ASSESSMENT OF ASTHMA KNOWLEDGE AMONG URBAN COMMUNITY PHARMACISTS IN SELANGOR, MALAYSIA

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ABSTRACT

Objective: This study aimed to assess the knowledge of asthma among urban community pharmacists in Selangor, Malaysia.

Study Design: Cross sectional study.

Place and Duration of Study: Study was conducted at state of Selangor, Malaysia from Jan 2016 to Jul 2016.

Material and Methods: One hundred fifty (150) community pharmacists in Selangor, Malaysia, were randomly selected and recruited for this baseline study. Self-administered questionnaires were directly distributed and collected by the investigators themselves. The extracted data from the completed questionnaires was analyzed using Statistical Package for Social Science (SPSS) version 19 (based on parametric/ non-parametric data).

Results: The mean average score of the pharmacists was 12.93 ± 3.46 over a maximum possible score of 23 corresponding 56% of which was thought to be moderate performance. Respondents performed best in issues relating to features of asthma while areas of knowledge deficiency included recognizing the main symptoms of asthma, factors that can cause asthmatic attacks and proper mode of delivering asthma medications. The knowledge of asthma was related to age while gender and location of their premises had no influence on their knowledge.

Conclusion: The key findings of this study indicated that the knowledge of asthma among community pharmacists surveyed was of average level. These results bring into focus the need for community pharmacists to undergo continuing professional education in order to update their knowledge and skills.

Keywords: Asthma, Community pharmacists, Knowledge.

INTRODUCTION

Asthma is characterized as a reversible inflammatory condition of the lungs that leads to narrowing of the bronchi. During exacerbation, asthmatic patients will show classical signs and symptoms that include wheezing, breathlessness, chest tightness and coughing. Asthma is one of the significant health related problems resulting in high morbidity and mortality. In 2011, there were about 300 million persons affected by asthma around the world[1,2]. About 300 million people worldwide had asthma. As countries became more urbanized. It is projected that this number would increase to 400 million by 2025[3]. This rapid increase in its prevalence is also associated with the increased urbanization[4]. The prevalence of asthma symptoms is common in low, middle and high income countries worldwide[5]. The global burden of the asthma in the adult population is on a rise, hence making it a major health issue around the globe, smoking and the lifestyle changes in the developed countries are the major barriers contributing to its poor control[6]. According to the GINA, in 2025, the estimated prevalence of asthma patients will increase by an additional 100 million individuals[3].

Bronchial asthma also appeared to be one of the growing public health problems in Malaysia[7,8]. The prevalence of asthma was about 4.8% among Malaysians[3]. The prevalence of asthma among children aged 13-14 years old was 9.6% whereas 4.1% adults were asthmatic. Asthma prevalence was higher in rural (4.5%) than in urban areas (4.0%), and higher in those with lower educational status (5.6%) and lower

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income (4.7%)[7,8]. The prevalence of childhood asthma is 24% and is significantly higher among Malays than Indian and Chinese (28%, 12.8%, and 2.1% respectively)[9]. Factors like smoking, gender, atopy and environmental pollutants like exhaled nitric oxide, indoor carpets, lorry fumes and congested roads can exacerbate the asthma symptoms in both children and adults[10,11].

In a recent study that was performed in Europe and Australia it was observed that most of the asthma patients had poor control over their diseased state without the active intervention of pharmacists[12]. For the better outcome of pharmaceutical care for asthma patients the pharmacist must be competent with positive attitude and significant knowledge. Worldwide the role of pharmacist in asthma management has received positive recognition. Publications in the past decade that have addressed the role of pharmaceutical care for asthma have shown that well-educated pharmacists could increase the therapeutic consequences of patients, including quality of life, severity of disease, adherence to medications and medical resource utilization[13]. The pharmacists are professionally competent and possess adequate knowledge required for the proper counselling of asthma patients[14]. In severe asthma cases, the percentage of the properly managed patients also tend to increase due to proper interventions by pharmacists[15]. Therefore the current study aims to evaluate the knowledge of community pharmacists in Selangor, Malaysia.

