

PROFILE OF THE ASTHMA CLINIC
AT ADDINGTON HOSPITAL, DURBAN.

by
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Learn what I teach you, my son,
and never forget what I teach you to do.

Hold on to wisdom and insight. Never let them get away from you.
They will provide you with life - a pleasant and happy life.

You can go safely on your way and never even stumble.

You will not be afraid when you go to bed,
and you will sleep soundly through the night.

Proverbs 2.1, 3.21-24.

SUMMARY

A study was done about the Asthma Clinic at Addington Hospital to show the characteristics and demography of the patients attending the clinic during the study period of one year.

Some of the aspects studied were: the onset and duration of asthma, concomitant allergies, smoking behaviour, evaluation of treatment, casualty attendance, hospital admissions and compliance in attending the clinic.

Therapy of the patients was aimed at control of inflammation and broncho constriction. Preventative pumps were used in 96% of the patients. The aim was to make the patient symptom free, to live a normal life and to prevent short term and long term complications of asthma.

A comparison was made between three different groups of patients. a) non-smokers, b) smokers and ex-smokers, c) non-compliance in attending the clinic. It was found that the non-smoking group showed clinical improvement in lung functions, although not statistically significant.

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Chapter 1

Introduction

Asthma is a common respiratory disease in South Africa, effecting all ages of the population. Feeney (1993), in a nationwide hospital outpatient asthma survey, showed the largest number of asthmatics to be between the ages of 5 to 14 years (93.7%); the largest group of adults between 55 and 64 years (23.4%).

Asthma affects 9 to 12 million persons in the United States; its incident being highest among children and young adults (Weiss, 1993).

If not treated properly, asthma can lead to high morbidity and mortality. There is mounting evidence that asthma mortality, morbidity and prevalence is increasing in the USA (Gergen, 1992).

It affects the patients whole life: schooling, work and normal daily activities. The impact of asthma on everyday life was examined by Feeney (1993), who showed that 40% of both adults and children lost more then two weeks of work or school attendance a year, while 10% had absence rates over two months. Two thirds of all asthmatics found that asthma curtailed their leisure activities, adults were more incapacitated with one third being severely restricted. Sleep disturbances are one of the commonest

symptoms reported by asthmatics. For two third of both adults and children the normal sleep pattern is interrupted, but adults are more severely affected.

The seriousness of the disease demands that every opportunity should be taken to prevent or minimise aggravating circumstances, to educate patients about their illness and the treatment given, and to give optimum treatment in order to prevent short term and long term complications.

Despite scientific and therapeutic advances, asthma morbidity and mortality are rising. From 1980 to 1987 the prevalence of asthma increased 29% and asthma death rate 31% (Rivo, 1992).

This study therefore investigates the characteristics and demographics of patients who attend an urban asthma clinic at a general hospital. In addition, the study shows the daily functioning of the clinic and the treatment of the patients. Further, issues of compliance are investigated.

Finally, conclusions and recommendations are made.

Chapter 2

Litterature Review

Asthma is an inflammatory condition of the pulmonary airways, effecting a large percentage of the population worldwide. This inflammation is associated with hyper-responsiveness and increased reactivity of the airways and mucous secretions. This condition is partially or fully reversible, spontaneously or with treatment.

Diagnosis of asthma is made by demonstrating reversible air way obstruction. Spirometry or Peakflow meters should be used to objectively measure pulmonary status, since the history and physical examination do not correlate well with asthma severity (Rivo, Floyd, 1992).

Teterssell (1993), found that about 5% of adults and between 10 to 15% of children were affected in the United Kingdom. The amount of morbidity and mortality associated with the condition is extensive. According to The British Thorasic Society (1992) the death rate of asthma has remained at 2000 per annum for over a decade.

Asthma affects 9 to 12 million people in the United States of America and is one of the most prevalent chronic illnesses in children (Weiss, Budetti, 1992 and 1993).

Asthma affects 5% of the US population. Mortality in the US increased to 40% between 1982 and 1992. In 1991 alone more than 5000 death occurred from asthma (Casey, Winterbauer, 1995).

Bowersox (1993) reports in *The Western Journal of Medicine*, a 30% rise in asthma prevalence and mortality in the USA.

Eighty percent of asthmatic children have onset of wheezing by 7 years of age and 40% within 2 years of life. Those affected by chronic asthma are particularly likely to have their onset before their second birthday. Approximately 50% of mildly asthmatic children are asymptomatic by early adolescence. Most who continue to wheeze have relatively trivial episodes associated with viral infections and physical activity. About 20% of those with asthma, which apparently had resolved in early adolescence, have recurrence of wheezing in adult life. Virtually all children with chronic asthma continue to wheeze during adult life, though many experience some improvement (Phelan, 1994).

According to Phelan (1994), there is preponderance of males with asthma in early childhood. However, during adolescence girls tend to show less improvement than boys, so that by early adult life the sex difference no longer exists.

Feeny, Gilmartin, Gleeson, Harris, Kiely (1993) also found the above to be true during a study which was done in Ireland.

Garrett (1995) studied the epidemic of asthma death which

occurred in New Zealand in the late nineteen seventies and found a threefold increase in asthma death after 1981 to 1986. After which there was a progressive reduction in mortality from 4.4 per 100,000 to 1.9 per 100,000. However, hospital admission rates remained elevated throughout the 1980's. More recently, since 1990, there has been a dramatic fall in asthma morbidity, i.e. a 70% reduction in ICU admissions and 34% in hospital admissions.

