SURVEY OF MEDICINE AVAILABILITY AND AFFORDABILITY IN MANDALAY, MYANMAR

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ABSTRACT: A cross-sectional study was carried out in six townships of Mandalay District, Myanmar in March, 2012. The main purposes of this study were to identify the availability and affordability of selected medicines. Methodology developed by the World Health Organization (WHO) and Health Action International (HAI) was used. Price and availability data of 30 medicines were collected from 30 private sector retail pharmacies, 20 dispensing doctors, 10 drug stores in public hospitals, and 30 drug stores in private hospitals. The daily wage of the lowest paid unskilled government worker was used to gauge the affordability of medicines. In all sectors, the availability of the originator brand was extremely low (<4%). Overall, availability of the generic was moderate (50-66%). People cannot afford to buy the highest price generic in any sector. However, they can afford some kinds of lowest price generic, more in the private retail sector than in other sectors.

Keywords: Medicine availability, affordability, Mandalay, Myanmar

INTRODUCTION

Governments recognize access to health care services is a fundamental human right, enshrined in international treaties. The fundamental right to health cannot be fulfilled without equitable access to essential medicines for priority diseases. One-third of the global population lacks reliable access to needed medicine [1]. Today, in developing countries medicines account for 20-60% of overall health care expenditure [1], compared to less than 18% in most high-income countries [2]. Up to 90% of the population in low and middle income countries have to pay for medicines out of pocket compared with only 20% in high income countries [3]. Duties, taxes, mark-ups, distribution costs and dispensing fees are often high, regularly constituting between 30% to 45% of retail prices, and sometimes substantially more [4 - 6].

BACKGROUND

The health care system of Myanmar is a public-private mix in both financing and delivery. Government sector (Ministry of Health) is the main organization of health care delivery and the private sector is mainly providing ambulatory care [7]. Since there is no state funded community health insurance and only negligible coverage by social insurance, the major source of health expenditure is private expenditure. Of this, 99% of private expenditure is out of pocket expenditure. In country like Myanmar, the supply is generally insufficient to meet the demand [8]. The government alone cannot finance the health care delivery system with the sky rocketing medical care costs, global economic crisis, the advances in medical technology on one hand and the increase in demand and expectations of the public health care on the other. Therefore, Myanmar introduced user fees known as community cost sharing (CCS) for pharmaceutical, diagnostic services, pay wards etc., between 1993 and 1996 [9]. Even so, due to lack of state funding or community based health insurance and negligible coverage of social security scheme, the majority of households still pay out-of-pocket if most of the payment goes to buying medicines.

MATERIALS AND METHODS

This study employed methodology developed by the World Health Organization (WHO) and Health Action International (HAI) [10]. The objectives of this method were to obtain information on the availability and affordability of selected medicines. Six townships were studied in the Mandalay district. A sample of medicine outlets was surveyed in four sectors: private retail sector, dispensing doctors, private drug stores in public hospitals, and private drug stores in private hospitals. The study surveyed 30 medicines (14 from the global core list and 16 from the regional core list). Medicines were selected to represent treatment for a wide range of common acute and chronic conditions that cause significant morbidity and mortality. Most of these are in WHO Model List of Essential Medicines.

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Table 1 Percent availability and mean percent availability across all the sectors of innovator brand, highest priced generic and lowest priced generic drugs

