

KNOWLEDGE, ATTITUDES AND PRACTICES OF ASTHMATIC CHILDREN'S CAREGIVERS FOLLOW UP IN CAIRO UNIVERSITY HOSPITAL OUTPATIENT CLINICS

By

Iman Aly Abd El-Aziz*, Nadia Mostafa Tawfik***, Nagwa Eid Sobhy Saad**,
Saeed Soliman***

*Pediatric, **Internal medicine, ***Family medicine departments, Faculty of
Medicine, Cairo University

Corresponding author: Iman Aly Abd El-Aziz

E-mail: iman.omar@kasralainy.edu.eg

ABSTRACT

In paediatric Asthma, involvement of caregivers is essential, therefore a satisfactory level of parental knowledge influences the effectiveness of treatment of bronchial asthma as an important part in prevention of exacerbations and complications the hypothesis of this research is that good knowledge about bronchial asthma among asthmatic children's caregivers can lead to better control of asthma.

Aim of this research: *to assess the knowledge, attitudes, and practices (KAP) among caregivers of asthmatic children and evaluate factors affecting level of KAP.*

Subject and Method: *This is a descriptive cross-sectional study conducted on 150 caregivers of asthmatic children for follow up in chest and allergy outpatient clinic in pediatric specialized hospital, Cairo University. They were interviewed to fill a predesigned structured questionnaire to cover basic demographic and personal data, criteria of asthma control and to assess their knowledge, attitudes, and practices regarding bronchial asthma. Then find the correlation between KAP score and the association between (KAP) and other factors like educational level, occupation of caregiver, level of asthma control and assessment of KAP score as a predictor of asthma control.*

Results: *The KAP score ranged from 31 to 73 with average of 53 ± 10 SD. The 50th percentile of KAP score was fifty-five and this was considered the cut-off value to categorize KAP score into good (above 50th percentile) which was present in 73 caregivers (48.7%) and poor (below 50th percentile) in 77 caregivers (51.3%). Good KAP was significantly correlated to occupation of the caregiver and level of asthma control (p value < 0.05). Also, caregivers with good KAP score, their children were 8 times more likely to be controlled than those with bad KAP score (OR=8.4, 95% CI=3.3-21.3).and caregivers who achieved universal education, their children were more likely to be controlled than those who are illiterate (OR=4.8, 95% CI= 1.0-22.8).*

Key words: Asthma; KAP score

INTRODUCTION

Asthma is a chronic disease, which can be controlled but not cured (**National Asthma Council Australia, 2015**), Optimal control of asthma demands that children and adolescents and their families track daily symptoms and recognize when treatment needs to be adjusted to prevent asthma exacerbations (**D'Auria, 2013**). In pediatric practice, involvement of caregivers is essential, since children cannot take care of their own health (**Barrett, 2013**). Therefore, caregiver's perception of their child's disease is a significant factor that can influence the acceptance of the disease, compliance to therapy and quality of life of an asthmatic patient regarding asthma (**Aalderen, 2012**). Proper management of bronchial asthma of children requires attention to the behaviour of mothers of asthmatic children and also to the underlying beliefs which drive that behaviour (**Amin et al., 2014**), therefore a satisfactory level of parental knowledge influences the effectiveness of treatment of bronchial asthma as an important part in prevention of exacerbations and complications (**Langier, 2013**). Considering this we will conduct a survey-based study aimed at collecting original

information regarding knowledge, attitude, and practices among caregivers of known asthmatic children, the hypothesis of this research is that good knowledge about bronchial asthma among asthmatic children's caregivers can lead to better control of asthma. The main aim of this research is to assess the knowledge, attitudes, and practices (KAP) among caregivers of asthmatic children in a specialized tertiary pediatric hospital and assess factors affecting level of KAP.

SUBJECT AND METHODS

This is a descriptive cross-sectional study conducted during the period from December 2015 to April 2016 on 150 caregivers of asthmatic children who are already diagnosed to have asthma for more than 6 months duration among patients attending chest and allergy outpatient clinic in paediatric specialized hospital, Cairo university for follow up with no history of other comorbidity.

Sample size:

The minimal sample size required for the study was calculated to be 139 caregivers according to an anticipated population proportion of 10%, and an absolute precision of 5% at

95% confidence interval (Al Binalli et al., 2010).

