고 기억을 못하고 그러더라고. 잊어버리니까 굳이 얘기를 나누지 않는 거야. (중략) 생각지 못한 얘기를 하니까. 잊어버리고 아무것도 대답을 못하고 딴소리를 할 때는 견디지 못하는 거야." (P2)

"남편은 똑같은 소리 세 번만 하면은 탁 이게 너무 힘들어 하는 거예요. 나가버리고 그래요. (중략)열 번

을 얘기한다고 해보세요. 막 지쳐요." (P5)

또한, 치매환자 증상이 악화되면서 가족 돌봄제공자에게 모든 것을 맡기고 의존할수록 부담감이 가중된다고 말하였다. 가족 돌봄제공자들 역시 잦은 실수와 기억력 감소로 인해 자신이 올바른 대리 의사결정을 하고 있는지에 대한 확신이 없었기 때문이었다.

"무엇인가 말해줬으면 좋겠어. 이것은 저것은 좋다. 그렇게 해야지. 나도 결정내리기 쉽지 않은데.선택권을 줬으면 좋겠어. 그래야 보호자가 종합적으로 판단해서 결정 내릴 수 있으니. (중략) 나도 나이가 들어가고 깜박깜박하는데 점점 나도 잘 모르는데 가끔 결정내리는 것이 부담돼. 답답해." (P1)

다음으로 치매환자와 공유 의사결정에 대한 어려움을 경험한 후 의사결정을 지원하는 돌봄제공자들 스스로의 능력에 대한 한계에 직면하게 되었다고 언급하였다. 노력을 해도 반복되는 실패에 직면하게 되면서 자신에 대한 부정적인 감정이 생기고 낙담된다는 것을 의미한다.

"나도 사람인데 내가 어디까지 이해를 하고 어디까지 감싸주고 어디까지 들어줘야 되느냐 (중략)사람이 아무리 절제를 하고 자제를 한다 해도 세 번이상은 안 되더라고. 그러니까 나도 모르게 핀잔 같은 말이 나오는 거야. 내가 그렇게 안한다고 애를 써도 그게 안돼. 그니까 내가 돌려고 해. 절제력이 없어져 나도." (P6)

5) 치매환자와의 관계 악화 원인
가족 돌봄제공자들은 치매환자의 증상으로 인해 시기에 따라 내용이 다르기 때문에 공유 의사결정 상황에서 치매환자의 의견을 신뢰하지 못하게 된다고 하였다.

"어느 때는 아주 명료하게 자기 의사를 얘기하다 보면 그때 그 시절에 있었던 그 얘기를 그대로 나누는 거야. 기억을 하면서. 할머니가 그럴 때 보면 참 이상하다. 이게 치매인가. 이게 치매라는 건가.이렇게 생각하고. 어쩔 때 보면 절망의 나락으로 떨어지는 거야. 생각지 못한 얘기를 하니까. " (P2)

또한 치매환자가 싫어하는 주제에 대해 상의를 하게 되면 치매환자의 부정적 감정을 자극하여 결국에는 가족 돌봄제공자와 부정적 관계로 이어지게 되기 때문에 공유 의사결정을 하지 않는 것이 낫다고 하였다. 치매환자와 공유 의사결정을 해서 치료에 대한 긍정적인 효과를 기

대하는 가족 돌봄제공자와 달리 한번 갈등을 경험한 가족 돌봄제공자들은 현재 환자 감정을 자극하지 않으려고 노력하는 것이 더 중요하다고 생각함을 알 수 있다.

"우리 할머니한데 요양원 소리를 했다가 호되게 혼났었어요. (중략) 내가 듣고 판단을 하는 거죠.할머니한데 얘기를 안 해요. 싫어한다고. 굉장히 싫어해." (P2)

다음으로 치매환자는 사고력, 판단력이 약해져서 공유 의사결정 중 논리에 맞지 않는 말과 의존하는 모습을 보이기 때문에 치매환자에 대한 부정적인 인식이 축적된다고 하였다.

