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Assessment of Asthma First Aid Knowledge among Pharmacy Graduates: A Questionnaire-Based Study

Sohail Riaz^{1*}, Muhammad S Chaudhry¹, Muhammad W Ajmal¹, Irfan Hamid¹, Qazi A Ijaz²,
Kashif Sohail¹, Maria Tahir³

¹Akson College of Pharmacy, Mirpur University of Science and Technology, Pakistan

²University College of Pharmacy, University of Punjab, Pakistan

³Department of Pharmacy, Sardar Bahadur Khan Women University, Pakistan

***Corresponding author:** Riaz S, Akson College of Pharmacy, Mirpur University of Science and Technology, Mirpur, Azad Jammu & Kashmir, Pakistan. E-mail: sohailriaz361@gmail.com

ABSTRACT

Objective: The purpose of present study is to assess the knowledge of pharmacy students regarding asthma first aid.

Methodology: This quantitative, descriptive and questionnaire based cross sectional study was conducted among pharmacy graduates of two pharmacy colleges of Mirpur, Azad Jammu & Kashmir, from December 2018 to January 2019. Asthma First Aid Knowledge Questionnaire was used because of its proved validation and reliability. Data was collected through convenient sampling method. Data was coded and statistically analyzed by using SPSS V 20.

Results: A total of 126 students participated, in which most of the students were female (n=71, 56.3%) and most of the respondents were between age group of 23-27 years (n=84, 66.7%). This study demonstrated moderate first aid knowledge of asthma among pharmacy students (n=85, 67%). Gender, institute, and year of study had no significant association with overall knowledge (p value = >0.05). Only family history of asthma had significant effect on overall knowledge (p value= 0.001).

Conclusion: The present study concludes that there is dire need to provide adequate knowledge of asthma first aid among the pharmacy graduates to play their role in preventing the mortality and exacerbation of morbidity associated with asthma.

Keywords: Asthma, First aid, Pharmacy, Students

INTRODUCTION

More than 334 million people across the world suffer from asthma, which makes it one of the major public health problems [1]. Two third times, mortality associated with asthma is preventable with proper asthma education and first aid knowledge for management for acute asthma attack [2]. After the introduction of metered dose inhalers, the drop-in morbidity and motility was witnessed but these rates have failed to drop in these years. Educating the patients and their caregivers about the first aid of acute asthma attack management can also reduce the hospitalization of patients [3]. Seeking asthma care is very costly. According to study conducted in 2004-05, it was estimated that asthma care service cost more than \$606 million in Australia only and these services were attributable to medication and first aid knowledge [4]. This cost can be considered double in developing countries like Pakistan where health infrastructure and health system are immature and lacks in proper execution of health policies. Several patient care models have suggested that community pharmacies and pharmacists working there can be potential candidate to educate the patients and their care givers with first aid knowledge [5]. Therefore, it is very important for pharmacy undergraduate students to equip with latest and most up-to-date asthma and its first aid knowledge like Asthma Action Plan. This action plan includes all the necessary information and first aid knowledge to cope with acute attacks of asthma.

Pharmacy students upon graduating shall serve the public in primary level and can be key candidate to advocate the asthma first aid knowledge [6]. Therefore, assessing the pharmacy students' knowledge is very important. In available literature very few studies have been conducted to assess asthma first aid knowledge among pharmacy students [7-10]. Literature suggests there is no study has been conducted in Pakistan and Azad State of Jammu and Kashmir. The purpose of present study is to assess the knowledge of pharmacy students regarding asthma first aid.

RESEARCH METHODOLOGY

Study design

A quantitative, descriptive questionnaire based cross-sectional study was conducted.

Study settings and population

Fourth- and fifth-year students of two pharmacy institutes namely Akson College of Pharmacy, Mirpur University of Science & Technology, Mirpur AJ&K and Mohi-ud-din Islamic Medical College, Mirpur AJ&K.

Sample size

A non-random purposive sampling approach is used in this case since the target is an already existing group of individuals. The research target group in this study is 4th and 5th year students as they have studied about asthma in the Pharm-D curriculum, 2013 [11].

Research instrument

The pre-validated and reliable instrument was used named as Asthma First Aid Knowledge Questionnaire (AFAKQ) [12]. The tool was developed for Australian students and never been tested on Pharmacy students of Pakistan, the Questionnaire

was pretested before the commencement of study by checking the reliability through internal consistence (Cronbach's alpha) and face validity.

