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A Study of the Effect of Osteoporosis to Quality of Life for the Elderly

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Abstract

Background: With the advent of an aging society, the elderly and their family members become physically and mentally traumatized and quality of life decline due to osteoporotic fractures and disability.

O**bjectives:** The purpose of this study was to explore the relationship among demographic variables, health behavior, and quality of life for the elderly.

Methods: This study was a cross sectional study. A semi-structured interview in the form of questionnaires including personal attributes, related variables of health behavior, and WHO Questionnaire on Quality of life: BREF-Taiwan Version, (WHOQOL-BREF) was conducted. The study samples were convenient sampling of orthopedic patients from a local hospital in southern Taiwan. During the nursing period from November 2016 to February 2017, total of the number of participants were 183, and 183 valid questionnaires were collected. All data collected went through statistical software SPSS 22 to conduct data processing and analysis.

More female than male elderly do not smoke, drink, drink tea, and exercise; those with normal bone mineral density (BMD), and those who were not vegetarians, exercise more than those with abnormal BMD and with osteoporosis. Regarding the physical and mental aspects, the report of male's quality of life is better than woman's; for the physical, mental, and environment aspects, those who graduated from senior high school or vocational high school's quality of life is better than illiterate subjects; Regarding the physical, mental, and environment aspects, those who have income report their quality of life better than those who rely on children; for the physical aspect, those with less chronic diseases report their quality of life better than those with chronic diseases do; Regarding the physical and psychological aspects, the report of those with normal bone mineral density's quality of life is better than those with abnormal BMD and osteoporosis. The related factors affecting the degree of entire health satisfaction included osteoporosis, taking drugs to prevent chronic diseases, illiteracy, elementary school, the above four predicting variables can jointly explain the explained variance values of 18.5% of predicting the degree of entire health satisfaction of quality of life.

Conclusions: The results of this study will be used as a reference for the healthcare givers to enhance patients to gain the understanding and healthcare of osteoporosis to

improve the quality of life of patients with osteoporosis via offering the information of preventive health.

Keywords : Osteoporosis, Health Behavior, Quality of Life.

Introduction

According to the statistics of the Ministry of the Interior in 2018, the proportion of elderly people aged over 65 in Taiwan is 13.27% (Ministry of Internal Affairs of ROC, 2018 Feb). Health Promotion Administration of Ministry of Health and Welfare estimates that by 2025, the number of people over the age of 65 will reach 20%. In 2051, the proportion of elderly people over 65 years of age in Taiwan is 36.98% (Chen Yanzheng, Chen Qichang, Lin Zhujun, 2011). The world's population is above 65 years of age in 2010 to 2040, accounting for 14% of the world's population (Jane, 2013). A survey conducted by the National Health Administration of the Ministry of Health and Welfare in 2009 found that over 26.6% of elderly over 65 years of age suffer from osteoporosis (National Health Bureau, Health Promotion Administration, 2011a). With the advent of the aging society, attending to osteoporosis issues is an inevitable trend (Chen Zhaoying, Jianmeng Yue, Zheng Jinbao, 2016). There is a rapid increase in osteoporosis in Taiwan (Huang Zhaoshan, 2013). According to a 2005-2008 survey, the prevalence of osteoporosis in men and women over 50 years of age was 23.9% and 38.3%, respectively (Lin & Pan., 2011). It shows that osteoporosis is one of the common illness that affect the health of the elderly people (Huang, 2013). In addition, the life style and health behaviors of the elderly including whether or not they have exercise habits, bad habits (smoking, drinking alcohol, eating betel nuts), habits of taking vitamins or minerals, economic conditions, and education level, which also affect osteoporosis and the risk of falling leading to vertebral fractures (Bo Abrahamsen, Brask, Rubin & Schwarz., 2014). Risk factors for osteoporosis include genetics, hormones, exercise, physical activity, nutrition (Lim, Lee & Tserendejid., 2015), smoking, excessive drinking, excessive coffee (YamauchiM, 2015), age, gender, race, lifestyle State (Wu Kaiwen, Zhang Zhihong, Yang Rongsen, 2012), lack of vitamin D and calcium deficiency (Weaver, Alexander & Boushey, 2016).