"상의하고자하는 내용을 전하면 대개 이러이러한 답변이 올 거다 예상을 하자나요. (중략) 이렇게 예상을 하고 질문을 하면 엉뚱하게 답변을 한다고.그거하고 관계없는 얘기를. 그러면은 질문하는 사람이 실망스러워서 그냥 얘기가 중단되는 경우도 있고" (P6)

마지막으로 가족 돌봄제공자들은 공유 의사결정 후 치매환자와 갈등이 유발됨을 경험하였다. 치매환자의 기억력 저하로 인해 처음부터 공유 의사결정을 하지 않는 것이 낫겠다고 판단하였음을 알 수 있었다.

"밤낮으로 눈만 뜨면 그 얘기야. 왜 날짜를 네 맘대로 했냐고. (중략) 잊어버리니깐 안했다고. 나한데 왜 안했냐고. 그 딴소리나 하고 그니까 하나마나야. 안했다고 야단이니까. 의논을 안 하는 게 좋아..(중략) 지금도 그래요. 지금도 해도 해서 화낼 것 같으면 안해." (P7)

6) 우선순위 변화에 따른 선택 사항

가족 돌봄제공자들은 치매환자와 함께 공유 의사결정이 필요한 여러 상황이 있음에도 불구하고 상황에 따라 공유 의사결정의 필요성을 스스로 판단하고 선택 사항으로 여기고 있었다. 중대한 일들이 생길지라도 자녀들에게 결정을 맡기고 치매환자와 매일 일상생활을 건강하게 살아가는 것이 더 중요하다고 하였다. 초기 치매로 진단을 받으면서 갑작스럽게 당면한 증상에 대한 문제들이 크기 때문에 치매가 더 나빠지지 않도록 현재의 질병 관리에 대해 최우선 순위를 부여한다고 볼 수 있다.

"지금은 별로 같이 여쭤보고 그렇게 없는데. 왜냐하면 요새는 내가 거의 그 센터 다니고 병원가고 이런 거하는데. 밥 먹으면 운동 가야된다. 이러고.별로 상의

하고 뭐 그런 게 없어. (중략) 건강문제만 그것만 내가 맨날 걱정하지. 더 나빠지면 어떡하나. 지금은 우리가 더 젊었으면 뭘 어떻게 해야겠다. 그러니까 그러는데 지금은 별로 그런 게 없어요." (P9)

"요즘에는 결정할 것도 없고 뭐 먹고 돌아다니는 거니까. (중략) 얘들이 이제 다 알아서 하니까." (P3)

Ⅴ. 논의 및 제언

본 연구는 최근 우리나라 노인인구 중에서 비율이 빠르게 증가하고 있는 초기 치매환자를 돌보는 가족 돌봄제공자의 공유 의사결정에 대한 인식이 어떠한지를 심층적으로 파악 및 이해하여 설명하고 초기 치매환자와 가족 돌봄제공자의 효율적인 공유 의사결정을 위한 지침 개발에 기초자료를 제공하고자 하는 목적으로 질적 내용분석 방법을 사용하여 수행되었다.

가족 돌봄제공자의 공유 의사결정에 대한 인식이 환자의 의사결정 참여 정도에 중요한 요소이므로 긍정적으로 인식되는 부분은 지원 및 교육을 하며 부정적으로 인식되는 부분에 대해서는 보완할 전략이 필요할 것으로 여겨진다. 또한 공유 의사결정에 대한 올바른 이해가 가족 돌봄제공자의 부담감을 감소시키고 치매환자의 자기 결정권 침해를 최소화하기 때문에 연구결과를 바탕으로 효율적인 공유 의사결정을 할 수 있도록 지지를 한다면 환자의 자기결정권의 존중을 이념으로 삼는 성년 후견제도의 효율성을 뒷받침할 것으로 생각된다.

