

International Comparison of Drug Prices with Malaysia: A Systematic Review

AMIRUL A, ONG SC

Discipline of Social and Administrative Pharmacy, School of Pharmaceutical Sciences, Universiti Sains Malaysia, Penang, Malaysia

ABSTRAK

Harga ubatan yang mahal merupakan topik hangat di Malaysia. Di dalam tinjauan kajian sistematik berkenaan perbandingan harga ubatan ini, kami melaporkan perbandingan antara harga ubatan antarabangsa dengan di Malaysia. Kami mengkaji secara sistematik dengan menggunakan PubMed, Cochrane Library, ScienceDirect dan Scopus. Hanya kajian yang melibatkan perbandingan antarabangsa dimasukkan. Kajian keberkesanan kos, analisis impak bajet dan kajian kos tidak dimasukkan. Sebanyak 10 kajian dimasukkan. Sembilan kajian membandingkan harga dengan harga median rujukan antarabangsa (IRP). Satu kajian membandingkan harga dengan negara lain. Harga ubatan di sektor awam dan swasta lebih tinggi dari IRP. Kajian ini memberi maklumat bahawa harga ubat di Malaysia lebih tinggi dari harga antarabangsa. Jumlah kajian yang diterbitkan dalam bidang ini juga belum mencukupi. Hanya satu kajian yang membandingkan dengan negara lain. Lebih banyak kajian diperlukan bagi menambahbaik sistem harga ubatan di Malaysia.

Kata kunci: ekuiti kesihatan, kesihatan awam, khidmat farmaseutikal, polisi kesihatan

ABSTRACT

High drug price is a hot topic in Malaysia. In this systematic review of drug price comparison studies, we report on international comparison of drug prices with Malaysia. We systematically searched PubMed, Cochrane Library, ScienceDirect and Scopus for peer-reviewed articles. Only studies that made comparison internationally were included. Cost-effectiveness studies, budget impact analysis or costing studies were excluded. A total of 10 studies were included. Nine studies compared the price with median international reference prices (IRPs). Only one study compared the price with another country. The drug price in Malaysia for

Address for correspondence and reprint requests: Dr. Siew Chin Ong, Discipline of Social and Administrative Pharmacy, School of Pharmaceutical Sciences, Universiti Sains Malaysia, Penang, Malaysia. Tel: +604-653 3888 Email: siewchinong@usm.my; oschin99@yahoo.com

both government and public sectors was higher than IRP. This review provides the information that the drug price in Malaysia is higher than the international standard. The number of published studies in the drug pricing area is still inadequate with only one study that compares Malaysia drug price with another country. More studies are needed to improve Malaysia's drug pricing system.

Keywords: health equity, health policy, pharmaceutical services, public health

INTRODUCTION

Over the past half-century, pharmaceutical advancements have made it possible to treat and prevent a wide spectrum of disorders effectively. These advancements were so significant in modern healthcare that access to them was considered a fundamental human right. While exercising that right generates enormous social value, it presents a huge policy problem due to its associated costs. Despite the fact that demand for medications is one of the key drivers of pharmaceutical expenditure, growing costs are a primary source of concern for healthcare administrators since medicines are increasingly being priced at levels that appear to be unjust to consumers (Pollack 2015).

Malaysia's healthcare system consists of two categories i.e. public and private. The Ministry of Health (MOH) is responsible for the public sector, which is mostly funded through general taxation. The private sector is financed by private health insurance, consumers' out-of-pocket spending, non-profit agencies, and private entities (Malaysia Competition Commission, 2017). Malaysia is a country with a high standard of living and a world-

class healthcare system. It has a health care worker-to-patient ratio of one to 186, above the World Health Organisation's (WHO) target of 1:225. Malaysia now has 71,041 medical physicians working in the public and private sectors, which equates to one doctor for every 454 people, which is better than the 1:500 ratio (CodeBlue 2020). Nevertheless, the price of drugs in Malaysia has been steadily rising over the years (Hassali et al. 2012).