SUBJECTS AND METHODS

A cross-sectional survey was conducted from January 5 to July 15, 2016 in the state of Selangor, Malaysia. The minimum effective sample size was estimated to be 150 out of total 1854 pharmacies in malaysia and 427 in Selangor. The sample size was calculated by using the online sample size calculator Raosoft with a distribution response and confidence interval of 95% and 5% margin of error. Due to lack of sampling frame and upto-date electronic population database, a convenient sampling technique was used. A total of 157 registered urban community pharmacists were initially approached, but only 153 gave written consent for participation. Data from 3 participants were incomplete and therefore excluded from the analysis. Only registered urban community pharmacists were recruited.

The survey was conducted by a single investigator, using validated questionnaire (23 AKQ-P). The investigator systematically met with the community pharmacists and explained the objectives of the survey. Apart from the rare cases where the pharmacists responded on the spot, the investigator was often obliged to return at a time suitable for the pharmacists. If the questionnaire was not filled out on the day of the visit, the pharmacist was requested to respond in front of the investigator or to schedule another visit. After six visits to the same pharmacy without a response, the respondent was excluded from the study. The questionnaire was designed to obtain the information on socio-demographic and the knowledge of asthma for the better management and treatment of the disease. The questionnaire was developed from extensive literature review as well as adopted and adapted with approval from the corresponding authors[16,17] and aligned with GINA guidelines[1,2]. There are two parts of the questionnaire. The first part of the questionnaire consisted of socio-demographic data and the second part of the questionnaire evaluated the knowledge (n=23 items). Content and face validation was done by a group of senior pharmacists in academia and practicing community pharmacists. The questionnaire was endorsed as valid and reliable for the research among health professionals mainly pharmacists to assess the knowledge of asthma among community pharmacists. The questionnaire was pretested on a convenient sample of 33 pharmacists (not included in the final sample) which were not the targeted population. Rasch measurement model was applied to confirm the reliability of the questionnaire. Participants were awarded one mark for each correct response and

zero mark for each wrong answer. The maximum score was 23.

The demographics of the community pharmacists were calculated through descriptive statistics using Statistical Package for Social Science 18. A one-way ANOVA was conducted to compare the effect of age, ethnicity and practicing year on knowledge of asthma among

157 questionnaires were distributed. So 95.5% response rate was observed in this study area.

The socio-demographic characteristics of the study participants are presented in table-I showing data of real study conducted among urban community pharmacist from Selangor, Malaysia. The mean age of the respondents was 31.52 and SD ± 4.93. As shown in the table-I, there

Table-I: Socio-demographic data of study participants.

Demographic	N (%)
Age	
21-25	20 (13.3%)
26-30	49 (32.7%)
31-35	46 (30.7%)
36-40	29 (19.3%)
41-45	6 (4.0%)
Mean = 31.53 ± 4.93	
Gender	
Male	55 (36.7%)
Female	95 (63.3%)
Ethnicity	
Malay	89 (59.3%)
Chinese	51 (34.0%)
Indians	10 (6.7%)
Pharmacy education level	
Bachelor of pharmacy	134 (89.3%)
Master of pharmacy	16 (10.7%)
Practising year at community level	
1-2 years	30 (20.0%)
3-4 years	49 (32.7%)
5-6 years	31 (20.7%)
7-8 years	23 (15.3%)
9-10 years	14 (9.3%)
11-12 years	3 (1.7)
Mean = 2.67 ± 1.31	

urban community pharmacists. Independent sample t-test was applied for gender and pharmacy education level. A p-values <0.05 were considered statistically significant.

RESULTS

To achieve the required sample size i.e. 150 fully completed questionnaires from the community pharmacists from Selangor, Malaysia,

were 55 (36.7%) males and 95 (63.3%) female respondents. On ethnicity basis Malay were more i.e. 89 (59.3%) than Chinese 51 (34.0%) and Indians 10 (6.7%). Majority of the respondents had bachelors qualification 134 (89.3%) in comparison to the Master's degree holders i.e. 16 (10.7%). The mean number of practicing years was 5.26 with SD ± 3.08. There was no difference

between mean scores of age and practicing year (table-II).