본 연구의 첫 번째 범주인 치매환자와의 의사소통 촉진 수단이라는 연구 결과는 공유 의사결정을 하면서 환자의 관점에 대해 묻고 그들이 정보를 이해했는지 확인하고 답을 하며 대화를 촉진한다는 선행연구(Smebye et al., 2012)와 상응하였다. 특히 공유 의사결정의 한 부분인 사전 의료계획은 말기에 받는 케어에 대하여 선호도와 목적을 확인하고 의사소통하는 적절한 수단(Sarabia-Cobo et al., 2016)이라는 연구 결과와도 같은 맥락이라 할 수 있다(Samsi & Manthorpe, 2013). 치매환자의 증상이 악화됨에 따라 의사소통의 제한을 경험할 수 있는 상황에서 공유 의사결정을 통하여 사회적인 인간에게 꼭 필요한 좋은 의사소통을 해야 할 필요성이 더욱 강조된 것으로 해석할 수 있다. 이전의 연구에서 가족 돌봄제공자에게 치매환자의 정보 이해 능력을 사정하도록 교육하는 것은 공유 의사결정을 증가시키고 환자와 보호자간의 의사소통을 촉진할 수 있고(Hirschman et al., 2005) 좋은 의사소통은 부담감,죄책감을 감소시킬 수 있다고 하였다(Sarabia-Cobo et al., 2016). 이러한 연구들을 고려하여 의사소통을 촉진하기 위해 가족 돌봄제공

자에게 환자의 정보 이해 능력에 대하여 교육하고 공유 의사결정을 격려하는 것이 중요하다고 판단된다.

본 연구의 두 번째 범주로 치매환자의 자율성 보장 수단으로서의 공유 의사결정에 대한 인식은 여러 외국 선행연구를 지지하는 결과이다. 치매환자들은 가능한 오랫동안 의사결정을 하길 원하는데 함께 공유 의사결정을 참여하지 못하면 소외감을 느끼지만 함께 할 수 있도록 지지가 제공되었을 때는 자신감이 생기고 스스로 생산적이라고 여기는 긍정적인 마음을 가진다는 결과의 선행연구(Fetherstonhaugh et al., 2013)가 있었다. 이것은 치매환자의 생각과 감정을 고려하여 자율성을 보장하는 의사결정을 한다면 정서적 만족감이 향상된다고 한 본 연구의 결과와 매우 유사하다. 치매환자의 욕구와 선호도를 충족시킬 때 치매환자는 삶을 독립적으로 관리할 수 있고 사회적으로 활동적일 수 있다고 나타난 선행연구(Groen-van de Ven et al., 2016)와 달리 본 연구결과는 치매환자 선택의 욕구 충족 기회라는 점만 분석할 수 있어서 선행 연구처럼 충족의 결과에 대해서는 더 깊이 분석하지 못하였다. 또한 본 연구는 치매환자의 바람직한 선택을 위한 안내자 역할을 가족 돌봄제공자가 수행할 수 있다는 점에 대해 추가적으로 강조한 점에서 차이가 있었다. 치매환자와 보호자들이 자율성을 유지하고 관리하는 전략을 사용하는 것에 대한 중요성을 언급한 선행연구(Samsi & Manthorpe, 2013)에서처럼 치매환자의 자율성 보장 수단이라는 범주는 인격체로서 자신의 삶에 대해 결정을 내리고 존중받을 권리에 대한 중요성이 치매환자들에게 더욱 강조된 것으로 설명 될 수 있다. 전문가들이 치매환자가 가치를 표현하고 감정을 의사소통하도록 잔존 능력을 강화 시키는 방법들에 참여 하도록 돕기 위해 공유 의사결정을 지지해야 한다고 한 연구결과처럼(Groen-van de Ven et al., 2016), 의료진들이 공유 의사결정을 지지하는 것은 환자의 자율성 보장을 위한 중요한 부분이라고 생각된다. 공유 의사결정을 통해 미래에 대한 계획을 함께 하여 가족 간의 갈등을 대비할 수 있다는 본 연구의 결과에 대해서는 치매환자의 의사결정을 대신하는 가족 돌봄제공자들에 의해 직면한 많은 문제들이 공유 의사결정으로 하는 사전 의료계획에 의해 해결될 수 있을 것이라고 일부 언급 되었을 뿐(Sarabia-Cobo et al., 2016)이었다. 이는 많은 치매환자 가족 돌봄제공자들이 미래에 일어날 갈등을 예측을 하지 못하고 현재의 문제들을 바라보고 스스로 해결하는데 중점을 두었기 때문으로 사료된다. 따라서 본 연구결과는 공유 의사결정을 통하여 미래에 대한 계획을 함께 함으로 인해 어려움을 대비할 수 있다는 점에 대하여 가족 돌봄제공자에게 교육을 해야 할 필요성을 제시했다는 점에서 의미가 매우 크다고 할 수 있다.셋째로 본 연구에