Osteoporosis-related fractures and related complications can cause pain, increase death rate, reduce self-care ability and reduce the quality of life, so prevention and treatment of osteoporosis is an important health issue for the elderly (Guo Qiongwen, Hong Zhouyuan, Fang Zirong, Xie Zhengfang, 2014). Therefore, the purpose of this study is to explore the correlation between demographic characteristics, health behaviors, and quality of life in older ethnic groups.

Methods

1.Study design and subjects

This study adopts cross-sectional design, for purposive sampling. Using a structured questionnaire to collect data from patients of a certain southern hospital.

Inclusion criteria: 1. Age between 60 to 75 years old, with clear consciousness. 2. The measurement must be done with a quantitative ultrasound test. 3. There is no mental illness or brain disease.

Exclusion criteria: 1. Severe internal diseases; such as heart failure, chronic obstructive pulmonary disease, end-stage kidney disease and long-term renal dialysis, stroke and others. 2. Those with a history of fracture within six months.

2.Research instruments

(1) Demographic characteristics: gender, age, height, weight, education, marital status, working conditions, living conditions, financial resources, chronic diseases, fractures, bone density).

(2) Related variables of health behavior: smoking, drinking, betel nut, vegetarian or not, milk, coffee, tea, medicine, exercise, sun exposure.

(3) World Health Organization Quality of Life Questionnaire Taiwan Concise Edition (WHOQL-BREF) Scale: This questionnaire has been commonly used in related research in Taiwan. The questionnaire itself was translated and developed into a concise version of Taiwan by domestic scholars with the consent of the World Health Organization (WHO) in 2001. The scope of the questionnaire survey includes 4 aspects: physical, psychological, social, and environmental. Using Likert's five-component method to score points, the score of each question range from the lowest 1 point to the highest score 5 points; the first question and the second question are the overall assessment. The questionnaire contains positive and negative questions. The higher the positive score, the better the quality of life. The reverse questions are questions 3, 4 and 26 respectively. The score must be converted before the score. The conversion formula is: New Score = 6 - Original Score (Mei, Chuan. Hung1., & Hsin, Yi. Lee., & Jiann, Shing. Jeng., & Jung, Der. Wang, 2013; Lin, PC, & Yen, M., & Fetzer, S. J, 2008).

3. Data collection

This study was approved by the appropriate research ethics committee (No. 16-092-B1). After the consent of the hospital receiving the case, the investigator explained the purpose of the study to the subjects, obtained the consent of the subjects and filled in the study consent form, then the data collection was conducted. A total of 183 valid samples were collected. The implementation period of the project was from November 3, 2016 to February 3, 2017 for a total of three months.

4. Statistical analysis

All statistical analyses were performed using SPSS version 22.0 for Windows (SPSS Inc., Chicago, IL, USA). Descriptive statistics included frequency count, percentage, mean and standard deviation to describe basic information. Inferential statistics included the t-test, one-way ANOVA and stepwise regression analysis. A P value less than 0.05 was considered to be statistically significant.

Results

1. The Current Quality of life for the Elderly

In the overall quality of life for the elderly, the average score 2.91 (SD=0.69); the overall average satisfaction score is 2.83 (SD=0.62). And in the physical aspect, the average score is 12.97 (SD=1.43); average score for psychological aspect is 12.38 (SD=1.42); average score for society aspect is 12.12 (SD=0.68); average score for environmental aspect is 11.36 (SD=1.35) (Table 1).

Table 1 The analysis of the current quality of life for the elderly (N=183).

Variables	Average/standard deviation	Maximum value	Minimum value
Overall quality of life assessment	2.91±0.69	5.00	1.00
Overall health Satisfaction	2.83±0.62	4.00	1.00
Physical aspect	12.97±1.43	16.57	6.86
Psychological aspect	12.38±1.42	19.33	7.33
Society aspect	12.12±0.68	19.00	11.00
Environmental aspect	11.36±1.35	18.67	8.44

2. The correlation of demographic characteristics, health behaviors and quality of life in elderly groups

(A)The correlation of demographic characteristics and quality of life of the subjects

The correlation of demographic characteristics and quality of life of the elderly shows that the physical and psychological aspects of male's quality of life are better than female's; aging from 60 to 65 years old people's physical, psychological and environmental aspects of quality of life are better than people aging from 71 to 75; elementary school's psychological aspect of quality of life is better than illiterate people; working people's physical, psychological and environmental aspects of quality of life

are better than non-workers; those who earn income's physical, psychological and environmental aspects of quality of life are better than those who financially rely on their children; those who earn income's psychological, environmental aspects of quality of life are better than those rely on social welfare assistance; those without chronic disease's physical aspect in quality of life is better than those with chronic disease; those who had broken their wrist's society aspect in quality of life is better than those who had never broken their wrists; those with normal bone density's physical, psychological aspect in quality of life is better than those with osteoporosis; those with normal bone density's physical aspect in quality of life is better than those with insufficient bone density; those with insufficient bone density's psychological aspect in quality of life is better than those with osteoporosis (See Table 2).

