Affordability of essential medicines used for treating chronic diseases in Malaysia: An academic perspective

H Ahmed, M Ibrahim, Z Babar

Citation

Abstract
The aim of this study is to measure the affordability of drugs used in treating common chronic diseases. The study was conducted in the Universiti Sains Malaysia (USM) and in 5 private retail pharmacies. The study measured prescriptions contents of Universiti Sains Malaysia panel of clinics claim forms of patients for the year 2006. Affordability of medicines used was calculated using private retail pharmacies prices. Affordability was expressed as the number of days' salary required by lowest wage earners to pay for one month treatment. The number of day's salary would have to pay by the worker ranged from 0.11-6.56 days', 0.13-2.88 days', 0.13-4.70 days' and 1.04-2.93 days' wage for the treatment of hypertension, diabetes, asthma and for multiple conditions, respectively. Low affordability was noted for most of the branded products, most combined treatments and all multiple chronic cases treatments. Government must intervene to ensure affordability of medicines among the public.

IMPACT OF FINDINGS ON PRACTICE
- Prescribers should be encouraged to prescribe generic medicines if proven cost-effective based on evidence
- Government should set up ‘Good Prescribing & Dispensing Practices’ policy to ensure medicines prescribed and dispensed are rational, accessible and affordable to the general public

INTRODUCTION
Affordable medicine prices are an important prerequisite for ensuring access to essential drugs in the public and private sectors. The issue is to ensure access to essential drugs (ED) through appropriate prices (i.e. affordable drugs), as affordability is defined as “free access to goods and services” [1] and moreover, high drugs prices lead to barrier towards affordability [2]. Affordability prices are an important prerequisite for ensuring access to essential medicines, both in the public and private sectors. It is one of the specific objectives of the National Medicines Policy which emphasis on access to equitable availability and affordability of essential medicines to those who need them.

Great benefits have been gained through the use of an essential drugs list in the public sector. However, in most low- and middle-income countries the majority of people are treated with drugs bought from the private sector. These consumers often purchased high-priced drugs, in small quantities, rather than in therapeutic amounts of essential drugs. The widespread prescription and sale of non-essential drugs means that households, especially poor households, are not getting the best health care value for their money and may ultimately not receive the treatment needed [3]. Therefore, in many countries even the developed nations, have applied the essential drugs list in order to improve care and manage drugs costs as the list serves to maintain drug affordability amongst a selection of essential drugs [4]. In fact, access to health care, which includes access to ED, is a prerequisite for realizing the human right i.e. the right to health [5].

The causes of access gap to essential drugs and the measures which are needed to close the gap is linked to a set of fundamental economic, social and educational factors that lie beyond the health sector system [6]. However, it should be noted that access to essential medicines helps to reduce disease burden [2].

Affordability also refers to the cost of treatment in relation to people’s income [7]. High costs of medicines results in poor access to the public, even in rich countries [8]. Moreover, the WHO has reported that many people throughout the
world cannot obtain the drugs they need due to its unaffordability. [3]

Due to fact that Malaysia as a developing nation has no regulatory system for drug pricing [9], imported drugs prices have increased by up to 28 per cent annually over the last 10 years, especially for medicines used daily [10]. Most medicines prices ranged from 10-293% higher than in Australia and UK. Furthermore, such price increases up to 20.7% per annum vis-à-vis a rate of inflation was 7% [11].

A survey on the median prices ratios for some essential drugs for innovator brand (IB) showed that it was 16 times higher than the international reference prices [12]. The most sold generic (MSG) and the lowest priced generic (LPG) in the private retail pharmacy were 6.89 and 6.57 times higher than the international prices, respectively.

Basically chronic diseases need treatment over a life time, and if a patient cannot afford medicines this may lead to more serious illnesses and complications. For instance, drugs for the treatment of pneumonia are hardly affordable in Malaysia [13]. In addition, treatments cost of some disorders such like hypertension, asthma and respiratory disorder are expensive due to costly branded and generic medicines [12].

Therefore, there is a need to study actual prescriptions prescribed by physicians in a government organization to its employee. This study aims to measure affordability of drugs used in treating hypertensive, diabetic and asthmatic patients, and patients with multiple diseases (i.e. combination of any of these diseases).

MATERIALS & METHODS

The case study method was used to assess drugs affordability in Malaysia, with the Universiti Sains Malaysia (USM) (which is a government institution) employee being used as an example to evaluate affordability of prescriptions based on diseases. A retrospective study design was used to measure medicines affordability of different treatment regimens for diabetes type II, hypertension, asthma and multiple cases of diseases. This study sourced its data from USM panel clinics claim forms for the year 2006. The university community (staff, student, pensioner and dependant) can obtained their prescriptions either from the university clinic or panel of private clinics and pharmacies. The panels have signed an agreement with the university to provide services to the university community. An individual can have an option to receive their medication from the clinic or pharmacy. Due to the difficulty to obtain prices of medicines from the private clinics, prices of medicines from the pharmacies were studied. Affordability of medicines was expressed as the ratio of prescription cost in private retail pharmacies to the lowest paid USM worker wage.