참여한 가족 돌봄제공자는 공유 의사결정을 치료 촉진 기회로 인식하였는데 공유 의사결정을 할 때 가족 돌봄제공자들은 치매환자의 잔존능력을 강화시키고 의사결정 역할을 성취하도록 하기 위해 인지능력의 제한을 보상할 수 있다고 한 연구(Groen-van de Ven et al., 2016)와 상응하였다. 또, 정보를 교환하고 질문하고 답하는 지지를 제공하고 선택들을 강화시킴으로 치매환자의 잃어버린 기능을 보상하고 보유된 기능을 유지하게 한다고 하는 선행연구결과(Smebye et al., 2012)와도 유사하였다. 하지만 가족 돌봄제공자들이 공유 의사결정을 하면서 치매환자 인지를 상승 시키도록 돕는 것과 달리 치매환자들이 직접 그들이 의사결정을 계속할 수 있도록 전략들을 개발하고 인지손상을 보상함으로써 독립성을 유지한 연구결과(Fetherstonhaugh et al, 2013)와는 차이가 있었다.이는 국내에서는 적극적으로 치료에 참여하는 치매환자의 역할 보다 치매환자들을 돕는 가족 돌봄제공자의 역할의 중요성이 더욱 강조된 것으로 설명된다. 치매환자와 공유 의사결정을 함으로써 질병 상태 변화를 파악할 수 있는 기회가 된다는 내용은 국외 선행연구들에서 강조 되지 않았는데 본 연구결과는 공유 의사결정에 관한 인식 연구에 새로운 지식을 추가했다고 할 수 있다. 가족 돌봄제공자가 치매환자들을 돌보면서 중증도의 미세한 변화를 알아차리기가 쉽지 않을 수 있는데 공유 의사결정을 위한 의사소통을 적극적으로 활용하여 환자의 증상 변화를 파악할 필요가 있겠다.

네 번째로 가족 돌봄제공자의 부담감 증가 원인은 공유 의사결정에 관하여 부정적으로 인식하는 범주로 나타났다. 선행연구에서는 가족 돌봄제공자를 좌절하게 만드는 원인이 반복되는 말들과 기억 상실이었고(Silverstein & Sherman, 2010) 가장 많은 고통과 가장 큰 부담감을 발생시키는 가족 돌봄제공자 역할의 요소는 매일매일의 의사결정을 돕는 것이다라고 강조하였다(Harrison, Greenish, Jones, Mandal, & Sampson, 2012). 대리 의사결정들은 가능한 대안들과 그 효과들에 대한 부족한 정보 때문에(Hirschman et al., 2005)환자의 인지가 감소함에 따라 더 부담이 되고 그러한 부담은 의사결정 과정을 지연시키며 고통, 죄책감을 유발시킨다는 연구(Lesile, 2015) 와 상응한다고 판단된다. 또한 외국 선행 연구들(Hirschman, Xie, Feudtner, & Karlawish, 2004; Karlawish, Casarett, Propert, James, & Clark, 2002)에서 가족 돌봄제공자의 부담감 증가는 치매환자와의 공유 의사결정을 감소시키는 악순환을 나타내었다. 따라서 의사소통 지원 프로그램을 통해 치매환자와 매일의 일상을 둘러싼 문제들을 토의하도록 지지 받을 수 있게 될 때 가족 돌봄제공자들은 치매환자의 관점을 더 잘 이해하게 되고 의사소통이 촉진되었다고 하며 결과적으로 삶의 질

