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Awareness, Attitude and Practices Concerning the Essential Medicines Concept among Malaysian Prescribers and Pharmacists

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Key Messages

1. Essential medicines are the fundamental elements of primary health care, especially in developing nations.
2. Essential medicines satisfy the priority needs of a population in treating common health conditions.
3. Malaysian prescribers and pharmacists have somewhat positive attitudes but still lack appropriate knowledge and good practices with respect to essential medicines.
4. Efforts are warranted in Malaysia to focus on the increasing awareness of health professionals on the essential medicines concept.
5. An undergraduate curriculum and continuing medical/pharmacy education programs should be the priority and focus to increase awareness and knowledge on the essential medicines concept.

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Introduction

Essential medicines (EM) are the fundamental elements of primary health care [1]. They are the medicines that satisfy the priority needs of a population in treating common health conditions [2],[3]. An essential medicines program and a list of

essential medicines (EML) are adopted by each country as a part of its national drug policy [4]. Medicines are selected on the basis of safe, cost-effective clinical guidelines [5]. EML leads to more rational prescribing, enhances the accessibility to health care and decreases the costs (i.e.

increases affordability), which in turn improve the entire quality of care [5],[6]. A major barrier to the implementation of the essential medicines concept (EMC) is the resistance from some health care professionals as a result of certain misconceptions [7]. Some health care professionals may think that the efficacy and the quality of the essential medicines are low because they are cheap and that they may not satisfy the patient's needs. Some may be worried about financial implications or about their clinical freedom [8]. The Malaysian EML was launched on 27th January 2000, and to our knowledge, till

now, the knowledge and attitudes towards the essential medicines concept among health care professionals in Malaysia is unknown. The present work aims to measure the knowledge, attitudes and practice of the Malaysian prescribers and pharmacists with respect to essential medicines.

Materials and Methods

The design of the study was cross-sectional. Data was collected during the period from September to November 2007. The eligible populations were prescribers and pharmacists who were working at the time of the study in public (government) clinics and hospitals, respectively, all over Malaysia.

The sampling procedures involved the multistage clustering technique. In the first step, ten states from west Malaysia were recruited by simple random sampling using the lottery method. Within those states, the same technique was used to select hospitals and clinics. A total of 60 hospitals and 113 health clinics were included.

A structured self-administered questionnaire was mailed to each health facility. The questionnaire sent to physicians was almost similar to that sent to pharmacists regarding the knowledge and attitudes items. The questions related to practice were different. The two questionnaires were developed in English initially, based on literature review. Face and content validations were achieved through a group of faculty lecturers and graduate students in the School of Pharmaceutical Sciences, Universiti Sains Malaysia. A pilot study was conducted among 30 pharmacists and modifications on questionnaires were performed whenever required. Covering letters were addressed to the medical officers in charge and the chief pharmacists in the recruited clinics and hospitals, respectively, asking them to distribute questionnaires to all prescribers and pharmacists in their institutions. The average numbers of prescribers in each clinic and the average number of pharmacists in each hospital were estimated to be three and ten, respectively. The numbers of questionnaires sent to each institution were based on previous estimation. A return envelope with stamps and a pen (as a token of appreciation) was sent to each respondent.

Besides demographic information, the data collected covered the knowledge, attitude and practices of prescribers and pharmacists with respect to the concept of essential medicines. The questionnaire included questions about whether Malaysia has a national essential medicines list and sources of the respondent's information about the Malaysian national medicines lists.

Knowledge was measured by eight items, whereas, attitudes were measured by five items. Each item on knowledge was coded as a dummy variable (i.e. yes=1 and no=0) and total scores were computed for each respondent. Items on attitude were scored on a summated 5-point likert-scale: strongly disagree, disagree, neutral, agree, and strongly agree. Higher scores represented higher knowledge and more positive attitudes towards essential medicines. The questionnaire included two questions on practice. The two items were scored on a summated 5-point likert-scale: never, sometimes, about half time, usually, and always. Higher scores represented better practices with respect to essential medicines.