Pharmaceutical pricing strategies can be used to maximise medicine affordability. Various price-control programmes have been implemented worldwide, including the National Pharmaceutical Pricing Authority in the United Kingdom and social insurance plans in Germany and Japan (Hassali et al. 2012). Malaysia, however, has not established any pricing control policies in the private sector. The price of drugs in the private sector in Malaysia is unregulated and subject to market dynamics (Hassali et al. 2012).

Health spending in Malaysia increased from RM 38.63 billion in 2011 to RM 44.78 billion in 2013, corresponding to RM 18.195 billion and RM 21.495 billion in the private sector, respectively. Furthermore, between 1997 and 2017, pharmaceutical

Table 1: Study criteria

Study design	Any
Comparators	International
Inclusion criteria	International price comparison Government and private sector
Exclusion criteria	Costing studies Cost-effectiveness analysis Budget impact analysis National comparison
Study period	Any

spending surged eightfold (Ministry of Health Malaysia 2019). As a result, ensuring fair access to medications is a critical component of healthcare systems.

This systematic review aims to identify the studies that compare Malaysian drug prices internationally, which will serve as a potential target for drug price optimisation. This study is critical because it will serve as a guide for policymakers when negotiating medication prices. Our review is also significant since it will aid in ensuring that the price of pharmaceuticals in this nation is comparable to that of other similar countries and that we are not overpaying for the drugs. Additionally, it will promote a more transparent and systematic approach to medication pricing.

MATERIALS AND METHODS

A systematic literature review was conducted to search for studies that compare Malaysian drug prices with international entities. This systematic review was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)

statement (Moher et al. 2009).

Search Strategy

Studies that compared Malaysia's drug prices internationally were identified. The following databases were searched on the 26th October 2021. The eligibility criteria are described in Table 1. The analysis excluded primary grey literature papers, such as those produced by non-governmental organisations (NGOs), because our objective was to evaluate scientific evidence of global comparison published in peer-reviewed publications. The searched databases included PubMed, Cochrane Library, ScienceDirect, and Scopus.

Study Selection

The keywords were as follows: ("pharma*" OR "drug*" OR "medicine*" OR "prescription") AND ("pric*" OR "cost*" OR "expend*" OR "fee*" OR "reimbursement") AND (Malaysia*). The results were downloaded into Mendeley library and duplicates were removed. The data was then uploaded to Rayyan (Ouzzani et al. 2016) for title and abstract screening. 28 studies were included for full text review. Ten studies were selected in the final review (Figure 1).

RESULTS

After duplication removal and title-abstract screening, 28 studies were screened for eligibility. After full-text screening, 10 of the studies were included in the systematic review.