	DD, n=20			PH, n=10			PP, n=30			Private retail, n=30		
	IB	HPG	LPG	IB	HPG	LPG	IB	HPG	LPG	IB	HPG	LPG
Mean percent availability across the basket of 30 medicines	1.8	28.5	32.5	1.0	31.7	42.0	3.5	49.4	51.5	3.2	51.7	66.2
Anti-amoebic												
Metronidazole	0.0	0.0	15.0	0.0	0.0	10.0	0.0	3.3	16.7	0.0	13.3	66.7
Anti-convulsion												
Phenytoin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Anti-filarial												
Diethylcarbamazine	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Anxiety												
Diazepam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	73.3	60.0	0.0	0.0	0.0
Arthritis												
Diclofenac	0.0	70.0	30.0	0.0	100.0	90.0	0.0	100.0	46.7	0.0	93.3	100.0
Asthma												
Beclomethasone	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0	3.3
Salbutamol	45.0	10.0	25.0	10.0	40.0	60.0	60.0	56.7	83.3	40.0	50.0	70.0
Depression												
Amitriptylene	0.0	0.0	80.0	0.0	0.0	10.0	0.0	0.0	66.7	0.0	0.0	26.7
Fluoxetine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diabetes												
Glibenclamide	0.0	5.0	5.0	0.0	0.0	50.0	0.0	0.0	26.7	0.0	10.0	60.0
Gliclazide	0.0	50.0	35.0	0.0	40.0	20.0	0.0	50.0	80.0	0.0	53.3	76.7
Metformin	0.0	85.0	25.0	0.0	40.0	70.0	0.0	90.0	46.7	0.0	86.7	96.7
Eye infection												
Gentamycin	0.0	10.0	30.0	0.0	10.0	40.0	0.0	30.0	76.7	0.0	50.0	90.0
Hypercholesterolemia												
Atorvastatin	0.0	40.0	50.0	20.0	30.0	60.0	23.3	66.7	93.3	26.7	63.3	96.7
Simvastatin	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	6.7	30.0
Hypertension												
Amlodipine	10.0	60.0	45.0	0.0	50.0	90.0	23.3	93.3	90.0	30.0	93.3	96.7
Atenolol	0.0	60.0	50.0	0.0	70.0	40.0	0.0	96.7	33.3	0.0	93.3	100.0
Captopril	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Enalapril	0.0	75.0	30.0	0.0	60.0	80.0	0.0	90.0	80.0	0.0	96.7	93.3
Malaria												
Doxycycline	0.0	5.0	70.0	0.0	10.0	100.0	0.0	53.3	93.3	0.0	63.3	100.0
Pain/ Inflammation												
Paracetamol	0.0	65.0	55.0	0.0	80.0	70.0	0.0	100.0	93.3	0.0	100.0	100.0
Ibuprofen	0.0	45.0	35.0	0.0	30.0	20.0	0.0	43.3	30.0	0.0	53.3	73.3
Respiratory tract infection												
Amoxicillin cap	0.0	80.0	45.0	0.0	80.0	90.0	0.0	93.3	66.7	0.0	100.0	100.0
Amoxicillin susp	0.0	10.0	55.0	0.0	20.0	40.0	0.0	66.7	63.3	0.0	86.7	93.3
Ceftriaxone	0.0	25.0	5.0	0.0	80.0	90.0	0.0	86.7	83.3	0.0	63.3	66.7
Ciprofloxacin	0.0	35.0	60.0	0.0	90.0	60.0	0.0	93.3	40.0	0.0	96.7	96.7
Cotrimoxazole susp	0.0	0.0	60.0	0.0	0.0	20.0	0.0	23.3	63.3	0.0	50.0	86.7
Skin infection												
Clotrimazole cream	0.0	45.0	35.0	0.0	20.0	10.0	0.0	46.7	46.7	0.0	66.7	73.3
Ulcer												
Omeprazole	0.0	75.0	25.0	0.0	80.0	60.0	0.0	96.7	60.0	0.0	86.7	90.0
Ranitidine	0.0	5.0	90.0	0.0	20.0	80.0	0.0	30.0	96.7	0.0	73.3	100.0

DD=dispensing doctor, PH= private drug store in public hospital, PP=drug store in private hospital, IB=innovator brand, HPG=highest priced generic, LPG=lowest priced generic

Dosage form, strength and recommended pack size were determined and fixed before data collection. In all, 90 drug stores were surveyed: 30 private retail outlets, 20 dispensing doctors' clinic; 10 private drug stores in public hospitals; and 30 private drug stores in private hospitals. Originator brand products were same for the country and did not vary from outlet to outlet. Thus, the name of the originator brand products had been already determined before actual data collection. Lowest-

priced generic equivalents and highest-priced generic equivalents were defined as the generically equivalent products with the lowest and highest unit price available at each medicine outlet on the day of the survey by data collectors. Specific lowest and highest priced generics could therefore vary from outlet to outlet, depending on which specific generic products were available. Availability and price of innovator/originator brand, highest priced generic and lowest priced generic were collected from the owner, medical officers, managers and staff by using the standardized data collection form. Price was collected if the medicine was physically present in the store.

Data were entered by using Excel and Statistical Package of Social Science Software, SPSS 17.0 version. Descriptive statistics were utilized such as means, medians and percentages. Availablilty and affordability of medicines were evaluated within and across the 4 sectors.

