
A Study on the Correlation between Healthcare's Ecology Utilization and National Health Condition

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Abstract

The development of economy, the enhancement of national income, the improvement of environmental health, and the richness of nutrition acquisition have improved national health conditions. Since national health conditions are related to national development of economy, healthcare's ecology utilization is a key investment in national health. Personal health could be maintained or enhanced through healthcare's ecology utilization to further promote labor productivity and national competitiveness. Aiming at aged population in Shanghai, the elderly aged above 60 in Shanghai are proceeded the comprehensive survey, including elderly health and medical care, family and social support, work, economy, and psychological leisure. The research results conclude significantly positive effects of 1.predisposing component on health condition, 2.enabling component on health condition, and 3.need component on health condition. According to the results, suggestions are proposed, expecting to find out the factors in elderly health and healthcare's ecology utilization for the reference of the government making elderly health care or welfare measures.

Keywords: healthcare's ecology utilization, health condition, aged population

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INTRODUCTION

National health is closely related to national economic development. Along with economic development, enhancing national income, improving environmental health, and rich nutrition acquisition, national health conditions are also improved. Besides, the more advanced and richer social economy resulting in large enhancement of medical technology and promotion of education standard would relatively enhance national requirements for health. Since national health conditions could affect national economic development and healthcare's ecology utilization is a key factor in the investment in national health, the maintenance of healthcare's ecology utilization or the promotion of personal health could further promote labor productivity and national competitiveness. For this reason, most advanced countries would make social welfare policies to enhance the national health. Nonetheless, global economic conditions are not satisfactory in the era, the competitiveness in various industries is largely reduced and the problem of social aging is influencing the world. The negative growth of population would serious affect national economy and societies. Population aging is regarded as the problems requiring long-term

improvement, which is a long way to go. However, living old does not mean living healthy and happy. It is often seen in hospitals that hospitalized patients do not have family accompany for assistance and care. A hospital could cure the elderly illness, but not the physiological and psychological needs. Low birth rate has accelerated population aging to result in increasing healthcare's ecology utilization. Nevertheless, increase in elderly population does not reveal good elderly health conditions and good quality of life. Current aging problems mainly impact the healthcare's ecology expenditure and growth. In the aging process, human organs gradually degrade, physiological functions decline annually, responses to external stimuli become slow, and adaptation to the external also gradually reduces. Common winter influenza vaccination therefore focuses on the elderly and children. At the elder stage with the rapidest degradation, the family, spirit, and finance pressure would appear that understanding elderly healthcare's ecology utilization rate requires further discussion. Discussions on the elderly are increasing in past years, but factors in elderly health and medical utilization are seldom discussed. For this reason, this study intends to discuss the effect of healthcare's ecology utilization on health condition,

expecting to find out the factors in elderly health and healthcare's ecology utilization. The research results are proposed for the reference of the government developing elderly health care or welfare measures.

LITERATURE REVIEW

Healthcare's Ecology Utilization

Peng and Chiang (2015) defined it as a person receiving medical professionals' diagnoses or treatment in medical care sites when suffering from illness or seeking for preventive health care (Allison et al. 2015). Hsia et al. (2016) referred medical utilization as the number of healthcare's ecology actually consumed when needs became seeking for medical treatment (Baek et al. 2015). Accordingly, the motivation of utilization is based on the public being influenced by "demand for medical care" or "medical needs". The former refers to the public performing the desire for the quality and quantity of health services with actions, while the latter refers to the essential quality and quantity of medical service from experts' points of view (Dinh et al. 2016). Either needs or demands refer to a medical service institution offering the public with consultation or diagnosis service under health considerations. There are many theoretical models for healthcare's ecology utilization, such as illness behavior stage model, Andersen healthy behavior model, health belief model, general theory of help seeking, and theory of reasoned action, among which Andersen healthy behavior model is broadly used. Referring to the healthcare's ecology utilization model proposed by Andersen in 1968 (Miao and Wu 2016), three major factors are included, namely predisposing component, enabling component, and need component.