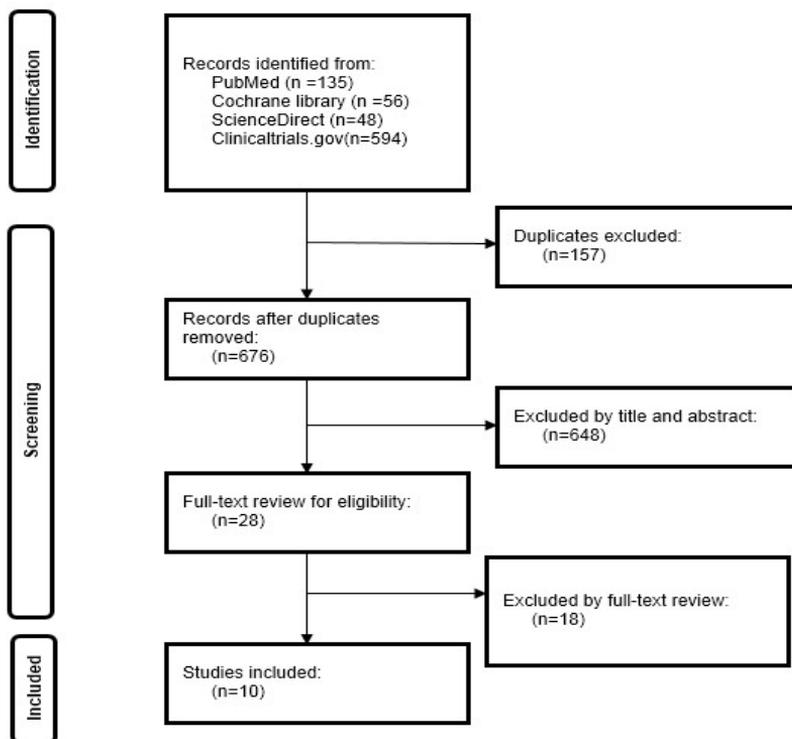


Figure 1: Overview of screening process

Table 2 shows the characteristics of the 10 included studies. The number of published studies in Malaysia has increased in the last ten years. Prior to the 2010s, there were only three studies. Since the 2010s, seven studies have been published.

Nine studies compared Malaysian drug prices with median international reference prices (IRPs) from Management Sciences for Health (MSH), which contains medicine price database from WHO. Only one study compared the drug price with another country, Australia (Hassali et al. 2012). Six studies compared the government procurement price with IRP (Babar & Izham 2009; Babar et al. 2007; Hamzah et al. 2020; Babar et al. 2005; Wong et al. 2018; Wong et al.

2019). The government procurement price was found to be generally higher than IRP. The most extensive study that compared the government procurement price with IRP involved 1831 drugs. One study that examined the government procurement price does not specify the number of drugs included in the analysis (Wong et al. 2018). The majority of the studies assessed the price across multiple drug classes. Only one study assessed one class of drug (Wong et al. 2018). Two studies categorised their analyses into innovator and generic classes (Babar et al. 2007; Wong et al. 2019). The average drug price in the government sector was found to be up to 10.55 IRP, with the maximum being 21 IRP (Babar et al. 2005).

Table 2: Overview of study characteristics

	Babar et al. 2009	Babar et al. 2007	Babar et al. 2013	Babar et al. 2005	Hamzah et al. 2020
Year	2009	2007	2013	2005	2020
Comparators	Median international reference prices (IRPs), from MSH	Median international reference prices (IRPs), from MSH	Median international reference prices (IRPs), from MSH Asthma Drug Facility (ADF)	Median international reference prices (IRPs), from MSH	Median international reference prices (IRPs), from MSH
Prices	Government procurement price	Government procurement price Private sector	Private sector	Government procurement price Private sector	Government procurement price
Drugs	564 drugs	48 drugs	3 drugs	62 drugs	1831 drugs
Outcomes	Average: 1.14 - 4.53 times the IRP	Government procurement price: Innovator: 2.41 times the IRP MSG: 1.56 times the IRP LPG: 1.09 times the IRP Private sector retail pharmacies Innovators: 16.35 times the IRP MSG: 6.89 times the IRP LPG: 6.57 times the IRP Dispensing doctors' clinic Innovators: 15.40 times the IRP MSG: 7.76 times the IRP LPG: 7.76 times the IRP	Private retail pharmacy: Beclometa-sone (Innovator): 2.45 times the IRP 15.41 times the ADF Budesonide (Innovator): 2.1 times the IRP 8.5 times the ADF Budesonide (Generic): 0.43 times the IRP 1.74 times the ADF Salbutamol (Innovator): 3.63 times the IRP 5.72 times the ADF Salbutamol (Generic): 1.77 times the IRP 2.79 times the ADF	Public price: 10/20 drugs have an average of 10.55 times the IRP Private price: 26/28 drugs have an average of 31.09 times the IRP	Government procurement price: Weighted average price ratio of 1.9 to 3.5 times the IRP