Availability was calculated based on the number of the facilities having those drugs at the time of survey and presented as percentage (percent availability). Mean percent availabilities were calculated based on the 30 drugs.

In this paper, affordability was calculated in terms of the number of days the lowest paid unskilled government worker would have to work to pay for one treatment course for an acute condition or one month's treatment for a chronic condition. At that time of the survey, the lowest paid unskilled government worker earned 1000 Kyats per day in Myanmar. However, some population lives on less than the salary of the lowest paid government worker. Hence, the affordability is actually lower than calculated for many Myanmar residents.

RESULTS

The availability (percentage of facilities where the medicine was available on the day of data collection) of 30 drugs, and the affordability for selected clinical conditions that are treated with medicines on the global core list are described below.

AVAILABILITY

In dispensing doctor sector, the mean percent availability across the 30 medicines were 1.8% for innovator brand, 28.5% for the highest priced generics and 32.5% for the lowest priced generics. The availability of amlodipine, amoxicillin cap, atenolol, ceftriaxone, clotrimazole cream, diclofenac, enalapril, gliclazide, ibuprofen, metformin, omeprazole and paracetamol in highest priced generic were more available than the lowest priced generic. Moreover, the availability of captopril, diazepam, fluoxetine and phenytoin drugs were nil in all 3 categories, Table 1.

In private drug store in public hospital, mean percent availability of all surveyed medicines was 42% for lowest priced generics, 31.7% for highest priced generics and only 1 % for innovator brands. Poor availability (<25%) were encountered even in the lowest priced generic of some drugs. Furthermore, 7 out of 30 drugs were not found in any of the 3 categories. However, 100% availability was seen in highest priced and lowest priced generic of diclofenac and lowest priced generic of doxycycline, Table 1.

In drug stores in the private hospitals, mean percent availability were 3.5% for innovator brand, 49.4% for highest priced generic and 51.5% for lowest priced generics. Some of the individual drugs have better availability in highest priced generic than lowest priced generic. Non-availability of some drugs was also found in all 3 categories. However, 100% availability was seen in highest priced generic of diclofenac and paracetamol suspension, Table 1.

In the private retail sector, mean percent availability of innovator brand was 3.2%, highest priced generic was 51.7% and lowest priced generic was 66.2%. 100% availability was seen in highest and lowest priced generic of some drugs. However, poor availability (<25%) were found in highest priced generics of glibenclamide, metronidazole, simvastatin and lowest priced generic of beclomethasone. Moreover, availability was nil in captopril, diazepam, diethylcarbamazine, fluoxetine and phenytoin, Table 1.

Medicine availabilities were compared among the different sectors. Cross-sector comparisons were made for individual medicine as well as for sectors.

AVAILABILITY COMPARISONS

Overall availability of the innovator brands was poor in all the sectors. The availabilities of highest priced generic were acceptable in the private retail sector (51.7%) and private drug store in private hospital (49.4%). The availability of private retail sector had better than the other sectors. The availabilities of lowest priced generics were acceptable in private drug stores in private hospitals (50.0%) and the private retail sector (66.3%). The availability of lowest priced generic was highest in the private retail sector and lowest in dispensing doctor sector, Table 1.

AFFORDABILITY

Affordabilities of the 14 drugs on the global core list are summarized in Table 2. These drugs were

Table 2 Median number of day's wages of the lowest paid unskilled government worker needed to purchase a course of treatment, by sector