Instrument consists of two sections. Demographic section includes gender, age, year of study, institute, residence, asthma in curriculum, history of asthma. Knowledge regarding asthma was assessed by means of AFAKQ. This section consists of 14 dichotomous (true/false) variables describing activities that need to perform in asthma emergency. Every right answer is given "1" and wrong answer is given "0" points. Over all knowledge is assessed by means of right answers and cut off levels as well. Respondents scoring 0 to 5 are considered as poor knowledge, 6- 9 as adequate knowledge and 10 – 14 as good knowledge.

Data collection process

Simple Convenient method was adopted for data collection. The investigator approached students to inform them about the study and enquired about their willingness to participate. Questionnaires were distributed among the participants after signing the consent form and were asked to complete the questionnaire.

Ethical consideration

A consent form is distributed to participants along with tool. Students were informed that there would be no direct benefit or disadvantage to them if they participated or refused. Approval to use AFAKQ was taken from principle author of questionnaire.

Statistical analysis

All statistical analyses were assessed using SPSS v20. Descriptive statistics were applied to present data in frequency, percentages and central tendencies. Inferential statistics were applied between dependent and independent values to present the significant difference between them. Non parametric tests (kruskal wallis, Mann whitney and chi-square tests) were used to describe association.

RESULTS

Before data collection pilot study was conducted, the questionnaire was distributed among 30 students. Students found it valid and claimed that they had not faced any difficulty in answering the questions. For reliability analyses, the Cronbach's alpha value was 0.50. The maximum time participant took to complete questionnaire was 6 minutes.

Table 1 represents the demographic characteristics. A total of 126 participants responded to the study. In terms of gender there was a difference between male (n=55, 43.7%) and female (n=71, 56.3%) population. Participants of the age group 23-27 years (n=84, 66.7%) were dominant. Most of the students belonged to 4th year of Pharmacy (n=67, 53.2%). Majority (n=104, 82.5%) of the participants were from Akson College of Pharmacy. Out of 126 participants, only 32.5% students (n=41) has family history of asthma.

Table 1: Frequency and percentage distribution among demographic characteristics (N=126).

Demographic characteristics	Frequency	Percentage (%)
<i>Gender</i>		
Male	55	43.7

Female	71	56.3
Age (years)		
18-22	40	31.7
23-27	84	66.7
28-32	2	1.6
Year of study		
4 th year	67	53.2
5 th year	59	46.8
Institute		
Mohi-ud-din Islamic Medical College	22	17.5
Akson College of Pharmacy	104	82.5
Residence		
Hostel	82	65.1
Home	44	34.9
Have you ever studied asthma in your course?		
Yes	109	86.5
No	17	13.5
Have you or anyone in your family ever suffered from asthma?		
Yes	41	32.5
No	85	67.5

Table 2 represents the frequency and percentage of correct answers given by students it represents that majority of students do not know about spacers and correct use of spacers (n=55). Many students know the importance of calling ambulance. Majority of students know the use of relievers inhalers (n=107). Study assessed that a majority of students (n=32, 25.4%) has a bad knowledge about use of spacer and holding of breath. A large number of students (n=102, 81%) know that without proper treatment mild asthma can become severe. Low number of students (n=33, 26.2%) has knowledge about use of corticosteroids.

Table 2: Percentage response correct answers given by students in individual variable (N=126).

S. No	Questions	Correct answers	
		Frequency	Percentage (%)
1	Spacers are NOT recommended when giving asthma first aid to children	55	43.7
2	An ambulance should still be called, when a child known to have asthma is able to breathe normally after reliever inhalers have been used.	87	69
3	When a person is having a sudden onset of asthma symptoms you should lay them on their side.	66	52.4
4	Wheeze, cough and difficulty in breathing are signs that a person needs to use reliever inhalers immediately.	107	84.9
5	Reliever inhalers are usually blue.	82	65.1
6	Administering high doses of reliever medicines to a child, who is having a sudden onset of asthma symptoms, is UNLIKELY to cause harm.	57	45.2

7	When administering asthma first aid it is important to ask the child to hold their breath after each puff of reliever medicine is delivered via the spacer.	26	20.6
8	When administering asthma first aid you should not waste time by shaking the reliever inhaler.	75	59.5
9	Reliever inhalers only contain anti-inflammatory medicine.	85	67.5
10	When administering asthma first aid, it is best to put 4 puffs of reliever medicine into the spacer at one time and ask the person to take 4 big breaths.	32	25.4
11	It is possible for the person with mild asthma to have severe asthma attack.	102	81
12	When a child has a sudden onset of asthma symptoms, they should drink lots of liquid such as water.	94	74.6
13	When asthma symptoms occur suddenly, taking inhaled corticosteroids will make the narrowed breathing tubes (airways) wider so it is easier to breath.	33	26.2
14	When administering asthma first aid, it is recommended to wait 4 minutes and assess the child after delivering the first 4 puffs of reliever medicine.	96	76.2

