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## Relationship between Urban Health-related Quality of Life and Utilization of Medical Ecology

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### Abstract

The advance of medical technology allows people extending the life, and the promotion of material life standards allows people thinking of a better life. Accordingly, general public or medical institutions gradually emphasize health-related quality of life. Moreover, the increasing medical expenses in past years result in unbalance medical finance that effectively controlling the increasing utilization of medical ecology becomes a critical issue. Selecting the general public in Shanghai as the research samples for the questionnaire survey, total 500 copies of questionnaire are distributed, from which invalid and incomplete ones are deducted for 421 valid copies of questionnaire, with the retrieval rate 84%. The research results show remarkably negative correlations between 1.health-related quality of life and medical expenses, 2.health-related quality of life and number of medical visits, as well as 3.health-related quality of life and number of hospitalization. According to the results, suggestions are proposed, expecting to achieve the goal of promoting the citizens' health-related quality of life.

**Keywords:** health-related quality of life, utilization of medical ecology, medical ecology, medical environment

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### INTRODUCTION

Along with the changes in social environment, the advance of economy and technology has largely enhanced people's life standards. Especially, the development of medical technology and the improvement of public health environment have the type of diseases change from acute infectious diseases to chronic illnesses which require long-term care. The reducing threats of diseases allow people largely extending the life. The development of medical technology, either the invention of medical equipment or the innovation of pharmacotherapy, largely enhances illness cure rate. It has people change the opinions about life to no longer pursue the length to live, but to live healthily and happily in the long life. As a result, the idea of "health-related quality of life" is gradually emphasized by the general public. When medical standards are able to effectively control people's physiological conditions, people present distinct opinions about medical service and change the attitudes towards the physical health and health care from "passive" receivers to "active" pursuers. In this case,

people start to think of psychological needs after the material life standards are enhanced and the physiological needs are gradually satisfied. By extending such an idea to people's medical needs, it is apparent that people gradually emphasize the physiological health and the effect of physical health on spirit. The demands for medical service therefore focus more on the care quality in the therapy process, in addition to illness cure. Besides, better quality of medical service to satisfy the psychological needs is required for improving and enhancing the quality of life.

Nonetheless, along with the society getting into developed country and aging society, more citizens realize the suffered illnesses as chronic illnesses, which could not be cured. Although treating chronic illnesses as acute diseases could control the conditions to certain degree, such a method is the misuse of medical ecology and conflicts with preventive health care in public health. For this reason, advanced countries in the world start to stress on the so-called "health-related quality of life", expecting to enhance the use efficiency of medical

ecology and enhance the public quality of life. After all, the ultimate purpose of medical service is to create the welfare of health care users. The relationship between health-related quality of life and utilization of medical ecology therefore becomes a primary issue on national medical policies. This study attempts to discuss the correlation between health-related quality of life and utilization of medical ecology and inspect whether more medical ecology is required for the enhancement of health-related quality of life, or national health-related quality of life could be promoted under limited medical ecology.

## LITERATURE REVIEW

### Health-related Quality of Life

Chiang and Chu (2014) mentioned that health-related quality of life stressed on the psychological and social changes of individual health-related quality of life due to personal physical function changes caused by diseases, accidents, or treatment, which could be evaluated by subjective judgment and objective measurement. Klembczyk et al. (2016) explained general quality of life as a broad quality of life, while health-related quality of life as a narrow quality of life that health-related quality of life was covered in general quality of life. Hawe et al. (2015) regarded health-related quality of life as the subjective measurement of individual current health state, health care, and health promotion activities to achieve and maintain the standard of physical functions and continuously pursue life goals. It reflected the general comfort (Perelman et al. 2015).

Wothan (2014) indicated that the evaluation of health-related quality of life contained "objective" quality of life and "subjective" quality of life. Alaeddini et al. (2015) pointed out "objective" quality of life as the evaluation of quality of life from others' angles; the evaluation standards, e.g. physiological function, personal income, and family structure, were specific and could be easily observed. Such external standards could affect individual life comfort. However, "objective" quality of life could not definitely express how an individual experienced the life. "Subjective" quality of life, on the other hand, referred to an individual treating the quality of life from personal aspects and judging the quality of life with individual subjective perception. It aimed to discuss individual life experience and life satisfaction. Johnson et al. (2015) measured health-related quality of life with both "subjective" and "objective" quality of life to completely present the health-related quality of life.