- (1) Predisposing component: Referring to a case's intention to use healthcare's ecology before being attacked by illness, such as demographic characteristics (age, gender, marital status), social structure characteristics (education standard, religion, occupation), and health belief (attitudes toward health and belief in medical treatment).
- (2) Enabling component: Referring to factors, in external environment, in enhancing or hindering individuals using healthcare's ecology, such as personal/family resources (income, health insurance) and community resources (availability of medical service and transportation time) (Simões and Almeida 2014).

- (3) Need component: Referring to personal health demands, such as personal subjective perception and clinical evaluation of illness.

Health Condition

Chen et al. (2015) defined health as completely physical, psychological, and social peace and happiness, not simply without illnesses or weakness. Fishman et al. (2016) regarded the definition stressing on spiritual society. From the viewpoint of economics, health was to remove all factors in economic and production losses, e.g. disabilities, loss of working ability, and young death. It emphasized that health care was the right of consumers; meanwhile, cost-benefit analysis or cost-effectiveness analysis is used for understanding the utilization of health care (Alyasin and Douglas 2014). Jacob et al. (2015) pointed out to measure health conditions from multiple dimensions. Current measurement of health conditions did not simply measure physical problems, a lot of research also adopted multi-dimensional self-evaluation for the participants' health conditions. In other words, it did not simply measure bodies or emotions, but evaluated the overall health condition (Booker et al. 2015). However, Parry et al. (2016) indicated that overall health conditions could hardly be evaluated. In various health scales in past research, SF-36 health scale (MOS 36-Item Short Form General Health Survey Measures) seemed to be a complete measuring tool, which selected representative dimensions from more than 40 physical and mental health concepts to evaluate health condition (Gerteis et al. 2014).

SF-36 health scale could be used for assessing health policies and health survey of general groups, special groups, and clinical research (Atenstaedt et al. 2015); the application is broad and is suitable for different ages; and, the reliability and validity are approved by domestic and international researchers. Referring to Yang (2016), eight health condition dimensions are covered in the measurement in this study, namely (1) physical functioning (PF), (2) role functioning-physical (RP), (3) bodily pain (BP), (4) general health (GH), (5) vitality (VT), (6) social functioning (SF), (7) mental health (MH), and (8) role functioning-emotional (RE).

Research Hypothesis

Hung et al. (2014) mentioned that medical service utilization was related to time cost and financial burden for seeing a doctor. When they were different, or the financial burden for medical service utilization was distinct, the health would be influenced. Accordingly, research mainly discussed the correlations between

conditions of medical service utilization, distance for seeing a doctors, education standards, racial differences, lifestyles, socioeconomic status, and income with health result. Andrade et al. (2016) discovered that increasing medical expenditure and enhancing education standards would significantly promote health conditions and reduce regional fatality rate. Jacob et al. (2016) studied the relationship between residential or elderly medical expenditure and health result with regional data and proved that the increase in medical expenditure and the enhancement of education standards would remarkably promote health condition and reduce regional fatality rate. Corwin et al. (2016) discovered that residents in remote areas receiving free medical service showed notable effect on individual medical service utilization. In regard to time for seeking for resources, residents in shortage areas spent more time than general US citizens and generally appeared less medical service utilization. Sung et al. (2015) indicated that farther distance from medical clinics requiring more time and cost to reduce the residents' service use frequency might affect health condition. Kaiser (2016) revealed that education standards, personal lifestyles, household income, occupation, quality of life, and healthcare's ecology were the key factors in the public health. The improvement of such factors would enhance the public health. Hefner et al. (2015) discovered that healthcare's ecology utilization would reduce fatality rate and the practice of medical welfare appeared better effects on residents in low-income areas. The following hypotheses are therefore proposed in this study.

H1: Predisposing component presents significantly positive effects on health condition.

H2: Enabling component shows remarkably positive effects on health condition.

H3: Need component reveals notably positive effects on health condition.

RESEARCH METHOD

Method Model

The test of goodness-of-fit in the LISREL model could generally be measured from overall model fit (external quality of model) and internal quality of model. In terms of overall model fit, the commonest evaluation indicators contain (1) " χ^2 ratio" (Chi-Square ratio), standing for the gap between theoretical model and expected value, which is better smaller than 3, (2) goodness of fit index (GFI) and adjusted goodness of fit index (AGFI) which are better close to 1 to show the

better fit, (3) root mean square residual (RMR), reflecting the square root of "residual fit variable/covariance mean", which is better smaller than 0.05, and (4) incremental fit index (IFI), which is better higher than 0.9 to show the good model fit.