From the above it is seen that asthma is a serious illness and that there is evidence that asthma mortality, morbidity and prevalence are increasing worldwide.

In the Netherlands asthma impairs the quality of life of 10 to 20% of men and 5 to 10% of women and children, almost 9% of General Practitioner consultations are due to illness by asthma and chronic obstructive airway disease.

In the United States a 6% increase was found in asthma related hospitalisations of all ages; with a 24% increase in those younger than 20 years of age. Weiss et al. (1993). The increases were most noticeable among children and minority groups.

Griffiths, Naish, Sturdy, Pereira (1996) states that admission rates for asthma in 1991 to 1992 were 80 to 100% above national averages for all age groups in east London.

The cost of asthma, both social and economic to the individual and his family, society and health services is extensive. The National Survey of Morbidity in General Practice (1988) suggests that one million people consult a family doctor each year due to asthma, which result in estimated total of 2.73 million GP visits per annum. In addition there are also financial costs which the department of Health and Social Security incur, in payments and sick benefits, which are estimated at 60 million pounds per annum. There are also costs to industry in terms of productivity due to absenteeism from work or loss of education for children suffering from asthma. However the greatest costs are those incurred by the patient and his family. The quality of life of an asthmatic, who is not controlled, can be extensively compromised (Tattersell, 1993)

In children 4 to 12 years of age, asthma is the main reason for absence from school. Rutten-Van Molken, Rutten, Van Doorslaer (1992) and Feeny et al. (1993) state that the impact of asthma in every day life was examined in a number of different ways. Forty percent of both adults and children lost more than two weeks of work or school attendance, due to asthma exacerbations.

Because of the impact of asthma worldwide and nationwide every effort should be made to improve and control this disease. The National Asthma Education Program has issued guidelines to improve the detection and treatment of asthma (Bowersox, 1993). According to these guidelines, clinicians must use objective measures of pulmonary functions, such as home peak flow meter to

assess and monitor each person's asthma. With appropriate pharmacology therapy, environmental control and education, patients and their families can achieve control of these conditions. Patients with asthma can objectively monitor their conditions by measuring peak expiratory flow rates at home. By taking regular measurements, patients with moderate to severe asthma can prevent severe exacerbations by early intervention. Measurements are taken at 7am and 7pm each day, as well as before and after inhalation of broncho-dilators. If the peak expiratory flow rate is between 80% and 100% of the patients personal best, no changes are needed. However, when it drops between 50% and 80% of personal best, a temporary increase in medication is needed. When the peak expiratory flow rate falls to less than 50% of base line levels, broncho dilators are used immediately and the patient's physician is notified if the rate does not rise with the adjustments made. In severe exacerbations, airflow obstruction needs to be rapidly reversed. For patients admitted to emergency departments, the treatment is B2-agonist inhaled every 20-30 minutes and parenteral cortico-steroids.

Patient education has moved to the fore front of out-patient asthma management. Patients require instruction in the correct use of medications and use of spacers with inhaled medication. They should keep diaries of peak expiratory flow rates and they should write action plans in case of acute exacerbations.

Rivo et al (1992) suggest the following:

- (1) asthma status to be monitored by Peak Expiratory Flow Rate (PEFR). Also Forced Expiratory Volume in one second (FEV1),

obtained with spirometry,

- (2) the appropriate pharmacologic therapy to relieve symptoms and prevent short term and long term complications,
- (3) Asthma should be reduced by minimizing exposure to allergies and irritants,
- (4) Physicians must establish a therapeutic relationship with patients and their families to encourage patients and give them confidence to take an active role in managing their asthma,
- (5) encourage patients to have their own peak flow meters to monitor their daily peakflow and assess daily fluctuations.

Tattersell (1992) reports that in most efforts, aiming at improving the care of asthmatics in general practice, concentrate specifically on patient education. This is based on the assumption that improved knowledge will improve compliance to drug therapy. Nurses and others involved with patient education must explore deeper issues if they are to be effective in assisting the patients to alter behaviour and attitudes.

Rivo et al (1992) advice this pharmacologic therapy:

- (1) Broncho dilators to dilate the airways. Symptomatic treatment includes Beta adrenergic agonists, methyl xanthines and anti-cholinergics.
- (2) Anti-inflammatory agents: they act prophylactically by interrupting the development of bronchial inflammation. They include inhaled and systemic cortico steroids, and sodium cromoglycate.

Usually the medication is prescribed in a stepwise fashion for 1)mild, 2)moderate and 3)severe asthma. Progression to the next step is indicated when the current step fails to achieve the goals of the therapy. Once control is achieved and sustained for several weeks to months, a step down in therapy may be considered.

Mild asthma is to be considered to be a mild wheeze once or twice a week and is controlled by B2-agonist, which are inhaled when necessary. Most of the time, these patients are asymptomatic. Should a daily use of B2-agonist pump be necessary, then treatment with a preventative inhaler (i.e. a cortico-steroid) should be added.

Moderate asthma refers to exacerbation which occurs more than twice a week and lasts a few days. It usually affects their sleep and activity levels. Anti inflammatory agents such as inhaled cortico-steroid or sodium cromoglycate should be added to that daily basis. Sodium Cromoglycate should be used at 2 puffs 4x /day and it usually should be 4-6 weeks before its benefits are seen.

Weinberg (1994) reports that Sodium Cromoglycate (SCG) has established an unparalleled record for efficacy and safety in healing asthma especially in children. These medications have been available in South Africa for 25 years and peadiatricians in our country observe happier, healthier children. SCG is a major breakthrough in healing the inflammatory element of asthma. Inhaled cortico steroids are in different strengths - 50mgr, 100mgr and 200/250mgr depending on different makes. It should be used on a regular basis: 2 puffs twice daily.

According to Rivo (1992) if symptoms persist, a longer acting broncho dilator, such as oral B2 agonist or sustained release theophyllin preparation may be added.

If the asthma is still not controlled, oral corticosteroids are indicated in high doses (40-60mg daily) for one to two weeks. Failure to respond to this will necessitate long term corticosteroids orally. However, such a treatment has many adverse effects such as Hypertension, Osteoporosis, Cushing syndrome and cataracts. If so, the lowest possible dose should be given, i.e. Prednisone 5mg daily.

Morris (1992) stated that in the past, despite their efficacy, too much reliance has been placed on routine broncho dilator therapy in asthma; it now is recommended that they be used as required in order to avoid tolerance.

Phelan (1994) suggests that prophylactic drugs, particularly inhaled corticosteroids, may increase the likelihood of childhood asthma resolving. However, there has been no research evidence to support this. The longterm use of inhaled corticosteroids in children with more severe asthma has failed to permanently alter the longterm course of the disease. When inhaled steroids were stopped after 24-36 months of treatment, the patterns of asthma rapidly returned to those that existed before medication.

The factors that are known to aggravate or precipitate attacks of asthma are Histamines, cold air (which may result in exercised induced asthma), non-isotonic solutions, sulphur dioxide and allergens (Barnes, 1991). In addition, patients should avoid other aggravating factors, such as smoking (including passive

smoking), dusty occupations, animals and house dust mite (Tattersfield, 1991).

With regards to occupational asthma, it is necessary to isolate the sensitisers, i.e. exposure to sensitiser should be avoided as soon as possible. This may involve moving the patient to a different location at work or granting the patient sick leave (Ramsdale, 1991). However, it must be understood that confirmation of the diagnosis of occupational asthma is often very devastating for the patient. This situation often results in additional stress such as attempts of finding a new job disheartening and expensive, especially for older and unskilled workers.

According to Bardin et al. (1992), acute viral respiratory illnesses account for 53% of acute conditions in the USA.

Another risk factor is smoking. Exposure to tobacco smoke in early life has increased steadily in the last decades, mainly because more women of child bearing age smoke. Passive smoking has been associated with an increased risk of developing asthma in childhood, especially when the mother or caretaker of the child is a heavy smoker.

Rivo (1992) states that reducing exposure to in- and out-door allergens is an important means of asthma control: in-door dust, mites, cockroaches and animal dander (cats and dogs).

Chapter 3

Method

3.1 Subjects

The total sample of this study (N = 250) consisted of patients, who attended the Asthma Clinic at Addington Hospital, Durban, over a one year period. The subject's age ranged from 13 to 82 years, with a mean of 40.5 years. See Table I for the gender distribution of subjects according to race.

Table I

Gender distribution of subjects according to race

	male		female		total	
	N	(%)	N	(%)	N	(%)
Coloured	17	(6.8)	75	(30.0)	92	(36.8)
Indian	23	(9.2)	53	(21.1)	76	(30.4)
White	22	(8.8)	38	(15.2)	60	(24.2)
African	8	(3.2)	14	(5.6)	22	(8.8)
TOTAL	70	(28.0)	180	(72.0)	250	(100)

3.2 Method of data collection

A questionnaire (Appendix 1) together with a structured interview was used to obtain information from the subject. Subject's hospital files were also used to supplement the process.

All interviews were personally conducted by the author. The author informed all patients about the study and written permission was obtained from them to participate. Subjects were given the choice to refuse participation or withdraw from the study at any time without suffering any disadvantage or prejudice. (see Consent form: Appendix 3)

3.3 Materials

- (1) Structured interview - Appendix 1.
- (2) Flowsheet - Appendix 2.
- (3) Record book kept in Out-patient department (Asthma Clinic)
- (4) Discharge books from the Wards

3.4 Construction of Questionnaire

Following the review of relevant literature, several items were selected to be included in the questionnaire. The content and face validity was established by asking professionals to examine the questions. Following this process the final questionnaire (Appendix 1) was used.

Chapter 4

Results

The Asthma Clinic for 1993 had a total of 850 visits. The Clinic is held once a week, a total of 48 clinics a year, with an average of 19 patients per clinic session. Patients were seen at monthly intervals until they were well controlled, after which they collected medicine on a monthly basis without being seen until their next appointment 3 months later.