	Hassali et al. 2012	Ahmad & Islahudin 2018	Wong et al. 2019	Wong et al. 2018	You et al. 2019
Year	2012	2018	2019	2018	2019
Comparators	Australia retail drug prices	Median international reference prices (IRPs), from MSH	Median international reference prices (IRPs), from MSH	Median international reference prices (IRPs), from MSH	Median international reference prices (IRPs), from MSH
Prices	Private sector	Private sector	Government procurement price Private sector	Government procurement price Private sector	Private sector
Drugs	10 drugs	11 drugs	50 drugs	Oncology drugs	10 drugs
Outcomes	Malaysia retail price: 30.30 % to 148.28% higher than Australia	Innovators: 0.1 to 82.5 times the IRP Generic: 0.6 to 7.0 times the IRP	Government: Innovator: 1.5 times the IRP Generics: 1.5 times the IRP Private: Innovator: 8.6 times the IRP Generics: 2.5 times the IRP	Government and private sector: 0.2 to 3.2 times the IRP	Innovators: 24.09 times the IRP Generics: 10.77 times the IRP

The drug prices were all higher than IRP in the private sector, with an average as high as 31 times the IRP (Table 2). Four studies exclusively examine the price of drugs in the private sector (Ahmad & Islahudin 2018; Babar et al. 2013; Hassali et al. 2012; You et al. 2019). One study used the term “private medicine outlets” without stating whether it refers to hospitals or clinics (You et al. 2019). Majority of the studies that assessed the drug price in the private sector differentiated between innovator and generic classes. The number of drugs included in the studies that assess the price in the private sector was lower than that in the government sector, ranging from three to eleven drugs.

DISCUSSION

WHO has advocated internationally to safeguard optimal health and foster wellbeing for all as one of the sustainable development goals for health transformation (World Health Organisation 2016). This study was conducted to systematically review international drug prices in comparison to Malaysia. International comparisons may contribute to achieving appropriate access to safe, effective, high-quality, and inexpensive healthcare services and medications. Our study demonstrated that the number of international drug comparison studies is currently insufficient and should be expanded. In Malaysia, the bulk of

published assessments compares the price to the median IRP, which appears to be more convenient in terms of data gathering, as it was made available by the MSH. Additional research should be undertaken to compare the pricing of drugs in various nations as this will provide a better representation. The number of drugs assessed in the private sector is also too low, ranging from three to eleven drugs. To provide a more realistic picture, the number of medications investigated should be increased and also across multiple drug classes.

This study showed that the Malaysian government's procurement prices were higher than the IRP (Babar & Izham 2009; Hamzah et al. 2020; Wong et al. 2019). The first study on medicine prices in Malaysia was conducted in 2005, which reported that the drug price in the public sector had a maximum price of 21 IRP. This study also showed that some generic drugs' prices in the public sector were higher than that in the private sector, owing to the absence of a competitive environment in the public sector. The availability of generic drugs also does not necessarily reduce the price of innovator drugs as some of the drugs still have higher prices than the IRP (Babar et al. 2005). The government procurement price was higher than India and Sri Lanka. In Rajasthan, India, the generic drug price was 0.96 IRP, while in Sri Lanka, it was 0.82 IRP. The price markup across the supply chain in Malaysia was also higher than Sri Lanka, Kenya, Peru, Armenia, Brazil and Philippines (Babar et al. 2007). The drug distribution system

in Malaysia was privatised in 1994. A study comparing drug prices between pre and post-privatisation found that the price increased by 64.04% after privatisation, with the price of vitamins and supplements drastically increased between 2001-2003 with an annual average of 167.09%. Folic acid 5mg tablet price increased by 500% in 2001-2003 (Babar & Izham 2009).