A non-intervention, descriptive cross-sectional survey was used to measure the prices of drugs obtained from the private retail pharmacy. This method was adopted from WHO/HAI methodology for measuring drugs affordability. It took into consideration the actual cases and prescriptions by measuring affordability of prescriptions of staff in the university, unlike the WHO/HAI method which depended on hypothetical diseases conditions [14].

Disease selection was made based on the prevalence of diseases in the university. The sample was chosen according to the findings of a survey which found that hypertension, diabetes and asthma constituted 50% of all prevalent diseases in Malaysia [15]. Procedure for selection is for those diseases which their treatments are for a life time. A drugs check list was prepared using the Malaysian national essential drug list [16] in order to identify drugs used for the treatment of diabetes type II, hypertension and asthma. Both core and supplementary drugs (i.e. essential medicines) from the national list were included. The USM panel clinics claim forms used in this evaluation were for the year 2006. One inclusion criteria for this study was that all claim forms must be for the university staff who were diagnosed with diabetes type II, hypertension, asthma and any possible multiple conditions.

Five private retail pharmacies within 5 kilometres radius from the university campus were selected. A data collection form was developed to investigate the content of each claim form, including the details about the medicines prescribed.

The Microsoft® Office Excel software was used to analyse the data. Median drugs prices and median cost of each prescription were calculated. The number of days’ salary a USM worker spend to pay for each prescription was calculated to express the affordability for a treatment period of one month. This method is adopted from the WHO/HAI methodology. A treatment cost exceeding one day’ wage was considered as not affordable [14]. Figure 1 shows the flow of the study.
RESULTS

The median for unit prices of drugs mentioned in the claim forms were obtained from the survey on five private retail pharmacies.

AFFORDABILITY OF DRUGS USED IN TREATING HYPERTENSIVE PATIENTS

The majority of drugs used in treatment of hypertension were affordable, except some IB drugs which cost more than one day’s salary. Prescriptions’ costs ranged from 0.11 - 6.56 days’ salary. The affordability of prescriptions depended on the choice of therapeutic class, amount of drugs prescribed, and whether the drugs were generic or brand. (Table 1)

Table 1 Number of days’ salary required to pay for a month hypertension treatment by the lowest unskilled USM worker

<table>
<thead>
<tr>
<th>Prescription</th>
<th>Number of days required to pay for 15 tablets/month</th>
<th>Number of days required to pay for 30 tablets/month</th>
<th>Number of days required to pay for 45 tablets/month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amlodipine 5 mg tab (G)</td>
<td>0.25</td>
<td>0.46</td>
<td>0.51</td>
</tr>
<tr>
<td>Amlodipine 10 mg tab (IB)</td>
<td>0.35</td>
<td>0.70</td>
<td>1.03</td>
</tr>
<tr>
<td>Amlodipine 15 mg tab (IB)</td>
<td>0.56</td>
<td>1.00</td>
<td>1.41</td>
</tr>
<tr>
<td>Benazepril 10 mg tab (IB)</td>
<td>1.44</td>
<td>2.87</td>
<td>4.21</td>
</tr>
<tr>
<td>Benazepril 20 mg tab (IB)</td>
<td>0.31</td>
<td>0.62</td>
<td>0.93</td>
</tr>
<tr>
<td>Nydropril 40 mg tab (IB)</td>
<td>0.33</td>
<td>0.66</td>
<td>1.00</td>
</tr>
<tr>
<td>Valsartan 80 mg tab (IB)</td>
<td>0.40</td>
<td>0.81</td>
<td>1.22</td>
</tr>
<tr>
<td>Lisinopril 20 mg tab (IB)</td>
<td>0.59</td>
<td>1.18</td>
<td>1.57</td>
</tr>
<tr>
<td>Lisinopril 10 mg tab (IB)</td>
<td>1.65</td>
<td>3.31</td>
<td>4.97</td>
</tr>
<tr>
<td>Amlo-digoxin 5 mg tab (IB)</td>
<td>3.28</td>
<td>6.56</td>
<td>9.82</td>
</tr>
</tbody>
</table>

