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# Pricing strategies for pharmaceuticals in developing countries: what options do we have?

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**Effective pharmaceutical pricing policies in developing countries are important to ensure accessibility and affordability of essential medicines for the people.**

In developing countries, essential medicines are not always available to those who need them because of prohibitive prices and lack of availability, and the quality of medicines and healthcare are also variable [1]. About one-third of the world's population lack sustainable access to essential medication [2]. This is most pronounced in poor countries. Despite the existence of pharmaceutical pricing policies in some of these countries, the evidence does not always support their effectiveness in improving prices and availability.

Governments have a responsibility to ensure that all citizens receive affordable health care and medicines, and can do this by controlling different stages of the pharmaceutical supply chain. The World Health Organization (WHO) has produced guidelines for low- and middle-income countries on how to implement effective pharmaceutical pricing policies [3]. These include regulation of mark-ups in the pharmaceutical supply and distribution chain; tax exemptions/reductions for pharmaceutical products; application of cost-plus pricing formulae for pharmaceutical price setting; use of external reference pricing; promotion of use of generic medicines; and use of health technology assessment.

In developing countries, including the Middle East and North Africa, the pharmaceutical sector is relatively unregulated, and the extent of regulation depends on level of income, policies and degree of inclusion of the healthcare system in the national vision. This can occasionally affect the availability and affordability of certain drugs. Temporary deficits in the procurement of affordable essential medicines can negatively affect patients with non-communicable diseases, notably the pharmaceutical management of chronic cardiovascular diseases highly prevalent in Middle Eastern and North African countries [4].

We conducted a literature review to evaluate whether the inefficiency of the pharmaceutical sector is a result of absence of policies or lack of implementation and enforcement of policies in developing countries. The review covered English and Arabic scientific journals (including both experimental and observational studies) and government publications published between January 2000 and March 2016 covering pharmaceutical pricing policies and their effect. The search was conducted across several databases, including PubMed, PQ Central, EconLit, ProQuest, CINAHL, Scopus, ScienceDirect, Cochrane, WHOLIS, WHOCC, and Web of Knowledge. The search terms used were 'drug', 'medicine', 'pharmaceutical', 'price, pricing', 'price containment', 'price control', 'pricing strategy', 'pricing policy', and 'developing countries' or 'LMICs' where applicable. Grey literature search was also conducted through government publications, WHO/HAI reports and Open Grey database in addition to using the search engine Google Scholar. This search yielded 1,250 studies. After removing duplicates and screening against the inclusion criteria, i.e. descriptive or quasi-experimental policies, initiatives and strategies to control prices, 87 publications were identified for full-text screening. This produced 25 eligible studies which were included in the systematic review, see Table 1. Eighteen covered Asian countries, five from African countries, two from South America, and one from Mexico.

The policies identified in the eligible studies pertained mainly to disease-specific and essential medicines, see Table 1. These policies were mapped to the WHO guidelines on pharmaceutical pricing policies [3]. An explorative synthesis of the 25 included studies showed that the most commonly used policies are external reference pricing and mark-up regulation, whereas tax exemptions and health technology assessment were the least used. In most of the cases reviewed, policies have been ineffective because of poor legislative framework, lack of pre- and post-implementation activities, and non-compliance by various stakeholders. Six out of the 25 studies were quasi-experimental (pre-/post-implementation), which allowed for a qualitative synthesis. Due to the diversity of outcomes measured, a quantitative comparison was not possible; nevertheless, the policies demonstrated a favourable impact toward lowering the price of medicines. These decreases in prices were undermined by either an increase in utilization, or long periods for the decreases to occur.

The volume of publications available was surprisingly low, and in many cases, the quality of reporting was poor. In these studies, the pricing strategies were mentioned but no outcome was identified.

Due to the unique nature of medicine, the commercial aspects related to pharmaceuticals should consider the therapeutic, psychological and human value they add to society. These aspects include procurement, availability, affordability and quality. Therefore, governments and stakeholders should collaborate and commit to tailor a pharmaceutical pricing policy that respects the uniqueness of an individual market and its economics capacity. The study designs identified in the included studies reflected the weak monitoring activities undertaken by policymakers or governments to evaluate the impact of the policies implemented. Such evaluative studies can provide decision-makers with evidence-based measurement of the effectiveness of price containment strategies adopted. No relationship was identified between the economic status of a country and the type of pricing policy implemented. The promotion of generic medicines use

