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International Journal of Nursing Studies 43 (2006) 1001–1010
INTERNATIONAL JOURNAL OF NURSING STUDIES
www.elsevier.com/locate/ijnurstu

Effectiveness of case management for community elderly with hypertension, diabetes mellitus, and hypercholesterolemia in Taiwan: A record review

Kuei-Yun Lu[a,b,*], Pi-Li Lin[c,d], Li-Chi Tzeng[d], Kuo-Yi Huang[c,d], Liang-Chih Chang[e]

[a]*Department of Health Services Policy and Management, School of Public Health, University of South Carolina, USA*
[b]*Department of Nursing Management, Fooyin University, Taiwan 22-3F, No.11, Shin-Guang Rd., Kaohsiung 80661,Taiwan*
[c]*Department of Nursing, Kaohsiung Medical University, Taiwan*
[d]*Department of Nursing, Meiho Institute of Technology, Pingtung, Taiwan*
[e]*Graduate Institute of Bioresources, National Pingtung University of Science & Technology, Taiwan*

Received 29 July 2005; received in revised form 7 November 2005; accepted 13 November 2005

Abstract

Objective: To identify the effectiveness of case management for community elderly with hypertension (HT), diabetes mellitus, and hypercholesterolemia (HC) (the so-called three highs).
Design and setting: Secondary data of the first and 3-month-after visiting records were extracted from 33 Public Health Centers in Taiwan.
Participants: Seven hundred and sixty-six clients were selected who were at least 65 years old and had been diagnosed twice on the Case Management Record with at least one of the three highs.
Results: This sample had a mean age of 72.6 years, 59.7% were female. Approximately 74% of the clients had HT, 55% had diabetes, and 15% had HC. Each elderly revealed 1.4 highs of the three highs. The elderly with HT, and diabetes, their blood pressures (BP) and blood sugars significantly decreased after being managed by public health nurses. Males and the elderly living in urban areas had more decrease in systolic BP. Females had more decrease in fasting blood sugar.
Conclusions: The study found that the case management of the three highs presented effectiveness on reducing the values of the three highs of the elderly in community.

Keywords: Public health nursing; Case management; Hypertension; Diabetes mellitus; Hypercholesterolemia

What is already known about this topic?

(1) The three highs are the major risk factors of chronic diseases, which predominate as the major issues of health care delivery systems.
(2) In previous studies, the method to evaluate nursing intervention in controlling clients' hypertension,

*Corresponding author. Department of Nursing Management, Fooyin University, Taiwan 22-3F, No.11, Shin-Guang Rd., Kaohsiung 80661, Taiwan. Tel.: +886 7 5377558; fax: +886 7 5377877.
E-mail addresses: kueiyun123@yahoo.com.tw, ft001@mail.fy.edu.tw (K.-Y. Lu).

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doi:10.1016/j.ijnurstu.2005.11.013

diabetes and hyperlipidemia was to analyze clients' behavioral changes.

What this paper adds

(1) An experimental study that evaluated the effectiveness of case management for the elderly with any one of the three highs by analyzing the changes of the values of the three highs.
(2) Nursing interventions in public health centers demonstrated the effect of significantly reducing the values of blood pressures and blood sugars of the elderly in communities.

1. Introduction and background

Case management is identified as a practice strategy for meeting the health care needs of people by the public health sectors. The changing health care environment has encouraged the emergence of case management as a strategy to design nursing care delivery systems (Metcalfe, 2005). Case management has been identified as increasing cost effectiveness of care (Coenen, 1993). Thus, it has been obtaining more attention for health promotion at the community level. Previous studies reported that case management subsequently contributes to controlling diabetes (Howe et al., 2005), to reducing unnecessary Medicare readmission (Michelman et al., 2005), and to improving elderly physical function (Bernabie et al., 1998). However, after reviewing numerous literatures, Hallberg and Kristensson (2004) indicated that the nursing interventions and activities which constitute case management vary widely in different studies.

1.1. Health promotion

A prominent theory of public health in the later part of the 20th century advanced the concept of prevention by three stages and at five levels (Stanhope and Lancaster, 2004). Of these stages and levels, health promotion is regarded as the most important strategy focusing on changes of both the environment and the individual to actively promote the health of the public (Chen, 2000).

With an increasing life expectancy, and the trend of a demographic transition toward more aged populations, chronic diseases predominate as the major issues of health care delivery systems. Cerebrovascular disease (CVD), heart disease, diabetes mellitus (DM), and hypertensive disease have been the second, third, fifth, and ninth of the ten leading causes of death since 1991 in Taiwan. Hypertension (HT), DM, and hypercholesterolemia (HC) are major risk factors for CVD and heart diseases (Department of Health [DOH], 2003). Accordingly, the DOH focuses on encouraging adults to have their blood pressures (BP), blood sugars, and total cholesterol (TC) checked regularly. After the check, the program establishes a management system to follow-up on the cases, and to promote shared care to upgrade the care quality for chronic diseases. Nurses play an important role in detecting, monitoring, treating and preventing diseases, thus promoting better community health (Shaver, 2005). Nursing research has shown that nurses have created positive differences in reducing risk factors of chronic diseases and improving the health of communities (Metcalfe, 2005).

1.2. The three highs

CVD is the leading cause of morbidity and mortality in developed countries. This disease is associated with approximately 50% of all deaths in the USA (Goodwin, 1999). CVD continues to affect more Americans than any other disease, and its annual national economic impact is estimated at 190 million in health expenditures, medication, and lost productivity owing to disability and death (Bushnell and Smith, 1998). In Taiwan, the years of life lost to CVD are much greater than from other diseases. Heart disease caused nearly 3000 mortalities per 100,000 in 2000. Age-specific mortality of cardiovascular disease shows that most victims are over the age of 65 (Bureau of Health Promotion [BHP], 2004). The risk factors of CVD reported by the DOH were HC, HT, DM, obesity, high dietary salt, alcohol and cigarette consumption, and insufficient physical activity and stress. Cholesterol accumulates in the walls of arteries and forms plagues. HC, the major component of fatty tissue, can erode the wall of the artery, diminish its elasticity and interfere with blood flow. This is an important factor of CVD and a common cause of heart attack and stroke. The National Cholesterol Education Program estimates that 65 million Americans are with HC (Department of Human Health Service [DHHS], 2005). The DOH reported that 43% of adults above 45 years of age in the population suffer with HT, 23% with vascular diseases, and11% with DM (DOH, 2003).

HT is known to cause structural and functional changes within the heart, kidney, brain, and systematic vasculature, thereby leading to the pathogenesis of CVD, stroke and renal diseases. According to the DOH survey, 10.4 of deaths occurred from renal failure in 100,000 people in Taiwan (DOH, 2004). Krousel-Wood et al. (2004) reported that HT is an important preventable risk factor for CVD, the leading cause of mortality in the United States. The Community Hypertension Intervention Project (CHIP) reported that 65% those recorded as having HT are deemed to be usually not compliant. HT is a "silent" disease process, and compliance with therapy is always the most serious problem (Bone et al., 2000).