*NP = No prescription, G = Generic, IB = Innovative Brand

AFFORDABILITY OF PRESCRIPTIONS CONTAINING ONE MEDICINE

The majority of drugs used in treatment of diabetes type II were affordable even for the IB products of some drugs. However, some IB drugs cost more than a day’s salary. Prescriptions’ costs ranged from 0.13 - 2.09 days’ salary. (Table 2)

Table 2 Number of days’ salary required to pay for a month diabetes type II treatment by the lowest unskilled USM worker

<table>
<thead>
<tr>
<th>Prescription content</th>
<th>Number of days required to pay for 30 tablets/month</th>
<th>Number of days required to pay for 60 tablets/month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glibizide 1 mg tab (G)</td>
<td>0.13</td>
<td>0.26</td>
</tr>
<tr>
<td>Glibizide 1 mg tab (IB)</td>
<td>0.89</td>
<td>1.29</td>
</tr>
<tr>
<td>Metformin 650 mg tab (G)</td>
<td>0.18</td>
<td>0.51</td>
</tr>
<tr>
<td>Metformin 850 mg tab (G)</td>
<td>0.39</td>
<td>0.97</td>
</tr>
<tr>
<td>Glipizide 10 mg tab (IB)</td>
<td>0.19</td>
<td>0.43</td>
</tr>
<tr>
<td>Glipizide 40 mg tab (IB)</td>
<td>1.04</td>
<td>1.89</td>
</tr>
</tbody>
</table>

*G = Generic, IB = Innovative Brand

AFFORDABILITY OF PRESCRIPTIONS CONTAINING TWO MEDICINES

The majority of prescriptions containing two drugs used in treatment of diabetes type II were not affordable even when both drugs are generic products. Prescriptions’ costs ranged from 0.57 - 2.88 days’ salary. (Table 3)
Affordability of essential medicines used for treating chronic diseases in Malaysia: An academic perspective

Figure 4
Table 3 Median diabetes type II prescriptions costs and number of days’ salary required to pay for a month treatment by the lowest unskilled USM worker.

Figure 6
Table 5 Median asthma prescriptions costs and number of days’ salary required to pay for a month treatment by the lowest unskilled USM worker.

AFFORDABILITY OF DRUGS USED IN TREATING ASTHMATIC PATIENTS

AFFORDABILITY OF PRESCRIPTIONS CONTAINING ONE MEDICINE

The majority of drugs used in the treatment of asthma were affordable even for IB product of some drugs, except few IB drugs which cost more than a day’s salary. Prescriptions’ costs ranged from 0.13- 3.91 days’ salary. (Table 4)

Figure 5
Table 4 Median asthma prescriptions costs and number of days’ salary required to pay for a month’s treatment by the lowest unskilled USM worker.

AFFORDABILITY OF PRESCRIPTIONS CONTAINING TWO MEDICINES

All prescriptions containing two drugs used in the treatment of asthma were not affordable even for generic products of both drugs. Prescriptions’ costs ranged from 1.24 – 4.7 days’ salary. (Table 5)

Figure 7
Table 6 Median diabetes type II prescriptions costs and number of days’ salary required to pay for a month treatment by the lowest unskilled USM worker.

DISCUSSION

Unaffordable of medicines especially for chronic diseases is a critical issue particularly for the ‘bottom billion’. This refers to majority of the world population which populated in the developing nations. Economic consequences of not making chronic care maintenance medications available at affordable prices can be severe. It is because if that is not done, the country will have an economic disaster sometime
in the future with unnecessary amputations, heart attacks, kidney failures, strokes from uncontrolled diabetes, hypertension, etc. This will affect not just the quality of life of the person and family, but also the productivity of the country.

This study has looked into cases, single disease and multiple diseases. This study actually has contributed a significant part where it has considered the actual prescriptions and medicines prescribed to patients, compared to WHO/HAI study protocol which looked at hypothetical cases and not the actual prescriptions.

HYPERTENSION TREATMENTS

In Malaysia, the prevalence of hypertension is high [17]. Treatment of hypertension is important because if patients ignore drug administration due to unaffordable reason, serious complications may occur.

Affordability of innovator brand is less than generic and this may be due to the fact that IB products were higher priced than generic ones. IB amlodipine 5 mg tablet had the lowest affordability among hypertensive drugs as well as other conditions, because it is still under patent and no generic alternative were available. This finding complied with the results of a study done in Malaysia in 2007 by Babar et al., [12] who found that a worker would have to spend 4 days’ salary to buy IB amlodipine from a private retail pharmacy. Another report stated that IB amlodipine 5 mg tablet once per day was also unaffordable in China as it cost 14.3 days’ salary [18]. Another finding found that IB amlodipine 5 mg tablet once per day cost the patient 8.1 days’ salary [19]. The high cost of IB amlodipine 5 mg tablet may be due to fact that it is still under patent and no generic product is available. In Malaysia, the treatment of hypertension using atenolol 50 mg is much more affordable than in Kenya [20]. The cost was also lower than in Mongolia where it amounted to 1.1 days’ salary [7].