과 긍정적 적응, 치매환자와의 관계가 개선되었다고 하였다는 선행연구(Murphy & Oliver, 2013)의 결과를 고려할 때 가족 돌봄제공자의 부담감을 줄이고 공유 의사결정을 촉진 시킬 수 있는 의료진의 교육 및 의사소통 지원 프로그램의 개발 및 수행이 필요하다고 생각된다. 또, 이러한 연구결과를 토대로 의료진들이 가족 돌봄제공자의 부담감을 줄이기 위해 치매단계가 진행됨에 따라 가족 돌봄제공들에게 다양한 변화 시점을 안내하고 정보를 주어 효율적인 공유 의사결정을 지지하는 교육을 하는 것이 필요할 것이라고 사료된다.

다음으로 공유 의사결정을 치매환자와의 관계 약화 원인으로 인식하고 있었는데 이는 초기 치매환자와 공유 의사결정을 많이 할수록 가족 돌봄제공자들은 더 높은 삶의 질과 우울의 감소, 더 적은 부정적인 긴장관계를 경험했다는 연구(Menne et al., 2008)와 상반되었다. 본 연구의 대상자들이 국외 선행연구의 주된 대상자들에 비해 소수이며 치매환자와 가족 돌봄제공자들의 인구학적 특성, 치매증상이 다르다는 점을 고려하면 다른 초기 치매환자 가족 돌봄제공자들에게 결과를 일반화하기에 신중함이 필요된다. 또한 특징적으로 본 연구에서는 치매환자와 치매 치료에 관하여 함께 의사결정을 할 때 부정적인 감정을 자극하게 된다는 내용이 추가적으로 도출되었는데 국내에서는 치매에 관한 부정적인 인식 때문에 치매환자들이 질병에 대한 인정을 하지 않는 경우가 많아 치매 치료에 적극적으로 참여하기 원하지 않는 것으로 해석된다. Silverstein & Sherman, 2010)의 연구에서 기존의 프로그램과 달리 초기 치매환자와 가족 돌봄제공자가 함께 참여하여 인지장애에 대한 개요, 증상에 대한 치료, 기억과 안전을 향상시킬 수 있는 기술, 법적 재정적 계획과 의사소통을 포함한 내용으로 훈련 프로그램을 구성하고 운영을 하였다. 이후 치매에 대한 지식이 증가하였고 치매환자와 치매 진단 및 개인적인 계획에 대한 의사결정을 공유할 때 편안함을 경험하는 긍정적인 영향을 받게 되었다고 하였다. 이 연구의 결과처럼 의료진들은 특히 초기 치매환자와 가족 돌봄제공자가 함께 교육 받을 수 있는 장을 마련하고 프로그램 교육을 수행하여 초기 치매환자와 가족 돌봄제공자가 편안하고 효율적인 공유 의사결정을 할 수 있도록 지지 할 필요가 있다고 생각된다.