Method:

- A pilot study was performed to assess the study procedures and questionnaire on 15 cases to adjust the formula and assess the time needed for every patient and to simplify the questions and choices of questions, those pilot questionnaires data cases were not included in the result of this research.
- An informed written consent was taken after full explanation of nature of the study, benefits, and possible harm.
- In the illiterate caregiver, an informed oral consent was taken after full explanation of nature of the study, benefits and possible harm followed by written signature from a witness relative that the patient agreed to be involved this procedure was based on the WHO Research Ethics Review Committee report on obtaining informed consent (WHO ERC, 2010).
- The interview was conducted by filling a predesigned structured questionnaire after translating it to caregiver the questionnaire was composed of

the following sections: (Martínez & Sossa, 2005).

Section (1): Covers basic demographic and personal data.

Section (2): was for medical history questions.

Section (3): was composed of 17 questions testing caregiver's knowledge, attitudes, and practices regarding bronchial asthma (**Annex 1**).

No attempt was made to correct a wrong answer or response until the completion of interview. After the information was gathered, caregivers were provided with the correct knowledge of asthma.

Ethical and official approval:

The study design and methodology were approved by the scientific research committee of Departments of Pediatrics and family medicine, Faculty of Medicine, Cairo University. The study protocol was approved by the Local Ethics Committee of Scientific Research, Faculty of Medicine, Cairo University.

Statistical analysis of data:

The collected data were organized, tabulated, and organized and statistically analysed using Statistical Package for Social Sciences (SPSS).

Scoring system of the questionnaire:

Caregivers responded to each item on a Likert-type scale of five points with answers ranging from “strongly disagree” to “strongly agree.” Responses to each item were thus graded from 1 to 5 and greater weight was assigned to correct answers. That is, if a true statement obtained a correct response of “strongly agree” a score of 5 was assigned, scoring gradually decreased until a score of 1 was reached when that item received a response of “strongly

disagree.” In the same way, if the statement that was false received a response of “strongly disagree” a score of 5 was assigned, scoring gradually decreased until only 1 point was given for a response of “strongly agree.” Item scores were then added for a total score ranging from 17 to 85, with higher scores indicating greater knowledge of asthma (**Martínez & Sossa, 2005**). For interpretation of results, all P-values less than 0.05 were considered significant (**Awan & Munir, 2015**).

RESULTS

Table (1): Socio-demographic characteristics of the study population (150 caregiver)

Age: Mean \pm SD (Range)	5 \pm 2.4(2.0 – 12.0)
Number of siblings: Mean \pm SD (Range)	2 \pm 1(0-5)
Gender of the child	n (%)
• Male	76(50.7%)
• Female	74(49.3%)
Residence	n (%)
• Urban	87(58%)
• Rural	63(42%)
Relation of caregiver to child	n (%)
• Mother	149(99.3%)
• Father	1(0.7%)
Caregivers work	n (%)
• Non-working	122(81.3%)
• Professional	20(13.3%)
• Manual worker	8(5.3%)
Educational level	n (%)
• Illiterate	29(19.3%)
• Basic education	62(41.3%)
• Secondary	43(28.7%)
• Faculty/Institute	16(10.7%)

Table (1) shows that gender distribution was nearly equal, only one of the 150 caregivers was a father, and the rest were

mothers, and most of the mothers were non-working, and the average age of the children was 5 years.

Table (2): Medical data of the study population

Duration in years (Mean \pm SD)	2.4\pm1.7
Family history of asthma	n (%)
• Yes	56(37.3%)
• No	94(62.7%)
History of sibling affection	n (%)
• Yes	104(69.3%)
• No	46(30.7%)
Smoking at home	n (%)
• Yes	90(60%)
• No	60(40%)
History of allergic rhinitis	n (%)
• Yes	93(62%)
• No	57(38%)
Source of disease knowledge	n (%)
• Free governmental health service	126(84%)
• Private health facilities	24(16%)
Regular physician visit	n (%)
• Yes	94(62.7%)
• No	56(37.3%)

Table (2) shows that two thirds of the caregivers visit their physician regularly and 60% of

the children were exposed to smoking at home.

