



ISSN: 2231-3354
Received: 10-08-2011
Accepted: 13-08-2011

Community pharmacy dispensing costs in the state of Penang, Malaysia

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ABSTRACT

The objective for this study was to determine the dispensing cost in community pharmacies. This was a pilot cross-sectional study of 10 community pharmacies on Penang Island. A 17-item self-administered questionnaire was developed and consisted of questions on the type of pharmacy license, pharmacist salary, non-pharmacist salaries, pharmacy area size, dispensing area size, overhead and capital resources. The costs for dispensing prescriptions were calculated, and descriptive statistics were used to compare the dispensing costs with the type of pharmacy license, weekly trading hours and availability of the pharmacist's personal office. We found that dispensing costs in a community pharmacy average MYR 0.41 per minute or MYR 3.17 per prescription. The major cost drivers in the pharmacy dispensing costs were salaries and rent. This study provides an empirical basis for a proper reimbursement structure for pharmacy dispensing services in Malaysia.

Key words: Dispensing, cost, Malaysia, community pharmacy, health service.

INTRODUCTION

A pharmacy practice in a community setting is usually referred to as a community pharmacy. Their proximity and frequency of contact with the public makes them important primary health care providers that are utilised in many parts of the world (Department of Health 2005; Ballantyne 2007). In many countries, such as the United States, Japan, Philippines, Indonesia and the United Kingdom, most people find that pharmacists provide helpful understandable advice on both drug and non-drug related health issues (Holloway and Green 2003). The information obtained from a pharmacist regarding drugs is often more precise and accurate regarding the consumer's needs compared to the information received from other sources. The use of the pharmacist was found to be an important element in self care, and sometimes replaced general practitioner consultations (Cunningham-Burley and Maclean 1988). Dispensing is a significant part of a pharmacist's activities, which at present, include some aspects of pharmaceutical care. Therefore, drug dispensing is largely viewed as a set of activities consisting of verifying prescription validity, checking drug interactions, solving drug-related problems, counselling on the use of medications, documentation of patient medication records and monitoring of drug therapies (Wiedenmayer et al. 2006). Proper dispensing by qualified personnel reduces medication errors and increases treatment effectiveness (Suh 2000). However, in some parts of the world, including Malaysia, physicians are still allowed to dispense drugs in spite of evidence of improper dispensing and conflicts of interest as the prescriber (supplier-induced demand), which has led to increases in medication errors and irrational drug use.

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Furthermore, medicine is usually dispensed in clinics by untrained technicians, which results in undetected medication errors and absence of medication counselling that eventually leads to negative therapeutic outcomes (Ajdukovic et al. 2007).

In light of the overwhelming evidence of the benefits of dispensing by pharmacists and the readiness of local pharmacists, the Malaysian government is planning to disallow dispensing activities by physicians (Consumer Association of Penang 2008). In most countries that have implemented dispensing separation, the dispensing service fee has been set as a percentage mark-up system or fee for service that has been based on government negotiation or previous utilisation rates. A dispensing fee chargeable to customers has been proposed to compensate for the professional service provided by the pharmacist (Huttin 1996). However, in the absence of an empirical study on the basic cost of providing a prescription dispensing service, a proposed fee structure could potentially undervalue or overvalue the service, which would be inefficient. Therefore, the aim of this study was to assess the prescription dispensing costs of community pharmacies in Malaysia.

MATERIALS AND METHODS

This cross-sectional study was conducted from the 16th of June to the 5th of July 2008. Fifteen community pharmacies in the state of Penang were selected based on the community accessibility of the pharmacy. The study sample included community pharmacies in the Penang area, excluding chain pharmacies due to their centralised cost structure (resources controlled by the head office). Ten of the fifteen selected pharmacies agreed to participate in the study.