Table 3 represents that females gender has more knowledge about asthma first aid as compared to male with mean value of 8.13 but p value tells that gender group has not significant effect on knowledge. It was most surprising that 4th year students showed more knowledge than 5th year. Asthma in curriculum showed p-value 0.011, it showed that curriculum has significant effect on knowledge. But most significant effect showed by family history p-value was 0.001, it showed that students who or anyone in their family suffered with asthma has more knowledge of first aid. Family history has significant effect on knowledge

Table 3: Base line knowledge of demographic characteristics about asthma first aid and test score (N=126).

Sr. No	Demographic Characteristic	Frequency	Mean	Standard deviation	P-Value
1	Gender*				
	Male	55	7.76	1.895	0.353
	Female	71	8.13	1.851	
2	Age (years) **	40	7.3		
	18-22	84	7.85	1.829	0.228
	23-27	2	6.5	1.879	
	28-32			2.121	
3	Year of study*				
	4 th year	67	8.1	1.947	0.49
	5 th year	59	7.81	1.786	
4	Institute*				
	Mohi-ud-din Islamic Medical College	22	8.41	1.843	0.311
	Akson College of Pharmacy	104	7.87	1.873	
5	Residence*				
	Hostel	82	7.91	1.956	0.6
	Home	44	8.07	1.784	

6	Have you ever studied asthma in your course? *				
	Yes	109	8.13	1.886	0.011
	No	17	6.94	1.435	
7	Have you or anyone in your family ever suffered from asthma? *				
	Yes	41	8.73	1.937	0.001
	No	85	7.6	1.733	
*Mann Whitney test=significance level is <0.05					
**Kruskal Wallis test= significance level is < 0.05					

Table 4 shows that in case of gender, female have more knowledge as compared to males. However the *p value* shows that gender have no significant effect on knowledge. The *P value* of age group shows that age have no significant affect regarding to asthma first aid knowledge. The students of fourth year has better knowledge as compared to fifth year. *P-value* also suggests that institute have no affect regarding asthma first aid knowledge. Students living in hostels have more asthma first aid knowledge as compared to day scholars, *P value*=0.053 represents that curriculum somehow show significant effect on asthma first aid knowledge. The *P value*=0.003 indicates that students who have family history of asthma or suffering from asthma has more asthma first aid knowledge and show significant effect.

Table 4: Percentage overall knowledge based on demographic features (N=126).

S. No	Demographic Characteristics	Knowledge status			p-value
		good	moderate	poor	
1	Gender				0.487
	Male	11	37	7	
	Female	18	48	5	
2	Age (years)				0.237
	18-22	12	25	3	
	23-27	17	59	8	
	28-32	0	1	1	
3	Year of study				0.886
	4 th year	16	44	7	
	5 th year	13	41	5	
4	Institute				0.636
	Mohi-ud-din Islamic Medical College	6	15	1	
	Akson College of Pharmacy	23	70	11	
5	Residence				0.613
	Hostel	21	23	8	
	Home	8	32	4	
6	Have you ever studied asthma in your course?				0.053
	Yes	29	70	10	
	No	0	15	2	
7	Have you are anyone in your family ever suffered from asthma?				

Yes	17	21	3	0.003
No	12	64	9	

Table 5 represents the frequency and percentage of overall knowledge among the population. Majority of students (n=85, 67%) has moderate first aid knowledge about asthma emergency. Only 29 students have good knowledge about first aid management of asthma emergency.

Table 5: Distribution of subjects based on score in knowledge regarding asthma first aid.

Knowledge score	Frequency	Percentage (%)
Good knowledge (10-14)	29	23
Moderate knowledge (6-9)	85	67
Poor knowledge (1-5)	12	9.5

DISCUSSION

The results of current study indicated that overall asthma first aid knowledge is poor in students of Mirpur, Azad Jammu and Kashmir (AJ&K). These results were quite different from the findings obtained by *soo yy et al* in term of mean asthma first aid knowledge of childcare staff [13]. To the best of knowledge and extensive review of literature, it was found that the mean was more because in that literature childcare staff has been trained for provision of first aid in asthmatic patients.