Evaluation indicators of internal quality of model often used in LISREL include (1) square multiple correlation (SMC) of individual manifest variable, i.e. R² of manifest variables and latent variables, which should be higher than 0.5, (2) component reliability (ρ) of latent variables, i.e. Cronbach's α of observed indicators in a latent variable, which should be higher than 0.6, and (3) average variance extracted of latent variables, calculated by R² sum of manifest variables in a latent variable divided by the number of manifest variables to reveal the percentage of the latent variable being measured with manifest variables, which should be higher than 0.5.

Research Sample and Object

Aiming at aged population, the elderly aged above 60 in Shanghai are proceeded the comprehensive survey in this study, including elderly health and medical care, family and social support, work, economy, and psychological leisure.

Reliability and Validity Test

Validity refers to a measuring scale being able to actually measure the degree measured by the researcher. Common validity contains "content validity", tending to qualitative idea, "criterion validity", using known external criteria and the correlation coefficient in this test for the evaluation, and "construct validity", mainly used for evaluating the consistency of the measurement to other observable variables. The questionnaire content in this study is based on past theories and revised for the actual situation of research objects to design the tool being able to express the essence with complete representativeness so as to ensure the content validity of the questionnaire. Moreover, the final commonality estimate of Factor Analysis is applied to test the construct validity of measuring items. The validity appears in 0.7~0.9, revealing good validity test of the questionnaire.

EMPIRICAL RESULT ANALYSIS

Model Fit Test

The estimation of "Maximum Likelihood" (ML) is applied in this study, and the analysis results achieve convergence. Overall speaking, the indicators of the overall model fit, **Table 1**, pass the test, reflecting good external quality of the model.

