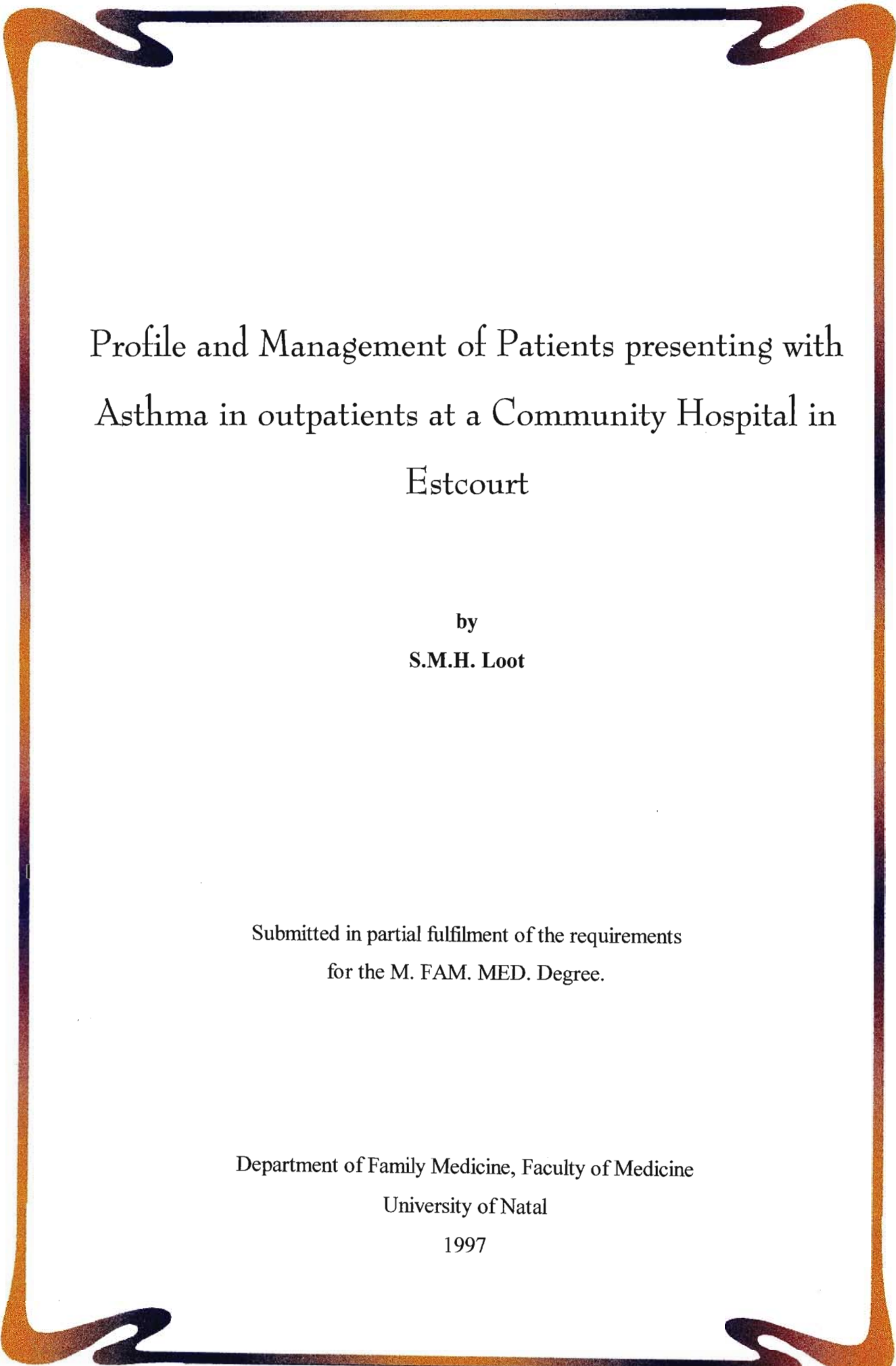


*Profile and Management of Patients presenting  
with Asthma in outpatients at a Community  
Hospital in Estcourt*

by  
S.M.H. Loot

Supervisor : Dr B. J. Pillay

*This is the original work of the author and has not been submitted for publication.*



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Submitted in partial fulfilment of the requirements  
for the M. FAM. MED. Degree.

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## QUOTATION

An idea isn't worth much until a man is found who has  
the energy and ability to make it work.

William Feather (*The Business of Life*)



## **SUMMARY**

Much work has been done in urban areas to implement national guidelines in the treatment of asthma. There is however a dearth of studies done in rural and semi-rural areas. For this reason this study on the profile and management of patients presenting with asthma at a community hospital was undertaken in Estcourt.

The study involved interviewing patients presenting with asthma at an outpatient clinic. The questionnaire and patient records were used. The questionnaire was designed by the author to detect precipitating factors leading to exacerbation of asthma and to assess whether national guidelines were been followed by doctors treating these patients.

A hundred patients were interviewed. Eighty seven percent of these patients' treatments were not in keeping with national guidelines. In only 11% of these patients had a doctor used a peak flow meter in the assessment of the patient. Three percent of patients had an understanding of their disease because of relatives who were medical workers.

Patients complained that their illness was not explained to them and they were not shown methods of coping with an acute attack. In many cases patients and health workers did not appreciate the seriousness of an attack. This is demonstrated by the study which showed seventy four percent of participants did not receive prophylactic treatment such as inhaled steroids or sodium chromoglycate although all were chronic sufferers of asthma. Of the thirty one patients admitted in 1997, twenty five had presented to outpatients in 1997 in the same month of their admission. This proves that the seriousness of their condition was not detected by the health workers attending to them.

Recommendations are made in keeping with national guidelines to improve services in the Estcourt area in order to reduce morbidity and mortality in patients suffering from asthma and to increase patient satisfaction.

## **Chapter One**

### **INTRODUCTION**

Asthma is a disease of airways that is characterised by increasing responsiveness of the tracheobronchial tree to a widespread narrowing of the air passages, which may be relieved spontaneously or as a result of therapy. Clinically it is characterised by paroxysms of dyspnoea, cough and wheezing. It is an episodic disease interspersed with symptom free periods<sup>1</sup>.

According to a study of 2000 patients in an English based general practice one would expect in a year, two new cases of asthma, forty persons with chronic asthma (i.e. with 60 to 80 attacks in total), and two hundred patients with a history suggestive of asthma<sup>2</sup>.

Asthma affects all age groups and is the most common cause of long term respiratory disease in children. Its occurrence has increased in most Western countries in the last twenty years<sup>13</sup>. The prevalence of asthma in the elderly is between 6-8%<sup>21</sup>. Luce<sup>21</sup> states that studies in the USA suggest a prevalence of 8-10% in children, 5% in adolescence and 7.9% in those over 70 years of age.

Asthma causes considerable morbidity as shown by Erlich and Weinberg<sup>41</sup> in their studies indicated a rise in admission for children suffering from asthma from 1978-1984 and a steep rise in admissions in 1987. Walzl<sup>16</sup> reports an increasing trend in severity of asthma worldwide.

Asthma causes 1500-2000 deaths in the U.K. annually<sup>40</sup>. More than 80% of these deaths were associated with potentially preventable factors.