Data was analyzed using the Statistical Package for Social Sciences (SPSS®) Version 13.0 and Microsoft® Office Excel. Descriptive statistics such as median, frequency and percentage were used whenever applicable. Data distribution around the mean was assessed using the Kolmogorov-Smirnov test. Mann-Whitney U, Kruskal-Wallis, Chi Square and Spearman rank-order correlation statistics were used for comparative and correlation analyses whenever applicable. *P-values* < 0.05 were considered to be statistically significant.

Response rates were calculated according to the number of pharmacies and clinics which responded out of the total number surveyed (60 hospitals and 113 health clinics), regardless of the number of subjects who filled the questionnaires in each health facility.

Results

A total of 186 prescribers from 65 clinics and 277 pharmacists from 44 hospitals completed the survey instrument with valid response rates of 57.5% and 73.3% for prescribers and pharmacists, respectively. The demographic characteristics of the participants are shown in [Table/Fig 1].

(Table/Fig 1) Respondents' demographic information

Variable	Prescribers Frequency (%)	Pharmacists Frequency (%)
Gender		
Male	100 (53.8)	42 (15.2)
Female	86 (46.2)	235 (84.8)
Ethnic Group		
Malay	165 (88.7)	171 (61.7)
Chinese	3 (1.6)	97 (35.0)
Indian	16 (8.6)	9 (3.2)
Others	2 (1.1)	-
Category		
Consultant	14 (7.5)	-
Specialist	11 (5.9)	-
Medical officer	80 (43.0)	-
Medical assistant	81 (43.5)	-
Higher degree		
Bachelor	-	258 (93.1)
Master	-	18 (6.5)
Others	-	1 (0.4)
Age (y)		
20-30	71 (38.2)	224 (80.9)
31-40	74 (39.8)	25 (9.0)
41-50	26 (14.0)	23 (8.3)
Over 50	15 (8.1)	5 (1.8)
Year of experience (y)		
<5	75 (40.3)	212 (76.5)
6-10	45 (24.2)	31 (11.2)
11-15	30 (16.1)	8 (2.9)
16-20	14 (7.5)	15 (5.4)
>20	22 (11.8)	11 (4.0)

64.5% and 63.5% of the responded prescribers and pharmacists, respectively, knew that Malaysia has an essential medicines list. The percentages of correct answers for knowledge questions varied extremely, ranging from 37.1% (the Essential Medicines Concept concerned with medicines therapeutic efficacy) to 72.0% (generic medicines have the same quality as brand medicines), and from 57.8% (the Essential Medicines Concept concerned with medicines therapeutic efficacy) to 74.7% (medicine availability is one of Essential Medicines Concept parameters and generic

medicines are more affordable than brand medicines) among prescribers and pharmacists, respectively [Table/Fig 2]. Significant differences between the two groups were found for both the knowledge and attitudes items [Table/Fig 2]. Knowledge sources were mainly internet and printed media (newspaper and magazine) for prescribers, and the internet and university curriculum for pharmacists.

(Table/Fig 2) Prescribers' and pharmacists' knowledge and attitudes towards EMC

	Prescribers (n=186) Frequency (%)*	Pharmacists (n=277) Frequency (%)*	*p*-value**
Knowledge questions			
Essential medicines are for common diseases in a country	109 (58.6)	185 (66.8)	0.15
Essential medicines concept is design to satisfy patient need	94 (50.5)	162 (58.5)	0.02
Medicines affordability is one of the essential medicines concept parameters	80 (43.0)	162 (58.5)	0.00
Medicines availability is one of the essential medicines concept parameters	126 (67.6)	207 (74.7)	0.18
Essential medicines concept concerns with medicines quality	116 (62.4)	185 (66.8)	0.34
Essential medicines concept concerns with medicines therapeutic efficacy	69 (37.1)	160 (57.8)	0.00
Generic medicines are more affordable than brand	91 (48.9)	207 (74.7)	0.00
Generic medicines have same quality as brand	134 (72.0)	173 (62.5)	0.00
Attitude questions			
positive attitudes			
Do you agree if Malaysia implements the Essential Medicines Concept	143 (76.9)	242 (87.4)	0.00
Does the Essential Medicines Concept lead to better health care	143 (76.9)	242 (87.4)	0.00
negative attitudes			
Do you agree that the Essential Medicines Concept restricts health professionals' clinical freedom	44 (17.7)	87 (40.4)	0.00
Does the Essential Medicines Concept limit innovation of the pharmaceutical industry	100 (49.8)	193 (69.7)	0.09
Are Essential Medicines mainly for developing countries	101 (50.7)	129 (46.6)	0.00

