



Original article

Health literacy impact on elderly patients with heart failure in Taiwan



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ABSTRACT

Background: Advances in medical technologies and medical services require adequate health literacy from patients in order to improve quality of life. However, health literacy is inadequate in many places and instances, especially in the elderly living in remote areas.

Purpose: To determine the prevalence of inadequate health literacy in elderly patients suffering from heart failure in Taiwan; to examine the impact of health literacy on self-care and quality of life; and to identify sociodemographic factors associated with health literacy.

Methods: Ninety-eight individuals were recruited using convenience sampling in a large medical center in Taiwan from May 2011 to May 2012. Four instruments were used in this study: a demographic questionnaire, Taiwan Health Literacy Scale, Self-Care of HF Index V. 6, and Minnesota Living with Heart Failure Questionnaire.

Results: Findings reveal that 60% of patients with heart failure in this study have inadequate or low health literacy.

Conclusion: The factors associated with health literacy are hard to change and/or improve; therefore, developing innovative ways to help patients in dealing with their symptoms is needed.

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1. Introduction

The concept of health literacy was introduced in the mid-1990s.^{1,2} It is defined as “an active process of interacting with one’s environment, utilizing basic as well as more complex cognitive and social skills to navigate the health care system in order to maintain an acceptable state of health”.¹

High prevalence of low health literacy has been found in adults in various studies by Western researchers.^{3–7} In Taiwan, Lee et al³ conducted a national survey of 1439 adults in 2008 to assess the prevalence of inadequate literacy in Taiwanese adults and reported a high prevalence of low health literacy.³

Health literacy has become an important issue for health care professionals due to the fact that adequate health literacy is

essential to allocate medical resources that in turn have profound impacts on health care outcomes. In addition, significant improvements in medical technologies also require adequate health literacy.^{8,9} Previous research also reported that higher mortality, inadequate use of preventive services, more hospitalization, more exacerbation of heart failure, and poor disease state control are associated with inadequate health literacy.^{1,2,10–14} Regarding demographic factors, older individuals with a lower education level, lower household income, residing in less populated areas, and having a poor mental state were more likely to have lower health literacy.^{1,3,15}

Elderly people with a history of heart failure are considered vulnerable and therefore require adequate health literacy and the self-care ability needed to manage a chronic condition in order to attain a better quality of life.^{16–19} Macabasco-O’Connell et al²⁰ sampled 605 heart failure patients and reported that inadequate literacy was associated with lower self-care behavior. However, Dennison et al²¹ found no difference in self-care maintenance and management scores between health literacy levels except in the

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area of self-care confidence. Notably, a high prevalence of inadequate health literacy is found in hospitalized heart failure patients. In addition, inadequate self-care abilities and poor quality of life were found in patients with heart failure.²¹

So far, there has been insufficient research focusing on the prevalence of inadequate health literacy and its impact on patients with heart failure in Taiwan. Thus, this study aims to investigate the prevalence of inadequate health literacy in patients suffering from heart failure in Taiwan, examine the impact of health literacy on self-care and quality of life, and identify sociodemographic factors associated with health literacy.

2. Methods

A descriptive cross-sectional design was used in this study. Ninety-eight individuals were recruited using convenience sampling from a large medical center in Taiwan from May 2011 to May 2012. Participants were aged 50 years or older, inpatients diagnosed with heart failure New York Heart Association class II or class III, and able to communicate in Mandarin or Taiwanese.

Sample size was estimated by G*Power version 3.1 (Department of Criminology, University of Melbourne, Parkville, Victoria, Australia). To determine the sample size, the significance level was set at $\alpha = 0.05$, the statistical power at $(1 - \beta) = 0.80$, and effect size at 0.3. Based on these criteria, at least 64 participants were recruited to meet the required sample size. In total, 98 patients were sampled.

The study was approved by the Institutional Review Board of Taipei Veterans Hospital, Taipei, Taiwan. The purpose of the study, the risk and benefits of participation, and confidentiality of personal information was explained to each participant at the outpatient clinic. Patients who met the sampling criteria were invited to participate in the study and requested to sign a consent form upon agreement to participate and prior to collection of any data. Four instruments were used in this study: a demographic questionnaire; Taiwan Health Literacy Scale (THLS); Self-Care of HF Index V. 6 (SCHFI-V6); and Minnesota Living with Heart Failure Questionnaire (MLHFQ). The participants filled out the questionnaires in a separate quiet room following their doctor's appointment. A research assistant helped to complete the questionnaires as needed.