The above shows the seriousness of the condition yet morbidity <sup>4</sup> and mortality <sup>5,16</sup> continue to rise in spite of astounding advances in the understanding <sup>8,11,12</sup> and treatment of asthma<sup>6</sup>. Suitable therapy <sup>17</sup> and education of patients <sup>22,23,28</sup> appear to be the best way of reducing morbidity and mortality.

A combined strategy involving doctor, nurse and patient and their family appears to be the effective means of coping with this disease. The seriousness of the condition <sup>4,6</sup> demands a concerted effort to educate the patient and minimise the complications that may occur.

The literature on treatment of asthma shows studies on protocols on treating asthma in tertiary hospital settings <sup>9,10,13,16,18</sup>, self management plans <sup>22,23,29</sup> and the pathology of asthma <sup>12</sup> but not on the profile and management of patients suffering with asthma in a community hospital setting. The Khaylitsha Community Health Centre study had demonstrated that national guidelines were not been followed <sup>45</sup>. Lalloo<sup>17</sup> echoes the the Khaylitsha Centre results and shows that health workers failed to prescribe appropriate treatment leading to deterioration in patients suffering from asthma.

A leading textbook of medicine <sup>3</sup> states, "It is becoming evident that asthma is a condition, like several other chronic disorders, where it is appropriate that patients take a leading role in managing their own illness. This involves a thorough understanding of the need for regular therapy, self checking of inhaler technique and self monitoring". Brandt and Muntingh <sup>7</sup> showed that education of patients about their asthma improved their response to their illness in spite of the fact that they came from a poor socioeconomic background.

This study was undertaken about treatment of people suffering from asthma visiting a community hospital for their treatment in Estcourt to ascertain if national guidelines were being followed and if a combined strategy involving health workers, patients and their families were being implemented. The failure of health workers to follow national guidelines as shown by the Khaylitsha study <sup>45</sup> was also demonstrated in this study .

## **Chapter Two**

### **LITERATURE SURVEY**

Robinson and Durham<sup>12</sup> define asthma as comprising of reversible obstruction of airways and airway inflammation with eosinophils and bronchial hyper-responsiveness increased broncho-constriction response to non-specific triggers such as cold air or histamine. Asthma should be diagnosed by demonstrating reversible airflow limitation demonstrated by inhaled bronchodilators in a clinic or home peak flow records. A careful occupational history is also important.

Asthma causes considerable morbidity. Jones et al<sup>4</sup> in a study of patients suffering with asthma in Southampton, England found that 51% were waking at night with wheeze, 49% were wheezy at least once a week, 31% had missed school or work in the previous year and 23% were avoiding certain physical activities between attacks. Walzl<sup>16</sup> reports increasing severity of asthma worldwide. Only a minority will require hospitalisation but this minority accounts for 500 000 admissions in USA. Mortality has increased in USA. from 0,15 to 0,36/100000. In 1987 more than 1000 children were admitted to Red Cross Hospital in Cape Town for asthma<sup>16</sup>.

Burns<sup>5</sup> wrote in an editorial that mortality from asthma continues to rise in several countries including the USA. The majority of deaths were avoidable. Poor perception of the severity of asthma is a predictor of severe asthma. Retrospective analysis have highlighted several clinical characteristics of patients who die from asthma. These include severe asthma, poor compliance with therapy, denial of the disease, delay in seeking medical attention, reduction in hypoxic but not hypercapnic respiratory drive in the patients with near fatal asthma. Patients with impaired perception of dyspnoea should monitor their peak expiratory flow regularly at home and have a written plan to step up treatment or summon help if there is a decrease of flow of more than 30%. The use of

medic-alert bracelets and epinephrine injection kits are also advised.

For years patients admitted to hospital with an asthmatic attack were routinely put on intravenous Aminophylline until. Fanta et al <sup>14</sup> concluded that sympathomimetic therapy alone is equally effective in most acutely ill asthmatics and that routine intravenous Aminophylline is therefore not indicated as part of emergency treatment.

Respiratory physicians all over the world recognised the need for guidelines to help doctors, nurses and patients to control an asthmatic attack. The use of steroids was proved necessary by studies demonstrating the importance of immunological reactions in asthma. . Robinson and. Durham <sup>12</sup> stressed the importance of the reaction of the mast cells to allergens and the immunological cascade leading to bronchial constriction, oedema and bronchial hyper-responsiveness. A better understanding of the immunological mechanisms may lead to future T cell specific and cytokine specific therapies. . Morris <sup>8</sup> described the early and late phases of an asthmatic attack promoted by immunological mechanisms. He advocated the use of steroids to prevent the late phase. Cassim and Lalloo<sup>10</sup> recommended that most patients with mild to moderate asthma require 30-60 mg. of oral prednisolone. In severe asthmatics 100 mg. hydrocortisone 6-hourly may be adequate.

In the treatment of children under five years of age suffering from asthma Bush<sup>19</sup> recommended the use of oral Ketotfen as first line prophylaxis for the relatively mildly affected wheezing baby in a dose of 0,5mg twice daily for four weeks and increasing to 1mg twice daily until review in two months. Inhaled or nebulised steroids is the next step.

Keeley <sup>6</sup> identified several negative factors in doctors treating asthma. They failed to identify asthmatic patients' symptoms. They think that regular use of bronchodilators treats asthma satisfactorily. They think that inhaled steroids may be dangerous and were reluctant to prescribe effective doses. They think that high doses of bronchodilators may be dangerous in an asthmatic attack. They do not check whether patients use their inhalers

properly. They do not make enough use of the best available method for taking inhaled drugs. Doctors fail to ensure that patients are given consistent advice and so undermine confidence in advice. Doctors make management of asthma worse for patients than the symptoms. He concluded that doctors failed to follow guidelines.

Indeed some doctors were of the opinion that bronchodilators harm the lungs. Van Schayck<sup>27</sup> allays the fears of such doctors in an editorial in the British Journal of General Practice. He felt this fear was not justified but warned that anti inflammatory medication (for example steroids) must be added if these were used more than once daily.

Luce<sup>21</sup> warned of the side effects of inhaled beta agonists in high doses in the elderly may lead to falls in serum potassium concentration which if already low from other drug treatments such as diuretics could lead to cardiac arrhythmia. This proves that earlier use of steroids rather than higher doses of beta-agonists should be used in the elderly.

The importance of following national guidelines is mentioned in several studies<sup>5,6,9</sup>. Irwin<sup>9</sup> found that a predetermined protocol made it easier to detect difficult to control asthmatics and to manage factors causing deterioration. In their study they identified five factors pertinent to managing the difficult to control asthmatic. A systematic protocol made it easier to determine the reason why an asthmatic was difficult to control. Multiple factors were responsible in majority of cases but the treatment of gastro-oesophageal reflux and the addition of steroids were the two most common helpful interventions. Gastro-oesophageal reflux was the most common factor leading to difficult to control asthma. Non adherence to therapy was an important factor. The use of azathioprine should not be routinely prescribed as a steroid sparing agent.