4.1 Demographics

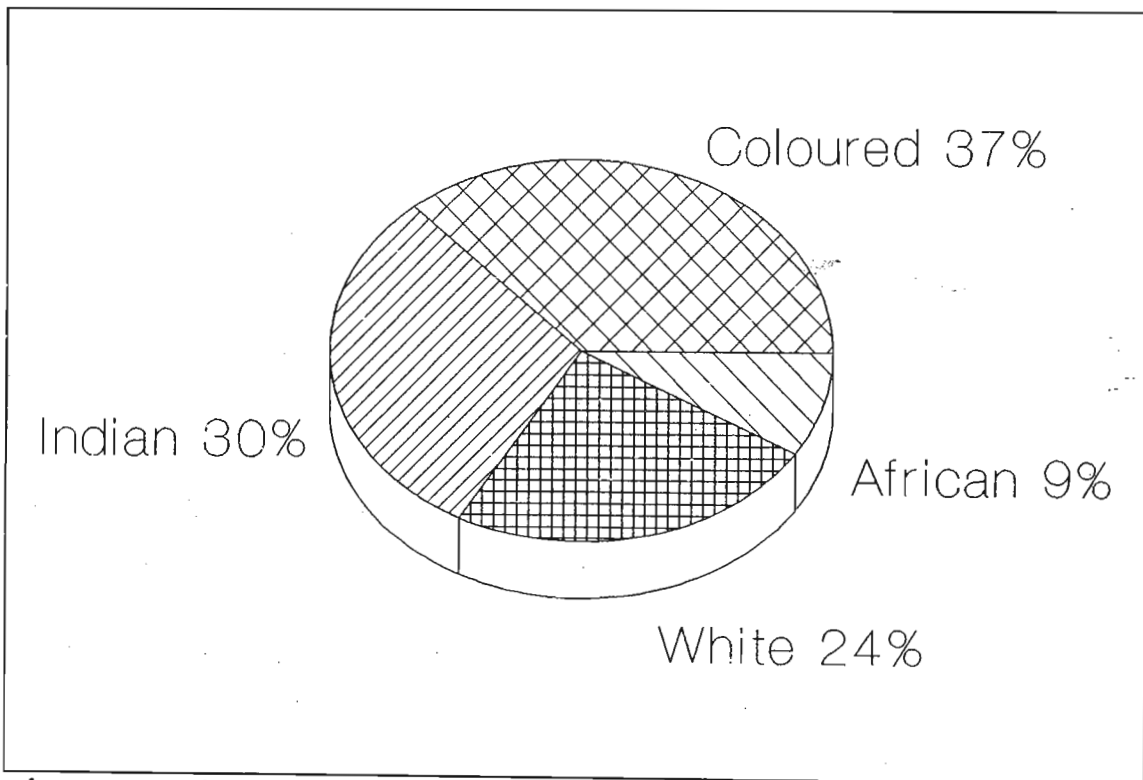


Figure 1 Distribution of sample according to race

Figure 1 shows that Coloured patients 92(37%) were most often seen at the Clinic, followed by Indian 76(30%), White 60(24%) and African 12(9%).

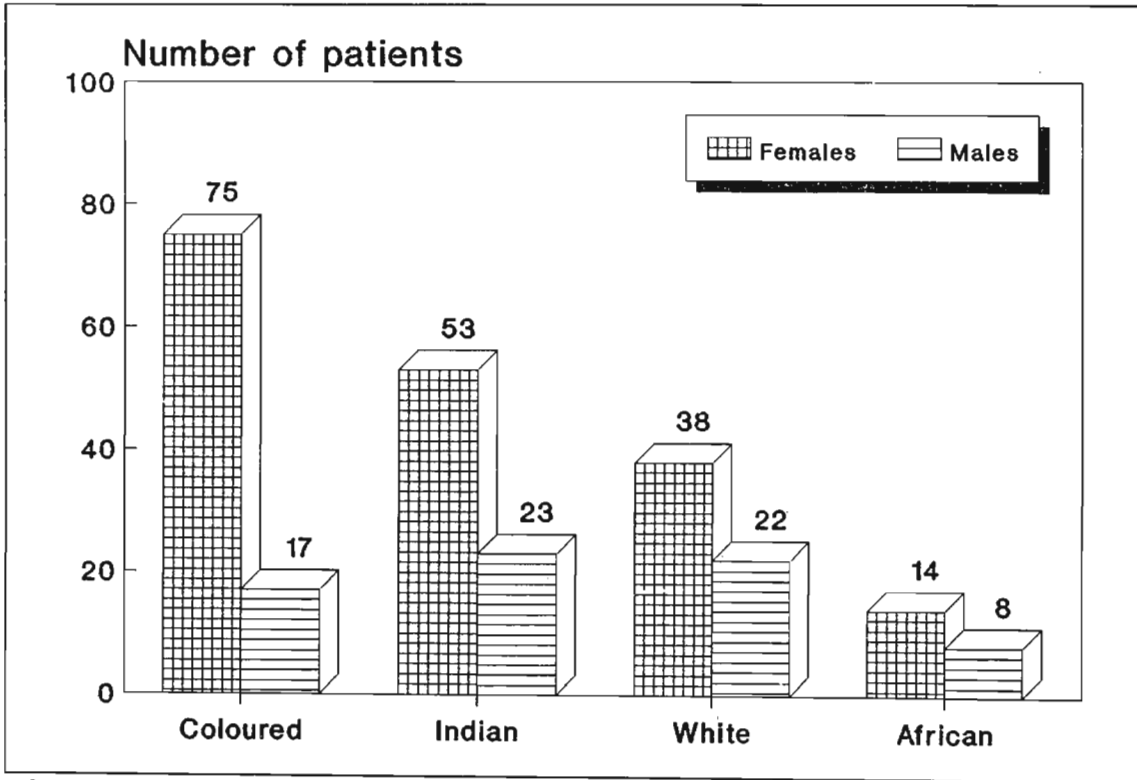


Figure 2 Male-female population ratio

More Females 180(72%) than Males 70(28%) attended the Clinic during the study period (see Table I and Fig 2); a trend that is seen among all race groups.

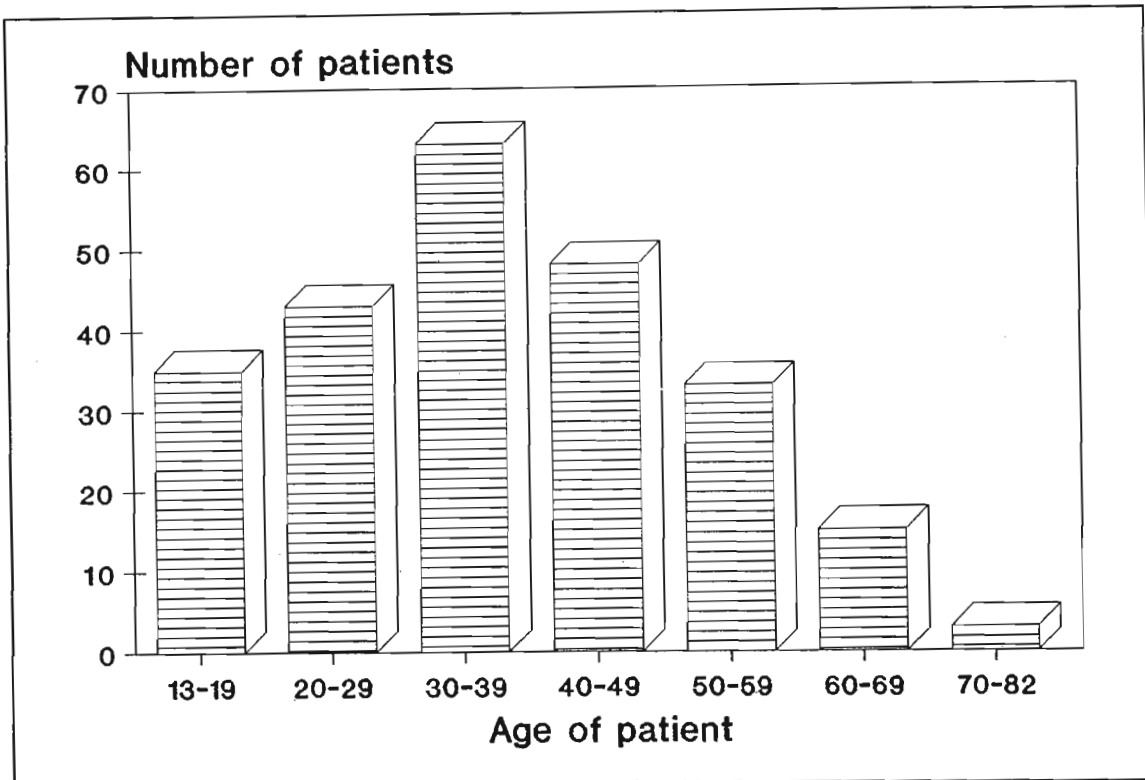


Figure 3 Age distribution

Figure 3 graphically represents the age distribution of the subjects. There is a steady rise in attendance from adolescents to adulthood, peaking in the thirties and thereafter decreasing again.

Out of the total sample (N = 250), 167(66%) were married. The remaining 83(33%) were single. Of these, 39(47%) were attending school or college, the remainder of the single subjects 44(53%) were above 21 years old and were divorced 4(5%), widowed 8(9%) and single working people 32(39%).

Figure 4 graphically represents the educational status of the subjects. Most subjects had either a primary 122(49%) or secondary education 120(48%). A small percentage 8(3%) had college education.

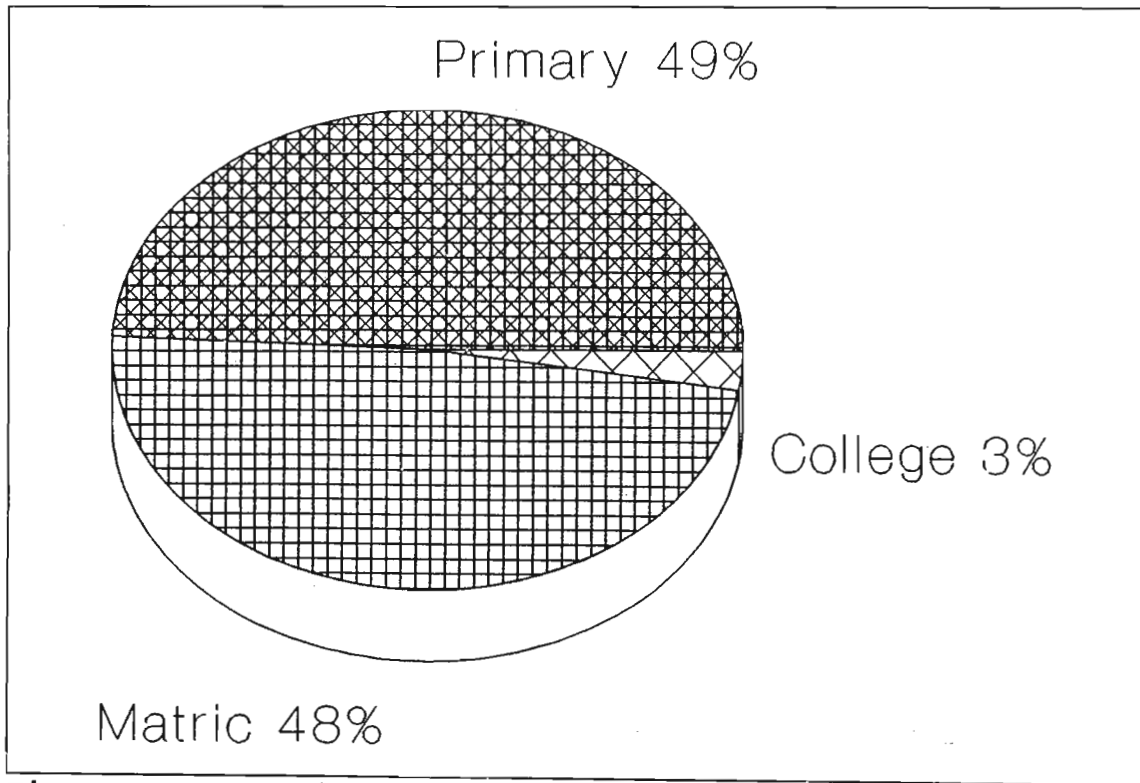


Figure 4 Education status of subjects

4.2 Asthma

Most subjects report the onset of Asthma before the age of 10 years. This includes those who were asthmatic at birth 143(57%) (see Fig 5). Also frequent, was a later onset of asthma.