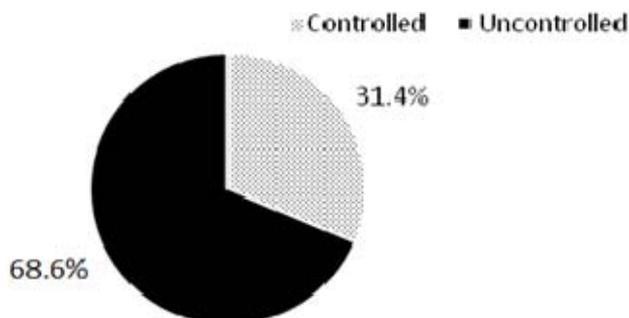


Figure (1): Percentage of Asthma Control Based on GINA Criteria (2016) in studied group

Figures (1) from the above figure almost 70% of children

were uncontrolled based on GINA criteria.

Table (3): Level of Knowledge, Attitudes, And Practices (KAP) Among Caregivers

The question	Correct answer %
1. It is best not to smoke or let anyone else smoke near a child who has asthma.	98.6 %
2. Some medications for asthma do not work unless they are administered everyday	88.6%
3. Asthmatic children might have attacks that are severe enough to require hospitalization in an intensive care unit or they might even die from an attack.	87.8%
4. When a child has an asthma attack it is best to go to the emergency room even if symptoms are mild.	61.2%
5. After a child's asthma attack, once the coughing is over, use of the inhaler and medications should stop.	58.5%
6. Children with asthma should use asthma medications only when they have symptoms (coughing, congestion, or wheezing)	58%
7. Inhalers can have an effect on the heart or damage it.	54%
8. Asthma attacks can be prevented if medications are taken even when there are no symptoms-between attacks.	50%
9. Inhaler use can lead to dependence or addiction.	48.6%
10. It is better to use inhalers directly without a holding chamber, so the medication can go more directly to the lungs.	46%
11. It is not good for children to use the inhaler for too long.	45.1%
12. If an asthmatic child gets the flu, you should apply the inhalers even if there is no coughing or wheezing.	27.1%
13. Children who have asthma should not participate in sports that make them run too much.	20%
14. Parents should ask a doctor to tell the school that an asthmatic child should not exercise or participate in physical education classes.	15.2%
15. The main cause of asthma is airway inflammation.	5.1%
16. Flu infections are the main cause or triggers of asthma attacks.	4.6%
17. If the parents of a child with asthma smoke outside the house, it will not affect the child.	0.7%

Table (3) The table above showed the percent of caregivers

responded appropriately to the questions to the nearest decimal.

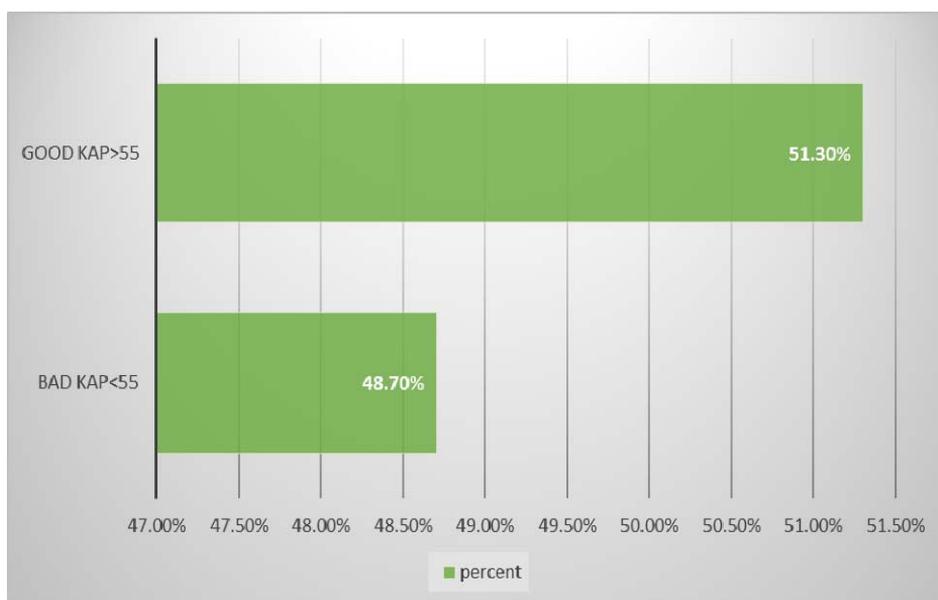


Figure (2): Percentage of Good and Bad KAP among Caregivers

Figure (2) The KAP scores were calculated according to methodology they ranged from 31 to 73 with average of 53 (± 10 SD). The 50th percentile of KAP score was fifty-five and this was considered the cut-off value to

categorize KAP score into good (above 50th percentile) which was for 73 caregivers (48.7%) and poor (below 50th percentile) which was for 77 caregivers (51.3%).

