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REVIEW

Pharmaceutical research in the Kingdom of Saudi Arabia: A scientometric analysis during 2001–2010

Ibrahim Alhaider [a], K.K. Mueen Ahmed [a,*], B.M. Gupta [b]

[a] Dept. of Pharmaceutical Sciences, King Faisal University, Al-Ahsa, Saudi Arabia
[b] National Institute of Science, Technology and Development Studies, Pusa, K.S.Krishnan Marg, New Delhi 110 012, India

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Abstract Studies on the performance of Saudi Arabia in the pharmaceutical science research using quantitative and qualitative measures. They analyze the productivity and global publication share and rank of the top 15 countries. The author studies Saudi Arabia's publications output, growth and citation quality, international collaborative publication share and most important the collaborating partners, contribution and citation impact of its top 15 organizations and authors, productivity patterns of its top publishing journals and characteristics of its highly cited papers.

Contents

* Corresponding author. Address: Dept. of Pharmaceutical Sciences, King Faisal University, P.O. Box 400, Al-Ahsa, Saudi Arabia. Mobile: +966 551421561, +966 35895446.
E-mail addresses: mueen.ahmed@gmail.com (K.K. Mueen Ahmed), bmgupta1@gmail.com (B.M. Gupta).
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1. Introduction

Despite of incredible advances in the diagnosis and treatment of various diseases, the incidence, prevalence, morbidity and mortality resulting from these diseases continue to escalate. Regardless, the wealth of information in internet, latest research trends, and many other health databases and increasing number of drugs available in the market, the progress to reduce medical need and disease burden is low in both developed and under developed countries. For ages, pharmaceutical products have been one of the main therapeutics to the majority of the less privileged population. The potential of the drugs has attracted the attention of the developed world, to tap their benefits to identify better and safe drugs to combat human diseases, while in the poor nations these products continue to provide health benefits to the diversified categories of patients (Fura, 2006; György and Gergely, 2006). The combined efforts of all public and private R&Ds worldwide bring around only few drugs directed against completely novel mechanisms successfully to market each year. Most drugs have had some therapeutic benefit, and some had phenomenal impact on mortality and morbidity, such as the anti-tumor agents. However, in many diseases, for e.g. HIV, Diabetes, and Cancer the cure has not been identified yet. The impact of genomics and proteomics is additionally creating an explosion in the number of drug targets. Today's drug therapies are based solely on approximately 500 biological targets, while, in 10 years' time, the number of targets could well reach 10,000. The increasing demand for new small molecules led to the invention of new technologies in the field of Pharmaceutical Sciences. Ever-increasing understanding of trends in pharmaceutical research, the community continues to struggle with finding solutions to identify lead molecules (William and Lloyd, 1998; Stephen et al., 2002). The present study is focused on an oil rich country of Middle East, the Kingdom of Saudi Arabia. With emerging globalization of science and education, the challenge of education and research needs in Saudi Arabia has opened new frontiers. As it is moving forward in most of the areas of research and setting up many research centers all over the country, majority of Saudi universities' prime interest is at advancing research in individual fields and enhancing the research atmosphere (AlAli, 2000; Simon and Yousif, 2012). The greatest breakthrough during recent years is expanding the role of pharmacists in the developing countries (Yousif, 2011). Saudi Arabia sets as an example of identifying the primary role in clinical pharmacy, drug discovery and research. Hence, pharmaceutical research is at the forefront and one of the strategic priorities in Saudi Arabia. Our main aim is to study and analyze the research output of Saudi Arabia and to identify highly productive institutes and authors.

Few scientometric studies have been published in this area. Reddy and Mahesh Kumar (2006) provide a scientometric analysis of world papers published by 57 countries in 10 major sub-specialities appearing in three leading international journals during the ten year period. Dotson et al. (2011) analyzed changes in the authorship and characteristics of articles in pharmacy journals during the 20 year period. In the field of bibliometrics of country output in pharmacology only a few studies have been carried out on India(Kaur and Gupta, 2009; Ahila et al., 2011; Gupta et al., 2011), China (Li et al., 2010) and Spain (Bordon and Barrigon, 2005) which deal with different facets of pharmacological research, its growth, global publication share and rank, international collaboration, institutional and authors productivity profile, etc.

1.1. Objectives

The main objective of present analysis in this paper is to analyze the Saudi Arabian contribution in the pharmaceutical research during the last 10 years from 2001–10 with a view: (i) to study the productivity profile of the world's top 15 most productive countries; (ii) to study the Saudi Arabian research output, citation impact, and international collaboration share and identify the leading collaborating partner countries; (iii) to study the contribution and citation impact of its most productive institutions & authors; (iv) to study the media of communication in most productive journals, and (v) to study the characteristics of highly cited papers.

2. Methodology and source used

This study was undertaken based on the publication data from Saudi Arabia and also identifies the top 15 most productive countries in the field of pharmaceutical research. Data for the present study were retrieved from the Scopus international multidisciplinary bibliographical database [http://www.scopus.com/search/] for the last ten years (2001–2010). The search strategy string used to retrieve the main data on research output, institutions, authors and major journals of Saudi Arabia is as follows: