

## Assessment of knowledge and attitude of adult asthmatics towards asthma and impact of family support on adherence to the use of inhalers

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### Abstract

**Background:** The increasing prevalence of asthma and failure of control are sources of concern in most parts of the world. A review of literature has shown that factors that affect patients' adherence to the use of inhalers included level of literacy, attitudes towards asthma management, knowledge about asthma, deficiencies in patients knowledge and control of symptoms.

**Aims:** The aim of this study was to assess the knowledge and attitude of adult asthmatics presenting to University College Hospital Ibadan towards asthma and the impact of family support on adherence to the use of inhalers.

**Methods:** This was a cross-sectional study conducted from 1st of April 2010 to 31st of March 2011. The study population involved 355 adults aged between 18 years and 55 years with an established diagnosis of asthma already on treatment and follow up.

**Results:** More than half of the respondents 205 (57.7%) had poor knowledge of asthma and its management. Two hundred and twenty one (62.3%) of the respondents had poor attitude towards asthma. Majority of the respondents 332 (93.5%) had good family support. A higher proportion of respondents with good knowledge of asthma, good attitude toward asthma and good family support had good adherence to the use of inhalers and consequently good control of asthma.

**Conclusion:** This study showed that the majority of the respondents had poor knowledge of asthma, poor attitude towards asthma and good family support.

**Keywords;** Knowledge, attitude, asthmatics, family support, adherence, inhalers

### Résumé

**Contexte:** La prévalence croissante de l'asthme et le manque du contrôle sont des sources de préoccupation dans la plupart des régions du monde.

Une revue de la littérature a montré que les facteurs qui influent sur l'adhésion des patients à l'utilisation des inhalateurs incluent le niveau d'alphabétisation, les attitudes envers la gestion de l'asthme, les connaissances sur l'asthme, les manques de connaissance et du contrôle des symptômes chez les patients.

**Objectifs:** L'objectif de cette étude était d'évaluer les connaissances et l'attitude des adultes asthmatiques présentant au Collège Hospitalier Universitaire d'Ibadan vers l'asthme et l'impact du soutien familial sur l'adhésion à l'utilisation des inhalateurs.

**Méthodes:** Ceci fut une étude transversale réalisée à partir du 1<sup>er</sup> Avril 2010 au 31 Mars 2011. La population étudiée impliquait 355 adultes âgés entre 18 ans et 55 ans avec un diagnostic établi de l'asthme déjà sur traitement et suivi.

**Résultats:** Plus de la moitié des répondants 205 (57,7%) avaient une mauvaise connaissance de l'asthme et de sa gestion. Deux cent vingt et un (62,3%) des répondants avaient une mauvaise attitude à l'égard de l'asthme. La majorité des répondants 332 (93,5%) avait un bon soutien de la famille. Une plus grande proportion de répondants ayant une bonne connaissance de l'asthme, une bonne attitude envers l'asthme et un bon soutien de famille avait une bonne adhérence à l'utilisation des inhalateurs et par conséquent un bon contrôle de l'asthme.

**Conclusion:** Cette étude a montré que la majorité des répondants avaient une mauvaise connaissance de l'asthme, une mauvaise attitude envers l'asthme et un bon soutien familial.

**Mots clés;** Connaissance, attitude, asthmatiques, soutien familial, l'adhérence, les inhalateurs

### Introduction

Asthma is a chronic inflammatory disorder of the airways that is characterized clinically by recurrent episodes of wheezing, dyspnoea, chest tightness, and coughing [1, 2]. According to a study conducted in the United States of America (USA), family history of asthma is an essential risk factor for asthma and that familial risk evaluations can help establish people at highest risk for developing asthma [3]. Adherence to asthma treatment and asthma morbidity are considerably improved when asthma education is delivered in combination with pharmacotherapy [4].



The prevalence of both diagnosed symptomatic asthma and anti-asthmatic drugs were reported to have increased according to Janson *et al* in an international cohort study conducted in Europe [5]. An Iranian study reported that level of literacy, attitudes towards asthma management, knowledge about asthma and control of symptoms were among the factors that affect adherence to therapy [6]. In a study carried out in Trinidad it was discovered that there were deficiencies in patients knowledge, inhaler techniques and prescribed relief therapy [7]. Heidi reported in a study done in USA that health beliefs and attitude towards asthma could have significant influence over adherence behaviours with prescribed asthma treatment regimen [8].

Most patients considered that they were less involved in treatment decision making than they would have preferred. Respondents identified patient related, provider related, and organizational barriers to participation in treatment [9]. The results of a South African study showed a positive association between asthma control and quality of life of asthmatics. Vital gaps in knowledge were also identified [10].

Stephen and co-workers found that patients often understate their symptoms, were able to endure poor symptom control, have low prospect of therapy, possess inadequate knowledge of correct drug usage, and show inadequate adherence to therapy [11]. In a study done by Demilaray in Turkey, the results showed that asthmatics did not have enough facts about asthma and additional information about asthma increased their knowledge and correct inhaler usage [12].

Researchers in Vancouver, Canada reported that asthma symptoms were greater among children with less family support and who lived in bad neighbour-hoods. The more difficult localities were associated with greater rates of child smoking and exposure to smoke which was associated with poorer asthma outcomes [13, 14]. The results of a systematic review comparing children undergoing family therapy in combination with asthma medications, with children taking asthma medications only showed that family therapy is a useful adjunct to drugs [15].

The aim of this study was to assess the knowledge and attitude of adult asthmatics presenting to University College Hospital (UCH) Ibadan towards bronchial asthma and impact of family support on adherence to the use of inhalers. The information obtained from this study will help in future planning of management protocols.

## Materials and method

A cross-sectional study was conducted from 1st of April 2010 to 31st of March 2011 at the Medical Outpatient Clinic of the University College Hospital (UCH), Ibadan, Oyo State. Three hundred and fifty five adults between the ages of 18 and 55 years with an established diagnosis of asthma and on inhaler therapy and follow up were recruited for the study.

A simple random sampling technique with computer generated random numbers was used for selection. Asthma clinic holds weekly at the Medical Outpatient Clinic. An average of 74 patients were seen per month at the asthma clinic during the period. Random numbers within the range of the number of registered asthmatics was generated using the random number function of Microsoft Excel 2007. (The soft-ware was opened, equal to (=) and r were clicked on the computer. Then RANDBETWEEN was clicked twice and randomisation was done between 1 and 15). On each clinic day eight patients with serial numbers corresponding to the random numbers generated were selected for recruitment until the calculated sample size of 355 was achieved.

Inclusion criteria were consenting patients 18 to 55years old, patients with established diagnosis of asthma that demonstrated 12-15% reversibility and history of the use of inhalers for more than 12 months.

Exclusion criteria included patients with other lung diseases like tuberculosis and bronchiectasis, chronic obstructive airway disease and patients with chronic illness that may affect their functional status (such as ischaemic heart disease or cardiac failure).

Sample size was estimated using the formula  $n = (Z\alpha + Z\beta)^2 pq/d^2$  [16] Quoting prevalence rate of asthma, 13% for Nigeria according to the International Study of Asthma and Allergies in Childhood. [17]

$n$  = minimum sample size,  $Z\alpha$  = the standard normal deviate, usually set at 1.96, which corresponds to the 95% confidence level.  $p$  = the prevalence rate of asthma for Nigeria = 13%.  $q = 1.0 - p$ ,  $d$  = degree of accuracy desired usually set at 0.05.  $\beta$  = 20%, Power is 80%  $n = (1.96 + 0.84)^2 (0.13) (1 - 0.13) / (0.05)^2 = 355$ . For the purpose of this study, a minimum of 355 patients were recruited

## Data collection

A structured questionnaire was administered to consenting subjects. A preliminary (pilot) study was done on 40 patients which involved the entire research procedure to identify potential problems and amendments were done where necessary.



A modified Asthma Knowledge Questionnaire-Chicago Community Asthma Survey-32 (CCAS-32) was used to determine respondents' knowledge, attitude and beliefs about asthma. It is a validated instrument used in previous studies in South Africa [10] and United States of America [18]. It is used for patients above 18 years and the Cronbach alpha is 0.869.

The Perceived Social Support – Family Scale was used to assess family support of the patients. It is a validated instrument used in previous studies in Nigeria [19] and United States of America [20]. Its Cronbach alpha is 0.9.

Adult Asthma Therapy Assessment Questionnaire was used to measure asthma therapy and control. This is a twenty-item questionnaire that measures asthma therapy and control with the response options “yes”, “no” and “unsure”. It has been validated and used in a previous study in United States of America [21]. The Cronbach alpha is 0.85.

Knowledge of the respondents was assessed on a scale of 2-21 points. Scores were totalled and categorized into two groups. Statistical analysis showed the mean score to be 12 points. Patients with knowledge scores less than 12 were classified as having poor knowledge while those with knowledge scores of 12 and above were classified as having good knowledge.

Attitude was assessed on a five point Likerts' scale with total scores ranging between 27-55 points. Scores were totalled and categorized into two groups. Statistical analysis showed the mean score to be 43 points. Respondents with attitude scores of less than 43 were classified as having poor attitude while those with attitude score of 43 and above were classified as having good attitude.

Family support was assessed on a scale of 10-42 points. Scores were also totalled and categorized into two groups. Statistical analysis showed the mean score to be 29 points. Respondents with family support scores of less than 29 were classified as having poor family support while those with scores of 29 and above were classified as having good family support.

Asthma control was assessed on a scale of 3-23 by the use of the spirometer readings and asking the patients the following questions. “In the past four weeks, did you feel that your asthma was well controlled?”, “In the past four weeks, did you miss any work, school or normal activity because of your asthma?”, “In the past four weeks did your asthma wake you up at night?”, “In the past twelve months, did you miss any work, school or normal activity because of your asthma?”, “In the past twelve

months, did your asthma wake you up at night?”, “In the past four weeks, what was the highest number of puffs a day you took of this (SABA) inhaler?”, “In the past twelve months, on days you use an inhaler (SABA) for quick relief, how many puffs a day do you usually take?”

FEV1% was used to classify patients into three asthma categories of severity. Patients with FEV1% greater than 80% were classified as having mild asthma, those with FEV1% between 60%-80% were classified as having moderate asthma while those with FEV1% less than 60% were classified as having severe asthma.

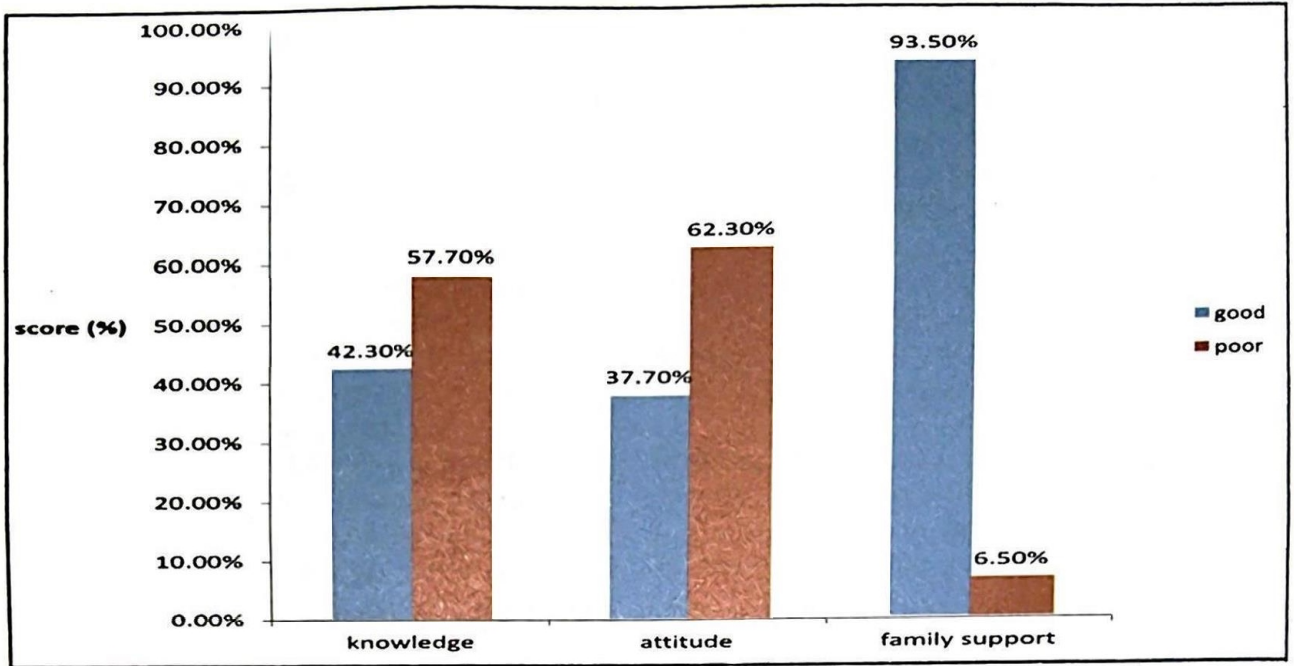
Patients with mild asthma (FEV1% > 80%) were given a score of three, those with moderate (FEV1% 60%-80%) were given a score of two while those with severe asthma (FEV1 % < 60%) were given a score of one. Patients using more than 12 puffs of inhaler a day scored one point, those using 9-12 puffs of inhaler per day were scored two points, 5-8 puffs was scored three points, 1-4 puffs was scored four points and no puffs scored five points. Scores were totalled and categorized into two groups. Statistical analysis showed the mean score to be 12 points. Patients with an asthma control score less than 12 points were categorized as having poor asthma control while those with an asthma control score of 12 and above were categorized as having good asthma control.