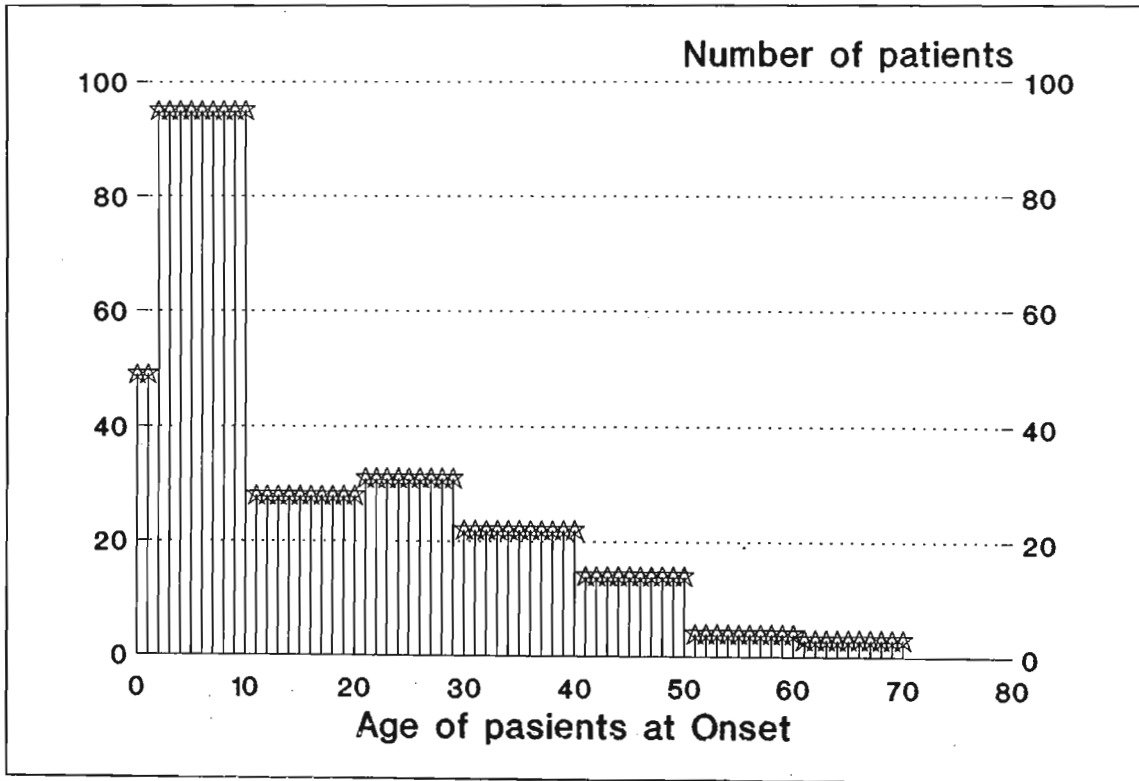


Figure 5 Onset of asthma

Table II.

Factors which precipitate acute asthma.

Factors	N	%
Virus	211	84
Weather	147	59
Exercise	64	26
Stress	42	17
Emotion	7	3
Spray paint	3	1
Total	474	192

Tabulated (Table II) are the factors which precipitated acute attacks of asthma in the subjects: Two hundred and eleven (84%) patients had asthma following upper respiratory infections due to viral illnesses. One hundred and forty seven (59%) subjects, due to change in weather, climate and the cold air of the evening were reported. Exercise induced asthma (especially in younger people) 64 (26%) was reported. The other factors were: Stress at work including, unemployment 42 (17%), emotional upset 7 (3%), spray painting 3 (1%).

One hundred and sixty five (66%) of the subjects attending the asthma clinic reported a family history of asthma.

4.3 Asthma and allergies

Table III

Allergies with Asthma

	Subjects	
	N	%
No allergy	97	39
Hayfever	142	57
Excema	8	3
Conjunctivitus	3	1
Total	250	100

One hundred and fifty three (61%) subjects with asthma had concomitant allergies (i.e. diagnosed clinically and according to history). Hayfever was the most common 142(57%). Followed by Excema 8(3%) and then allergic conjunctivitis 3(1%)

4.4 Smoking Behaviour and Asthma

A number of subjects were ex-smokers 46 (18.4%). Figure 6 represents the age of onset for smoking behaviour.