In discussing preventable factors in near fatal asthma Lalloo<sup>17</sup> singled out two main factors, which are failure of doctors to educate their patients and failure to prescribe appropriate treatment, as contributing to considerable morbidity. The severity of the asthmatic attack was often not appreciated by the doctor. The unusual predominance of

females in Lalloo's study<sup>17</sup> warrants targeting of this group for intervention. Walzl<sup>16</sup> in discussing severe asthma describes criterion for admission to an intensive care unit. These are deteriorating peak expiratory flow; worsening or persistent hypoxia or hypercapnia; persistent acidosis; exhaustion; confusion; drowsiness; silent chest and bradycardia.

Beasley et al.<sup>23</sup> reinforce the importance of the use of a protocol. They suggest the use of a protocol developed in New Zealand for the assessment and treatment of asthma in an outpatient setting. Poor assessment was shown by the taking of an inadequate history, poor examination technique and misinterpretation of results of arterial blood gases. Poor management was shown by insufficient use of systemic steroids and over reliance on bronchodilators. Follow up was poor because long term management was not discussed and family doctors were not informed. They felt the use of an assessment and management protocol would promote better care particularly by junior staff. Partridge<sup>22</sup> showed that self management plans were very effective but had to be clearly written and understood by patients. National based education programmes could reinforce this message. In another paper Partridge<sup>29</sup> advised that self management had to be clear. Patients should have written instructions on how to take increased doses of bronchodilators, increasing anti-inflammatory treatment and taking steroid tablets. They should be shown when to seek advice by informing them of signs of deterioration in their asthma. In an audit carried out at the Khaylitsha Community Health Centre in Western Cape, Mash and Whittaker<sup>45</sup> found that the South African Pulmonology Society guidelines were not been followed by staff in treating patients suffering from asthma. Many of the clinical nurse practitioners had attended courses on asthma but the impact on asthma care was minimal. The high number attending for acute attacks reflects the poor control and under-treatment of patients. Doctors and nurses did not spend enough time in educating patients about their illness so that patients accepted poor control as been normal.

The dangers of delaying the use of steroids have also mentioned by Sears et al<sup>15</sup>. In a study on deaths in asthmatics using home nebulisers they found that delay in using corticosteroids was the main danger in using nebulised Beta-agonist therapy rather than

Beta-agonist toxicity. The delay was caused by the patients using their nebulisers excessively in spite of deterioration in their asthma rather than using corticosteroids which would be more beneficial. Another important factor was that home nebulisers are really air compressors which did not reduce the hypoxia caused by an asthmatic attack, whereas nebulisers used in hospitals are oxygen driven which reduces the hypoxia.

Time spent in educating patients about their asthma has a positive effect on morbidity. Brandt and Muntingh <sup>7</sup> in a study done at Garankuwa Hospital showed that education and strict follow up of patients with poor socioeconomic and educational status improved morbidity. The disadvantage of their poor socioeconomic or educational status of the patient could be overcome by reinforcing the message of self management of their illness on each visit to the clinic.

Regarding asthma in children Davis <sup>11</sup> felt that repeated nocturnal attacks of coughing, exacerbation by exercise or triggering by allergens were core presentation symptoms.. She felt that Beta-agonists were safe in children but should be used with anti-inflammatory medication such as steroids or sodium chromoglycate. Phelan <sup>13</sup> advised that education and counselling is essential to allay anxiety in children with asthma. Parents should also be advised about allergen avoidance. He felt that exercise did not improve symptoms. Jensen et al.<sup>18</sup> in a study of asthmatic children attending Johannesburg and Baragwanath Hospitals showed that there are serious deficiencies in the education of parents of children suffering from asthma in the understanding of self management systems. Jones<sup>26</sup> advocates screening for asthma in children in general practice and outlined an approach using a questionnaire. The use of early prophylactic therapy would lead to better asthma control and improved quality of life.

In the field of general practice deficiencies in the management of asthma are highlighted by several studies. Coates et al .<sup>28</sup>, in a study of South Australian general practitioners, identified substantial variability and deficiencies in reported management of asthma. This reaffirms the need for a national campaign and continuing education for general



practitioners. Evans, Hardy and Stoner<sup>33</sup> found that general practitioner assessment and treatment was sub-optimal suggesting that the training of doctors gives insufficient emphasis to the drugs and equipment necessary for home visits to patients suffering from asthma. It was disturbing to note that only 54% of respondents carried a peak expiratory flow meter.

Recent studies of asthma in general practice demonstrated the importance of psycho-social factors in asthma. A study on deaths from asthma in East Anglia in England<sup>37</sup> demonstrated that 79% of the patients had experienced psycho-social factors which contributed to their deaths. Based on this study recommendations were made which included contacting defaulters, involving a close relative in the management plan, identification of at risk patients, for example with psychiatric morbidity, behavioural difficulties and socio-economic deprivation and those with poor past histories of emergency admissions. They recommend that these issues should be discussed frankly with the patients and their relatives. The importance of psycho-social factors are also given prominence in the new guidelines on asthma management<sup>42,43,44</sup> of the British Thoracic Society. In these guidelines the benefit of patient education and use of self management plans are emphasised.

Bisgaard<sup>36</sup> discussed drug delivery from different inhaler devices and concluded that the drug potency varied very widely with different inhalational devices, for example, a Turbohaler delivered twice the dose delivered by a pressurised metered dose inhaler. He recommended that prescribers consider the drug and the device used as a single entity. Dose recommendations should be related to likely lung dosage rather than nominal dose. These devices are also discussed in the new guidelines on asthma<sup>44</sup> of the British Thoracic Society. The guidelines contain useful practical information on inhaler devices and a recognition that the range of devices now available may render nebulisers unnecessary in many clinical situations.

It appears that integrated care of patients suffering from asthma is the best approach. The Grampian Asthma Study<sup>30</sup> investigated integrated care between hospital and community services together in managing patients and compared this to outpatient care. The study found both to be equally effective but patients preferred receiving integrated care. The Grampian study<sup>32</sup> also studied self monitoring which showed that patients using peak flow meters became aware of deterioration in their lung function and sought assistance earlier. This study concluded that peak flow meters should be targeted at patients whose asthma was more severe and difficult to treat.

The financial constraints of treating asthma and pressure from politicians to reduce healthcare costs could cause deterioration in asthma management. Nash, Sturdy and Too<sup>34</sup> confirmed that good clinical practice and cost consciousness did not seem to go together. A higher level of prophylactic prescribing suggested that the British Thoracic Society guidelines were being followed but in so doing more money was being spent on asthma drugs. Pressure to reduce costs may lead to reduction in prophylactic treatment and lower the quality of asthma care. In discussing asthma in the new South Africa, Green and Luyt<sup>46</sup> reported that asthma care should not be thought of as being intrinsically cheap or expensive. Most cheap drugs will be expensive if not used in the correct way and most expensive drugs will be infinitely cost effective if used correctly. They cite a study done in Germany where patients suffering with asthma were admitted for five days and were given intensive counselling on all aspects of asthma by a special nurse educator. In the year after the programme hospitalisations were reduced by 50% as were days absent from work. Unscheduled physician visits were reduced from 3.3 per patient per month to 1.0 and the number of attacks from 4.8 to 1 per patient per year. They emphasised that these savings were achieved without more medication been used.

In the South African context an asthma clinic run by a nurse may be a solution. Rees<sup>31</sup> reaffirmed the use of an asthma clinic run by a nurse and supervised by a doctor proficient in the management of asthma. The ultimate goal being freedom from symptoms. He reported complete patient satisfaction. Burke and Cecil<sup>24</sup> outline the use of a nurse run

clinic in a general practice in England and the use of a standardised protocol for history, examination and follow up. A nurse was able to monitor a patient adequately in the maximum time of 10-15 minutes.

Treatment of asthma in pregnant patients was reviewed by Nelson-Piercy and Moore-Gillon<sup>20</sup>. They looked at the effects of both asthma on pregnancy and pregnancy on asthma and concluded that the danger of withholding treatment is likely to do more harm to the foetus.

Celenza, Fotherghill, Kupek and Shaw<sup>35</sup> studied an asthma epidemic in London following a thunderstorm on 24 June 1994. It was associated with a fall in air temperature six hours before the storm and a high grass pollen count nine hours before. This study suggests that patients with asthma associated with thunderstorms may be a separate category from patients suffering from asthma from other causes..

The future of asthma treatment will change with the advent of new drugs. Levy<sup>25</sup> mentioned the use of Leukotriene receptor antagonists and their efficacy in asthma in the short term. One key advantage is that they can be administered orally. The most potent is the LTD<sub>4</sub> receptor antagonist Zafirlukast. Researchers reporting in the *Annals of Internal Medicine* (1997)126,177-187 assessed the use of a leukotriene-receptor antagonist, in a randomised double blind trial in 146 patients with mild to moderate asthma. They were given Zafirlukast twice daily orally treatment or placebo for thirteen weeks. In addition inhaled beta agonist were given when needed. Patients on Zafirlukast had more symptom free days and more days without beta agonist use, than those on placebo<sup>43</sup>.

Platts-Mills and Carter reviewed asthma and the exposure to indoor allergens<sup>49</sup> and found that exposure to cockroaches may be a contributing factor to the high prevalence of asthma and increased morbidity in inner city children. The revised 1997 guidelines for the treatment of asthma from the National Heart, Lung and Blood Institute in the United

States recommend that all patients with persistent asthma should be tested for sensitization to the chief perennial allergens (house dust mite, cat, dog, cockroach, and the fungus alternaria) and that specific advice to reduce exposure should be a key part of treatment<sup>49</sup>.

Chylack<sup>47</sup> warned that in our haste to prescribe inhaled steroids we should recognise that steroids could have adverse effects. He discussed a report by Cummings et al.<sup>48</sup>, which found an association between the use of inhaled steroids and the development of posterior sub-capsular and nuclear cataracts. A posterior sub-capsular cataract develops in the line of vision just anterior to the posterior capsule and it is easily visualised with a direct ophthalmoscope at a distance of 15 to 20 cm from the eye with a plus 4 diopter lens. The cataract appears as a black discoid collection of vacuoles against the red reflex, and it moves in a direction opposite to the gaze. Opacities in the cornea move in the same direction as the gaze. Nuclear and cortical cataracts may be invisible against the red reflex until fairly mature when it appears as a poorly defined central fog. The risk of cataract is substantial with larger doses and longer use. This relation also holds for other adverse effects such as myopathy, osteoporosis and psychological disturbances such as steroid induced psychosis.

The above literature survey highlights the importance of protocols, patient education and education of health workers in reducing the rising morbidity and mortality of patients suffering from asthma.

## **Chapter Three**

### **METHOD**

One hundred patients suffering with asthma and who attended an outpatients over a two month period, at Estcourt Hospital, were selected at random and interviewed by means of a questionnaire. In addition their records were scrutinised. The questions were related to specific factors causing a deterioration in their asthma. The object being to obtain a profile of the asthmatic patients and their management. The information was obtained with full consent.

The participants were mainly Black (75%) and Asian (19%). The majority were unskilled labourers (23%).

The community hospital at Estcourt is a two hundred and seventy six bed facility situated in the Magisterial District of Estcourt. Total outpatient attendance for 1995 was 52 154. The patients attending this hospital are mainly black and there are no specialist physicians on the staff. The work load is shared by four full time doctors and ten part time doctors.

The hospital is situated on the R103 route about two kilometres from the N3 highway and is easily accessible for most patients. Transport is usually good except in rainy weather when some patients from rural areas are unable to get to hospital.

Patients requiring specialist services are usually referred to hospitals in Pietermaritzburg which is about 95 kilometres away. This causes problems if the patient suffering with asthma requires intensive care facilities.

## Chapter Four

The results of this study unfortunately demonstrated that national guidelines were not being followed in the treatment of asthma.

### RESULTS

The majority of participants in the study were Black patients.(See Figure 1)

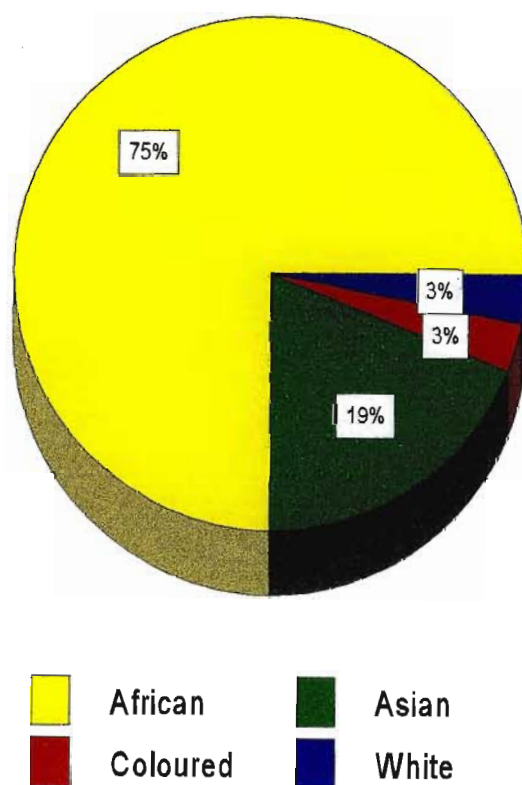


Figure 1

Dermography

**Table 1: Race Distribution of Participants**

AGE	AFRICAN		ASIAN		COLOURED		WHITE	
	Male	Female	Male	Female	Male	Female	Male	Female
<10	2	0	3	3	0	0	1	1
11-20	5	0	1	1	0	0	0	0
21-30	6	14	0	1	0	1	0	0
31-40	3	9	3	1	1	0	0	0
41-50	6	7	1	1	1	0	0	0
51-60	11	4	1	1	0	0	0	0
>60	4	4	2	0	0	0	0	1

It can be seen from table 1 that most patients were from the 21-40 age group( i.e. n=39). And the next highest is from the 41-60 age group( i.e. n= 33).

**Table 2: OCCUPATION OF PARTICIPANTS**

Occupation	% participants
Factory workers	7
Minors	7
Scholars	14
Labourers	23
Housewives	13
Artisans	8
Professionals	7
Clerks	2
Shop Assistants	2
Buyer for Hardware Store	1
Domestics	4
Security Guard	2
Hawkers	1
Pensioners	9

Table 2 shows that the majority of the participants were unskilled labourers (23%). Scholars were the next major group (14%) and housewives formed 13% of the participants.