A 17-item self-administered questionnaire on fixed costs related to resources was developed based on a literature review and group discussion and was later validated for its content by two experts in pharmacy practice. The questionnaire was divided into three sections: pharmacist information, employee information and non-personnel resources. The questionnaires were completed by either the pharmacist or the manager of the pharmacy upon consent. In order to assess the feasibility of the questionnaire, the time needed by the respondents for completion was also recorded.

Bottom-up micro-cost analysis was performed to calculate the dispensing cost per minute in a community pharmacy. The cost per unit of time was calculated due to the sparse volume of prescriptions filled in community pharmacies with the present absence of dispensing separation regulations. This was calculated by apportioning the sum of the monthly pharmacist cost, pharmacy overhead cost and equipment cost with the size of the dispensing area and dividing by the pharmacy monthly opening hours. The resources and costs included the pharmacist salary, the size of the dispensing area, non-pharmacist staff salaries, rent, electricity, water, phone, security, insurance, furniture and computer system. In addition, the cost per prescription was also estimated based on the average prescription for a low-volume pharmacy as defined in the United States (2007). The exact time of the furniture investment, computer system and security installation for various pharmacies was unknown. Thus, an assumption was made that all

of these items were purchased or installed at the same time. It was calculated as equivalent cost with a 4.45 annuity factor with the assumption that the items had been used for five years and had a 4% annual depreciation (Hatoum et al. 1988; Drummond et al. 1997). SPSS version 16.0 software (SPSS) was used to analyse the cost for dispensing prescriptions per minute. Missing data was treated as complete case analysis using the SPSS default function.

RESULTS

Fifteen pharmacies were approached but only ten (response rate = 67%) agreed to participate in the study. Nine (90%) of the pharmacies that participated held retail licenses while the rest held both retail and wholesale licenses. There were only three pharmacies that had a personal office for the pharmacist. Six of the participating pharmacists graduated from the Universiti Sains Malaysia, two from a private local university and the rest from overseas institutions. The mean time taken for a pharmacist to answer all of the questions was 6.5 (SD = 3.8) minutes. The pharmacist's salary contributed the highest percentage of the pharmacy dispensing cost (51.97%) followed by non-pharmacist staff salaries (23.81%).

The mean pharmacist salary was MYR 4330 (SD = MYR 649.87), overhead was MYR 5219.12 and capital costs were MYR 1446.84 (Table 1).

Table 1: Components of Community Pharmacy Monthly Dispensing Cost (N = 10)

RESOURCES	MEAN	SD	MEDIAN (IQR)	%
Overhead				
Monthly pharmacist salary (MYR), <i>a</i>	4330.00	649.87	4250 (1000)	51.97
Monthly non-pharmacist staff salary (MYR), <i>b</i>	2645.00	1389.33	2550 (2000)	23.81
Monthly electricity (MYR), <i>c</i>	490.00	195.51	500 (312.5)	1.24
Monthly water (MYR), <i>d</i>	25.20	20.07	20 (1.3)	0.06
Monthly phone (MYR), <i>e</i>	211.00	88.88	200 (62.5)	0.54
Monthly security (MYR), <i>f</i>	190.00	296.09	0 (325)	0.48
Monthly insurance (MYR), <i>g</i>	77.08	63.99	67 (2.7)	0.20
Capital				
Monthly rental (land) (MYR), <i>h</i>	2835.00	1438.76	2325 (1750)	7.20
Monthly furniture cost (MYR), <i>i</i>	447.38	334.44	374 (477.3)	6.71
Monthly IT equipment cost (MYR), <i>j</i>	92.10	71.41	96 (131)	1.38
Monthly security equipment cost (MYR), <i>k</i>	34.63	59.20	0 (56.2)	0.52
Dispensing area (m ²), <i>l</i>	15.56	6.98	14 (11.5)	
Pharmacy size (m ²), <i>m</i>	91.93	50.97	78 (60.4)	
Office size (m ²), <i>n</i>	12.74	3.04	14 (7.1)	
OVERHEAD COST DISPENSING PER MONTH [†] , <i>o</i>	5219.12			
CAPITAL COST DISPENSING PER MONTH [‡] , <i>p</i>	1446.84			
COST DISPENSING PER MONTH [§] , <i>q</i>	6665.97			
COST PER MIN	0.41			
COST PER PRESCRIPTION [#]	5.33			