(B) Correlation of health behaviors and quality of life for the subjects

The correlation of health behaviors and quality of life of the elderly shows that coffee drinkers' physical, psychological and environmental aspects in quality of life is better than non-coffee drinkers; tea drinkers' physical, psychological and environmental aspects in quality of life is better than non-tea drinkers; those who do not take chronic drugs' physical aspect is better than those who take chronic drugs; those who exercise's physical, psychological and environmental aspects in quality of life is better than those who do not exercise; those who bask in the sun's physical, psychological and environmental aspects in quality of life is better than those who do not bask in the sun (See Table 3).

Table 2 the correlation of demographic characteristics and quality of life of the elderly (N=183).

Variables	N	Physical Aspect Mean	SD	P Value (Scheffe's test)	Psychological Aspect Mean	SD	P Value Scheffe's test
Sex				0.001**			0.007**
Male	71	13.46	1.31		12.73	1.19	
Female	112	12.66	1.43		12.15	1.52	
Age				0.005**			0.004**
1.60 to 65 years old	65	13.38	1.32	1>3	12.79	1.56	1>3
2.66 to 70 years old	68	12.92	1.50		12.32	1.27	
3.71 to 75 years old	50	12.51	1.35		11.91	1.30	
BMI				0.685			0.434
Normal 18.5≦BMI<24	65	12.98	1.67		12.47	1.64	
Overweight 24≦BMI<27	60	13.02	1.39		12.32	1.35	
Mild obesity 27≦BMI<30	35	12.85	1.02		12.21	1.17	
Moderate obesity 30≦BMI<35	20	12.86	1.45		12.30	1.15	
Severe obesity BMI≧35	3	14.10	0.33		13.78	2.04	
Educational Level				0.001**			0.001**
1.Illiterate	53	12.35	1.47	4>1；4>2	11.66	1.34	4>1；4>2
2.Elementary School	93	13.00	1.24		12.41	1.12	2>1
3.Junior High School	14	13.43	1.28		12.81	1.29	
4.High School/Vocational High School	19	14.26	1.46		13.79	1.96	
5.University/College	4	12.86	1.09		12.83	0.64	
Marital status				0.813			0.068
Unmarried	2	12.29	0.40		10.67	1.89	
Married, with spouse	160	13.00	1.49		12.45	1.38	
Married, spouse passed away	16	12.75	0.97		11.71	1.48	
Divorced	5	13.14	0.90		12.67	2.05	
Working				0.003**			0.003**
No	156	12.84	1.43		12.25	1.43	
Yes	27	13.71	1.22		13.11	1.15	
Living Situation				0.556			0.189
Live with family	168	12.99	1.47		12.42	1.38	
Live alone	15	12.76	0.85		11.91	1.81	
Incomes				0.001**			0.001**
1. Earn by self	118	13.27	1.29	1>2	12.69	1.43	1>2；1>3
2. Rely on children	53	12.44	1.56		11.92	1.24	
3. Rely on social welfare assistance	12	12.33	1.37		11.22	1.09	
Chronical disease				0.019*			0.151
No	58	13.29	1.06		12.60	1.17	
Yes	125	12.82	1.56		12.27	1.52	
Used to have fracture				0.920			0.699
1.No	142	12.96	1.41		12.36	1.32	
2.Wrist	11	13.14	2.52		12.73	2.91	
3.Other	30	12.95	1.01		12.33	1.13	
Bone Density				0.001**			0.001**
1.Normal T Value>-1	73	13.47	1.15	1>2；1>3	12.74	1.15	1>3；2>3
2.Insufficient -1>=T Value>-2.5	68	12.87	1.26		12.41	1.45	
3.Osteoporosis T value<=-2.5	42	12.27	1.79		11.68	1.59	

Note：Using independent sample t-test, significant level α=0.05, *=P<0.05, **=P<0.01
Note：ANOVA verification (use Scheffe's test, post hoc tests)

Table 2 The correlation of demographic characteristics and quality of life of the elderly (N=183)(cont.)