Adherence was assessed on a scale of 1-13 by asking the following questions. “In the past twelve months, have you at any time taken medicine(s) for your asthma?”, “Do you believe you are able to take your asthma medicine(s) as directed?”, “Do you use an inhaler for quick relief from asthma symptoms?”, “What best described how you take your controller medicine?” Individual scores were totalled and categorized into two groups. Statistical analysis showed the mean score to be seven points. Patients with an adherence score less than seven were categorized as having poor adherence while those with scores of seven and above were classified as having good adherence.

The data was analyzed using SPSS (Statistical Package for Social Sciences) software version 15. Frequency tables and charts were used for relevant variables. Chi-square test was used for bivariate analyses to test the significance of the association between categorical variables. A p-value < 0.05 was considered to indicate statistical significance.

The study was approved by the Ethical Review Committee of the University College Hospital, Ibadan, Nigeria.





**Fig.1:** Distribution of respondents' knowledge, attitude and family support scores

**Results**

Figure 1 shows the distribution of respondents' knowledge, attitude and family support scores. More than half of the respondents 205(57.7%) had poor knowledge of asthma and its management while less than half 150(42.3%) had good knowledge of asthma and its management. Two hundred and twenty one (62.3%) of the respondents had poor attitude towards asthma while 134(37.7%) had good attitude towards asthma. Majority of the respondents 332(93.5%) had good family support.

adherence to drug. A slightly higher proportion of respondents with good knowledge of asthma had good adherence (51.3%) compared to those with poor knowledge of asthma (50.7%) (p=0.911). Also, a slightly higher proportion of respondents with good attitude towards asthma treatment and management had good adherence (53.0%) compared to those with poor attitude (49.8%) (p=0.557). A slightly higher proportion of those with good family support also had good adherence (51.5%) compared to those with

**Table 1:** Association of drug adherence with level of education, knowledge, attitude and family support characteristics of respondents

<i>Educational level</i>				
No formal education	31 (57.4)	23 (42.6)	1.085	0.781
Primary education	31 (49.2)	32 (50.8)		
Secondary education	32 (49.2)	33 (50.8)		
Tertiary education	87 (50.3)	86 (49.7)		
<i>Knowledge</i>				
Good	77 (51.3)	73 (48.7)	0.013	0.911
Poor	104 (50.7)	101 (49.3)		
<i>Attitude</i>				
Good	71 (53.0)	63 (47.0)	0.344	0.557
Poor	110 (49.8)	111 (50.2)		
<i>Family support</i>				
Good	171 (51.5)	13 (48.5)	0.555	0.456
Poor	10 (43.5)	161 (56.5)		

Table 1 shows the association between knowledge, attitude and family support with

poor family support (43.5%) (p=0.456). These were however not statistically significant.