[†] $(c+d+e+f+g)*(l/m)+a*0.8+b*0.6$; [‡] $(i+j+k)+h*(l/m)+h*(n/m)$; [§] $o+p$; ^{||} $(q/(60*4*68.25))$; [#] $(q/(15000/12))$

From the data analysis, the mean of the dispensing cost per minute was MYR 0.41. Assuming that the dispensing time was 10 or 15 minutes, then the dispensing costs per prescription were MYR 4.10 and MYR 6.15, respectively.

This study also found that the dispensing costs varied because of weekly trading hours, type of pharmacy license and pharmacist personal office availability (Table 2). This association was not statistically explored due to the limited sample size.

Table 2: Assessment of Impact of License, Personal Office Availability and Weekly Trading Hour on the Dispensing Cost.

Variable		n	Median (RM)
License	retail	9	0.44
	retail & wholesale	1	0.30
Personal office	Yes	3	0.45
	No	7	0.42
Weekly trading hour	< 70	6	0.44
	> 70	4	0.38

DISCUSSION

The main objective of this study was to determine community pharmacies' costs of dispensing prescriptions. To the best of our knowledge, this is the first study that assesses the dispensing costs of community pharmacists in Malaysia and provides important information that may aid policy makers in formulating a reimbursement structure for community pharmacies' dispensing services in Malaysia. Setting the fee too low would discourage service providers whereas setting it too high would discourage utilisation (Coalition for Community Pharmacy Action 2007). The dispensing cost per minute found in this study was MYR 0.41. A standard prescription with less than five medicines has been found to usually take 10 minutes of dispensing time and cost approximately MYR 3.91 (SD = 0.80) (Hatoum et al. 1988). This is a reasonable value for such a professional service even with a 10% mark-up by the pharmacist. However, it is important to note that the dispensing time per prescription depends on the quantity and nature of the prescribed medicines. Additional study is therefore needed to assess the effects of such variables on the time needed for medicine dispensing.

This study found that the pharmacist's salary is the major contributor to the dispensing cost (38%). This is expected because pharmacy is considered a professional occupation that commands a commensurate salary. However, it is interesting that a significant proportion of the dispensing cost was contributed from non-personnel resources (15.8%), driven mostly by the rent payment. Although this is a reflection of the urban sample in this study, which would typically have higher rental costs than a suburban or rural sample, it suggests an opportunity for cost control by controlling the main cost drivers.

The questions that were used in the questionnaire were reasonable as the pharmacists were able to answer them in less than 10 minutes. However, there were five pharmacists that refused to participate in this study. This could have been due to the topic of this research, which is sensitive as it involves pharmacy salaries and expenses.

This was a pilot study with a small sample size that was conducted in the Penang area only. The research team decided to forego the wider coverage that would have been possible from a mail survey compared with face-to-face interviews as some of the financial items in the survey were sensitive and required a delicate approach. Even with this personal approach, the response rate was modest at best. The study also did not include the cost of consumables (e.g., office supplies, labelling, containers), which might have contributed to an underestimate of the dispensing cost. In addition, Penang is considered an urban area, and the dispensing cost may

have been overestimated because rental costs in rural areas are lower.

CONCLUSIONS

In this study, the estimated dispensing cost in a community pharmacy for a standard prescription with less than five medicines was MYR 4.10. The main drivers of pharmacy dispensing costs were found to be salaries and rent. As this was a pilot study conducted on Penang Island, considered to be an urban area, the dispensing cost may have been overestimated for rural areas. Thus, a nationwide study with a sample that includes a wider range of pharmacies is needed for a better estimate of the dispensing cost and conclusive evaluation of factors that influence this cost.

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