The overall mean total score of asthma was 12.93 ± 3.46. Almost two third of the study participants 112 (74.7%) had the knowledge about the proper use of aerosols. One hundred seven (71.3%) pharmacists answered correctly regarding the problems associated with the use of dry powder inhalers (DPI). However, ninty (60.0%) pharmacists were unable to give the correct answer about the manifestation of asthma

professionals to take control of patients' disease (table-III).

There was no significant effect of age, gender, ethnicity, education level and practicing year on knowledge of asthma as *p*-values was less than 0.05 ($p<0.05$) .

DISCUSSION

An increased interest is observed in broadening community pharmacists' role in public health[18]. Pharmacists are easily accessible and recognized as experts in matters of health;

Table-II: Distribution of asthma knowledge according to socio-demographic variables.

Variables	N	Mean total knowledge score (S.D)	Degree of freedom (d.f.)	*p*-value
Age				
21-25	20	13.15 ± 3.51		
26-30	49	13.02 ± 3.68		
31-35	46	12.45 ± 3.40	4	0.428
36-40	29	12.86 ± 3.25		
41-45	6	15.33 ± 2.73		
Gender				
Male	55	12.76 ± 3.69	1	0.662
Female	95	13.02 ± 3.34		
Ethnicity				
Malay	89	13.00 ± 3.64		
Chinese	51	12.84 ± 3.32	2	0.946
Indians	10	12.70 ± 2.71		
Pharmacy education level				
Bachelor of pharmacy	134	12.85 ± 3.38	1	0.439
Master of pharmacy	16	13.56 ± 4.11		
Practicing year at community level				
1-2 years	30	13.53 ± 3.69		
3-4 years	49	12.36 ± 3.32		
5-6 years	31	12.25 ± 3.32	5	0.379
7-8 years	23	13.65 ± 3.47		
9-10 years	14	13.57 ± 3.75		
11-12 years	3	14.33 ± 3.05		

and eighty (53.3%) gave the wrong answer about the triggering factors of asthma.

Half of the participants seventy seven (51.3%) believed that the aim if the asthma management is to empower the health care

therefore, they could offer public health interventions more conveniently than other health care providers[19]. Furthermore, community pharmacies are the ideal site for credible counseling for a large segment of the population because pharmacists have frequent contact with

the public, have extended opening hours, and are widely distributed geographically. However, utilized[20,21]. Asthma must be treated correctly and carefully to decrease the personal, social and

Table-III: Items measuring the asthma knowledge of community pharmacists.