EMC =Essential Medicines Concept, *Frequency presented represents the response "yes",
** Chi-square test

When the measurement of items was used to compute scale variables (score systems on knowledge, attitudes and practice), some differences and similarities were found between prescribers and pharmacists. For both prescribers and pharmacists, the median score on knowledge was 5, with a minimum score of zero and a maximum score of 8. Both prescribers and pharmacists showed moderate positive attitudes towards essential medicines. The median score of the prescribers on attitude items was 17, with a minimum score of 9 and a maximum score of 25. The median score of the pharmacists on attitude items was 18, with a minimum score of 10 and maximum score of 25. The scores of the prescribers on practice

(median= 8) were better than that of the pharmacists (median= 6).

The scores on knowledge, attitudes and practice were compared by respondent categories and demographic characteristics [Table/Fig 3].Female prescribers showed a significantly higher median attitude score than their male counterparts. Among both prescribers and pharmacists, Indians showed the best attitude scores, followed by their Chinese and Malay counterparts. On the other hand, Malay pharmacists scored the highest scores on practice items as compared to other ethnic groups. Both the specialists and the medical officers showed significantly higher attitude median scores than the other prescriber's categories.

(Table/Fig 3) Differences between various demographic categories in knowledge, attitudes and practice scores

	Knowledge score		Attitude score		Practice score	
	Prescribers Median (p-value)	Pharmacists Median (p-value)	Prescribers Median (p-value)	Pharmacists Median (p-value)	Prescribers Median (p-value)	Pharmacists Median (p-value)
Gender						
Male	5.00 (0.64)*	5.00 (0.39)*	14.00 (0.00)*	18.00 (0.94)*	8.00 (0.50)*	6.00 (0.88)*
Female	5.00	5.00	16.00	18.00	8.00	6.00
Ethnic group						
Malay	5.00 (0.12)**	5.00 (0.99)**	14.00 (0.04)**	17.00 (0.03)**	8.00 (0.69)**	6.00 (0.02)**
Chinese	7.00	5.00	16.00	18.00	9.00	5.00
Indian	8.00	5.00	17.00	20.00	8.00	4.00
Other	5.00		18.00		8.00	
Category		-		-		
Consultant	5.50 (0.26)**		13.00 (0.00)**		7.50 (0.81)**	
Specialist	5.00		16.00		8.00	
Med. officer	4.00		16.00		8.00	
Med. assistant	5.00		14.00		8.00	
Higher degree	-		-			
PhD		5.00 (0.08)**		18.00 (0.06)**		6.00 (0.25)**
Master		6.00		18.00		6.50
Bachelor		6.00		20.00		8.00
Other						

*Mann Whitney U test
**Kruskal-Wallis test

Correlations between scores on knowledge, attitudes and practice with the continuous variables of age and years of experience are presented in [Table/Fig 4]. Among pharmacists, there were significant correlations between the two variables "age" and "years of experience" and between each of knowledge and practice scores. Among prescribers, there was only one significant correlation between years of experience and knowledge scores. All of the previous significant correlations were weak (correlation coefficients < 0.2) and positive (i.e. scores increased according to the increase in age and years of experience).

(Table/Fig 4) Correlation between age and years of experience with knowledge and practice scores

Independent variable	Knowledge score		Practice score	
	Prescribers r (p-value)*	Pharmacists r (p-value)*	Prescribers r (p-value)*	Pharmacists r (p-value)*
Age (y)	0.135 (0.07)	0.232 (0.00)	0.07 (0.34)	0.129 (0.03)
Years of experience	0.168 (0.02)	0.135 (0.02)	0.06 (0.40)	0.129 (0.03)

* Spearman rank-order correlation test

Correlations between the scores on positive attitudes and negative attitudes with the continuous variables of age and years of experience are presented in [Table/Fig 5]. Among pharmacists, there were significant correlations between the two variables "age" and 'positive attitude' and between "years of experience" and 'negative attitude'. Among prescribers, there was a significant correlation between "age" and "years of experience" and each of the positive attitude scores. All of the previous significant correlations were weak (correlation coefficients < 0.2).