Variables	N	Society Aspect Mean	SD	P Value (Scheffe's test)	Environmental Aspect Mean	SD	P Value (Scheffe's test)
Sex				0.444			0.152
Male	71	12.17	0.65		11.54	1.25	
Female	112	12.09	0.70		11.25	1.40	
Age				0.069			0.011*
1.60 to 65 years old	65	12.28	1.07		11.76	1.63	1>3
2.66 to 70 years old	68	12.04	0.21		11.20	1.20	
3.71 to 75 years old	50	12.02	0.38		11.08	1.00	
BMI				0.354			0.634
Normal 18.5≦BMI<24	65	12.23	1.03		11.47	1.65	
Overweight 24≦BMI<27	60	12.02	0.22		11.41	1.15	
Mild obesity 27≦BMI<30	35	12.11	0.47		11.11	1.19	
Moderate obesity 30≦BMI<35	20	12.15	0.49		11.22	1.06	
Severe obesity BMI≧35	3	11.67	0.58		12.00	1.60	
Educational Level				0.055			0.001**
1.Illiterate	53	11.98	0.31		10.83	1.01	4>1；4>2
2.Elementary School	93	12.10	0.44		11.35	1.19	
3.Junior high school	14	12.36	0.74		11.75	1.34	
4.High school/Vocational High school	19	12.47	1.68		12.70	1.97	

Variables	N	Society Aspect Mean	SD	P Value (Scheffe's test)	Environmental Aspect Mean	SD	P Value (Scheffe's test)
5.University/College	4	12.00	0.00		11.22	0.92	
Marital Status				0.319			0.152
Unmarried	2	11.50	0.71		9.56	0.31	
Married, with spouse	160	12.15	0.71		11.43	1.33	
Married, spouse had passed away	16	12.00	0.37		10.97	1.36	
Divorced	5	11.80	0.45		11.38	1.85	
Working				0.254			0.001**
No	156	12.10	0.68		11.22	1.27	
Yes	27	12.26	0.71		12.18	1.49	
Living Situation				0.135			0.198
Live with family	168	12.14	0.70		11.40	1.35	
Live alone	15	11.87	0.35		10.93	1.23	
Incomes				0.190			0.001**
1.Earn by self	118	12.19	0.82		11.64	1.36	1>2；1>3
2.Rely on children	53	11.98	0.31		11.01	1.22	
3.Rely on social welfare assistance	12	12.08	0.29		10.22	0.78	

Variables	N	Society Aspect Mean	SD	P Value (Scheffe's test)	Environmental Aspect Mean	SD	P Value (Scheffe's test)
Chronical disease				0.995			0.793
No	58	12.12	0.42		11.40	1.22	
Yes	125	12.12	0.78		11.35	1.41	
Used to have fracture				0.007**			0.283
1.No	142	12.06	0.42	2>1	11.35	1.31	
2.Wrist	11	12.73	2.20		11.96	2.37	
3.Other	30	12.17	0.53		11.21	0.99	
Bone density				0.306			0.409
1.Normal T Value>-1	73	12.11	0.52		11.53	1.17	
2.Insufficient-1>=T Value>-2.5	68	12.21	0.91		11.28	1.44	
3.Osteoporosis T value <=-2.5	42	12.00	0.49		11.22	1.48	

Note：Using independent sample t-test, significant level α=0.05, *=P<0.05, **=P<0.01
Note：ANOVA verification (use Scheffe's test, post hoc tests)

Table 3 Correlation of health behavior and quality of living for elderly (N=183)