The government procurement system can be improved to obtain a more economical price. Currently, three procurement processes were used i.e. i) a national concession agreement with a single authorised supplier; ii) national tenders; and iii) direct procurement by healthcare institutions. Pharmaniaga Logistics Sdn Bhd (Pharmaniaga), a government-linked business (GLC), currently holds the national concession deal. Pharmaniaga can supply public facilities with pharmaceuticals from the Approved Product Purchase List (APPL) at MOH-negotiated pricing. The second procurement process is for pharmaceuticals with an annual purchase value of more than MYR 500,000. The drugs will be ordered by public facilities through tenders controlled by the Procurement Division, with necessary assistance provided by the Pharmaceutical Services Programme. Under the third option, health facilities may purchase medicines directly from suppliers with an annual purchase value of MYR 50,000 to MYR 500,000. However, the hospitals must seek a minimum number of quotations from the government-registered suppliers prior to the procurement. For transactions under MYR 50,000, the health facilities may

Table 3: Procurement guidelines in Basel Statements 2015

Statement Number	Statements
20	Hospital pharmacists should be involved in the complex process of procurement of medicines and health products, promoting equity and access. They should ensure transparent procurement processes are in place in line with best practice and national legislation, are free from conflict of interest, and are based on the principles of safety, quality and efficacy.
21	Procurement practices must be supported by strong quality assurance principles, regularly reviewed and adapted to fit different settings and emerging needs in the most appropriate and cost effective way.
22	Procurement should not occur in isolation, but rather be guided by the formulary selection process. This includes the procurement of standard concentrations of high-risk medicines including electrolytes
23	Procurement must be supported by a reliable information system that provides accurate, timely, and accessible information

make direct purchases at their disposal. All purchases must be conducted from registered vendors with the health authorities and physically present in the country, irrespective of the method employed (Pharmaceutical Services Division 2017). In the public sector, procurement is handled by Bumiputera agents. Bumiputera refers to the Malays and natives of any of the States of Sabah and Sarawak (Federal Constitution of Malaysia 1957), and Bumiputera companies were given preference in securing government contracts in Malaysia (Malaysia Competition Commission 2017).

The procurement agents have been a subject of controversy since they have been accused of nepotism, favouring a small number of high-ranking officials and politicians and their families. These agents have also been accused of conspiring with pharmaceutical corporations to manipulate the tendering process, resulting in excessive medicine prices. International pharmaceutical corporations refuse to cooperate with alternative tendering agents and

only interact with a small number of them, resulting in a monopoly and a guaranteed tender victory. International pharmaceutical corporations are also suspected of bribing these agents to obtain business and contracts in Malaysia (CodeBlue 2019).

Malaysia’s procurement system may be improved following the Basel Statements. The Basel Statements were developed in 2008 in Basel, Switzerland, by the International Pharmaceutical Federation’s Hospital Pharmacy Section (FIP). These Basel Statements included 75 statements organised around six critical facets of hospital pharmacy practice. Procurement of medicines is one of the themes covered. The Basel Statements, first published in 2008, were amended in 2014 and republished in 2015. Table 3 summarises the amended Basel Statements 2015 procurement guidelines (International Pharmaceutical Federation 2015), where Malaysia should consider adapting to the current procurement system to ensure tax money is well spent on the healthcare system in the

most cost-effective ways.

In Malaysia, the Malaysia Health Technology Assessment Section (MaHTAS) conducts the health technology assessment. MaHTAS is a critical component of the Malaysian Ministry of Health. MaHTAS was formed in August 1995 and is funded by the federal government. It is housed inside the Medical Development Division of the Ministry of Health, making it Asia's first formal health technology assessment (HTA) programme (Roza et al. 2019). MaHTAS is tasked with evaluating the cost and safety of pharmaceuticals, medical equipment, and technologies. Currently, when a company submits a new medicine application, no cost-effectiveness analysis (CEA) is required. Only the budget impact analysis (BIA) is required. The BIA, as its name suggests, provides for the assessment of the financial impact of healthcare technology installation. The BIA process begins by calculating the entire economic consequences of the health technology on the health care budget, which is the summation of the costs and savings related to the health technology's considerations. The analysis's objective is to ascertain the advantages of various health technologies by comparing their calculated overall economic consequences (Sullivan et al. 2014). The CEA is a pharmacoeconomic strategy for determining acceptable health technologies based on health outcomes criteria, as well as determining costs based on outcome comparisons. The costs of two or more health treatments with varying