(Table/Fig 5) Correlation between age and years of experience with positive and negative attitudes scores

Independent variable	Positive attitude score		Negative attitude score	
	Prescribers r (p-value)*	Pharmacists r (p-value)*	Prescribers r (p-value)*	Pharmacists r (p-value)*
Age (y)	-0.197 (0.00)	-0.131 (0.03)	-0.094 (0.21)	0.093 (0.12)
Years of experience	-0.203 (0.00)	-0.072 (0.23)	-0.104 (0.16)	0.122 (0.04)

* Spearman rank-order correlation test

Discussion

The essential medicines concept offers cost-effective solutions to many health problems among populations [9]. The lack of knowledge among prescribers and pharmacists about the concept acts as a major barrier for their attitudes and practice. This affects the implementation of the concept in the field as well as the implementation of the national drug policy, since "essential medicines" is a cornerstone for the national drug policy [10].

In our findings, the levels of knowledge of the prescribers and pharmacists were less than satisfactory. Their responses to knowledge items indicated misunderstandings about EM. This is supported by the WHO report that focused on the misconceptions of the Western Pacific Region's health professionals to EM. The report mentioned that health professionals thought that the essential medicines had low therapeutic efficacy [8]. However, in contrast to the WHO report, our prescribers think positively about the quality of the generic medicines. Generally, the level of knowledge of the pharmacists seemed to be better than that of the prescribers. This may be explained by the fact that the main source of knowledge for

the pharmacists was the university curricula. The difference between our two study groups in the affordability-related knowledge-items may be due to the fact that pharmacists are more aware about the cost-effective alternatives of medicines [11].

The theory of reasoned action states that people intend to conduct a behaviour such as considering essential medicines while prescribing and dispensing, only when they evaluate it positively [12]. Almost half of the respondents expressed negative attitudes towards EMC. On the other hand, greater proportions of them showed positive attitudes. These contrasted findings can be explained by a model of dual attitudes in which people can simultaneously hold two different attitudes toward the same thing, one implicit and the other explicit [13]. Compared to the prescribers, pharmacists showed a higher tendency towards positive attitudes as well as negative ones. Negative attitudes appear clearly through the thoughts of the respondents that their clinical freedom is restricted by following the essential medicines list, limitations of the innovation in the pharmaceutical industry and that EML is useful mainly for developing countries. In the same context, a survey on truth about the hospital formulary reported that 67% of the respondents believe that the formulary interferes with their clinical freedom [14]. A survey in Nigeria about the acceptability of the essential medicines list [15] mentioned the same thing.

Our findings indicated inappropriate practices when dealing with EM. The prescription of EM to patients in our setting is lower than that reported by a study conducted in Nepal [16]. Nevertheless, the authors recommended an education program for prescribers to increase rational prescribing according to the list of EM [17]. Efforts are needed to strengthen the practice, and to consider EM in prescribing and dispensing activities. The prescribing and the dispensing according to EMC are important factors in the rational use of medicines [18], [19].

The relationship between demographic characteristics and the knowledge and attitudes is the most obvious feature. This might be explained by following specific guidelines or by using the same sources of knowledge by most groups, whereas, attitude is an aspect related to individuals. Our findings indicate that the attitude towards EMC among Indian pharmacists and prescribers were the best among different ethnic groups. Nevertheless, Indian pharmacists had the least practice scores and Malay pharmacists had the highest. These differences in ethnicity responses may be due to the fact that some minority groups have cultural norms, behaviour and beliefs that contradict other practitioner's groups [20].

Our findings showed that younger practitioners held better attitudes towards EMC (i.e. attitude scores were negatively associated with age) while the older practitioners practiced better. It may be that the practice of the practitioners was enhanced as long as their experiences increased. On the other hand, newer issues in practice seemed to be more appealing to the younger and were expressed more positively in their attitudes as compared to those who were older. This was supported by the attitude of the practitioners towards complementary and alternative medicines (relatively new topic as essential medicines), which was found to be negatively associated with age [2],[20].