Table (4): Correlation Between (KAP) And Other Factors

	Bad KAP n (%)	Good KAP n (%)	P-value	X ²
Educational level of the caregiver				
Illiterate	19 (12.7%)	10(6.7%)	0.043	8.1
Basic education	33 (22%)	29(19.3%)		
Secondary	18 (12%)	25(16.7%)		
Faculty/institute	4 (2.7%)	12(8%)		
Regular physician visit				
No	36 (24%)	20(13.3%)	0.00	7.9
Yes	38(25.3%)	56(37.3%)		
Family history				
No	44(39.3%)	50(33.3%)	0.5	0.6

Yes	30(20%)	26(17.3%)		
History of sibling affection				
No	54(36%)	50(33.3%)	0.3	0.9
Yes	20 (13.3%)	23(17.3%)		
History of allergic rhinitis				
No	50(33.3%)	43(28.7%)	0.1	1.9
Yes	24(16%)	33(22%)		
Sex of child				
Male	35(23.3%)	41(27.3%)	0.5	0.6
Female	39(26%)	35(23.3%)		
History of exposure to smoking at home				
No	26(17.3%)	34(22.7%)	0.2	1.4
Yes	48(32%)	42(28%)		
Occupation of the caregiver				
Non-working	67(44.7%)	55(36.7%)	0.00	8.1
Working	7(4.7%)	21(14%)		
Source of disease knowledge				
Private health facilities	13(8.7%)	11(7.3%)	0.6	0.2
Free Government health services	61(40.7%)	65(43.3%)		
Level of control				
Controlled	8(5.3%)	39(26%)	0.00	28.5
Non controlled	66(44%)	37(24.7%)		

Table (4) shows that good KAP was positively associated to educational level, occupation of the caregiver and level of asthma

***Good KAP >55%, Bad KAP<55%**

control and this association was statistically significant (p value < 0.05).

Table (5): Predictors for the Level of Asthma Control

Predictor	Adjusted odds ratio	95% CI of odds Ratio	P value
KAP category			
• Bad	Reference		0.000
• Good	8.4	(21.3-3.3)	
Educational level			
• Illiterate	Reference		0.043
• Basic education	0.6	(2.0-0.1)	
• Secondary	0.7	(2.5-0.2)	
• Faculty/ Institute	4.8	(22.8-1.0)	

(Table 5) showed that caregivers with good KAP score, their children were 8 times more likely to be controlled than those with bad KAP score (OR=8.4, 95% CI=3.3-21.3), and

caregivers who achieved universal education, their children were more likely to be controlled than those who are illiterate (OR=4.8, 95% CI= 1.0-22.8).

DISCUSSION

In pediatric practice, involvement of caregivers is essential, since children cannot take care of their own health (Barrett, 2013). Therefore, caregiver's perception of their child's disease is a significant factor that can influence the acceptance of the disease, compliance to therapy and quality of life of an asthmatic patient regarding asthma (Aaldere, 2012).

All asthma management guidelines intensify the importance of the role of the family in managing childhood asthma. Reports in the literature

indicate that the severity of asthma among children can be controlled by proper management of the disease by the family (AlOtaibi and AlAteeq M., 2018). In the current study 99.3% of caregivers were mothers whose 19.3% of them were illiterate while 41.3% had basic education, noting that mother's attitude and practice were found to be associated with the the level of asthma control (Noureddin et al., 2019). We can assume that their level of education was associated with their level of knowledge. Furthermore, mothers have higher affectionate parenting attitudes than fathers; children tend to form

a high degree of intimacy with their mothers who play an essential role in helping children to formulate new healthy lifestyles and behaviors **(Kim et al., 2021)**. The unsatisfactory educational level can be explained by the site of the study being conducted in Cairo University hospitals outpatient clinic which is a free-of-charge health care facility attracting patients from lower socio-economic and educational levels.