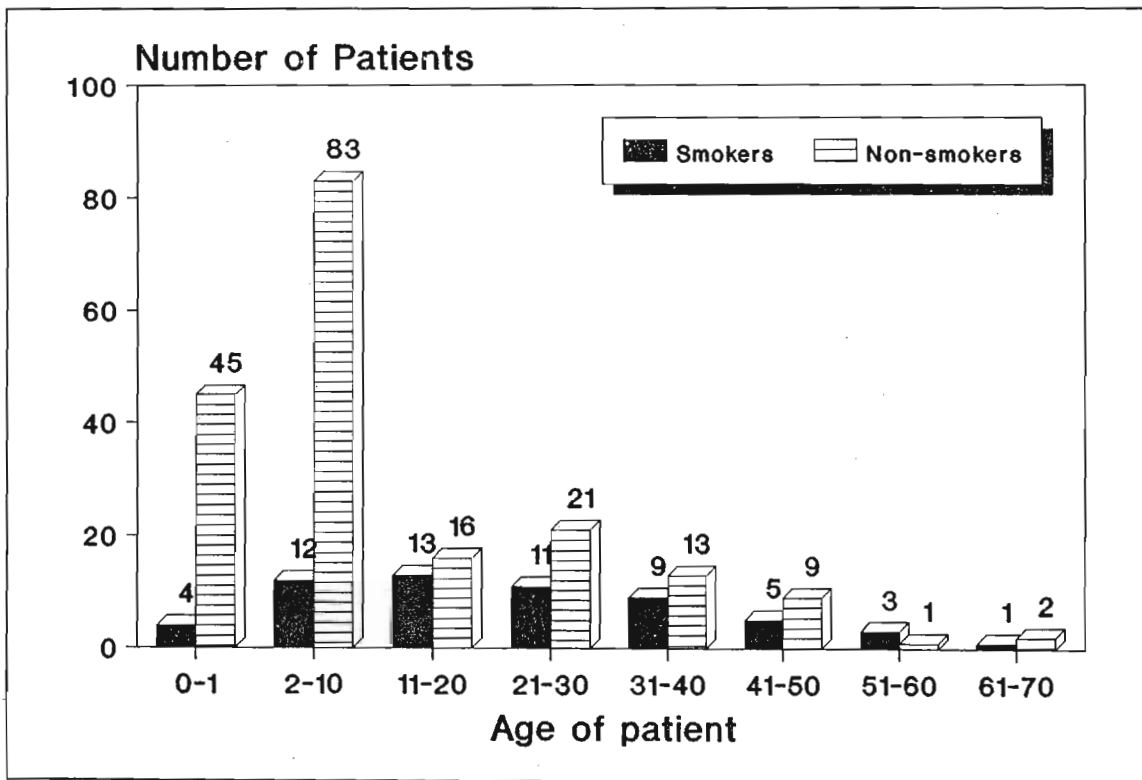


Figure 6 Onset of asthma in non-smokers and in smokers

Table IV.

Onset of asthma in non-smokers and in smokers.

	Smokers N (%)	Non-Smokers N (%)
0-1 year	4 (7)	45 (24)
2-10	12 (21)	83 (44)
11-20	13 (22)	16 (8)
21-30	11 (19)	21 (11)
31-40	9 (16)	13 (7)
41-50	5 (8)	9 (5)
51-60	3 (5)	1 (-)
61-70	1 (2)	2 (1)
Total	58 (100)	190 (100)

Table IV tabulates the onset of asthma for smokers and non-smokers. From early adolescence to early adulthood the onset of asthma seems to be correlated with smoking.

4.5 Smoking habits.

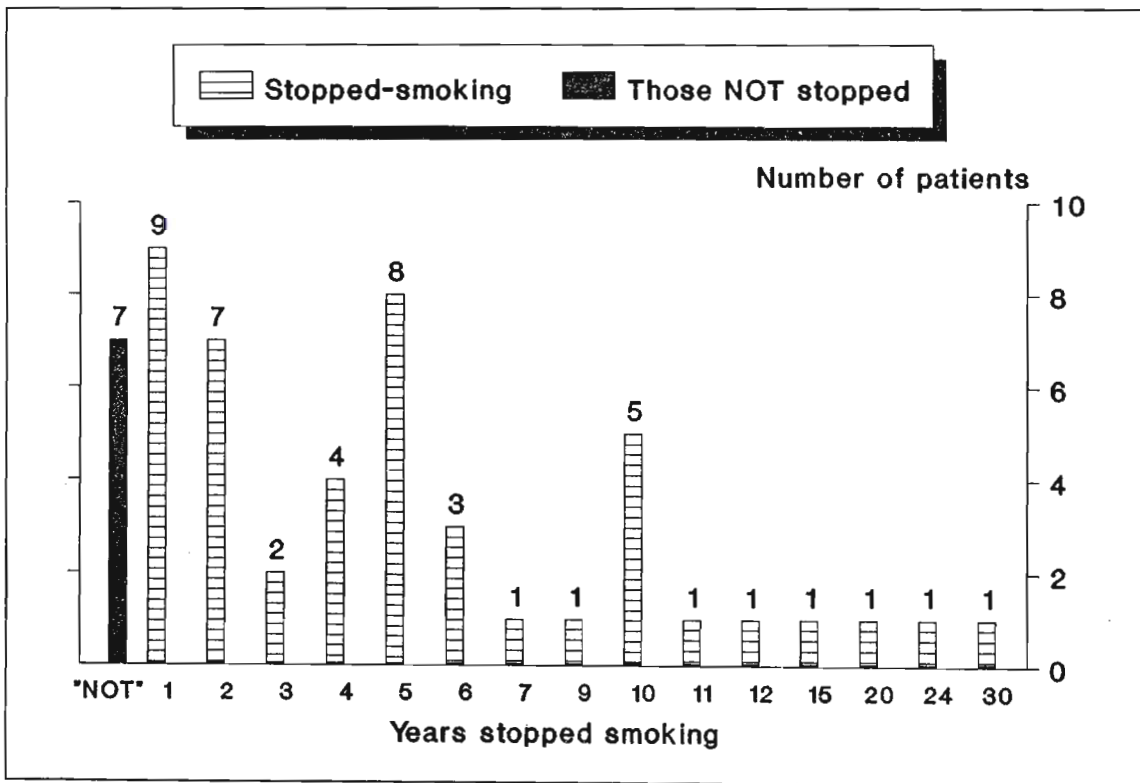


Figure 7 Those that stopped smoking and those that did not

Figure 7 shows that most subjects 46(88%) quit smoking and that only 7(12%) patients continue to smoke.