## EXPOSURE TO DUST

Surprisingly, only 23 reported that they were exposed to dust at work or school. 11 were labourers; 3 were factory workers; 3 scholars; 2 were teachers; 1 was a buyer for a hardware store and 3 were professionals.

## MARRIAGE STATUS

27% males were married. 16% females were married. 2% males and 5% females were widowed. In the married group 10 patients reported that they had no help if they had an asthmatic attack. Sixteen of the single patients reported the same.

## AGE OF ONSET OF ASTHMA

Figure 2 illustrates that most cases of asthma (34%) occurred among children <10 years of age. The next peak occurs in the 21-30 age group (19%) and then in the 31-40 age group where 14% of cases occurred.

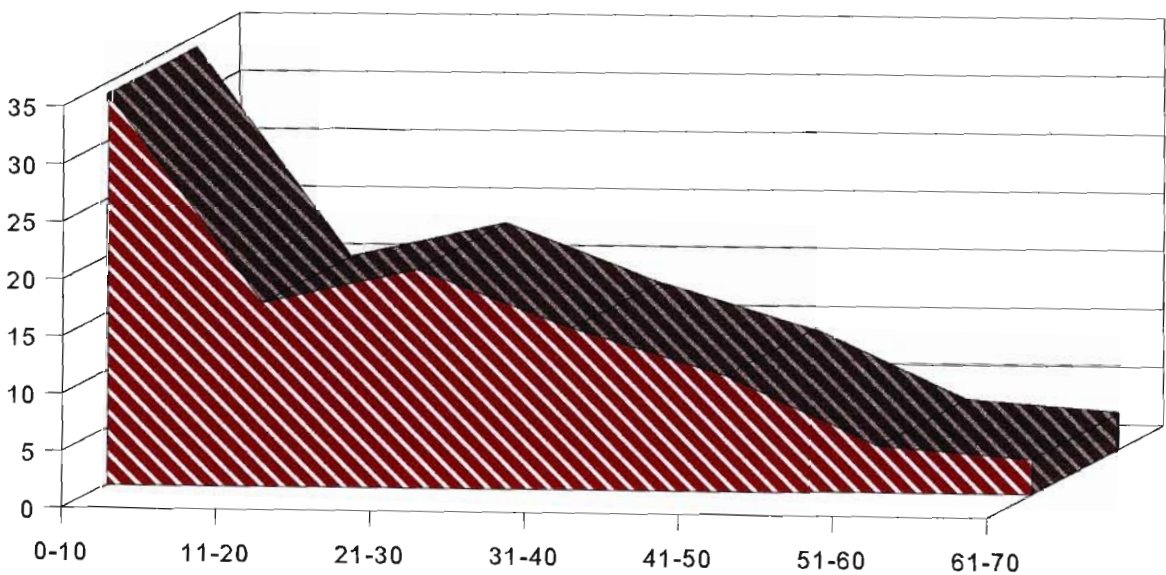
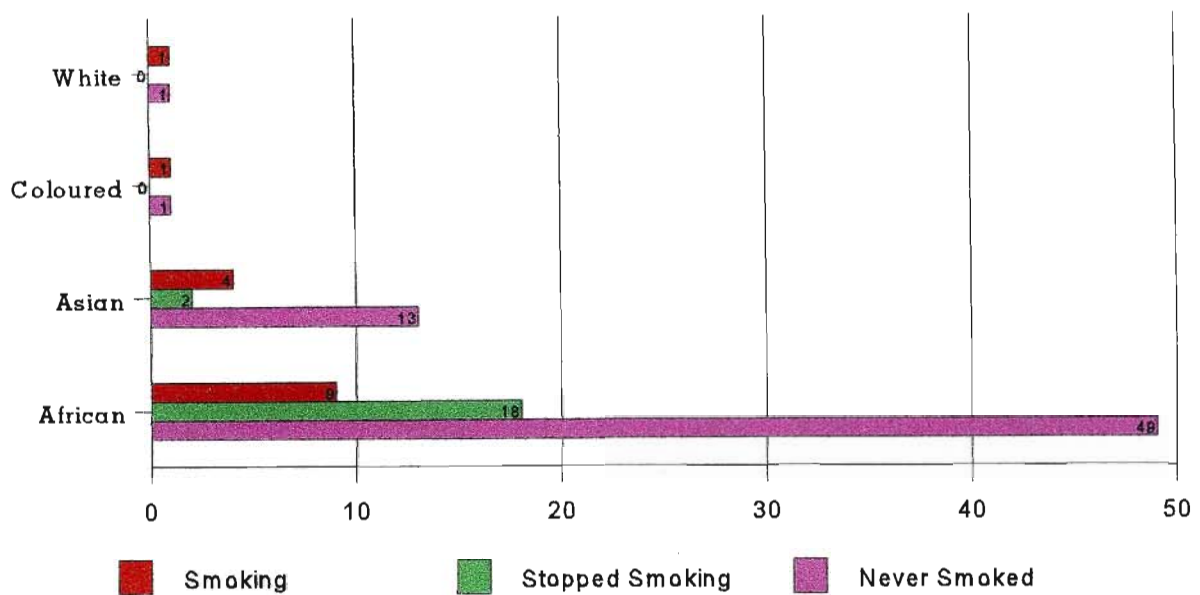


Figure 2

Age of Onset of Asthma





**Figure 3** Cigarette Smoking Pattern

The results indicate that the majority of patients replied that they did not smoke. Patients had learnt by result of trial and error that cigarette smoking caused a deterioration in their asthma. This was a very strong motivating factor guiding them to abstinence from this obnoxious habit. Reddy et al.<sup>51</sup> showed in a study of smoking status of South Africans that the highest smoking rate was in the Coloured community (59%) followed by Asians (36%), Whites (35%) and Blacks (31%). In the study 1 out of 3 Coloureds smoked i.e 33%. Four out of nineteen Asians smoked i.e. 21%. One out of two whites smoked i.e. 50%. Nine out of 76 Blacks smoked i.e. 12% . In each population group the result was lower than expected except in the White group. However, two cases are worthy of note. One was a 68 year old White widow who developed asthma at the age of 57. Her mother suffered from asthma and she was also a heavy cigarette smoker. This did not prevent the patient from taking up smoking although she witnessed the negative effect that it had on her mother's health. The second case was an 84 year old Asian male who developed asthma at the age of 64. He had smoked from childhood and could not give it up in spite of all the suffering it caused him .The latter two cases demonstrate the difficulty patients with asthma have in giving up smoking, even though they are aware of the harm it causes them. In Reddy's study<sup>51</sup>, the majority (87%) acknowledged the harmful effects of smoking but could not give it up.