Referring to Chen and Chi (2015), health-related quality of life is composed of objective measurement and subjective cognition, including

- (1) Behavior capacity: people's health, self-care, cognition, meaningful time use, and social behaviors, which are measured with social standards.
- (2) Environmental quality: including air, water, or living quality.
- (3) Individual realization: individual subjective measurement of health, social relationship, and other important dimensions.
- (4) Psychological comfort: comprehensive spiritual health, including positive and negative emotional states and life satisfaction.

### Utilization of Medical Ecology

According to medical conditions, Gong et al. (2014) defined utilization of medical ecology as the amount actually consumed in medical ecology, when needs turned into medical seeking behaviors. Almagoshi (2015) defined it as a person suffering from illness or seeking for preventive healthcare and receiving professional medical personnel's diagnoses and treatment in medical sites. Utilization of medical ecology therefore was the actual action of people physiologically or psychologically longing for medical service.

In the second stage of medical ecology utilization model, Hudon et al. (2016) divided medical ecology, according to the pattern and degree of individuals using medical ecology, into four dimensions.

- (1) Type of medical ecology utilization: referring to the type of medical service, including western medicine, Chinese traditional medicine, and dental care.
- (2) Provision of site of medical care: referring to the sites where the public receive medical service, such as hospitals, clinics, health centers, pharmacies, or nursing homes.
- (3) Purpose of medical ecology utilization: referring to the reasons of the public receiving medical service, which might contain treatment, diagnoses, preventive health care, health checks, or other medical services.

- (4) Time interval for a visit: referring to the proportion and number of times the public using medical ecology in certain period.

The detection of utilization of medical ecology is mainly calculated by the ecology used and the frequency of ecology used by patients in medical institutions, i.e. “fee” and “quantity”. “Money expenditure” and “medical service unit” are the common objective indicators. “Money expenditure” exchanges different medical service items into money units, i.e. individual expenditure on medical care utilization. “Medical service unit” is measured with the medical care units provided by medical institutions, e.g. number of outpatient, number or day of hospitalization, and treatment items (Rashid et al. 2014).

Peng and Chiang (2015) pointed out the high correlations among measuring indicators for utilization of medical ecology. In this case, by referring to Peng and Chiang (2015), “medical expenses”, “number of medical visits”, and “number of hospitalization” are regarded as the indicators for the detection of utilization of medical ecology.

## RESEARCH HYPOTHESIS AND RESEARCH METHOD DESIGN

### Research Hypothesis

Zeinali et al. (2015) analyzed the quality of life of the aged in rural areas and grazing areas in Baotou City, Mainland China, and discovered the factors of chronic illness, age, hospitalization utilization, education, and gender. Ben Ramadan et al. (2017) studied community leaders’ medical ecology utilization and the relevant factors and found out the significant correlations with age, family income, perceived health-related quality of life, number of chronic illness, and number of medical ecology utilization. In the research on health-related quality of life and medical demands of the aged, Yokoi and Tashiro (2014) found out the more cases suffering from chronic illnesses, the notably increasing outpatient probability; besides, self-rated health-related quality of life revealed significantly negative effects on the probability and number of seeking for western medicine as well as the probability of seeking for Chinese traditional medicine. Simou and Koutsogeorgou (2014) studied the factors in the public medical utilization after the practice of national health insurance and discovered the smaller effects of individual tendency (demographic data) and usability (family ecology and social ecology) on outpatient and hospitalization; and, needs (perceived health-related quality of life, chronic illness, and days of activity

**Table 1.** Regression analysis of health-related quality of life and organizational support

dependent variable →	utilization of medical ecology					
	medical expenses		number of medical visits		number of hospitalization	
independent variable ↓	$\beta$	$\rho$	$\beta$	$\rho$	$\beta$	$\rho$
health-related quality of life						
behavior capacity	-2.438**	0.000	-2.412**	0.000	-2.455**	0.000
environmental quality	-2.184**	0.000	-2.095**	0.000	-2.122**	0.000
individual realization	-2.216**	0.000	-2.113**	0.000	-2.186**	0.000
psychological comfort	-2.342**	0.000	-2.327**	0.000	-2.357**	0.000
F	32.447		38.425		41.663	
P	0.000***		0.000***		0.000***	
R2	0.257		0.304		0.288	
adjusted R2	0.222		0.265		0.251	

Note: \* stands for  $p < 0.05$ , \*\* for  $p < 0.01$

limited) were the major factor in the public medical utilization. The following hypotheses are therefore established in this study.

