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The utilization of nonprescription medications in Saudi patients with cardiovascular diseases

Eman M. Shorog^{a,b}, Khalid A. Alburikan^{a,*}

^a Department of Clinical Pharmacy, College of Pharmacy, King Saud University, Riyadh, Saudi Arabia

^b College of Pharmacy, King Khalid University, Abha, Saudi Arabia

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ABSTRACT

Background: Cardiovascular diseases (CVDs) are the most common cause of disease-related death in Saudi Arabia. The incidence of CVDs continues to increase, presenting a major health care problem. Nonprescription medications are widely used by patients with CVD and may cause adverse drug events, either by worsening the disease or by harmfully interacting with prescribed medications. We investigated the patterns of nonprescription medication utilization and the factors associated with their use in patients with CVD.

Methods: This was a cross-sectional study conducted at the Cardiology Clinics of an academic tertiary health care center. Participants were asked about their sociodemographic characteristics, medical history and frequency of using nonprescription medications including over-the-counter (OTC) products, dietary supplements, and herbal products. Moreover, we investigated the participants' sources of information about nonprescription medications. Multivariate logistic regression analysis was conducted to examine the predictors of nonprescription medication use.

Results: A total of 209 participants were interviewed. The mean age of the participants was 56 ± 15 years, and 110 (52.6%) were female. Of the 209 participants, 116 (55%) reported routine use of nonprescription medications. Black seeds and garlic were the most frequently used herbal products. Acetaminophen, cold/cough remedies, and ibuprofen were the most commonly reported OTC drugs. Of the surveyed patients, 54 (46.5%) used nonprescription medications to manage cardiovascular conditions specifically. Compared with other comorbidities, diabetes mellitus was associated with a higher use of nonprescription medications.

Conclusion: In patients with CVD, the routine use of nonprescription medications was common for a number of reasons. Health care providers should proactively discuss nonprescription use with their CVD patients to avoid potential harmful outcomes.

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Abbreviations: CVD, cardiovascular disease; OTC drugs, over-the-counter drugs; CAM, complementary and alternative medicine; NSAID, nonsteroidal anti-inflammatory drug.

* Corresponding author at: Department of Clinical Pharmacy, College of Pharmacy, King Saud University, Riyadh, Saudi Arabia.

E-mail addresses: eshorog@ksu.edu.sa (E.M. Shorog), kalburikan@ksu.edu.sa (K.A. Alburikan).

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1. Introduction

Cardiovascular diseases (CVDs) are the most common cause of disease-related death in Saudi Arabia, similar to previous findings reported globally (Al-Omran, 2012). Although there are limited data on the incidence and prevalence of CVDs among Saudis, these indicators are expected to increase due to the increase in risk factors such as hypertension, obesity, elevated low-density lipoprotein (LDL)-cholesterol, and physical inactivity, as reported in recent studies (Alenazi et al., 2015; Gao et al., 2013; "Heart Disease Facts & Statistics | cdc.gov," n.d.; Rabito and Kaye, 2013).

The data on conventional medicine have demonstrated that the effective use of therapeutic agents for CVDs leads to better health outcomes (Amsterdam et al., 2014; Fonarow et al., 2011; Yancy

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et al., 2013). The recent American College of Cardiology/American Heart Association guidelines recommend medications such as beta-blockers, angiotensin-converting enzyme (ACE) inhibitors, aspirin, and high-intensity statins to prolong survival and reduce the risk of cardiovascular complications, including stroke, heart failure, and myocardial infarction (Amsterdam et al., 2014). Similarly, in patients with heart failure, guideline-directed medical therapy improves quality of life, reduces future re-hospitalizations and reduces the risk of mortality (Fonarow et al., 2011; Yancy et al., 2013).

Recent reports have suggested that the regular use of nonprescription medications to treat chronic conditions such as CVDs is common. However, this use has been associated with adverse drug events and poor adherence to prescribed medications (Bahall, 2015; Grant et al., 2012; Mattila et al., 2013; Rottlaender et al., 2007). For example, the concomitant administration of ginkgo (*Ginkgo biloba*) or garlic (*Allium sativum*) with warfarin or aspirin may enhance the risk of bleeding, representing an interaction with potentially serious outcomes (Bahall and Edwards, 2015; Wang, 2015). Many factors have been linked to nonprescription medications utilization in CVDs patients, including patients' stress and psychological state, the accessibility and affordability of nonprescription medications, and the widespread advertising of nonprescription medications as harmless therapy for controlling a number of CVDs symptoms (Grant et al., 2012; Prasad et al., 2013; Rabito and Kaye, 2013). Although data have suggested that the Saudi population has a higher utilization of nonprescription medications than those in different studies worldwide, there are no data on the use of nonprescription medications in Saudi patients with CVDs (Elolemy and Albedah, 2012). Therefore, our study investigated the utilization patterns of nonprescription medications in this important patient population.