In the current study, the percentage of uncontrolled children was 68.8% which is quietly high percentage, KAP was positively correlated to level of asthma control (p value < 0.05) as caregivers' knowledge about chronic conditions such as asthma is a key factor for better management and control **(AlOtaibi and AlAteeq M., 2018)**. Those findings were nearly similar to that in the study of **(Binsaeed et al., 2014)** which was performed on 158 asthmatic children's caregivers and the percentage of uncontrolled patients was 59.3% which was related to bad KAP of care givers in addition to other factors like family income and number of siblings. An old large population epidemiological surveys and clinical asthma studies of more than 20,000 children in developed

countries suggested that many children with asthma are not being managed in accordance with guideline recommendations, and asthma management practices vary widely between countries. Asthma control falls short of guideline recommendations in large proportions of children with asthma worldwide. That study signifies also the role of physician as routine review at regular intervals scheduled follow-up visits for asthma have been associated with an increased likelihood of using anti-inflammatory medication. **(Gustafsson et al., 2006)**.

Like this study, Silva & Barros in Portugal found that almost all the caregivers know that smoking at home can make a child's asthma worse **(Silva & Barros, 2013)** and in another study of **(Cabelloa et al., 2013)** conducted on 344 parents in Spain ,95% of parents know the same information.

Silva & Barros in Portugal noted that 84% of the caregivers know that some asthma medications do not work unless they are taken every day **(Silva & Barros, 2013)**. Our results were nearly similar to the mentioned studies in knowledge but care giver attitude toward applying the knowledge can be affected by cultural issues and peer pressure.

The current study showed that 53% of the caregivers know that inhaler use does not affect or damage the heart which is slightly similar to the study of **(Cabelloa et al., 2013)** in which 66% of the caregivers know the same information.

This study showed that only 5% of the caregivers know that asthma is due to inflammation in the lungs, in contrast to the study **(Silva & Barros, 2013)** in which 70% of the caregivers know the same information. This May be due to lack of information about the non-contagious diseases like asthma in educational curriculum of some developing countries **(Noureddin et al., 2019)**.

This study shows that good KAP was positively associated to occupation of the caregiver and this association was statistically significant as working caregiver may have better knowledge, shared experiences obtained from work environment, in contrast to our study of **(Idriss, 2003)** which was conducted on 240 asthmatic children at Khartoum children's Emergency Hospital, Sudan in which the working mothers showed no difference in their knowledge and attitude than the non –working mothers, except in their attitude towards management

and in practice towards the warning signs and management.

In this study there is statistically significant correlation between level of KAP and the educational level of the caregivers in like the study of **(Silva & Barros, 2013)** which was conducted on 50 asthmatic children in Portugal in which there was a significant positive correlation between asthma knowledge, and education level of parents. In another study **(Idriss, 2003)** in Sudan the level of education of mothers affected their knowledge and attitude for triggering factors and asthma management. Further support by a study by **(Zhao et al., 2013)** conducted in China on 2960 parents of asthmatic children that showed that parent education has positive association with KAP score.

In contrast to the current study, the study of **(Ramesh et al., 2014)** that was conducted on 40 mothers of asthmatic children in South India in which There was no statistically significant difference between the level of knowledge and improved maternal educational status may be due to the availability of society derived knowledge in countries with large population.

This study showed that caregivers with good KAP score, their children were eight times more likely to be controlled than those with bad KAP score supported by the study of (Binsaeed et al., 2014) which showed the same correlation.

Study limitation:

- Large number of illiterate patients who needed assistant in reading the form and recording their responses.
- Patients are not representing multiple geographical areas in Egypt.

CONCLUSION

This study showed that 48.7% of the caregivers had bad KAP score regarding childhood bronchial asthma and that good KAP was positively associated to occupation of the caregiver and level of asthma control, and that children of caregivers with good KAP score, were eight times more likely to be controlled than those with bad KAP score also children of caregivers who achieved universal education were more likely to be controlled than those who are illiterate.

RECOMMENDATIONS

Regular follow up visit of asthmatic patients should be encouraged with repeated stress on treatment guidelines with practical

practice on medication use achieved by family physicians and pediatricians' health intervention through hospital-based awareness campaigns including simple information about asthma pathology, medications, and environmental control. For more informative results, studies with larger number and wider geographical distribution are recommended.