마지막으로 '우선순위 변화에 따른 선택 사항'으로서 인식하고 있었는데 공유 의사결정에 대하여 중요하게 생각하지 않았기 때문에 상황에 따라 선택 사항으로 여기는 경우가 많았다. 특히, 치매를 돌보는 계획을 세우는 상황에서는 전문가들이 가장 잘 알고 있기 때문에 공유 의사결정을 세울 필요를 느끼지 못하는 것으로 나타났다(Mariani et al., 2016).또, 외국의 한 선행연구(Silverstein & Sherman, 2010)에서 가족 돌봄제공자들은 교육을 받아야 할 필요성에 대해 치매에 대한 일반적 지식과 치료에 대한 정보가 가장 중요하다고 답하였고 공유 의사결정의 교육 필요성에 대해서는 언급하지 않은 내용이 있었다. 초기 치매환자 가족 돌봄제공자들은 치매라는 새로운 질병을 접하게 되고 어떻게 치료 및 관리를 해야 하는지 모르는 상황에서 이러한 필요가 충족되지 않았기 때문에 공유 의사결정에 대한 필요성이 부족한 것으로 해석될 수 있다. 따라서 초기 치매환자 가족 돌봄제공자들에게 앞서 언급한 것처럼 치매환자와 함께 참여하는 프로그램의 내용에 관하여 교육함으로 치매에 대한 기본적인 교육에 대한 욕구를 충족시킬 뿐만 아니라 이어서 공유 의사결정에 대한 교육이 필요할 것으로 여겨진다. 또한 '우선순위 변화에 따른 선택 사항'을 나타낸 가족 돌봄제공자들은 긍정적인 인식, 부정적인 인식이 의사 결정 상황과 공유 주제에 따라 동시에 나타남을 알 수 있었다. 따라서 효율적인 공유 의사결정을 하기 위해 상황과 주제에 따른 적절한 중재가 필요할 것으로 생각된다. 공유 의사결정이 아닌 다른 것들을 계속해서 우선순위로 두었을 때 선택 사항으로 인식한 공유 의사결정이 나중에 무관심으로 되어버릴 수 있기 때문에 변동적 상황에 따라 공유 의사결정의 필요성에 대한 적절한 중재 또한 필요할 것으로 여겨진다.

본 연구가 자료를 분석하여 여러 가지 중요하고 의미 있는 결과를 제시함으로써 전반적이고 상세한 내용을 이해하는데 도움이 되었음에도 불구하고 특정 인식을 갖게 된 원인, 결과 등 인과적 관계를 분명히 나타내지 못하므로 향후 공유 의사결정을 효율적으로 중재하기 위한 이론적 근거를 제시할 연구가 진행될 필요가 있다. 또한 서울특별시 치매센터에 등록 되어있는 소수의 초기 치매환자 가족 돌봄제공자만을 대상으로 하였으므로 다른 지역에 거주하거나 치매센터를 이용하지 않는 가족 돌봄제공자들의 인식과는 다를 수 있기 때문에 전체 초기 치매환자 가족 돌봄제공자에게 일반화 하는데 있어서 주의해야 한다. 자료수집 시 공유 의사결정에 대한 인식에 관한 이해가 부족한 가족 돌봄제공자들이 많았기 때문에 풍부한 데이터를 얻기에 어려움이 있었고 가족 돌봄제공자들의 의견만을 바탕으로 분석하였기 때문에 정확하고 객관적인 정보를 얻는데 한계가 있었다.

하지만 이상에서 살펴본 바와 같이 본 연구결과를 통해 공유 의사결정의 상황과 시기 및 공유 의사결정에 대한 인식이 경험을 통해 만들어 졌다는 점을 밝혀낼 수 있었다. 따라서 치매 관련 교육 시 간접경험을 통해 공유 의사결정을 선택 사항으로 생각하는 가족 돌봄제공자들에게 공유 의사결정을 경험할 수 있는 기회 등을 제공하는 것이 공유 의사결정의 인식을 제고하는데 도움이 될

수 있을 것이다.또한 국내에서 초기 치매환자 가족 돌봄제공자의 공유 의사결정 관련 연구는 없었다는 점과 외국에서도 초기 치매환자의 공유 의사결정에 대한 가족 돌봄제공자의 경험 및 인식에 대해 구체적으로 분석하여 연구한 논문이 매우 부족하였기 때문에 우리나라 가족 돌봄제공자가 인식하는 공유 의사결정에 대하여 살펴보고 구체적인 인식을 기술하여 이해의 폭을 넓혔다는 점에서 본 연구가 갖는 의의는 매우 크다고 하겠다.