Variables	N	Physical Aspect Mean	SD	P Value (Scheffe's test)	Psychological Aspect Mean	SD	P Value (Scheffe's test)
Drinking				0.365			0.626
No	142	12.91	1.48		12.31	1.51	
Sometimes	30	13.37	1.30		12.56	0.98	
Already quitted	9	12.83	0.99		12.81	1.37	
Still drinking	2	12.29	1.21		12.67	0.00	
Smoking				0.188			0.103
No	155	13.04	1.30		12.42	1.36	
Sometimes	6	11.90	2.27		11.22	1.07	
Still smoking	13	12.57	2.10		12.00	2.24	
Already quitted	9	13.14	1.74		12.89	0.82	
Chewing Betel nut				0.966			0.933
No	173	12.97	1.46		12.38	1.43	
Sometimes	2	12.57	1.62		12.67	0.00	
Already quitted	5	13.14	0.81		12.00	1.94	
Still chewing	3	13.14	0.57		12.44	0.38	
Vegetarian				0.317			0.390
Yes	33	12.74	1.03		12.18	1.12	
No	150	13.02	1.50		12.42	1.48	
Drinking Milk				0.887			0.598
Yes	72	12.95	1.40		12.44	1.50	
No	111	12.98	1.46		12.33	1.38	
Drinking Coffee				0.001**			0.001**
Yes	37	13.84	1.14		13.32	1.62	
No	146	12.75	1.42		12.14	1.27	
Drinking Tea				0.001**			0.002**
Yes	37	13.68	1.24		13.03	1.70	
No	146	12.79	1.42		12.21	1.30	
Chronic drugs				0.024*			0.106
No	50	13.29	0.97		12.65	1.12	
Yes	133	12.85	1.56		12.27	1.51	
Exercise				0.013*			0.027*
No	81	12.66	1.67		12.12	1.48	
Yes	102	13.22	1.16		12.58	1.35	
Bask in the Sun				0.004**			0.022*
No	101	12.70	1.57		12.16	1.32	
Yes	82	13.30	1.17		12.64	1.51	

Note：Using independent sample t-test, significant level α=0.05, *=P<0.05, **=P<0.01
Note：ANOVA verification (use Scheffe's test, post hoc tests)

Variables	N	Society Aspect Mean	SD	P Value (Scheffe's test)	Environmental Aspect Mean	SD	P Value (Scheffe's test)
Drinking				0.747			0.507
No	142	12.13	0.74		11.33	1.40	
Sometimes	30	12.17	0.46		11.54	1.15	
Already quitted	9	11.89	0.33		11.60	1.23	
Still drinking	2	12.00	0.00		10.22	1.26	
Smoking				0.426			0.218
No	155	12.15	0.71		11.41	1.35	
Sometimes	6	11.83	0.41		10.44	1.22	
Still smoking	13	11.92	0.64		11.01	1.41	
Already quitted	9	12.00	0.00		11.70	1.09	
Chewing Betel nut				0.731			0.624
No	173	12.13	0.70		11.39	1.35	
Sometimes	2	12.00	0.00		10.22	1.26	
Already quitted	5	11.80	0.45		11.11	1.72	
Still chewing	3	12.00	0.00		11.11	0.44	
Vegetarian				0.111			0.121
Yes	33	12.03	0.17		11.11	0.91	
No	150	12.14	0.75		11.42	1.42	

Variables	N	Society Aspect Mean	SD	P Value (Scheffe's test)	Environmental Aspect Mean	SD	P Value (Scheffe's test)
Drinking Milk				0.338			0.231
Yes	72	12.18	0.95		11.51	1.56	
No	111	12.08	0.43		11.27	1.19	
Drinking Coffee				0.284			0.001**
Yes	37	12.30	1.22		12.32	1.56	
No	146	12.08	0.46		11.12	1.18	
Drinking Tea				0.200			0.013*
Yes	37	12.35	1.34		11.86	1.71	
No	146	12.06	0.36		11.24	1.22	
Chronic drugs				0.811			0.939
No	50	12.14	0.45		11.35	1.17	
Yes	133	12.11	0.76		11.37	1.41	
Exercise				0.119			0.034*
No	81	12.04	0.43		11.13	1.31	
Yes	102	12.19	0.83		11.55	1.36	
Bask in the sun				0.101			0.005**
No	101	12.04	0.40		11.11	1.21	
Yes	82	12.22	0.92		11.67	1.45	

Note：Using independent sample t-test, significant level α=0.05, *=P<0.05, **=P<0.01
Note：ANOVA verification (use Scheffe's test, post hoc tests)

3. Predictors affecting the quality of life of elderly people

In terms of quality of life in the physiological aspect, the major predictors include illiterate (P=0.001), elementary school educated (P=0.006), osteoporosis (P=0.001), osteopenia (P=0.013), and chronic disease (P= 0.042). The score of illiterate on quality of life and physiology is 1.237 points lower than that of high school/vocational educated; the quality of life of the elementary educated is 0.704 points lower than that of high school/vocational school educated; the quality of life of osteoporosis is 0.985 lower than the normal density. The score of the quality of life for lack of bone mass was 0.544 points lower compared with the normal density.