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**Table 1: Pharmaceutical pricing policies adopted in developing countries, target medicines and year of adoption**

| Country | Pharmaceutical pricing policies | Target medicines | Year of adoption |
|---|---|---|---|
| 7 ME countries: Egypt, Kuwait, Jordan, Lebanon, Qatar, Saudi Arabia, United Arab Emirates | • Use of external reference pricing | Mainly branded patented medicines | N/A |
| Bangladesh | • Promotion of use of generic medicines | Essential medicines | 1982 |
| Brazil | • Regulation of mark-ups in the pharmaceutical supply and distribution chain<br>• Application of cost-plus pricing formulae for pharmaceutical price setting | Essential medicines | N/A |
| Brazil | • Regulation of mark-ups in the pharmaceutical supply and distribution chain<br>• Tax exemptions/reductions for pharmaceutical products | Essential medicines | 2000 |
| Brazil, Thailand | • Promotion of use of generic medicines | Antiretrovirals | 2006–2007 Thailand; 2003 Brazil |
| Burundi | • Government subsidy (not classified as policy by WHO) | Antimalarials | 2003 |
| China | • Regulation of mark-ups in the pharmaceutical supply and distribution chain | Essential medicines | 2010 |
| China | • Regulation of mark-ups in the pharmaceutical supply and distribution chain | 60% of all medicines of which systemic antibacterial | 1996 |
| China | • Regulation of mark-ups in the pharmaceutical supply and distribution chain | Essential medicines | 2009–2011 |
| China | • Regulation of mark-ups in the pharmaceutical supply and distribution chain<br>• Application of cost-plus pricing formulae for pharmaceutical price setting | Essential medicines | 2009 |
| China | • Regulation of mark-ups in the pharmaceutical supply and distribution chain | All medicines | 2000 |
| China | • Regulation of mark-ups in the pharmaceutical supply and distribution chain | Essential medicines | 2009 |
| China | • Regulation of mark-ups in the pharmaceutical supply and distribution chain<br>• Application of cost-plus pricing formulae for pharmaceutical price setting | All medicines | 2000–2001; 2005 |
| China, Taiwan | • Application of cost-plus pricing formulae for pharmaceutical price setting | Brand-names medicines | 2009 |
| Indonesia | • Application of cost-plus pricing formulae for pharmaceutical price setting<br>• Use of external reference pricing<br>• Promotion of use of generic medicines | Generic medicines | 2010 |
| Jordan | • Regulation of mark-ups in the pharmaceutical supply and distribution chain<br>• Use of external reference pricing | All medicines | 2000–2001 |
| Kuwait | • Regulation of mark-ups in the pharmaceutical supply and distribution chain | All medicines | N/A |
| Mali | • Application of cost-plus pricing formulae for pharmaceutical price setting | Essential medicines | 2006 |

(*Continued*)

**Table 1: Pharmaceutical pricing policies adopted in developing countries, target medicines and year of adoption (*Continued*)**

| Country | Pharmaceutical pricing policies | Target medicines | Year of adoption |
|---|---|---|---|
| Mexico | • Application of cost-plus pricing formulae for pharmaceutical price setting<br>• Use of external reference pricing | All medicines | 2004 |
| Mozambique | • Regulation of mark-ups in the pharmaceutical supply and distribution chain<br>• Tax exemptions/reductions for pharmaceutical products | All medicines | 1990, 1998 and 2003 |
| Oman | • Regulation of mark-ups in the pharmaceutical supply and distribution chain<br>• Use of external reference pricing | All medicines | 1990 |
| Sierra Leone | • Government subsidy (not classified as policy by WHO) | Antimalarials | 2004 |
| South Korea | • Application of cost-plus pricing formulae for pharmaceutical price setting<br>• Use of external reference pricing | New innovative drugs | 1999–2000 |
| South Korea | • Promotion of use of generic medicines<br>• Use of health technology assessment | All medicines | 2007 |
| Turkey | • Use of external reference pricing | All medicines | Revised in 2011 |

ME: Middle Eastern; N/A: not available; WHO: World Health Organization.

was remarkably low in developing countries despite the tremendous benefits that would be brought to societies. Generics use can lessen the economic burden on consumers and payers; however, its low rate of prescription is correlated to social beliefs and attitudes of both prescribers and consumers, to low profit margins, and to lack of pro-generics regulation.

Although many developing countries have implemented pricing strategies, it is vital that more research is conducted to ascertain the shortcomings of such policies, ultimately leading to the required reforms.

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