이상의 과정을 통해 분석된 본 연구 결과는 관련 학문에 새로운 지식을 더하고 건강관리 전문가들이 임상에서 공유 의사결정에 대한 인식을 확인하여 더 나은 공유 의사결정을 하도록 돕는 교육과 지지를 하는데 기여할 수 있다. 또한 초기 치매환자의 가족 돌봄제공자를 위한 공유 의사결정 관련 실무 지식 개발 및 교육자료 개발에 중요한 근거 자료에 활용되는 의미가 있을 것으로 사료된다. 정책적으로는 진단이 내려지면 섣불리 공유 의사결정에서 치매환자들을 배제하는 것이 아니라 성년 후견제도 개시 전 효율적인 공유 의사결정을 하게 됨으로 치매환자의 자기 결정권 존중과 가족 돌봄제공자의 부담감을 감소시키기 위한 성년 후견 제도의 목적을 뒷받침할 수 있을 것으로 사료된다.

이러한 본 연구의 결과를 바탕으로 다음과 같은 제언을 하고자 한다.

첫째, 본 연구는 치매센터에 등록된 초기치매환자의 가족 돌봄제공자들만을 대상으로 하고 있으므로 추후 연구는 지역을 확대해서 더 많은 가족 돌봄제공자들을 연구대상자로 포함시켜야 하며 의사결정 상황과 인구학적 특성에 따른 공유 의사결정에 대한 인식 차이에 관해서도 반복 연구를 제언한다.

둘째, 치매의 등급에 따라 의사 결정 능력이 다르기 때문에 초기뿐만 아니라 각 등급별 치매환자를 돌보는 가족 돌봄제공자들을 대상으로 확대하여 반복 연구를 제언한다.

셋째, 가족 돌봄제공자뿐만 아니라 초기 치매환자의 생각에 대한 이해의 폭을 넓히기 위하여 공유 의사결정에 대한 초기 치매환자들의 인식을 심층적으로 분석하는 질적 연구를 할 것을 제언한다.

넷째, 본 연구 결과를 바탕으로 초기로 진단 받은 치매환자를 돌보면서 여러 어려움에 직면한 가족 돌봄제공자들의 부담감을 감소시킬 수 있도록 공유 의사결정을 성공적으로 할 수 있는 실제적이고 총체적인 교육 프로그램의 개발 및 평가 연구 또한 제언하는 바이다.

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Perception about Shared Decision Making of Family Caregivers of Early Dementia Patients: A Qualitative Content Analysis Study

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.The purpose of this study was to explore perception about shared decision making of family caregivers of patients with early dementia (PWED). This study was conducted with a sample of 12 family caregivers (mean age = 71.4±10.4) of PWED from three dementia safety centers in Seoul. In-depth interviews were done for each participant about shared decision making and data were analyzed using qualitative content analysis. Six categories and 17 sub-categories identified for participants' perception about shared decision making: means to facilitate communication with patients with dementia, means to secure autonomy of patients, opportunity to facilitate treatment, cause of increasing family caregivers' burden, cause of worsening relationship with patients, and option for choices depending on priority change. The findings of this study can provide a knowledge basis for health care professionals and policy makers to understand how family caregivers of PWED think about shared decision making. It would be of great value to develop educational programs and practical guidelines about shared decision making for PWED and their family, which may contribute to respecting PWED's self-determination right as well as reducing burden of their family.

Keywords: ealry dementia patient, family caregiver, shared decision making, perception

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