2.1. Measurements

2.1.1. Demographic questionnaire

This questionnaire was used to collect patient personal information such as age, marital status, employee status, education level, and others. Related medical information such as treatment plan, any adverse events related to the disease, and related biological data were also collected and comorbidity was measured using the Charlson Comorbidity Index (CCI). There are 19 diseases in the CCI.²² Each comorbid condition score could be different, thus it is weighted based on the risk of mortality and the index final scores are the sum of individual disease scores. The final score was categorized into 0–2, 3–4, and ≥ 5 , a higher score indicating higher level of comorbid condition.²²

2.1.2. THLS

This scale was developed by a group of five experts in Taiwan, which included clinic physicians, health care administrators and scholars. First, 125 common health-related Chinese terms were chosen by the expert panel. A valid sample of 776 individuals from four groups (outpatient department patients, university students, community residents, and casual visitors to the central park) was recruited to construct this scale. Health-related terms with the highest significance were selected. There are nine divisions among

these 66 health-related terms with the Cronbach α of each division having a satisfactory level of 89% and above (Tables 1 and 2).

The five-point Likert scale was used with the total score ranging from 0 to 330 and a final mean score ranging from 0 to 5, a higher score indicating a higher level of health literacy. The authors of this scale indicated that a mean score below 3 was the cut-off point to define inadequate health literacy (from moderate to low).²³

2.1.3. SCHFI-V6

This scale was used to measure the level of self-care status. It is comprised of three subscales: a 10-item self-care maintenance scale, a 6-item self-care management scale, and a 6-item self-care confidence scale. The score of each scale ranges from 0 to 100, a higher score indicating a better self-care level with a score of 70 being the cut-off point for adequate self-care. Notably, the author of the instrument panel suggested scoring items separately by each scale rather than a total score of three subscales. Self-care management can be assessed only when patients identify their own symptoms.^{24,25} Tung et al²⁶ reported an average of 0.89 content validity index as confirmed by five experts. The α coefficient was 0.635 for self-care maintenance, 0.716 for self-care management, and 0.860 for self-care confidence in Tung et al's study.²⁶

2.1.4. MLHFQ

This instrument was used to measure the quality of life, which is a disease-specific measurement for assessing patients' subjective feeling of disease impact on their daily life.²⁷ The Chinese version MLHFQ, contains 21 items with physical, emotional, and social quality of life aspects. The total score was calculated using the sum of each item and employing the five-point Likert scale with 0 representing no impact on quality of life and 5 representing a very high impact on the quality of life. Thus, the final score can range from 0 to 105, with a lower score indicating a better quality of life.^{28,29} Ho et al²⁸ (2007) confirmed the psychometric properties of Chinese version MLFHQ. Content validity was examined by an expert panel and confirmed to be 0.98. Reliability was confirmed by the results of Cronbach α : 0.95 for the scale, and 0.93–0.95 for the subscales.^{28,29}

2.2. Data analysis

SPSS for Windows, version 19 software (SPSS Inc., Chicago, IL, USA) was used to analyze the data. Descriptive statistics such as frequency, percentage, mean and standard deviation were used for the demographic data and descriptive results of three main variables (health literacy, self-care, and quality of life). The effect of health literacy on self-care and quality of life was assessed by linear regression, and comorbid condition (CCI) was identified as a confounding factor. The sociodemographic factors associated with health literacy were examined by liner regression as well. The significance level was set at 0.05.

Table 1
Reliability of the Taiwan Health Literacy Scale.

Divisions	Number	Cronbach α
Name of the drug	8	0.901
Major diseases	10	0.773
General diseases	10	0.935
Organ	7	0.932
Physiological	7	0.904
Check procedure	7	0.926
Therapeutic procedure	5	0.598
Symptom	7	0.912
Characterization	5	0.937
Total	66	0.979

Analytic method: reliability analysis by SPSS.

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