REFERENCES

1. **Aalderen, W. M. (2012):** Childhood Asthma: Diagnosis and Treatment. Scientifica, Volume 2012, Article ID 674204. Retrieved from.
2. **Al-Binali, A. M., Mahfouz, A. A., Al-Fifi, S., Naser, S. M., & Al-Gelban, K. S. (2010):** Asthma knowledge and behaviours among mothers of asthmatic children in Aseer, south-west Saudi Arabia. Eastern Mediterranean health journal = La revue de sante de la Mediterranee orientale = al-Majallah al-sihhiyah li-sharq al-mutawassit, 16(11), 1153–1158.
3. **AlOtaibi, E., & AlAteeq, M. (2018):** Knowledge and practice of parents and guardians about childhood asthma at King Abdulaziz Medical City for National Guard, Riyadh, Saudi Arabia. Risk management and healthcare policy, 11, 67–75.
4. **Amin, G. M., Elsamman, G. A,**

- & Hussein, H. A. (2014):** Knowledge of Mothers of Children with Bronchial Asthma, *Med. J. Cairo Univ.* 82(2), 63–70.
5. **Awan, A. S., & Munir, S. S. (2015):** Asthmatic children; knowledge, attitude, and practices among caregivers. *Professional Med J*, 22(5), 130–136.
6. **Barrett, J. S. (2013):** Paediatric models in motion: requirements for model-based decision support at the bedside, *British Journal of Clinical Pharmacology*, 79(1), 85–96.
7. **Binsaeed, A. A., Torchyan, A. A., Alsadhan, A. A., Almidani, G. M., Alsubaie, A. A., Aldakhail, A. A., ... Alsaadi, M. M. (2014):** Determinants of asthma control among children in Saudi Arabia. *Journal of Asthma*, 0903(February 2013), 435–439.
8. **Cabelloa, M., Ocejasetienb, E., Higueraa, L. G., Caberoa, M. J., Belmontea, E. P., & Gómez-acebob, I. (2013):** Assessment of parental asthma knowledge with the Newcastle Asthma Knowledge Questionnaire. *Pediatrics de Atencion Primaria*, 15, 117–126.
9. **D’Auria, J. P. (2013):** All About Asthma: Top Resources for Children, Adolescents, and Their Families. *Journal of Pediatric Health Care*, 27(4), e39–e42.
10. **Gustafsson, P. M., Watson, L., Davis, K. J., & Rabe, K. F. (2006):** Poor asthma control in children: evidence from epidemiological surveys and implications for clinical practice. *Journal Compilation*, 4(March), 321–334.
<http://doi.org/10.1111/j.1368-5031.2005.00798>.
11. **Idriss, A. A. (2003):** Effect of mother’s knowledge, attitudes and practice on asthmatic children attending Khartoum Children Emergency Hospital. Khartoum University. (Doctoral dissertation, UOFK).
12. **Kim, J., & Oh, S. (2021):** The relationship between mothers' knowledge and practice level of cough etiquette and their children's practice level in South Korea. *Child health nursing research*, 27(4), 385–394.
13. **Langier, K. (2013):** Knowledge of parents or guardians about children’s bronchial asthma. Participation of a nurse in health education of parents or guardians and a sick child. *Studia Medyczne*, 29, 171–176.
14. **Martínez, C. R., & Sossa, M. P. (2005):** Validation of an Asthma Knowledge Questionnaire for Use with Parents or Guardians of Children with Asthma. *Arch Bronconeumol*, 41(8), 419–424.
15. **National Asthma Council Australia. (2015):** Australian Asthma Management Handbook. National asthma council Australia.

16. **Ramesh, N., Nisha, C., & Jose, S. K. (2014):** Knowledge Regarding Childhood Asthma among Mothers of Asthmatic Children Presenting to a Selected Hospital, Bangalore, South India. *National Journal of Research in Community Medicine*, 3(3), 224–229.
17. **Silva, C. M., & Barros, L. (2013):** Asthma knowledge, subjective assessment of severity and symptom perception in parents of children with asthma. *The Journal of Asthma: Official Journal of the Association for the Care of Asthma*, 50(9), 1002–9.
18. **Zhao, J., Shen, K., Xiang, L., Zhang, G., Xie, M., Bai, J., & Chen, Q. (2013):** The knowledge, attitudes, and practices of parents of children with asthma in twenty-nine cities of China: a multi-centre study. *BMC Pediatrics*, 13(1), 1.
19. **Noureddin, A. A., Shaaban, K. M., Mohamed, S., Abdalla, A. A., Mahmoud, A., & Salman, M. (2019):** The knowledge attitude and practice (KAP) of mothers of asthmatic children toward asthma in Khartoum asthma clinics. *Scientific reports*, 9(1), 12120.
20. **2016-GINA.pdf (ginasthma.org)**