CrossMark

KOREA CENTERS FOR
DISEASE CONTROL & PREVENTION

ORIGINAL ARTICLE

Accuracy of Self-reported Hypertension, Diabetes, and Hypercholesterolemia: Analysis of a Representative Sample of Korean Older Adults

Heeran Chun [a], Il-Ho Kim [b,c,*], Kyung-Duk Min [d]

[a]Department of Health Administration, Jungwon University, Chung-buk, Korea.
[b]Social and Epidemiological Research, Centre for Addiction and Mental Health, Toronto, Canada.
[c]Department of Psychiatry, University of Toronto, Toronto, Canada.
[d]Institute of Health and Environment, Graduate School of Public Health, Seoul National University, Seoul, Korea.

Abstract

Objectives: This study will assess the accuracy of self-reported hypertension, diabetes, and hypercholesterolemia among Korean older adults.
Methods: Using data from the fourth Korean National Health Examination and Nutrition Survey (KNHANES IV, 2007—2009), we selected 7,270 individuals aged 50 years and older who participated in both a health examination and a health interview survey. Self-reported prevalence of hypertension (HTN), diabetes mellitus (DM), and hypercholesterolemia was compared with measured data (arterial systolic/diastolic blood pressure, fasting glucose, and total cholesterol).
Results: An agreement between self-reported and measured data was only moderate for hypercholesterolemia (κ, 0.48), even though it was high for HTN (κ, 0.72) and DM (κ, 0. 82). Sensitivity was low in hypercholesterolemia (46.7%), but high in HTN and DM (73% and 79.3%, respectively). Multiple analysis shows that predictors for sensitivity differed by disease. People with less education were more likely to exhibit lower sensitivity to HTN and hypercholesterolemia, and people living in rural areas were less sensitive to DM and hypercholesterolemia.
Conclusion: Caution is needed in interpreting the results of community studies using self-reported data on chronic diseases, especially hypercholesterolemia, among adults aged 50 years and older.

1. Introduction

The accuracy of self-reported cardiovascular disease (CVD) and its determinant factors are a pivotal issue for global public health in CVD prevention and management among older populations. CVD continues to be a leading cause of morbidity and mortality in most developed and developing countries [1—3]. In accompaniment with a rapidly growing elderly population concomitant with increasing life expectancy, South Korea (hereafter Korea) has seen a dramatically increasing trend in the risk of CVD. The prevalence of

*Corresponding author.
E-mail: Il-Ho.Kim@camh.ca (I.-H. Kim).

CVD risk factors such as of hypertension (HTN), diabetes mellitus (DM), and hypercholesterolemia among adults (30 years or older) has increased from 24.6%, 9.6%, and 10.7% in 2007, to 27.3%, 11.0%, and 14.9%, in 2013, respectively [4]. To prevent and manage the increasing health burden of CVD risk factors, the Korean government implemented the National Cardio-Cerebrovascular Disease Plan 2010−2015 [5], but patients with these chronic diseases are frequently excluded from the government's enrollment system, due to limited public knowledge and awareness of CVD risk factors [6].

Accurately assessing the prevalence and trend of these diseases is a prerequisite for societal disease management and medication compliance. While, in reality, self-reported health data through surveys are widely used due to cost-effectiveness, it is noted that complex variations between subjective and objective measures of CVD risk factors hamper us from a better understanding of the magnitude of CVD, its associated factors, and the effectiveness of government interventions for its prevention [7−10]. A handful of studies suggest that the prevalence of self-reported DM shows a relatively high level of agreement [11−14], but high cholesterol revealed a significant discrepancy [9−11,15], with a mixed result for high blood pressure. A Minnesota study using 2,037 participants aged 45 years or older suggests that agreement between reported and medical records was noticeable for both DM and HTN (κ 0.71−0.80) [12]. In comparison to the American research, several European findings suggest similar agreement for DM (κ 0.84−0.76), but a significantly lower agreement for HTN (κ 0.63−0.51) and hypercholesterolemia (κ 0.55−0.48) [9,11,13]. A recent European study of 12 countries estimated that nearly 70% of European adults were unaware of having high cholesterol levels [11]. These results imply that undiagnosed cases of chronic patients could significantly deteriorate the quality of CVD primary care and intervention, when relying only on self-reported health data. However, there is a substantial knowledge gap in the accuracy of self-reported chronic diseases among Asian older adults. In addition, it is still unclear why this discrepancy in agreement exists for CVD risk factors, while emerging research shows that some sociodemographic factors such as age, sex, and education can contribute to its accuracy [9,16−19].

The central objective of this epidemiological research is to investigate the accuracy of self-reported HTN, DM, and hypercholesterolemia among Korean older adults. The specific goals of the study are to assess: (1) whether Korean older adults have a higher accuracy of reporting CVD risk factors when compared with measured data; (2) whether the extent to which the observed variation between the two measures differs in HTN, DM, and hypercholesterolemia; and (3) whether the extent may be attributable to demographic factors, socioeconomic factors, and/or health behavioral factors. The study will also examine whether there are different determinant factors between DM, HTN, and hyperlipidemia. To achieve our aims, we will use the Fourth Korean National Health and Nutritional Examination Survey (KNHANES IV), 2007−2009, the representative national data [20].

2. Materials and methods

2.1. Data and study population

This study is based on data from KNHANES, conducted from 2007 to 2009. This nationally representative cross-sectional survey included health interviews, health examinations, and nutritional surveys, intended to monitor the health and nutrition status of the Korean population. The details of this survey have been published in several publications [20]. Out of 24,871 individuals for whom both reported and measured data (health interviews and health examination) were available, 8,529 (34.3%) were over the age of 50 years. We obtained 7,270 observations for the final analysis, after eliminating all missing data.

2.2. CVD risk factors

CVD risk factors included HTN, DM, and hypercholesterolemia. Reported HTN, DM, and hypercholesterolemia cases were ascertained with the following questions. Has a doctor ever told you that you have: (1) high blood pressure or HTN? (2) hyperglycemia or DM? or (3) high blood cholesterol or hypercholesterolemia? Regarding the measured CVD risk factors, HTN was defined as a systolic blood pressure ≥ 140 mmHg, or diastolic blood pressure ≥ 90 mmHg, or currently using medication due to high blood pressure (Joint National Committee-6 definition) [21]. In the case of DM, individuals with fasting blood glucose levels of 126 mg/mL or those under treatment are categorized as DM [22]. Hypercholesterolemia is considered as a fasting blood cholesterol level ≥ 240 mg/mL or using medication for the condition [23].

2.3. Predictors

Sociodemographic and behavioral characteristics were taken into account as predictors of the discrepancy between reported and measured data. Sociodemographic variables included sex, marital status, region (urban/rural), education (elementary school/high school/college or higher), employment status (yes/no), and household income. The equalized household income levels were categorized into tertiles (high/middle/low), after household income was divided by the square root of the household size. This was to adjust for differences in disposable income by the numbers of people in the household [24].