Our study showed that prescribers and pharmacists in Malaysia held positive attitudes towards EM. However, appropriate knowledge and good practices were not satisfactory. More efforts are needed by stakeholders to elevate awareness about the EMC, in order to fill the gap between the theory of essential medicines and the actual implementation of the concept in the field. The government should develop guidelines to consider essential drugs while prescribing and dispensing medications. As implementing the EMC in the field is a

national responsibility, health care professionals should use essential drugs as a matter of priority. Differences in the attitudes between the genders and ethnic groups should be further studied. Also, differences in the attitudes and practice between higher degrees also need to be considered. In addition, private sector health professionals should be investigated because our study focused only on health professionals in the public sector.

Acknowledgement

References

[1]. Quick JD. Essential medicines twenty-five years on: closing the access gap. Health Policy and Planning. 2003; 18: 1-3.

[2]. World Health Organization (2004) WHO Policy Perspectives on Medicines-Equitable access to essential medicines: a framework for collective action. [Online]. [Accessed19th September 2006]. Available from World Wide Web: http://whqlibdoc.who.int/hq/2004/WHO_EDM_2004.4.pdf. Geneva.

[3]. Chirac P. Translating the essential drugs concept into the context of the year 2000. Trans R Soc Trop Med Hyg. 2003; 97:10-2.

[4]. Ratanawijitrasin S, Soumerai, S. B. Weerasuriya, K. Do national medicinal drug policies and essential drug programs improve drug use? a review of experiences in developing countries. Soc Sci Med. 2001; 53:831-44.

[5]. World Health Organization. How to develop and implement a national drug policy. 2nd ed. Geneva: WHO; 2001.

[6]. Reidenberg MM, Walley T. The pros and cons of essential medicines for rich countries. BMJ. 2004; 329:1172.

[7]. Kanji N, Hardon A. What Has Been Achieved and Where are we now? In: Kanji N, Hardon, A., Harnmeijer, J. W., Mamdani, M. , Walt, G., editor. Drugs Policy in Developing Countries. London: Zed Books Ltd; 1992 p. pp. 91-109.

[8]. World Health Organization (2005) Regional Strategy for Improving Access to Essential Medicines in Western Pacific Region 2005-2010. ISBN 92 9061 185 5. Manila.

[9]. Quick JD, Hogerzeil HV., Velasquez G , Rago L. Twenty-five years of essential medicines. Bull World Health Organ. 2002; 80:913-4.

[10]. World Health Organization. Access to essential medicines. WHO Drug Information. 2007; 21:267-9.

[11]. Babar ZU. Pakistan's National University of Pharmaceutical Sciences. Am J Pharm Educ. 2006; 70:123.

[12]. Ajzen I, Fishbein M. . Attitude-behavior relations: a theoretical analysis and review of empirical research. Psych Bull 1977; 84:888-918.

[13]. Ajzen I. Nature and Operation of Attitudes. Annual Review of psychology. 2001; 52(2001).

[14]. Anonymous. The Truth about hospital formularies – Survey shows many myths still exist 15 years latter. ISMP - Medication Safety alert! ® 2005; 10.

[15]. Adikwu MU, Osondu BO. Four years of essential drugs' list in Nigeria-Soc Sci Med. 1991; 33(9):1005-10.

[16]. Lamichhane D, Giri B,Pathak O, Panta, O., Shankar, P. Morbidity profile and prescribing patterns among outpatient in a teaching hospital in western Nepal. MJM. 2006; 9:126-33.

[17]. Quick JD, Rankin JR, Conner RWO, Hogerzeil HV, Dukes MNG ,Garnett A. Managing Drug supply. West Hartfort: Kumarian Press, Inc. 2nd (ed.), 121-135; 1997.

[18]. Karande S, Sankhe P, Kulkarni M. Patterns of prescription and drug dispensing. Indian J Pediatr. 2005; 72:117-21.

[19]. Laing R, Hogerzeil H, Ross-Degnan D. Ten recommendations to improve use of medicines in developing countries. Health Policy and Planning. 2001; 16:13-20.

[20]. Conboya L, Kaptchuka Ted J, Eisenberga David M, Gottliebb, B., Acevedo-Garciab, D. The relationship between social factors and attitudes toword conventional and CAM practitioners. Complementary therapies in clinical practice. 2007; 13:146-57.