S No.	Questions	Correct N (% age)	Wrong N (% age)
1	Asthma episodes are associated to airway hyper-responsiveness with variable airflow obstruction that is often reversible with treatment.	101 (67.3%)	49 (32.7%)
2	Asthma results from complex interactions among inflammatory cells, mediators and other tissues in the airway.	84 (56.0%)	66 (44.0%)
3	The genetic predisposition for the development of an IgE-mediated response to common aeroallergens is not a predisposing factor for developing asthma.	71 (47.3%)	79 (52.7%)
4	The inflammatory process in asthma does not cause permanent changes in the airways.	103 (68.7%)	47 (31.3%)
5	Asthma can be triggered by aspirin or other non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen.	70 (46.7%)	80 (53.3%)
6	In some people with asthma, exercise-induced symptoms may be the only manifestation of asthma.	60 (40.0%)	90 (60.0%)
7	PEF meter is used to measure the pulmonary function.	85 (56.7%)	65 (43.3%)
8	The aim of asthma management is to empower health care professionals to take control of patients' disease.	77 (51.3%)	73 (48.7%)
9	An asthma 3+ visit plan is a plan in which physicians treat an acute asthma exacerbation over 3 visits.	74 (49.3%)	76 (50.7%)
10	Inhaled beta2-agonists are preventive medicines	73 (48.7%)	77 (51.3%)
11	All people with asthma should have a long-acting beta2 agonist for symptom relief.	79 (52.7%)	71 (47.3%)
12	Unlike short-acting bronchodilators, formoterol effects usually last for 2 days.	84 (56.0%)	66 (44.0%)
13	If a patient needs to take a beta2-agonist and a corticosteroid at the same time, the steroid should be taken first to get the best response.	79 (52.7%)	71 (47.3%)
14	Inhaled non-steroidal anti-inflammatory such as sodium cromoglycate is recommended as initial preventative therapy for children with frequent episodic to mild persistent asthma.	76 (50.7%)	74 (49.3%)
15	When oral corticosteroids are initiated in an acute asthma attack, inhaled corticosteroids should be ceased to avoid any complications.	93 (62.0%)	57 (38.0%)
16	After the patient has recovered from a severe asthma attack, he/she should be maintained on the same dose of oral corticosteroid permanently in order to control his/her condition.	91 (60.7%)	59 (39.3%)
17	It is a good idea to give cough syrup during an asthma attack to treat asthma related cough.	88 (58.7%)	62 (41.3%)
18	Patients should hold their breath at least 5-10 seconds after taking an inhaled asthma medicine.	78 (52.0%)	72 (48.0%)
19	Multiple actuations of aerosol devices before inhaling from a spacer will result in more effective medication delivery.	112 (74.7%)	38 (25.3%)
20	The most common problem with dry powder inhaler (DPI) use is incorrectly coordinating drug release and inhalation.	107 (71.3%)	43 (28.7%)
21	Dry powder inhalers (DPIs) require higher inspiratory flow rates than metered dose inhalers (MDIs).	92 (61.3%)	58 (38.7%)
22	It is allowed to breathe out through a dry powder inhaler.	89 (59.3%)	61 (40.7%)
23	Only nebulizers can be used in children <2 years who have asthma.	80 (53.3%)	70 (46.7%)

pharmacists working in non-institutionalized settings, such as pharmacies are not being fully economic burdens of asthma. The most common problem with asthma patients is sub optimal

drug use. This questionnaire based survey gives some insight into community pharmacists' knowledge of asthma. According to our results community pharmacists had moderate knowledge about asthma i.e. 12.93 ± 3.46. The results of this study were consistent with the findings of the previous research work, i.e. pharmacists had moderate level of knowledge about asthma[13,18]. In this study we found that there is no significant difference between the mean score of the knowledge and different age groups however, the community pharmacists who had an age between 41 and 45 had greater mean score of knowledge as compare to other age groups. Furthermore table-III shows that there is no significant difference between mean score of knowledge with difference of gender, ethnicity and pharmacy education level however, pharmacists with master's degree had greater mean score (13.56 ± 4.11) from that of bachelor degree holders (12.85 ± 3.38) and the pharmacists who worked for more than 10 years had greater mean score of the knowledge (14.33 ± 3.05) as compared to the pharmacists who worked less than 10 years. Overall there was no significant difference found between different socio-demographic variables and knowledge about asthma.

The generalizability of the findings from this study must be viewed within the context that this was a convenient sample and conducted only in one state (Selangor) of Malaysia. Therefore, these findings may not necessarily reflect the knowledge of all community pharmacists of Malaysia. However, an effort has been made to ensure that pharmacists of all age and ethnic groups were well represented in the sample slected for this study.

CONCLUSION

Pharmacists working on community pharmacies in Selangor, Malaysia had moderate knowledge about asthma regardless of their age, ethnic group, gender, education level and number of years working at community pharmacies. This study was conducted only in one state of Malaysia Studies with large sample sizes should be performed to address this issue nationwide. Furthermore, the regulatory and licensing authorities should assess the knowledge of the community pharmacist about asthma before giving license to practice.

CONFLICT OF INTEREST

There was no conflict of interest to be declared by the author and the co-author related to the present study.

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