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Review

Systematic review of factors affecting pharmaceutical expenditures



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ARTICLE INFO

Article history:

Received 12 June 2012

Received in revised form 11 February 2014

Accepted 18 March 2014

Keywords:

Drug financing

Drug quantities changes

Drug therapies changes

New drugs

Pharmaceutical expenditures

Spending determinants

ABSTRACT

Objective: To systematically identify the main factors contributing to the increase in pharmaceutical expenditures.

Methods: A systematic search of published studies was conducted utilising major widely used electronic databases using the search terms 'factors,' 'financing,' 'pharmaceutical,' and 'expenditures.' To be included, the studies needed to: (1) measure at least one of the following outcomes: total growth in pharmaceutical expenditures, price growth or quantity growth; (2) mention a clear method for analysing the impact of factors affecting the increases in drug expenditures; (3) be written in English. Nonprimary articles that were published only as an abstract, a review, a commentary or a letter were excluded.

Main results: From a total of 2039 studies, only 25 were included in the full review. The main determinant categories that were identified in the review were factors related to price, utilisation, therapeutic choice, demand and health care system.

Conclusions: The major cost drivers were found to be changes in drug quantities and therapies as well as new drugs. It is important for policymakers to understand pharmaceutical spending trends and the factors that influence them in order to formulate effective cost containment strategies and design optimum drug policy.

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1. Background

The global demand for health services has increased dramatically in recent years due to changes in population characteristics, the introduction of health care technology and changes in the structural factors of the health care system [1]. In developing countries, this is caused by several factors, including the appearance of new diseases and the

differences in the provision of health care to populations in different settings, including the provision of essential drugs and vaccines [2]. Pharmaceuticals, as the most important health component, contributed to more than half (55%) of all health-related trade in 2007 [3]. Faced with escalating health care costs in increasingly difficult economic conditions, many countries are looking for effective containment strategies for pharmaceutical costs.

Unfortunately, there are multiple factors affecting pharmaceuticals. Pharmaceutical products involve a long chain of process from the discovery of new products, the promulgation of governmental regulations addressing licensing and safety issues, the marketing process and the behaviour of providers/consumers. A variety of fac-

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tors emerge from this chain that may affect pharmaceutical expenditures. This multiplicity of factors is the origin of the difficulties facing policymakers as they seek to design effective pharmaceutical cost control interventions. In Europe, various policies were implemented not only for players in the health care market such as the pharmaceutical industry, wholesalers and retailers, consumers and prescribers [4], but also at the public and population level; demographic and disease incidence factors, which are outside of the pharmaceutical chain, are essential elements to consider in designing policies and allocating budgets [5]. A variety of strategies have been employed in different countries to rein in the increase in pharmaceutical expenditures, including educational, managerial, administrative and financial strategies [6].

The objective of this study is to identify the main factors that are contributing to the increase in pharmaceutical expenditures. Many studies have identified several factors that are responsible for the increase in pharmaceutical expenditures and have assessed several cost containment strategies [7]. These studies have explained the variation in pharmaceutical spending trends in different countries. Various factors have been explored, including the shift from older, cheaper medicines towards newer, more expensive medicines, increases in the utilisation of medicines, the introduction of new medicines, and increases in the prices of existing drugs [8]. However, due to differences in the healthcare systems in each setting, there are distinct variations in the classification of these factors. Furthermore, all of these studies were based in developed countries. This study attempted to systematically review the published literature regarding the factors that affect pharmaceutical expenditures.

The findings may help health policymakers to gain a better understanding of the expenditures and trends in pharmaceutical services and may provide information that will assist them in setting priorities and in designing policies. This review presents findings, policy recommendations and suggestions for future research.

2. Objectives

The objective of this review is to identify the main factors that are contributing to the increase in pharmaceutical expenditures.

3. Methods

This review was performed using an adaptation of the Cochrane guidelines for systematic reviews of health promotion and public health [9].

3.1. Criteria used to consider reviews for inclusion

Studies were included if their main objective was to explore the factors that affect pharmaceutical expenditures. The factors affecting pharmaceutical expenditures are defined in this review as elements that influence the economic outcomes of a health care system driven by medical demand, the trend of care, or the effects of new

technology. The studies also needed to have the following characteristics:

- (i) The study must measure at least one of the following outcomes: total growth in pharmaceutical expenditures, price growth or quantity growth.
- (ii) A clear method to analyse the impact of factors affecting the increases in drug expenditures must be mentioned.
- (iii) The study must be written in English.
- (iv) Non-primary research articles that were published only as an abstract, review, commentary or letter were excluded from the review.

3.2. Search methods for the identification of reviews

Major widely used electronic databases were selected for the search, including Pub Med (from 1992 to 20 June 2010), Science Direct (from 1993 to 21 June 2010), ProQuest (from 1994 to 22 June 2010), SpringerLink (from 1994 to 20 June 2010), EBSCOhost (from 1995 to 13 December 2010 (last update)) and Google Scholar (from 1991 to 29 June 2010).

The differences in the time frames were due to the availability of access to electronic databases from the Universiti Sains Malaysia library during the time in which the searches were performed. A search strategy was designed using the search terms 'factors,' 'financing,' 'pharmaceutical' and 'expenditures.' For PubMed, the medical subject headings (MeSH) 'health expenditures,' 'economics,' and 'pharmaceutical' were used (refer to the search strategy in [Appendix 1](#)).

3.3. Data extraction and management

Two authors (MAM, AAS) independently assessed the titles and abstracts of each potential article for eligibility. Differences in decisions about inclusion and exclusion were resolved through consensus. A pre-developed data abstraction form was used to extract the following information from the included studies: the study title, author(s), country, year, objective(s), the statistical methods used to assess the factors affecting pharmaceutical expenditures, the results, and the authors' conclusions.

3.4. Assessment of the methodological quality of the included reviews

The quality assessment tool for quantitative studies [10] suggested by Cochrane Collaboration was adopted in this review for independent assessments by MAM and AAS of the quality of the included studies.

3.5. Data synthesis

Narrative synthesis was used in this review. Meta-analysis was deemed to be unsuitable because of the heterogeneity of the studies in terms of methods, participants, settings and outcomes. The synthesis steps began with the organisation of the extracted data by the author [11]. A narrative description of the most common factors

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