In this study the knowledge of students was found to be moderate as compared to the study conducted by *Abbas et al* year in which mean asthma first aid knowledge was found less than 50% [7]. It was also found that in that survey students have taken asthma first aid training so due to training there was an improvement in first aid knowledge. The reliability of AFAKQ in AJ&K was also found less than the survey conducted by Mancuso *et al* where Cronbach *alpha value* was 0.71 [14]. Language and lacking of knowledge about asthma action plan is the major barrier in the execution of AFAKQ because it was developed in contrast to asthma action plan [12].

In the present survey, multiple factors influencing the asthma first aid knowledge among the students of pharmacy. Age has not significantly affected the knowledge of pharmacy students about the asthma first aid whereas in another survey conducted by Zuniga *et al*, it was found that age of participants significantly influenced the knowledge with *p value* 0.042 [15]. On the other side, gender has also not significantly influenced the asthma first aid knowledge in students but it was found that female were more aware than male about asthma first aid. Globally, the literacy rate in female is increasing that might be one of the factor about the awareness of asthma first aid knowledge among the female in AJ&K. Pakistan is a developing country and it was found by Razi *et al* that female are more equipped about asthma first aid as compared to male with *p value* 0.002 [16]. The level of education was also a factor that can influence the survey. As the survey was conducted in pharmacy institutes among the students of 4th and final professional so this factor was excluded but it was surprisingly found that the students of 4th professional were more expert in asthma first aid knowledge as compared to final professional. This might be due to the curriculum of Pharm-D approved by Pakistan Pharmacy Council in 2013 in which asthma is a topic of 4th professional and the major participants included in the survey were from 4th prof. Angelini *et al* proposed that educational level is a factor that significantly influenced the overall knowledge about asthma [17].

The students of Pharmacy institutes included in the survey were from Mohi-ud-Din medical college and Akson College of Pharmacy showed a mean of knowledge 7.87 and 8.41 respectively that was not significantly different because the students of both institutes studied the asthma in their curriculum. So, it was concluded by Sally *et al* in another survey that academic curriculum is a factor that can affect the level of knowledge in students. In the presented survey, academic curriculum has not significantly influenced the level of asthma first aid knowledge in students because it was included in their curriculum. A fact that was also explored in this study was that those participants who have experienced asthmatic episodes or have a family history of asthma had more knowledge and expertise to manage the attacks of asthma as compared to the number of students who have studied asthma in their curriculum (*p value* 0.003). The results of this survey were also supported by the finding of Razi *et al* [16].

A variety of parameters included in the current survey of asthma first aid knowledge. All the parameters predicted different results. The alarming results were found about the use of spacer, how much no of puffs of reliever medicine required by holding the spacer in child mouth and use of corticosteroids in asthma emergency as mentioned in item 7, 10 and 13 respectively. The results indicated that only 20.6% students know how to use spacer, 32% students have knowledge about the number of puffs of reliever medicine in a spacer and 33% students were know about the use of corticosteroids in asthma emergency.

In item 7,10 most of incorrect answer was due to lack of knowledge about spacer as well as the use of spacer and to hold breath for how much time and how much puffs of relievers are required which are clearly described in guidelines [18]. The educational system in AJ&K is probably responsible for the lacking in knowledge about the use of spacers. Asthma first aid knowledge and training should be a part of clerkship in final professional of Pharm-D curriculum. As the updated knowledge regarding to first aid of asthma as well as training to manage the respective disease to Pharm-D students can reduce the rate of mortality in community relevant to asthma emergency.

The data presented in this study showed that 23% students have good knowledge about asthma first aid whereas 9.5% participants have bad knowledge while remaining 67% students have moderate knowledge. The total score of all the participants was within 6-9 score. This survey indicate an alarming situation regarding the knowledge as well as training of students in pharmacy institutes of AJ&K that can be improved by delivering the up dated knowledge regarding to the first aid of asthma to the students, by arranging the lectures of pulmonologist and by arranging the workshops of asthma first aid awareness in the institutes. This practice will raise the confidence level of pharmacy students to implement their knowledge of asthma to manage the respiratory disorders for the betterment of the community of Azad state of Jammu and Kashmir.

CONCLUSION

The data presented in this survey indicated that there was moderate knowledge of asthma first aid among pharmacy students which is quite insufficient for health care providers. There should be good knowledge of asthma first aid among the pharmacy graduates who later on in practical life would prevent the mortality and exacerbation of morbidity associated with asthma.

Based on current study following recommendations have being made.

- Latest and up to dated guidelines should be taught to pharmacy students.
- More practical approaches should be encouraged for students to initiate first aid knowledge program.
- There is a dire need of large-scale educational program on management of acute asthma attack.

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CONFLICT OF INTEREST STATEMENT

All authors declare no conflict of interest.

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