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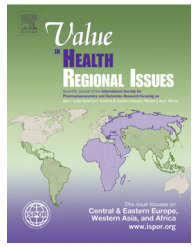

A Systematic Review of Community Pharmacists' Interventions in Reducing Major Risk Factors for Cardiovascular Disease

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ABSTRACT

Objectives: To conduct a systematic literature review and assess the effectiveness of community pharmacists' interventions in reducing major risk factors for cardiovascular diseases. **Methods:** A comprehensive literature search from 2000 onwards was performed using MEDLINE (1946 to June 4, 2013), EMBASE (1947 to present), CINAHL, and Cochrane Library. The gray literature was also searched. Studies were classified as diabetes, hypertension, dyslipidemia, and tobacco dependence. Data abstracted from the articles included study design/participants, study duration, key components of intervention, primary outcome, and key findings. Study quality was assessed using a checklist appropriate to the study design. **Results:** A total of 1020 citations were initially identified, with 27 meeting inclusion criteria. Eight studies were randomized controlled trials, five were cluster randomized trials, two were randomized before-after design studies, five were nonrandomized controlled before-after design studies, and seven were uncontrolled before-after design studies. Interventions focused on diabetes (n = 8), hypertension (n = 9), dyslipidemia (n = 7), and tobacco dependence (n = 3). Effect sizes ranged from 7.8 to 17.7 mm Hg and from 0.2% to 2.2% reductions in systolic blood pressure and hemoglobin A_{1c}, respectively, while reductions in total cholesterol ranged from 18.2 to 27.1 mg/dl. Study quality was generally poor. **Conclusions:** Available evidence suggests a potential for substantial benefit in diabetes and hypertension but clinical benefits in lipid management remain unclear. The true effect of interventions is uncertain due to poor study quality, inconsistent results, and potential for publication bias. Further well-designed studies are needed to determine the true impact of community pharmacists' interventions in reducing major risk factors for cardiovascular disease.

Keywords: Cardiovascular disease, diabetes, hypertension, community pharmacy, dislipidaemia, tobacco dependence.

Introduction

In the last decade, noncommunicable diseases have been reported as major contributors to total global mortality [1,2]. Of the estimated 57 million deaths reported worldwide in 2008, noncommunicable diseases (predominantly cardiovascular diseases [CVDs], diabetes, chronic lung diseases, and cancers) accounted for about 36 million deaths. Of these noncommunicable disease–related mortality estimates, 17.3 million deaths were related to CVD, with coronary heart disease (CHD) accounting for about 7.3 million deaths and stroke for 6.2 million deaths [3]. CVDs pose a huge public health challenge and have been recognized by the World Health Organization as the leading single contributor to global mortality, with low- and middle-income countries disproportionately affected [3].

Several risk factors have been reported to be associated with CVDs. Although some are simply nonmodifiable (e.g., age, sex, family history of CVD, genetic links, and ethnicity), others are modifiable. The risk of CVDs can be reduced by adopting a healthy lifestyle such as regular physical activity, consumption of fruits and vegetables, moderation of alcohol intake, dietary sodium reduction, avoiding tobacco use, avoiding foods rich in fat, and maintaining a healthy body weight [4–8]. About 80% of CHD and CVDs are linked to behavioral risk factors [2]. The effects of physical inactivity and unhealthy diet may present in an individual as overweight and obesity, high blood pressure, elevated blood glucose levels, and elevated blood lipid levels. These "secondary risk factors," which can be measured, indicate a higher risk of developing a stroke, cardiac arrest, heart failure, and other complications. The community pharmacy setting presents an opportunity for health improvement because it provides "high street" access to a trained health professional without appointment [9]. Community pharmacies are uniquely positioned in the heart of the community to access "hard-to-reach" groups and hence reduce health inequalities and be pivotal in public health improvement interventions.

Conflict of interest: The authors have indicated that they have no conflicts of interest with regard to the content of this article.

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Community pharmacies are often patients' first point of contact, and for some, their only contact with a health care professional [10]. The strategic locations of the pharmacies, extended opening hours, and ease of accessibility to the public without need for appointment make the community pharmacy setting uniquely suitable for implementing population-based chronic disease prevention interventions, especially in resource-poor settings with disproportionately high rates of CVD morbidity and mortality [11].