efficacy and outcomes are combined into a single measuring unit called incremental cost-effectiveness ratio (ICER) which are then compared with the willingness-to-pay (WTP) threshold value (Arbel & Greenberg 2016). The CEA is the only type of pharmacoeconomic analysis used in numerous industrialised nations, including Japan, Australia, and Canada, where health authorities conduct and consider pharmacoeconomic evaluation when making decisions concerning reimbursement of a particular technology. The BIA is intended to supplement CEA, by providing additional information to policymakers about the financial implications of subsidising and reimbursing new technologies. The BIA outcome will attempt to mimic the expected scenarios using a variety of assumptions and data inputs, rather than as an objective reference, as in the case with CEA.

The drug price in the private sector is higher than IRP, 82.5 times the IRP for ceftriaxone injection (Hamzah et al. 2020). A study conducted on the prices for ischemic heart disease drugs in the private sector found that almost half of them were unaffordable. Only two innovator drugs were affordable (You et al. 2019). The only study which directly compared the drug price in Malaysia with other country showed that the drug price in Malaysia retail pharmacies was higher than in Australia (Hassali et al. 2012). A similar finding was also reported for the price of asthmatic drugs in the retail pharmacies as they were found to be consistently higher than IRP (Babar

et al. 2013). Currently, the drug price in the private sector is unregulated. Advocates of deregulated medicine prices in Malaysia contended that allowing the market to set the price of a drug is the best option. The price will be optimised in concert with supply and demand due to competition between medicine corporations and manufacturers (Coburn 2018).

The pharmaceutical market, according to proponents of a controlled market, is not the same as a normal market. In a regular market, customers have the choice of selecting another product if one does not meet their needs. Users in the pharmaceutical market, on the other hand, cannot easily switch to another drug if the current one does not meet their needs. No matter how expensive the drug is, the patient will have to pay for it. In contrast to the usual market, demand for the medicine is unaffected by the price (Mwachofi & Al-Assaf 2011).

Global health spending surpassed US\$ 8.3 trillion in 2018, accounting for 10 percent of global Gross Domestic Product (GDP) (World Health Organisation 2020). According to the Department of Statistics Malaysia, overall health care spending as a proportion of GDP has fluctuated between 3.67% in 2007 and 4.24% in 2017 (Ministry of Health Malaysia, 2019). The figures ranged from 3.08% percent of GDP in 2007 to 3.75% in 2018, according to the World Health Organisation (WHO)'s data for Malaysia, which were never greater than 4 percent of the GDP (World Health Organisation, 2021).

In 2018, the average expenditure

on health in high-income nations was 8.2% of GDP. Low-income nations spent 6.4 percent of their GDP on health, whereas upper-middle-income countries spent 6.3% of their GDP on health. The lowest percentage was found in the category of lower middle-income nations, at 4.8% (World Health Organisation 2020). Despite the fact that there is no obvious relationship between a country's income and the proportion of its GDP spent on healthcare, Malaysia should set a goal of spending at least 5 percent of its GDP on health in order to attain universal health care (UHC) (Mcintyre et al. 2017). Low health expenditures as a percentage of GDP may be attributable to Malaysia's high out-of-pocket (OOP) expenditure. In 2017, MOH spent the most on health care at 43% of total expenditures, followed by out-of-pocket (OOP) spending at 38% and private insurance at 7%. Between 1997 and 2017, OOP expenditures accounted for between 29% and 38% of overall health expenditures (Ministry of Health Malaysia 2019). According to the World Health Organisation (WHO), OOP accounts for between 30% and 40% of overall health expenditures which indicates that the people are not fully covered. In actuality, 15-20% OOP of total health expenses significantly reduces a country's financial calamity (World Health Organisation 2017). From 1997 to 2017, OOP remained Malaysia's biggest component of private sector funding, accounting for around 77% of overall financing (Ministry of Health Malaysia 2019).