The quality of life for having chronic diseases was 0.421 points lower than that without the chronic disease (Table 4). In terms of psychological aspect of life quality, important predictors includes illiterate (P=0.001), elementary education (P=0.001), junior high school education (P=0.037), social welfare relief (P=0.001), and

osteoporosis (P). =0.014), ages 71 to 75 (P=0.047). The quality of life of illiterate in psychological aspect scored 1.799 points lower than high school/ vocational education; the scores of the quality of life in the elementary education were lower than those of high school/vocational school education by 1.160. The psychological aspects of the quality of life of social welfare assistance are 1.213 points lower than those with their own income; the psychological quality of osteoporosis is 0.553 points lower than the normal density; the quality of life's psychological aspect of the elementary education is lower by 0.878 than those of the high school/ vocational education; the psychological scores for the quality of life for aging between 71 to 75 years decreased by 0.416 points compared to that of 60 to 65 (Table 5).

In terms of social aspect of life quality prediction, the score for those had fractured wrist was increased by 0.686 points compared with those without fractures; the social quality score of relying on children's support was 0.229 points lower than that of own income (Table 6).

In terms of quality of life in the environmental aspect, the score of illiterate in the environmental aspect was 1.386 points lower than that of high school/vocational education, and the quality of life in environmental aspect for elementary and junior high school education was 0.856 points lower than that of high school/vocational education, and the score for social welfare assistance is 1.288 points lower than own income (Table 7).

In terms of overall quality of life, the major predictors were social welfare assistance (P=0.001), illiterate (P=0.001), elementary education (P=0.036), and their influence was 9.1%, 5.3%, and 2.1% respectively. The total variation in quality of life in the physiological aspect of 16.4% can be explained. (Table 8)

Table 4 The Stepwise Regression Analysis of Influencing Factors on the Physiological Aspect of the Quality of Life of Elderly Population Characteristics and Health Behavior (N=183).

Variables sequence	Regression Beta coefficient	Standardization Beta coefficient	F Value	T Value	P Value
constant	14.403				
Educational Level (Illiterate vs high school/vocational high school)	-1.237	-.393	15.397	-4.397	.001
(Elementary school vs high school/ vocational high school)	-.704	-.247	11.726	-2.800	.006
Bone Density (Osteoporosis vs Normal density)	-.985	-.290	13.254	-3.877	.001
(Insufficient vs Normal density)	-.544	-.184	10.771	-2.502	.013
Chronical disease (Yes vs No)	-.421	-.137	9.613	-2.051	.042

Table 5 Stepwise regression analysis on the influencing factors for demographic characteristics, health behaviors on the psychological aspect in the quality of life (N=183).

input variables Sequence	Regression Beta coefficient	Standardization Beta coefficient	F Value	T Value	P Value
constant	13.873				
Educational Level (Illiterate vs high school/vocational high school)	-1.799	-.574	20.834	-5.728	.001
(Elementary school vs high school/ vocational high school)	-1.160	-.408	17.417	-4.023	.001
Educational Level (Illiterate vs high school/vocational high school)	-.878	-.164	12.395	-2.100	.037
Income (Social welfare assistance/ earn by self)	-1.213	-.211	16.290	-3.267	.001
Bone Density (Osteoporosis vs Normal density)	-.553	-.164	14.180	-2.477	.014
Age (71 to 75/60 to 65)	-.416	-.131	11.171	-2.000	.047

Table 6 Stepwise regression analysis on the influencing factors for demographic characteristics, health behaviors on the society aspect in the quality of life (N=183).

Input Variables Sequence	Regression Beta coefficient	Standardization Beta coefficient	F Value	T Value	P Value
constant	12.145				
Used to have fracture (wrist/No)	.686	.239	9.632	3.314	.001
Income (Rely on children/earn by self)	-.229	-.152	7.133	-2.109	.036

Table 7 Stepwise regression analysis on the influencing factors for demographic characteristics, health behaviors on the environmental aspect in the quality of life (N=183).

Input Variables Sequence	Regression Beta coefficient	Standardization Beta coefficient	F Value	T Value	P Value
constant	12.285				
Educational level (illiterate vs high school/vocational high school)	-1.386	-.467	12.624	-5.242	.001
(Elementary school vs high school/vocational high school)	-.856	-.318	12.385	-3.571	.001
Income (social welfare assistance/earn by self)	-1.288	-.237	12.842	-3.495	.001

Table 8, Stepwise regression analysis on the influencing factors for demographic characteristics, health behaviors on the overall quality of life (N=183).