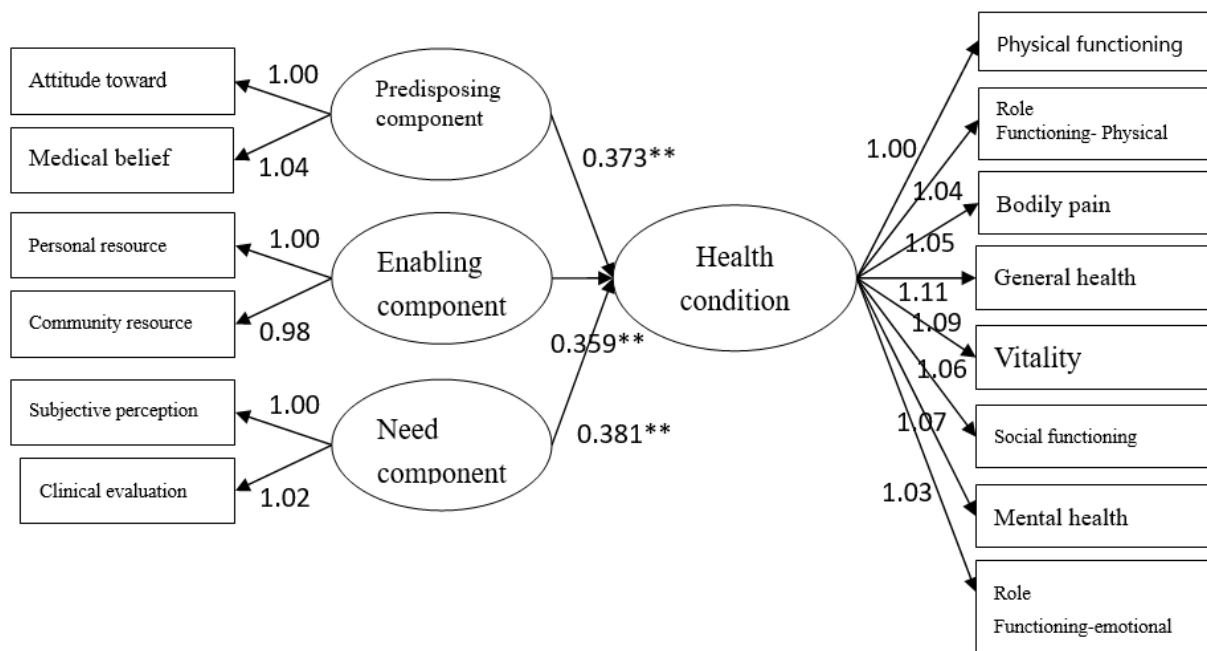


Fig. 1. Relationship path graph

Table 1. Model analysis result

overall fit	evaluation indicator	judgment standard	result
	p-value	p-value > 0.05	0.000
	$\chi^2/d.f.$	< 3	1.382
	GFI	> 0.9	0.948
	AGFI	> 0.9	0.911
	CFI	> 0.9	0.963
	RMR	<0.05, <0.025 excellent	0.021
	RMSEA	0.05~0.08 good < 0.05 excellent	0.037
	NFI	> 0.9	0.923
	IFI	> 0.9	0.916

Table 2. SMC of variable to dimension

predisposing component		enabling component		need component	
attitude toward health	medical belief	personal resource	community resource	subjective perception	clinical evaluation
0.73	0.76	0.75	0.78	0.72	0.79

Table 3. SMC of variable to dimension

health condition							
physical functioning	role functioning-physical	bodily pain	general health	vitality	social functioning	mental health	role functioning-emotional
0.71	0.74	0.75	0.78	0.80	0.81	0.83	0.84

Table 4. Component reliability and average variance extracted of variable

Item	healthcare's ecology utilization	health condition
component reliability	0.812	0.794
average variance extracted	0.80	0.78

In regard to the test of internal quality of model, SMC of manifest variables is higher than 0.5 (Table 2 and 3), revealing good indicators of latent variables. Furthermore, latent variables of healthcare's ecology utilization and health condition appear the component reliability higher than 0.6, and the average variance

Table 5. Hypothesis test

research hypothesis	correlation	empirical result	P	result
H1	+	0.373	0.00	supported
H2	+	0.359	0.00	supported
H3	+	0.381	0.00	supported

extracted of dimensions is higher than 0.5 (Table 4), apparently conforming to the requirement for internal quality of model.

Path Relationship Test

Selecting attitude toward health, personal resource, subjective perception, and physical functioning as the latent variables and the reference indicator being fixed 1, the estimate of the relationship between other dimensions and variables is significant, Fig. 1. Medical belief=1.04 appears better explanation power than attitude toward health. The test of research hypotheses is shown in Table 5.

CONCLUSION

The research results reveal that long life is no longer difficult due to the extending average life expectancy. However, it is not easy to live healthily, happily, and without psychological burden. Health is the complete physical, psychology and social balance. It is currently getting into aging country that medical policies for the elderly should be emphasized. The elderly would enhance the suffering of chronic illnesses with increasing ages to increase the frequency for clinic treatment and hospitalization. People with unhealthy behaviors, e.g. smoking and drinking, are comparatively

not willing to see a doctor to avoid health education from physicians. The government should promote the improvement by introducing formal medical treatment so as to prevent such people from seeking for treatment in serious illness conditions. In this case, the government should promote elderly medical prevention and treatment as well as psychological education to release the overall health insurance burden. Besides, the elderly living with children would more easily receive care from children that it should be encouraged to live together with or nearby children for care so as to protect national health.

SUGGESTION

From the research results and findings, the following practical suggestions are proposed in this study.

1. Nursing staff could survey elderly health needs for proper intervention and guidance. Nursing staff could provide different care services, based on personal resource characteristics, to enhance the health condition. Current cultivation of

nursing is lack of psychological consultation or pressure release courses. It is suggested to add relevant courses in the plan of nursing education.

2. Aiming at the elderly, personal computerized health database could be established, and the health conditions of employees should be tracked and monitored by occupational health nursing staff for providing proper and enhancing health services. Empowerment strategy could be applied to enhance self-efficacy, actively bear the responsibility for health maintenance, and further reduce medical expenditure for continuous care.
3. When planning health promotion plans or improvement programs, the group with special health conditions could be preceded deeper investigation and analyses for medical service, and practicing health care education and disease screening case management should be reinforced to further make progress on health conditions.

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