**Table 2:** Association between asthma control with educational level, knowledge, attitude and family support characteristics of respondents

<i>Educational level</i>				
No formal education	34 (63.0)	20 (37.0)	1.978	0.577
Primary education	33 (58.9)	23 (41.1)		
Secondary education	49 (68.1)	23 (31.9)		
Tertiary education	118 (68.2)	55 (31.8)		
<i>Knowledge</i>				
Good	110 (73.3)	40 (26.7)	6.362	0.012*
Poor	124 (60.5)	81 (39.5)		
<i>Attitude</i>				
Good	89 (66.4)	45 (33.6)	0.024	0.876
Poor	145 (65.6)	76 (34.4)		
<i>Family support</i>				
Good	221 (66.6)	111 (33.4)	0.966	0.326
Poor	13 (56.5)	10 (43.5)		

\*Significant at 5% level of significance

Table 2 shows the bivariate analysis of knowledge, attitude and family support with asthma control. A higher proportion of respondents with good knowledge of asthma had good asthma control (73.3%) compared to those with poor knowledge of asthma (60.5%). This was significant at  $p=0.012$ . Respondents with good attitude towards asthma had a slightly higher proportion with good asthma control (66.4%) compared to those with poor attitude towards asthma (65.6%), ( $p=0.258$ ). Also, respondents with good family support had a higher proportion with good asthma control (66.6%) compared to those with poor family support (56.5%), ( $p=0.326$ ).

### Discussion

In this study it was found that more than half of the respondents had poor knowledge of asthma which is similar to what was reported by Stephen and colleagues that patients have inadequate knowledge of aetiology of asthma and its management [11]. This was also supported by researchers in Trinidad who reported that there were deficiencies in patients' knowledge of asthma and its management [7]. This was also corroborated by a study conducted in Lagos in which a high proportion of respondents were found to have poor knowledge of "preventer" and "reliever" medications [22]. However, this is contrary to what was found in a South African study which reported that a high proportion of respondents had good knowledge of asthma [10].

A study conducted in Turkey suggested that asthmatic patients did not have sufficient information about their disease and that additional information increased their knowledge of the disease and

improved their inhaler techniques [12]. A high proportion of respondents with good knowledge of asthma had good adherence to the use of inhalers according to this study. It is expected that an asthmatic with good knowledge of asthma should have a better adherence to therapy. This study also showed that good knowledge of asthma does lead to good asthmatic control which is contrary to what was reported in the South African study that asthma knowledge is not a pre-requisite for good control of asthma [10]. A little bit above half of the respondents showed good attitude towards asthma and its management from this study. A high proportion of those who had good attitude towards asthma had good adherence to the use of inhalers. This was supported by the results of an Iranian study by Tavasoli and colleagues [6].

This study also showed that respondents who had good attitude had better control of asthma than those who had poor attitude towards asthma. It was reported in a study conducted in USA that health beliefs and attitude towards asthma could affect adherence to asthma treatment regimen [7]. The findings of this study about knowledge of asthma and its management among the respondents and attitude towards asthma was corroborated by Tavasoli and colleagues in an Iranian study which reported that attitude toward asthma and knowledge of asthma were some of the factors that influence adherence to the use of inhalers [6]. Scherer and Bruce reported that attitude towards asthma and self-efficacy rather than knowledge had the most significant impact on compliance with use of drugs [23].

The study has shown that there is a positive association between family support and adherence



to the use of inhalers. Yorke and Shuldham reported that family support is important in management of patients with asthma and is an adjunct to pharmacotherapy [15]. This was corroborated by the results of a study conducted in Vancouver, Canada which showed that asthma symptoms were greater among children who reported less family support and lived in worse neighbourhoods; lung function was also poorer among children who reported less family support [14]. The family gave moral and emotional support to the respondents, also advised, shared the interest and sought out the companionships of the respondents.

### Conclusion

The majority of the respondents had poor knowledge of asthma and there was a significant association between knowledge and control of asthma. The greater the knowledge of asthma the better the control. A higher proportion of respondents with good attitude towards asthma and its management had good control of asthma. Majority of the respondents who had good family support also had good adherence to the use of inhalers. This study showed that the majority of the respondents had poor knowledge of asthma, poor attitude towards asthma and good family support.

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