The productivity capacity is strongly

influenced by the availability of decent healthcare. Improved healthcare spending boosts human capital's productivity, resulting in increased economic growth. A number of studies have demonstrated that better health can lead to higher GDP and that this is also true in reverse (Bloom & Canning, 2003; Bloom et al. 2004).

International reference prices (IRPs) also known as external reference pricing (ERP), is one of the mechanisms to control drug prices. The Ministry of Health (MOH) proposed ERP adoption in 2019 which is a pricing strategy in which a country uses the price of another country as a benchmark for pricing in their own country. Countries that use ERP typically select a reference country based on a number of factors, including socioeconomic status, GDP size, and geographic closeness (Rémuzat et al. 2015). The proposal has upset the private sector. Negotiations between the government and the private sector are still ongoing. The ERP has a better possibility of being adopted according to the research, because of substantial political backing from both the administration and the opposition. The ERP was also well-received by the general public and consumer advocacy groups (Ashraf & Ong 2021).

This study demonstrated the importance of legislators in increasing the efficiency of procurement policies. The role of tendering agents, who are tainted with nepotism and corruption, must be re-examined and replaced with more effective procedures. The government may use a more transparent and effective online procurement

system. Outsourcing the procurement process may potentially be replaced with professionals from the MOH or the Ministry of Finance.

The Ministry of Health (MOH) should also seek to incorporate CEA into the current drug submission approval. Although it is possible for the results of both analyses to be contradictory, for example, BIA may produce positive results while CEA produces negative results, this can be resolved by introducing a rating system where the negative points associated with one method's conclusions could be offset by the positive points in another method's conclusions. Integrating BIA and CEA is an innovative approach for improving pharmacoeconomic analysis and health technology assessment's accuracy and quality.

Additionally, policymakers must use price-control measures such as ERP which will ensure that Malaysians do not overpay for medications. Continuous increases in drug prices are unsustainable in the long run. The ERP will assist the government in negotiating a more favourable agreement with pharmaceutical companies. Malaysia should take a look at other nations that have implemented ERP and customise it to meet the needs and conditions of the country.

While it is widely acknowledged that market forces should be allowed to operate independently, the pharmaceutical industry has unique characteristics that must be taken into account. These distinguishing characteristics set it apart from a conventional market, where demand and supply are more obvious. As a

result, market regulation is vital, as is government influence. However, excessive government action should be avoided. Unnecessary bureaucracy and costly application processes must be streamlined.

CONCLUSION

Malaysia's current medicine pricing strategy has to be improved. The government needs to improve its procurement system to ensure that it remains a clear and efficient process that is inexpensive and adaptable. The integration of CEA into the present medication submission system is critical because it allows the gathering of more information for making better decisions. Price-capping measures are urgently required since the existing free-market economics paradigm for the pharmaceutical industry does not perform efficiently. In order to enhance efficiency, it is necessary to reduce the number of superfluous bureaucratic processes and the cost of the application process. If pharmaceutical costs continue to rise at their current rates, they will become unsustainable in the near future, threatening Malaysians' access to high-quality, affordable healthcare. Economy-related issues such as corruption and unemployment as well as political instability and kleptocracy, have always taken precedence, as seen by the constant presence of these issues in the news, social media, and everyday dialogue. The expense of healthcare should have been at the top of the list as well. It is necessary to have more conversations and raise

awareness about the necessity of inexpensive, high-quality healthcare.

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