**Table 3: EFFECT OF WEATHER CAUSING DETERIORATION IN ASTHMA**

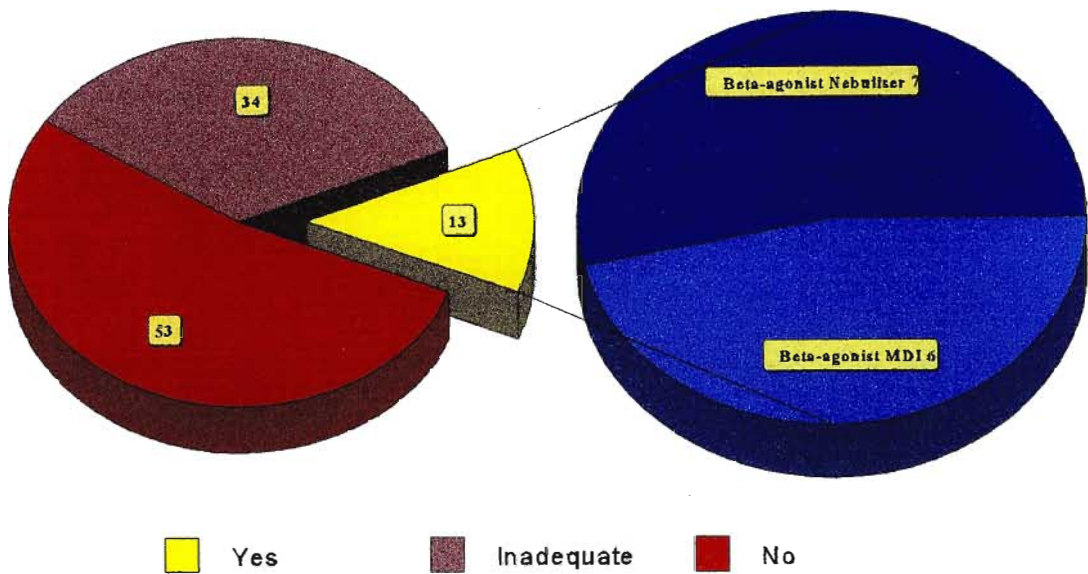
WEATHER	NO. OF PATIENTS
Cold	44
Hot	8
Rainy	7
Windy	1
Hot / Cold	8
Cold / Cloudy / Rainy	23
No Effect	9
<b>TOTAL</b>	<b>100</b>

Table 3 shows that cold weather was a major factor causing deterioration. Cold associated with cloudy or rainy weather was also an important factor.

**Table 4: PATIENTS' VIEWS OF PROBLEMS LEADING TO DETERIORATION IN THEIR ASTHMA**

TYPE OF PROBLEM	NO OF CASES
Domestic	12
Financial	9
Work/School	9
Bereavement	1
Financial and Family	11
No Problems	58
<b>TOTAL</b>	<b>100</b>

Table 4 shows that 12 patients reported domestic problems as a major factor causing deterioration in their illness and 11 patients complained that both financial and family problems were major factors causing deterioration of their illness. This illustrates that domestic problems are the major psycho-social factor influencing the illness.



**Figure 4** Can Patients Manage an Attack on Their Own

Only 13% of patients were able to manage an attack on their own. Of this 13% - 7% used a beta-agonist nebuliser and 6% used a beta-agonist metered dosed inhaler. Fifty-three percent had no knowledge and 34% used inadequate methods. (see figure 4)

### EFFECT OF PHYSICAL ACTIVITY ON ASTHMA

Seventy percent reported that physical activity caused a deterioration in their asthma. Any physical activity led to a difficulty in breathing and increased the usage of any asthma medication they were on. Thirty percent felt that physical activity had no effect on them as long as they took their medication.

### PEAK FLOW METER USAGE

Eighty-seven percent did not know what a peak flow meter was. Eight percent reported that they had used one but not regularly. In only 11% had a doctor used a peak flow meter in the patients assessment.

**Table 5: Drugs used for Asthma**

<b>DRUG USAGE</b>	<b>NO. OF PATIENTS</b>
Theophylline and Beta-agonist	47
Beta-agonist only	7
No. treatment	3
Theophylline only	14
Inhaled steroids and theophylline	1
Inhaled steroids and Beta-agonist	2
Inhaled steroids,oral steroids and theophylline	4
Inhaled steroids,oral steroids,theophylline and beta-agonist	3
Inhaled steroids,theophylline and beta agonist	9
Inhaled steroids only	1
Oral steroids,theophylline and beta-agonist	3
Sodium chromoglycate,theophylline and beta-agonist	1
Sodium chromoglycate and theophylline	2
Sodium chromoglycate and beta-agonist	2
Theophylline and antihistamine(Zaditen)	1
<b>TOTAL</b>	<b>100</b>

From the above it can be seen that only 20% were on inhaled steroids. Five were on Sodium chromoglycate. One was on Zaditen. Therefore seventy-four were not on prophylactic treatment as recommended in the national guidelines for chronic asthma.

## HOME REMEDIES

Seventeen patients reported some sort of home remedy. Twelve used traditional Zulu medicines. One patient steamed with Friar's Balsam and took orally a concoction of cod liver oil, turmeric and cumin powder in Pediasure. One patient felt that Suncodin tablets helped. One patient ingested a teaspoon of white vaseline. One patient ingested a mixture of honey/ginger/olive oil. One patient used cod liver oil and Scott's Emulsion.

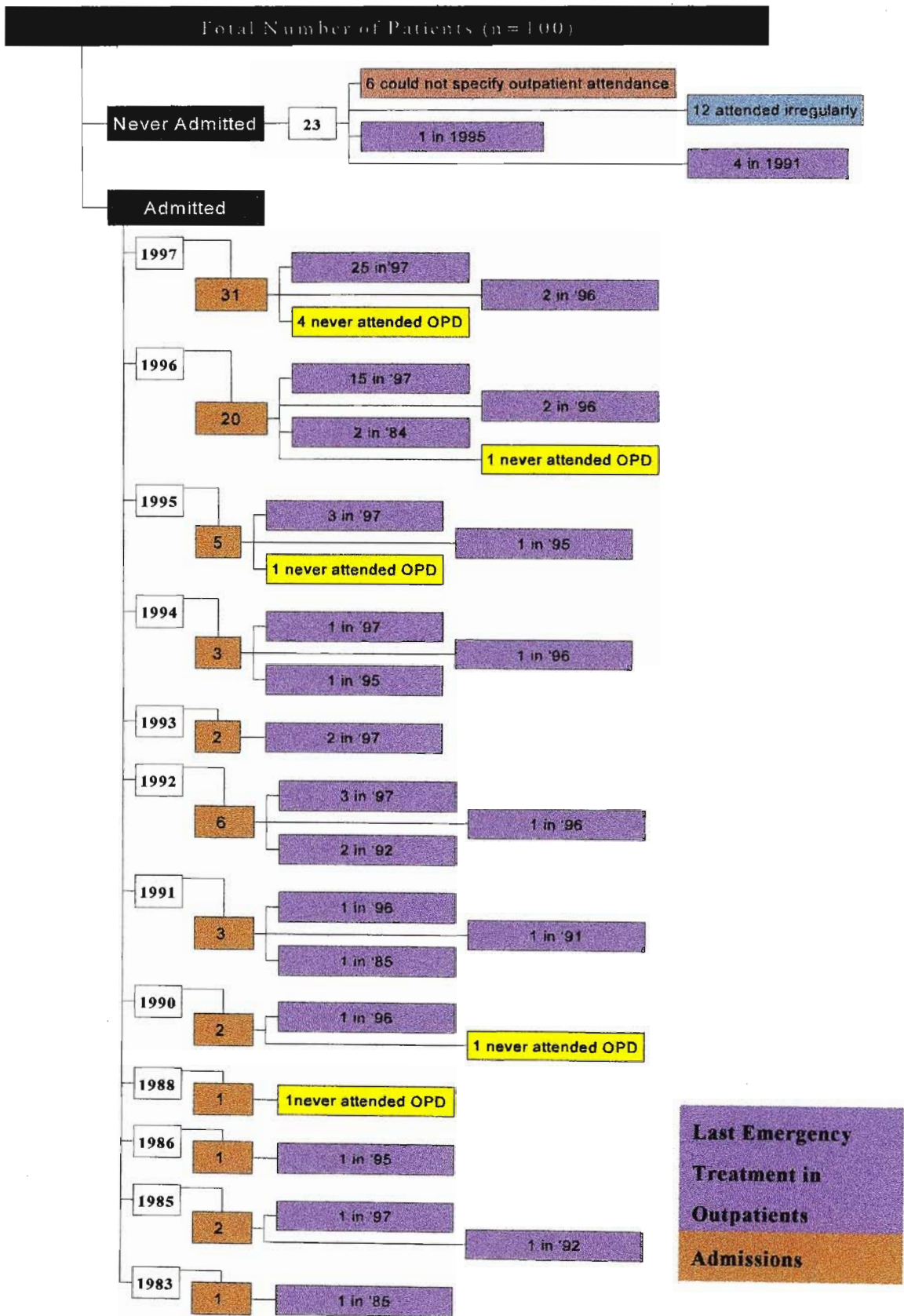
**Table 6: Allergies Reported by Participants**