DIABETES TYPE II TREATMENTS

The treatment of diabetes type II using one drug is affordable even for some IB products, but the situation is different with prescriptions containing more than one drug. This finding is similar to the cost of glibenclamide 5 mg tablet twice a day which cost 1.0 days’ salary in Mongolia [7]. In contrast IB drugs cost 6.1 days’ salary and 3.9 days’ salary using the most sold generic in Nigeria [20]. The finding of this study is in line with the study of affordability of medicines in Uganda where the treatment of patients with glibenclamide two tablets per day exceeded one day’s salary, while it exceeded two day’s salary in Peru [21]. However, no data was available to compare affordability of gliclazide 80 mg with that in other countries. In general, innovator brand and generic metformin 500 mg tablet is affordable for USM employees and this result differed with that in Mongolia, where the cheapest generic metformin 0.5 g tablet administer twice a day cost the patient 1.0 days’ salary [7] while in Shanghai province of China, it costs 3.6 days’ salary [19] and 10.8 days’ salary in Shandong province, China [18].

ASTHMA TREATMENTS

The majority of asthma treatment involving the use of one drug was affordable for the exception being the use of the innovator brand, salbutamol 4 mg tablets three times per day and the innovator brand ketotifen 1 mg tablet twice per day. The case was different when patients used two medicines, as in such cases treatment were not affordable at all.

MULTIPLE CASE CONDITION TREATMENTS

The treatment of hypertension and diabetes type II using two different prescription regimens were not affordable even if generic products were used. This is mainly due to the fact that diabetes is a condition of many co-morbid conditions, and its incidence and prevalence is very difficult to quantify as persons are often present with cardiovascular complications [22].

STUDY LIMITATIONS AND RECOMMENDATIONS

This study was conducted with few limitations. Firstly, the method to measure affordability is based only on the study methodology provided by WHO/HAI. This is the only reliable and validated method available. Even the definition of ‘what is affordability and not affordable’ is based on consensus provided by them and open to criticism. Secondly, the study did not consider all possible treatments suffered by all family members; it was only for one person (i.e. staff). The situation will be worse (i.e. unaffordable) if a family has a single income earner with more than one person experiencing chronic diseases. Thirdly, due to the difficulty to obtain prices of medicines from the private clinics, only prices of medicines from the pharmacies were studied. The authors are not certain of the cost of prescription in the clinics whether it is more expensive or less expensive compared to the pharmacies.

It is recommended for future study to look into the price of medicines and cost of prescriptions in the private clinics due
to the fact that Malaysia has dispensing doctors. Furthermore, future study is also encouraged to look into affordability of medicines in a family. It is also accepted the notion that the reason for price rises in Malaysia probably go well beyond absence of a price regulatory system. It is one of the reasons and government is encouraged to take appropriate action, while study can be carried out to look into other possible reasons for price hike.

CONCLUSION

It can be concluded that most of the medicines surveyed were not affordable. Affordability is largely dependent on the choice of therapeutic class and the product itself. It also depends on diagnosis whether it is a single disease or multiple diseases, the number of medicine per prescription, and whether drugs prescribed are brand or generic. In general, medicines which are unaffordable to a low paid worker will be much less affordable for a significant proportion of the population who have an income less or equal to that worker. Patients with chronic diseases, such as hypertension, diabetes and asthma, require affordable medicines due to the fact that their medication is for a life time.

ACKNOWLEDGEMENT

The authors would like to thank the management of Universiti Sains Malaysia who has approved the request to conduct this study in the campus. Further acknowledgement to Norlela Maarup, MD for her clinical information provided in this study.

References

5. Hogerzeil HV. Boosting access to essential medicines for rich countries. BMJ, 2004;329, 1172.
Affordability of essential medicines used for treating chronic diseases in Malaysia: An academic perspective

Author Information

Hind Mahjowb Abdallah Ahmed, MSc Candidate
Social & Administrative Pharmacy School of Pharmaceutical Sciences Universiti Sains Malaysia 11800 Penang, Malaysia

Mohamed Izham Mohamed Ibrahim, PhD
Deputy Dean of Research & Postgraduate Study, Social & Administrative Pharmacy School of Pharmaceutical Sciences
Universiti Sains Malaysia 11800 Penang, Malaysia

Zaheer-Ud-Din Babar, PhD
Lecturer in Pharmacy Practice, School of Pharmacy Faculty of Medical & Health Sciences The University of Auckland 85 Park Road, Grafton New Zealand