



## Does access to medicines differ by gender? Evidence from 15 low and middle income countries



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### ABSTRACT

**Objective:** To examine gender differences in access to prescribed medicines in 15 lower and middle income countries.

**Methods:** The proportion of consultations with at least one prescription for women in three age groups (<15, 15–59, 60+ years) with acute respiratory infections (ARI), depression and diabetes in routine audits was compared to the expected proportion calculated from WHO Global Burden of Disease estimates. Newer oral hypoglycaemic medication prescribing was also analysed. Differences reported by country, age group, and condition.

**Findings:** 487,841 consultations examined between January 2007 and September 2010 in low ( $n = 1$ ), lower middle (6), and upper middle income (8) countries. No country favoured one gender exclusively, but gender differences were common. Taking the 15 countries together, only diabetes treatment revealed a significant difference, with women being treated less often than expected ( $p = 0.02$ ). No consistent differences found across countries grouped by World Bank income category, WHO region or Global Gender Gap Index. Overall, women had equal access to newer oral hypoglycaemics.

**Conclusion:** Gender differences in access to prescribed medicines for three common conditions are common, but favour neither gender consistently. This challenges prevailing hypotheses of systematic disparities in access to care for women. Evidence about gender disparities should influence policy design.

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## 1. Introduction

Gender has been defined as the “socially constructed roles, behaviours, activities and attributes that a given society considers appropriate for men and women” [1]. Gender equity is a concern in many social and economic domains, including health. Indicators measuring mortality rates, household allocation of resources for medical care,

and allocation of food and education all point to the presence of gender inequity in many parts of the world, with South Asian countries often highlighted as showing strong evidence of bias against women [2–4].

In relation to the provision of health care, gender equity is generally taken to mean meeting the health needs of men and women in an equitable way, including equitable access to health services given need [5]. Gender differences in health have been well documented. For example, the World Bank recently reported skewed sex ratios at birth that favour males, excess female mortality in infancy and early childhood, high maternal mortality, and excess female mortality due to HIV/AIDS [6]. However,

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information on the effect of gender on access to medicines is sparse. In 2005, Baghdadi speculated that “[t]here are not enough data to conclude that [obstacles to care] lead to lower use of medicines among women, but based on available evidence this seems likely” [1].

A recent gender-stratified assessment of the management of chronic conditions in seven countries reinforces this view. It indicated less effective management of blood glucose, blood pressure, and hypercholesterolemia among women with diabetes in four low and middle income countries [7]. Another recent prospective study of the use of medications for secondary prevention for cardiovascular disease in urban and rural communities in 16 low, middle and high income countries (LMICs) concluded that fewer women than men took medicines in all settings [8]. The aim of the present study was to determine whether these gender differences are typical in low and middle income countries (LMICs), across different diseases and in settings with high levels of out of pocket payments.

## 2. Materials and methods

### 2.1. Data source and environment

We used data collected routinely by IMS Health [9] (IMS) on consultations by contracted general practitioners and specialists in 15 LMICs (Table 1, Supplementary information). In each country, IMS designs a sampling frame to represent the national distribution of prescribers, recruiting doctors across a range of regions and specialties. We used data collected between January 2007 and September 2010, with a mean of 12 quarters of data per country (range 4–15). Data were aggregated across this time period to create a large sample of physicians, consultations and prescriptions.

Eligible consultations were those during which at least one medicine was prescribed. In the study countries, physicians agreed to record data on every consultation within a pre-determined week per quarter or semester. Physicians recorded the patient’s sex, age, diagnoses, and medications prescribed as free text. IMS codes diagnoses according to the ICD-10 classification [10] and classifies prescribed medications according to the European Pharmaceutical Research Association (EphMRA) Anatomical Therapeutic Classification (ATC) system [11].

Consultations in the LMICs studied tend to be paid from different sources and physicians frequently provide care in both the public and private sectors. In our sample of prescribers and consultations (Table 1, Supplementary information), the median percentage of doctors who had recorded a private consultation for at least one of the three conditions studied was 77% (interquartile range 69%–83%, data available for 10 of 15 countries). The median percentage of consultations for the three conditions studied (depression, diabetes, or acute respiratory infection) paid for out of pocket or through private insurance was 67% (interquartile range 25%–81%). Data from the WHO National Health Accounts (Table 2, Supplementary information) also indicate that private payment for medicines predominates in the study countries, with private pharmaceutical expenditure constituting a median of 74%

(interquartile range 61%–90%) of the total pharmaceutical expenditure [12].

### 2.2. Study conditions

Based on ICD-10 codes used in the World Health Organisation (WHO) burden of disease report [13], we selected consultations from the IMS database for patients diagnosed as having depression, diabetes, or acute respiratory infection, three conditions commonly treated in outpatient settings in all countries

Diabetes represents a significant and growing health burden, particularly in South Asian countries [14] where gender differences are thought to be more prevalent than elsewhere [3–5]. Significant and potentially avoidable differences in mortality rates between men and women with diabetes have also been reported in at least one country [15]. Nevertheless, there is a severe shortage of gender-specific data on the global diabetes epidemic in lower and middle income countries [16].

Like diabetes, depression represents a significant cause of morbidity and is forecast to become the foremost cause of disability in under-developed countries by the year 2020 [17].

We included consultation data for acute respiratory infections as an example of a common acute condition. Gender differences in access to outpatient treatment have been demonstrated in nine middle income countries (including five of the study countries) [3].

### 2.3. Country, consultation and patient categorisations

We used World Bank income categories available as of July 2008, the approximate midpoint of the data collection period, to classify countries. We report on one low income country (Pakistan), six lower middle income countries (Colombia, Indonesia, Peru, Philippines, Thailand, and Tunisia) and eight upper middle income countries (Argentina, Brazil, Lebanon, Mexico, Poland, South Africa, Turkey, and Venezuela). We also classified countries according to WHO region and according to the 2010 Global Gender Gap Index rank (GGGI) [18]. Country GGI ranks were divided into quartiles and countries allocated to the appropriate quartile (Table 2, Supplementary information).

Consultations for diabetes and depression were included if the physician had recorded both a relevant diagnosis and prescribing of a drug from a relevant ATC category (A10, drugs used to treat diabetes or N6, psycho-analeptics, excluding anti-obesity preparations, respectively). Consultations for acute respiratory infections were included on the basis of the relevant diagnosis only; drug type was not used to filter the treated consultations due to the very wide range of classes of drugs that were being used in this condition. Consultations meeting these criteria are termed “eligible consultations.” We divided eligible consultations into three patient age categories corresponding to those used in the WHO Global Burden of Disease (GBOD) estimates (0–14, 15–59, 60+).

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