**H1:** Health-related quality of life shows significantly negative correlations with medical expenses.

**H2:** Health-related quality of life reveals remarkably negative correlations with number of medical visits.

**H3:** Health-related quality of life presents notably negative correlations with number of hospitalization.

### Research Object

The general public in Shanghai, as the research samples, is distributed 500 copies of questionnaire. By deducting invalid and incomplete ones, total 421 valid copies are retrieved, with the retrieval rate 84%.

## ANALYSIS AND DISCUSSION

### Correlation Analysis of Health-related Quality of Life and Utilization of Medical Ecology

Applying regression analysis to test the hypothesis and the theoretical structure, the first regression analysis result, **Table 1**, reveals the significance of regression equation ( $F=26.441$ ,  $p < 0.001$ ). Health-related quality of life presents remarkable effects on medical expenses, where “behavior capacity”, “environmental quality”, “individual realization”, and “psychological comfort” in health-related quality of life show notably negative effects on medical expenses in utilization of medical ecology ( $\beta = -2.438$ ,  $p < 0.01$ ;  $\beta = -2.184$ ,  $p < 0.01$ ;  $\beta = -2.216$ ,  $p < 0.01$ ;  $\beta = -2.342$ ,  $p < 0.01$ ). H1 is therefore supported.

The second regression result, **Table 1**, appears the significance of regression equation ( $F=38.425$ ,  $p<0.001$ ). Health-related quality of life presents significant effects on number of medical visits, where “behavior capacity”, “environmental quality”, “individual realization”, and “psychological comfort” in health-related quality of life show remarkably negative effects on number of medical visits in utilization of medical ecology ( $\beta=-2.412$ ,  $p<0.01$ ;  $\beta=-2.095$ ,  $p<0.01$ ;  $\beta=-2.113$ ,  $p<0.01$ ;  $\beta=-2.327$ ,  $p<0.01$ ). Accordingly, H2 is supported.

The third regression result, **Table 1**, reveals the significance of regression equation ( $F=41.663$ ,  $p<0.001$ ). Health-related quality of life appears notable effects on number of hospitalization, where “behavior capacity”, “environmental quality”, “individual realization”, and “psychological comfort” in health-related quality of life present significantly negative effects on number of hospitalization in utilization of medical ecology ( $\beta=-2.455$ ,  $p<0.01$ ;  $\beta=-2.122$ ,  $p<0.01$ ;  $\beta=-2.186$ ,  $p<0.01$ ;  $\beta=-2.357$ ,  $p<0.01$ ). Consequently, H3 is supported.

### CONCLUSION

The research results show physiological and psychological factors as the key factors in the public medical resource utilization. A person with healthier physiological and psychological states appears fewer demands for medical ecology. Although physiologically unhealthy state is the major factor in the public seeking for medical care, the psychological factor is also a factor in utilization of medical ecology. In other words, a physiologically healthy person might consider the physical unhealthiness due to psychological factors and seek for medical care. It could result in more medical ecology waste. In this case, the health authority, when considering solutions for health insurance financial problems, should not simply reform payment systems, but should also consider the public medical needs. Individual medical needs could be judged by medical personnel or measured with medical equipment. However, a favorable measuring tool has not been developed to evaluate individual medical needs. From

the aspect of health-related quality of life to estimate individual medical needs might be a good method. Health-related quality of life is individual subjective measurement of the current health conditions, health care, and health promotion activity to achieve and maintain the standard of physical functions and allows an individual continuously pursuing the life goal. It reflects the general comfort. The measurement of health-related quality of life therefore could indirectly understand the public subjective perception and cognition of physical health to understand the public medical needs.

### SUGGESTION

Aiming at promoting the public health-related quality of life, the following suggestions are proposed in this study.

1. Medical clinics are suggested to move towards preventive medicine or health education, promote the public health knowledge and improve the health behaviors, and control medical ecology waste with preventive point of view. The health authorities, on the other hand, should be able to provide adequate incentives for medical clinics being willing to proceed the public health education.
2. Health authorities are suggested to expand the payment for health education, or adopting payment for cases and payment for performance, so that medical clinics could focus medical care on illness prevention. In this case, the use of medical ecology could be reduced, and hospitals could acquire real benefits. Most important, the public health could be improved and promoted.
3. Medical clinics could integrate with community ecology to promote correct health concepts. Matching with the promotion of “comprehensive healthy community development”, medical clinics could utilize community force to co-create the living environment good for health so as to promote the public quality of life.

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