2. Methods

2.1. Study design

A cross-sectional study was conducted in adult cardiology clinics at King Saud University Medical City, which is a tertiary hospital in Riyadh with a 900-bed capacity.

2.2. Study population

Subjects were adults aged 18 years or older with a documented diagnosis of a CVD, including at least one of the following: heart failure with reduced or preserved ejection fraction, chronic stable angina, acute coronary syndrome, arrhythmias, or hypertension. Subjects were required to be scheduled for regular visits and able to respond to the interview questions. Subjects were excluded if they were unable to answer the interview questions for any reason.

2.3. Data collection and study plan

After the study had been approved by the King Saud University Medical City Institution Review Board Committee, a pilot study was conducted with the target population to validate the survey. Patients diagnosed with a CVD at the cardiology clinic of this tertiary academic hospital who met the inclusion criteria were randomly asked to participate in the study and answer all the survey's questions. Participants were surveyed prior to their clinic appointment. The survey asked participants about their socio-demographic data (age, sex, marital status, education level, and income), comorbidities, and frequency of nonprescription medication use (including OTC products, dietary supplements, and herbal supplements). The definition of nonprescription medications in the

current study was (derived from extracted based on in accordance with) a recent published study which conducted at the University of Wisconsin in the United States of America (Mattila et al., 2013). OTC medications, was defined as drugs or natural products that can be accessed by the patients directly regardless of physician prescription, thus patients are the principal contributors in the management of their own health status (Cooper, 2013). Economic level was categorized according to the annual income by Saudi riyal into; (low: <40,000, middle: 40,000–80,000, high: >80,000). Participants were also asked about their reasons for using nonprescription medications, their most common source of information about the safety and efficacy of nonprescription medications, and whether they had discussed nonprescription medications with their health care providers.

2.4. Statistical analysis

Descriptive statistics were used to report the prevalence of nonprescription medication use. Percentages and frequencies were used to summarize the categorical variables, while means and standard deviations were calculated for continuous variables. Chi-square or Fisher's exact test as required and two-sample t-tests were used to summarize the relationships between demographic variables and the use of nonprescription medications for categorical and continuous data, respectively. A logistic regression model was used to assess the changes in risk of nonprescription medication use based on participants' sociodemographic characteristics and comorbidities. A value of $p < 0.05$ was considered statistically significant. Data were entered and analyzed using IBM SPSS for Windows, version 22 (IBM Corp., Armonk, NY, USA).

3. Results

In total, 209 participants were interviewed; 99 (47.4%) were male and 110 (52.6%) were female. The mean age of the participants was 56.5 years (SD = 15.5). More than half of the participants had dyslipidemia, and two-thirds had hypertension. Nonprescription medication users differed significantly from non-users in osteoarthritis only ($p = 0.025$). Table 1 shows the clinical and demographic characteristics of the participants.

More than half of the study participants reported regularly using at least one nonprescription medication in the last three months. Black seeds (*Nigella sativa*) were the most commonly used herbal therapy (33%), followed by garlic (*Allium sativum*) (21.5%). Cold and cough remedies (including antihistamines, decongestants, and cough medicines) were reported by 23.4%, and ibuprofen by 14.3% were the most commonly utilized OTC medications. Table 2 provides detailed information on the types of nonprescription medications used.

Of the 209 patients surveyed, a large percentage used acetaminophen regularly or irregularly (62.2%) as an OTC medication; however, acetaminophen was not included in the analysis. After the multivariate logistic regression, participants with diabetes were found to be more likely to use nonprescription medications (OR 2.18, 95%CI 1.106–4.307). Other demographic characteristics and comorbidities did not predict nonprescription medication use, as shown in Table 3.

Of the 116 participants who reported routine use of nonprescription medications, 54 (46.5%) indicated that they had used nonprescription medications specifically to manage a cardiovascular condition. In this study, routine use means on a regular basis such as daily or weekly which was explained to the participants. Regarding physician-patient relationships, 31.6% of the patients visited more than one physician during the same period. Moreover, only 22.5% had discussed their use of nonprescription medications

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