ALLERGIES	NO. OF PATIENTS
NONE	41
Hayfever, pollen and other(mostly dust and smoke)	17
Hayfever and pollen	9
Animal and pollen	7
Animal only	1
Other - mainly dust and smoke	25
<b>TOTAL</b>	<b>100</b>

Dust and smoke is the main allergy reported by patients. Surprisingly, 41 patients did not report an allergic precipitating factor in their asthma.

## PATIENT'S UNDERSTANDING OF ASTHMA

Three patients only had a complete understanding of what Asthma was because their relatives worked in the medical field. Sixty-nine patients had no knowledge or opinion of Asthma. Two patients felt it was related to stress. Six patients felt it was an allergy. Eleven felt it was inherited. Two felt they were bewitched and developed asthma. Seven patients thought they had been fed some poison which led to the disease.



**Figure 5** Admissions for Asthma and Last Emergency Treatment in Outpatients

Figure 5 shows the number of patients who reported their last admission for an acute attack. Of those admitted, their last treatment in out-patients for an acute attack is shown. A large number attended out-patients but irregularly. Of those that were admitted in 1997 (n=31) 25 had attended out-patients for emergency treatment but the seriousness of the attack was not recognized by the attending doctor. Patients reported that they were never told to attend for follow-up. Forty-six patients had been admitted to Estcourt hospital prior to the year 1997 but 8 of these never attended out-patients and the rest attended irregularly. All of these patients were chronic asthmatics but none of them were ever counselled to attend regularly for follow-up.

## **Chapter Five**

### **DISCUSSION**

Asthma affects 4-5% of the population and occurs at all ages. About one half of the cases develop before the age of 10 and another third occur before the age of 40. In the study there were 6 males and 4 females in the <10 year group. By the age of 30 the study showed 18 males and 21 females which is in keeping with figures quoted by a leading textbook of medicine<sup>1</sup>. In childhood the male:female ratio is 2:1. This equalises by the age of 30<sup>1</sup>.

In the study 39% of patients presented from the 21-40 age group and 33% from the 41-60 age group. In an audit carried out at the Khayelitsha Community Health Centre most cases were found in the 40-59 age group which was 41% of their sample. The next high number occurred in the 20-39 age group which was 38%<sup>45</sup>.

Fifty-nine of our subjects showed some sort of allergy. Seventeen were allergic to pollen and dust and gave a history of hayfever. Nine gave a history of hayfever and allergy to pollen. Twenty five showed allergy in association with dust and smoke. Seven gave a history of allergy to animals and pollen. One was allergic to animals. Robinson and Durham<sup>12</sup> divided asthma into extrinsic asthma for which an allergen trigger is identifiable and intrinsic asthma for which no trigger is apparent clinically. Atopy is an inherited tendency to produce increased IgE response to antigenic stimuli. It is recognised by a positive skin prick to one or more aero-allergens (e.g. grass, pollen and house dust mite). Atopic individuals demonstrate an early asthmatic response to inhaled allergen extracts causing a rapid fall in airway calibre lasting about 30 minutes. In some patients a late response also occurs maximal 6-12 hours later. This late response can lead to bronchial hyper-responsiveness which may persist for several days.



Eleven percent of the patients gave a clear history of one or both parents suffering from asthma. Children whose parents both have asthma have a marked increased chance of developing the disease <sup>12</sup>.

Thirty four percent of our participants reported onset of asthma in the <10 year of age period. Phelan<sup>13</sup> reports that wheeze develops in 40% of asthmatic children of less than two years of age and in 80% by the age of seven years. Episodes of wheeze in children with infrequent episodic asthma are most common between 3 years and 6 years of age. In about 40% of these children the episodes resolve by later childhood and a further 10-20% resolve by adolescence. However 40% continue to have mild symptoms of wheezing with intercurrent infections or with exercise into adult life. Attacks of wheezing in children with frequent episodic asthma are triggered by viral infections in the pre-school years. By late childhood many episodes may occur without an obvious trigger, though weather change and allergen exposure may be responsible. The outlook for adulthood is 25% with no symptoms; 25% trivial symptoms; 25% significant wheeze monthly and 25% persistent asthma.

In the study 42% of our patients indicated a some problem contributing to the deterioration of their illness. Twelve percent reported problems at home; 9% financial problems ; 9% problems at work or school and 11% had financial and domestic problems. Discussing asthma in adults, Tattersfield<sup>50</sup> warns that diagnosis may be delayed when asthma presents as cough alone or in late onset asthma when breathlessness is usually less variable and asthma is only one of several possible causes of dyspnoea. She warns of missing asthma in smokers who may require a course of oral prednisolone to exclude asthma particularly in the older patient with airways obstruction. Peak expiratory flow rate measurement may be required and the characteristic diurnal changes with the lowest values in the morning will be diagnostic. She felt that patient's beliefs and knowledge of asthma are often outdated and erroneous. Patients often felt psychological factors were important but this was seldom the case. Some patients worried unnecessarily about inhalers. This view contrasts with a study on deaths from asthma in East Anglia<sup>37</sup> where

79% of patients experienced psycho-social problems which appeared important in contributing to their deaths.