Input Variables Sequence	Regression Beta coefficient	Standardization Beta coefficient	F Value	T Value	P Value
Constant	3.268				
Income (Social welfare assistance/earn by self)	-.644	-.233	15.059	-3.411	.001
Educational Level (illiterate vs high school/vocational high school)	-.647	-.430	18.048	-4.780	.001
(Elementary school vs high school/vocational high school)	-.259	-.190	11.717	-2.110	.036

Discussion

1. Correlation of demographic characteristics, health behaviors and quality of life of the elders.

The results of the study showed that men's quality of life in the physical and psychological aspects is better than women's, which is the similar as most studies (Lan, 2010; Wang, 2008; Cai et al., 2006). Those of high school/vocational school educated have better quality of life in terms of physiology, psychology, and environment than illiterate people. This is the same as most studies (Wang et al., 2014; Gao, 2013; Cai et al., 2006). Those employed are better than the unemployed in the physical, psychological, and environmental aspects.

This is similar to Yeh (2011) who mentioned that the physical categories of workers are better than non-workers. The quality of life of those who have income in the aspects of physical, psychological, and environmental quality is better than those supported by children. This is like what Gao et al (2013) mentioned; the higher the economic conditions mentioned in this, the better the quality of life in the aspects of psychology, society, and the environment is. People with no chronic diseases had better quality of life in the physiological category than those with chronic diseases. Like Gao et al. (2013) mentioned that the overall quality of life is worse for people with more than one chronic disease and those without chronic disease.

The quality of life in the social aspects where the wrist was once fractured is better than without fractures. This is related to the fact that Zhang (2004) mentioned, different parts of the fracture affect the quality of life, and the quality of life for wrist and wrist fractures is the highest. Inferencing that the may be related to the support of family and friends, the function of daily life, and interactions with neighbors in the region. The quality of life in the physiological and psychological aspects with normal bone mineral density was better than that of bone quality and osteoporosis.

The quality of life of those with bone density T-score < -2.5 was significantly lower than that of normal bone density, mentioned in Hallberg et al. (2004).

2. Important predictors affecting the quality of life of older people

This study has the most predictive ability towards the quality of life and physical aspect in terms of osteopenia, osteoporosis, illiteracy, elementary school, and can explain 21.4% of variance, which is similar to most studies (Hye. et al. 2016; Gao et al. 2013; Zeng Mingyue, 2011). In the psychological aspect, illiteracy, elementary school, social welfare assistance, osteoporosis and osteoporosis are the most predictivable and can explain 27.6% of variance, similar to some studies (Gao et al. 2013; Zeng Mingyue, 2011 Yu et al., 2009). In terms of social aspect, it is most predictive to use wrist fractures and supported by children, and can explain 7.3% variation, which is similar to some studies (Gao et al. 2013; Yu et al., 2012).

In terms of the environmental aspect, illiteracy, elementary school, and social welfare assistance are the most predictive and can explain 17.7% of variance, similar to the Gao (2013) study. In terms of overall quality of life, social welfare assistance, illiteracy, and elementary school are the most predictive and can explain 16.4% of variance, which is similar to some studies (Wang et al., 2014; Mathew et al. 2010; Zhao Anna , 2003).

Conclusions and Suggestions

Males, 60 to 65 years old, high school / vocational educated, employed, have their own income, no chronic

diseases, had a broken wrist, and have normal bone density will have better quality of life. Regarding health behaviors and quality of life, drinking coffee, drinking tea, not taking chronic drugs, exercise, and have sun exposure will have better quality of life. Therefore, the impact on the quality of life of the elderly as a whole; illiteracy, social welfare assistance, elementary school educated, lack of bone mass, and osteoporosis are predictors of the quality of life of elder people.

In this study, a cross-sectional survey method was used to investigate the related factors that affect the quality of life of the elderly.

The case is only confined to a certain district hospital in southern Taiwan, and it is difficult to make a comprehensive inference. However, if the sample can be expanded to community-wide to increase the representativeness and inference of the cases and further explore the relevant factors of osteoporosis, the quality of life of the elderly can be better promoted.

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