Conditions and drugs	Type of price	DD	PH	PP	Private Retail
Depression	LPG	2.7	2.5	2.8	0.9
Amitirptylene 25 mg Capusle/tablet, 3 per day for 30 days					
Adult respiratory infection	HPG	5.8	5.1	7.1	3.8
Amoxicillin 250 mg Caspule/tablet, 3 per day for 7 days	LPG	1.3	0.9	0.8	0.8
Hypertension	HPG	2.5	2.4	2.4	1.9
Atenolol 50 mg Capsule/tablet, 1 per day for 30 days	LPG	0.7	0.6	0.5	0.5
Hypertension	HPG	NA*	NA*	NA*	NA*
Captopril 25 mg Capsule/tablet, 2 per day for 30 days	LPG	NA*	NA*	NA*	NA*
Adult respiratory infection	HPG	2.0	2.8	6.0	2.0
Ceftriaxone 1g/vial injection, 1 injection	LPG	0.8	2.0	2.0	0.7
Adult respiratory infection	HPG	2.1	1.5	1.9	1.6
Ciprofloxacin 500 mg Capsule/tablet, 2 per day for 7 days	LPG	0.4	0.4	0.4	0.4
Pediatric respiratory infection	HPG	NA*	NA*	1.4	0.7
Co-trimoxazole 8+40mg/ml, 5ml, 2 per day for 7 days	LPG	0.7	0.5	0.7	0.5
Anxiety	HPG	NA*	NA*	1.0	NA*
Diazepam 5 mg Capsule/tablet, 1 per day for 7 days	LPG	NA*	NA*	0.3	NA*
Arthritis	HPG	4.6	4.1	4.5	3.9
Diclofenac 50 mg Capsule/tablet, 2 per day for 30 days	LPG	0.9	0.5	0.5	0.6
Diabetes	HPG	5.4	NA*	NA*	5.4
Glibenclamide 5 mg Capsule/tablet, 2 per day for 30 days	LPG	0.9			0.8
Ulcer	HPG	2.3	2.3	2.3	2.1
Omeprazole 20 mg Capsule/tablet, 1 per day for 30 days	LPG	1.9	0.5	0.5	0.4
Pain/Inflammation	HPG	2.9	2.3	2.5	2.0
Paracetamol suspension 24 mg/ml Millilitre, 15 ml per day for 3 days	LPG	0.7	0.6	0.6	0.6
Asthma	IB	5.0	4.8	5.5	4.2
Salbutamol 0.1 mg/dose inhaler, 1 inhaler of 200 doses	HPG	5.2	4.6	5.6	4.1
	LPG	3.5	3.1	3.6	2.9
Hypercholesterolaemia	HPG	NA*	NA*	NA*	8.3
Simvastatin 20 mg Capsule/tablet, 1 per 30 days	LPG		NA*		3.0

DD=dispensing doctor, PH= private drug store in public hospital, PP=drug store in private hospital, IB=innovator brand, HPG=highest priced generic, LPG=lowest priced generic, NA= not available

generally more available than were drugs appearing on the regional list. Affordability of a standard treatment course was calculated for each drug that was available for at least one sector, for brand-name drugs and for highest-and lowest-priced generics. The treatment guidelines were obtained from the British National Formulary (BNF). One day's wage or less for a course of treatment is generally considered affordable [10]. People could not afford to buy the highest price generics in any sector. However, they could afford some kinds of lowest price generic, more in private retail sector than in the other sectors. Most of the lowest priced generic cost less than one day wage except simvastatin, amitriptylene and ceftriaxone injection. Patient had to use 9 days salary to purchase the lowest priced generic of simvastatin in dispensing doctor and drug store in private hospital. Treatment of adult respiratory infection with the highest priced generic amoxicillin required 3.8 days' wages in the private

retail sector to 7.1 days' wages in drug stores in private hospitals. Patients had to pay approximately 4-6 days' wages when they purchased innovator brand and highest priced generic of salbutamol while patient had to spend 2-3 days' wages for lowest priced generic of salbutamol. To purchase highest priced glibenclamide to treat diabetes, patients had to spend about 6 days' wages. A one month treatment of highest priced generic of diclofenac for arthritis required 4-5 days' wages. Patient had to pay 6 days' wages to buy highest priced generic of ceftriaxone injection in drug store in private hospital. Approximately 2 days' wages were required to purchase all the other highest priced generic drugs.

DISCUSSION

The availability of innovator brand was extremely low in all the sectors (1.8% in dispensing doctor, 1% in private drug store in the public hospital, 3.5% in drug store in private hospital and 3.2% in private retail sector). This may be due to their high price in comparison to generic version drugs and abundant generic drugs availabilities. However, the low availability of originator brand is not necessarily a cause of concern when generic equivalents are available. Availabilities of both highest and lowest priced generics were acceptable in drug stores in private hospitals and in the private retail sector. In contrast, the availability of generics was low among dispensing doctors. This may be because tend to dispense only drugs that are commonly used. Generally the availability of the lowest price generic was better than that of the highest priced generics. There were some exceptions to this. For example, atenolol drug in drug store at the private hospital, highest priced generic (96.7%) was nearly 3 times more available than that of lowest priced generic (33.3%). So, patients are more likely to buy the highest priced generics which leads to higher out-of pocket expenditures in this situation and sector. Moreover, captopril was not found in any sector because it was not marketed in this survey area. They used other versions of drug instead of captopril. And also some kinds of psychotropic drugs were also not found in the facilities surveyed. However, some can be found in psychiatric facilities. Diazepam was found only in drug stores in private hospitals, probably due to regulatory requirements of licensing for this type of drug.