In countries in which health care costs are mostly covered by social insurance, the physicians are usually overburdened with high demand. Where health care costs are largely paid out of pocket at the point of service or by private insurance, a vast majority of the population is unable to access health care services. Therefore, the community pharmacy setting offers an avenue to consult with a well-trained health professional, thus either reducing the workload for primary care physicians or offering an alternative means of access to health promotion services for the less well-off in the society. Although the role of community pharmacists in health promotion has been acknowledged [12,13], not many studies have assessed the impact of interventions delivered by pharmacists within the community pharmacy setting. Although previous reviews have explored pharmacists' interventions to reduce risk factors for CVD, they focused on a single risk factor [14–17], were not limited to the community pharmacy setting [14,15,18,19], or are outdated [9]. Thus, the objectives of this study were to systematically review the literature and assess the effectiveness of interventions delivered within community pharmacy setting to reduce major risk factors for CVDs.

Methods

Search Strategy for the Identification of Literature

An initial MEDLINE search was conducted to find background literature on community pharmacists' activities in CVD risk reduction. Although the area of CVD has been well researched, the body of evidence in the field of community pharmacy practice is limited. This made it impractical to narrow the research to a particular context and evidence was sought from across the globe. The background search also aided in the identification of appropriate MeSH terms used in the formal search strategy, which was conducted between July 2013 and February 2014.

Literature Search Procedure and Databases Searched

Electronic databases searched included MEDLINE (1946 to June 4, 2013), EMBASE (1947 to present), CINAHL, and Cochrane Library. The gray literature was searched using the Cardiff University Index to Theses database and ProQuest Dissertations and Theses. Search terms included cardiovascular disease, coronary heart disease, ischemic heart disease, diabetes, hypertension, dyslipidemia, tobacco dependence, community pharmacist(s), and community pharmacy(ies).

Eligibility Criteria

Inclusion criteria were limited to studies carried out from January 2000 onwards: studies in which interventions were delivered by a pharmacist in a community pharmacy setting and interventions were intended to reduce the incidence or risk of CVD; studies that reported a clear outcome measure; articles in English language; and articles with full text and on human studies without regard to study design or location because generally not many published articles exist on community pharmacy practice research. Gray literature such as unpublished MPhil and PhD theses from 2000 onwards were also considered for inclusion.

The exclusion criteria were publications not related to community pharmacy–based interventions in preventing CVD incidence or its major risk factors; publications in foreign languages, due to the cost and time involved in translating materials; and articles published before 2000, because studies published before 2000 were considered obsolete, more so because previous authors highlighted that most community pharmacy practice research was undertaken in the last decade. Review articles and studies that focused only on economic outcomes without reporting clinical and/or humanistic outcomes were also excluded.

Data Collation and Analysis

Study selection process

All the articles retrieved were exported to Endnote Web Reference Management Software and duplicate records were removed. An initial screening of titles and abstracts was conducted and those that were not relevant to the research aim and objectives were excluded. A more detailed review of the remaining abstracts was undertaken to ascertain their eligibility. Full texts of potentially eligible studies were obtained and reviewed to determine whether they merited inclusion.

Abstraction of data

Identified articles were categorized according to the primary outcome of interest into diabetes, hypertension, dyslipidemia, and tobacco dependence. Data were abstracted from each study and entered into a matrix using the following framework: first author, year of publication, country, and evidence grade; study design and participants; study duration; key components of intervention; primary outcome, and key findings. If the primary outcome was not specified, the first outcome reported in the Results section was used, unless another outcome was specified in a power calculation. The matrix was used as the basis for a qualitative synthesis of findings and interpretation, taking into consideration the quality of evidence.

Assessing the methodological quality of included studies

Decision on methodological quality was based on what was reported because authors were not contacted. The quality assessment framework for research is generally based on hierarchy, with the randomized controlled trial (RCT) considered as the "criterion standard." The literature in the field of community pharmacy practice does not contain many RCTs but a substantial number of quasi-experimental and descriptive studies.

A deliberate attempt was made to avoid the use of scoring tools in study quality assessment for the following reasons: First, the lack of a reference standard for total quality score forces reviewers to make a judgment on what they consider to be an acceptable level of quality usually on the basis of reference used by previous authors. Second, scoring tools by implication assign equal weight to all domains irrespective of the degree to which the domain affects study validity. Furthermore, the question of how such scoring instruments have been validated was considered.

Two approaches were therefore used to assess the quality of evidence. First, studies were stratified into RCTs and non-RCTs. The Cochrane risk of bias tool [20] was used to assess the quality of each RCT on the following domains: adequacy of randomization, allocation concealment, blinding of participants, personnel and outcome assessors, completeness of data, selective outcome reporting, and "other bias."

Consort 2010 statement [21]: extension to cluster randomized trials (CRTs) was used to assess the quality of the included CRTs.