In the study 44% associated cold weather with a deterioration in their asthma. Seven percent associated this with rainy weather and twenty three percent with cold/cloudy and rainy weather. Eight percent thought that hot weather made their asthma worse. Eight percent felt that both hot and cold weather affected them. One percent felt that windy weather caused an exacerbation of his asthma. Nine percent reported no effect with changes in the weather. Thus seventy four percent of the patients reported deterioration in their asthma due to cold/cloudy or rainy weather. Celenza, Fothergill et al.<sup>35</sup> analysed environmental factors in thunderstorm associated asthma and reported that there was a fall in temperature six hours before the storm and a rise in the pollen count nine hours before. This was associated with a rise in the number of admissions of patients suffering from acute asthma.

In the study there appeared to be a total dislocation of the chain of communication between the hospital and peripheral clinics. Medication was stopped or changed without valid reasons. Patients were not informed of the correct manner of usage of their inhalers and the importance of regular usage. Self management plans as mentioned in the literature were non existent. Keeley reported that doctors were not following guidelines. They were afraid of using steroids<sup>6</sup> and were prescribing sub-optimal doses when they did use steroids. Walzl<sup>16</sup> reported deterioration in asthma patients caused by doctors' failure to appreciate the seriousness of the attack. Doctors failed to advise patients on the proper use of their medication. Lalloo<sup>17</sup> in discussing preventable factors in near-fatal asthma emphasises the inability of doctors to monitor patients effectively and the failure of doctors to appreciate the seriousness of the attack. One of the female patients interviewed in our study had suffered a respiratory arrest and required intensive care treatment. Lalloo<sup>17</sup> also found a greater preponderance of females in his study of near fatal asthma and suggested that this type of asthmatic should be targeted for further study. The Grampian study had demonstrated<sup>30</sup> that integrated care between hospital care and

community care was the best way of managing asthmatics. They also demonstrated the benefits of using peak flow meters<sup>32</sup> for monitoring.

Seventy four percent of the participants in the study were not on prophylactic treatment such as inhaled steroid or sodium chromoglycate although all of them were chronic sufferers. Sixty nine percent of the patients had no idea what asthma was or what could be done about it. Thirteen percent of patients could manage an attack on their own. Eighty seven percent did not have any idea what a peak flow meter was. In only eleven percent of patients did a doctor use a peak flow meter in their management. Partridge<sup>22</sup> mentioned the benefit of self management and suggests that practitioners should reinforce this by educating their patients. Coates et al.<sup>28</sup> lament the lack of knowledge of the management of asthma by general practitioners and point out that most general practitioners did not use peak flow meters. Evans, Hardy and Stoner<sup>33</sup> questioned whether general practitioners were equipped to manage acute severe asthma. Our study seems to support this as well.

Brandt and Muntingh<sup>7</sup> pointed out that education of patients was important in reducing morbidity. Their cases came from a poor and uneducated background but they improved after doctors had spent time educating them about their illness. The importance of educating patients is echoed by Laloo<sup>17</sup>, Phelan<sup>13</sup>, Tattersfield<sup>50</sup>, Walzl<sup>16</sup>, Jensen<sup>18</sup> and Keeley and Rees<sup>42</sup>. As Burke and Cecil<sup>24</sup> point out that a nurse run clinic can be effective if patient education is put high on the list of priorities when dealing with patients suffering from asthma. The cost of medication should not dictate the availability of appropriate medication in state institutions as this is not cost effective in the long run. This has been demonstrated by Nash, Sturdy and Too<sup>34</sup> in a study in east London and Green and Luyt<sup>46</sup> in discussing asthma in the transition of the new South African health services. This is evident in the state sector where the steroid inhaler generally available is of low strength i.e. Beclomethasone 50 micrograms per puff available as a generic and patients are generally put on sub-optimal doses. This leads to more attacks of asthma and frequent hospitalisations, costing the state millions of rands.

The study unfortunately also shows the failure of medical staff to follow national guidelines. The availability of a resource does not guarantee its usage. Peak flow meters are available in out outpatient departments but are seldom used. The reason for this could be that doctors working in a busy outpatients do not have time to counsel patients about their asthma. Another reason could be the lack of education of health workers on the management of patients suffering with asthma. One of the commonest complaint levelled against hospital doctors was their failure to communicate with these patients. Patients did not know when they should report a deterioration. Some patients did not know if they were required to take treatment on a long term basis. Forty seven percent of the patients in the study were prescribed theophylline and a beta agonist when they should have been put on anti-inflammatory medication such as inhaled steroids. As mentioned earlier, seventy four percent did not receive prophylactic medication leading to deterioration in their asthma and unnecessary admissions. The Khayelitsha study<sup>45</sup> had demonstrated that they had not achieved the target standards set or the quality of care desired. The main shortcoming been in the lack of education of patients and the failure of staff to follow national guidelines.

## **Chapter Six**

### **RECOMMENDATIONS**

The following recommendations are suggested:

- i. Health care workers(i.e. doctors and nurses) should receive training in treating patients suffering from asthma. Workshops training the health care workers on the national guideline should be arranged.
- ii. Audits should be carried out periodically by senior staff to ensure that the national guidelines are being followed.
- iii. A weekly asthma clinic should be established with a doctor trained in asthma management to run it.

A nurse especially trained to educate patients in their own language should be available at this clinic. Leaflets should be provided to patients to reinforce the nurse's message. Patients should be shown clearly the difference between a prophylactic medication and a medication that can be used in the event of an acute attack. The message that needs reinforcement is that suffering is not a norm to be accepted as part of the disease process of asthma. The aim of modern treatment is to keep a patient totally free from asthmatic attacks.

- iv. Peripheral clinics should make sure that sisters working there can recognise a severe asthma attack ( e.g. by use of a peak flow meter). Sisters should educate patients on the correct usage of their inhalers and the need to regularly take their medications .

- v. The ideal would be to give a peak flow meter to each patient (especially the patient suffering from chronic asthma), teach them how to use one properly to measure their peak flow readings and how to assess the severity of their attacks using these readings. Cheap peak flow meters could either be supplied by the state or subsidised so that patients can afford them.
- vi. Nebulisers with oxygen should be available at peripheral clinics to help patients before referral to hospital.
- vii. Ambulance personnel will require education on the recognition of severe asthmatic attack. Portable nebulisers in ambulances could help patients on the way to hospital.
- viii. Parents of children suffering from asthma need to be educated on the correct way of using inhalers so that they can help their children. They need counselling and support to help them cope with what is a stressful experience for their child as much as the child suffering with asthma. Family medicine principles can play an important part in helping both doctor and patient in dealing with parents.
- ix. A proper register should be kept of all patients suffering with asthma and defaulters should be counselled and followed up.
- x. A concerted effort should be made to identify allergens which may be precipitating asthma in selected patients (i.e. those showing a definite atopic bias). These patients should be offered comprehensive atopy investigations such as skin testing and Rast tests to common indoor allergens e.g. cockroaches and outdoor allergens e.g. animals. These studies could identify patients with asthma who are at risk of deterioration because of exposure to allergens. This could reduce morbidity and admissions.

In conclusion, the results of the study clearly prove that national guidelines for the management of patients suffering from asthma are not being followed. Recommendations are suggested for improving services to patients suffering from asthma in this area.

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