These findings can be compared with findings from other countries. The lowest priced generic availability (private retail sector) was better in Mongolia than in this study [11]. However, the private sector (LPG) availability of Malaysia (43%) had lower than that of in this study (66.2%) but their LPG availability in dispensing doctor had better (45%) than the study done in Myanmar (32.5%) [12].

Using lowest priced generics were fairly affordable in all sectors except in simvastatin, amitriptylene and ceftriaxone. One thing should be born in mind that it is not useful and helpful for the patients and consumers even the lowest priced generic was affordable if this drug is not on the stock. Cost can be escalate when highest priced generic were used. Although the cost of individual treatment with lowest priced generics was affordable, the cumulative cost of multiple medications (such as treating diabetes and hypertension) will be unaffordable. Although treatments seem affordable, substantial proportions of people living in Mandalay are earning less than the lowest-paid government worker. Moreover, this affordability calculation only includes medicines and does not account for other treatment costs (e.g. investigation, and diagnostics). Therefore true degree of affordability is likely to be overestimated by figures given here. In compare to the study done in the India, state of West Bengal, there were no observed variations in affordability between acute and chronic conditions, innovator brands and generic equivalents where people need less than one day's wages except ceftriaxone which needs more than 5 days wages [13], this study found that people need more than 1 day's wages in most of the treatment especially in highest priced generic and innovator brands.

CONCLUSION

The current survey on the availability and affordability of medicines in Mandalay, Myanmar has attempted to obtain reliable data on these respects, limiting itself to a select basket of global and regional medicines. It has shown that medicines that were obtained from all the sectors were not widely available. Nevertheless, it was acceptable in lowest price generics and highest price generics of private retail sector. Availability did not differ greatly across the sectors. For instance, overall availabilities were 32.5% in dispensing doctors, 42.0% in drug stores at public hospital, and 50.0 % in drug stores at private hospital and 66.3% in private retail sector for lowest priced generics. Also, highest priced generic's availability did not differ greatly across the sectors. Among the four sectors, dispensing doctor sector had the poorest availability and the private retail sector had the highest availability. Private retail sector was two times more available than that of dispensing doctor

sector. Psychotropic drugs such as fluoxetine, and phenytoin, were not available in all the sectors. In contrast, lowest priced generic amitriptylene was found in all the sectors. Diazepam (except in drug stores at private hospital) was not found in any of sectors. Metronidazole capsule or tablet (400 mg in this survey) had low availability. However, Metronidazole capsule or tablet (200 mg) are more available in the market than 400 mg of metronidazole tablet. The lower availability of originator brands is not necessarily a cause of concern provided that generic equivalents are available. Patients cannot affordable to buy the highest price generic. Generally, patients can afford to purchase the lowest price generic. However, even for the lowest priced generic, they cannot afford to buy amitirptylene for the treatment of depression, salbutamol for asthma and simvastatin for hypercholesterolaemia.

RECOMMENDATIONS

The study has not covered all therapeutic categories. Nevertheless, these results can serve as a reference point for future studies and point to problems that need further investigation. These results may be useful for advocates in their effort to induce policy makers to bring about lower prices. Further investigation and in-depth price component studies with a view to regulating mark-ups are also needed. Qualitative studies should also be done to ascertain the exact causes of price differences, drug prescriptions and usage. Price regulation policies and generic prescription policies (with chemical name so that there will be no more trade name bias) are also strongly recommended. This policy should aim to improve the availability of affordable generics.

LIMITATION

This study was pharmaceutical sector based cross-sectional study so that it cannot reach the changes over time. This survey did not consider the quality of drugs in comparison to their prices. Also, data were not recorded only for drugs for which the specified strengths and dosage forms were available. Some of the studied drugs were available in other strengths and forms. Thus, some of the availability figures given here may be underestimates of true availability.

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