4.6 Treatment of Asthma patients

Table V.

Preventative Inhaled by subjects

Medication	Subjects	%
Corti St 50	51	20
Corti St 100	97	38
Corti St 200	76	30
Lomudal	29	11
Tilade	2	1
Total	255	100

The patients treated at the clinic received two hundred and fifty five preventative treatments during the year; some of whom are on two preventative pumps (i.e. Lomudal and an inhaled corticosteroid).

Only four patients were not on inhaled corticosteroid pumps, but were on oral prednisone, i.e. because of poor compliance and poor coordination in the use of pump.

Table VI.

Symptomatic Treatment provided to the subjects

Medication	N subjects	%
Theophylin	183	73
Oral-Cortisone	41	16
Oral-B2	26	10
Inhaled-B2	245	98
Nebulizer	21	8
Anti-Histamine	72	29
Nasal Spray	24	10

Table VI reflects the symptomatic treatments given to the subjects. Most subjects were on an inhaled β_2 agonist, 245(98%) and on theophylline-oral, 183(73%). Anti-Histamines 72 (29%) and oral-cortisone 41 (16%) were also frequently used.

4.7 Casualty Attendance

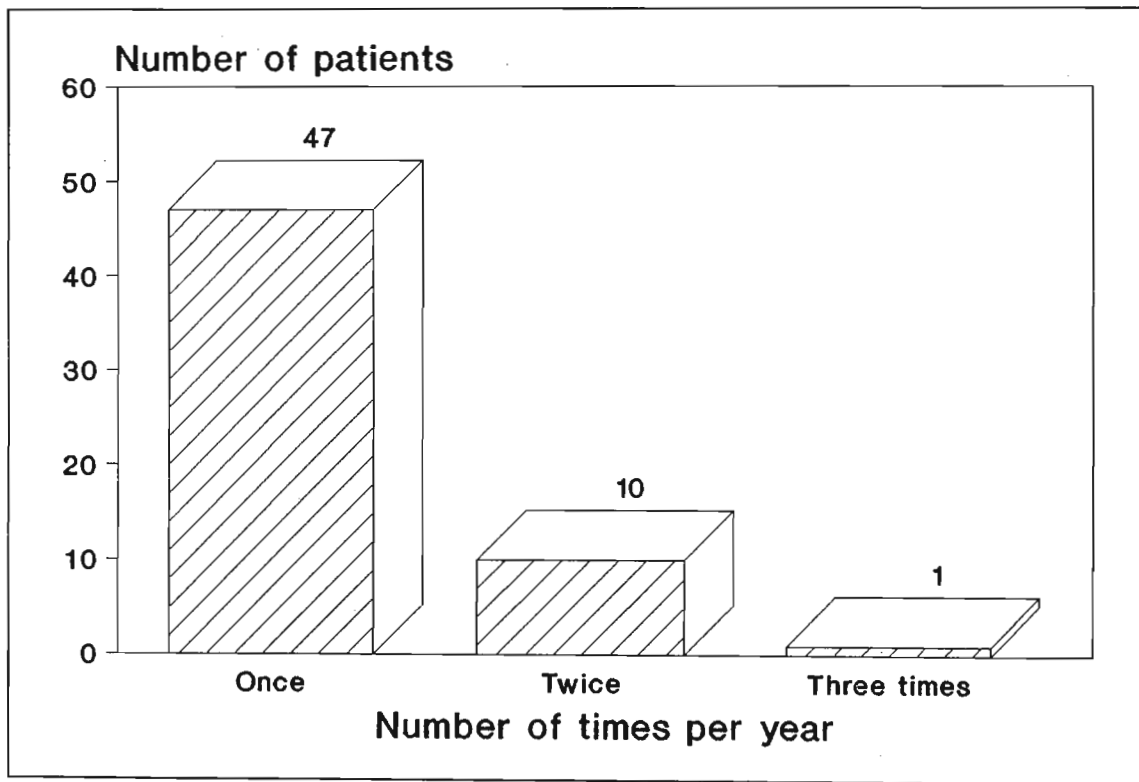


Figure 8 Casualty attendance *

Forty seven (19%) subjects attended casualty once, 10 (4%) twice and 1(0.4%) needed casualty treatment three times during 1993.

* "Casualty attendance" refers to:

The patient having an acute asthma attack, which needs emergency treatment in the casualty department of the hospital as an outpatient. After this either the patient is discharged when his condition has improved or he is admitted to the ward for in-patient treatment if his asthma is getting progressively worse.

4.8 Hospital admittance by Clinic patients

Of the patients attending the clinic 69(28%) were admitted to the ward. One hundred and eighty one (72%) had no admissions during the corresponding period.

4.9 Hospitalisation of asthmatics

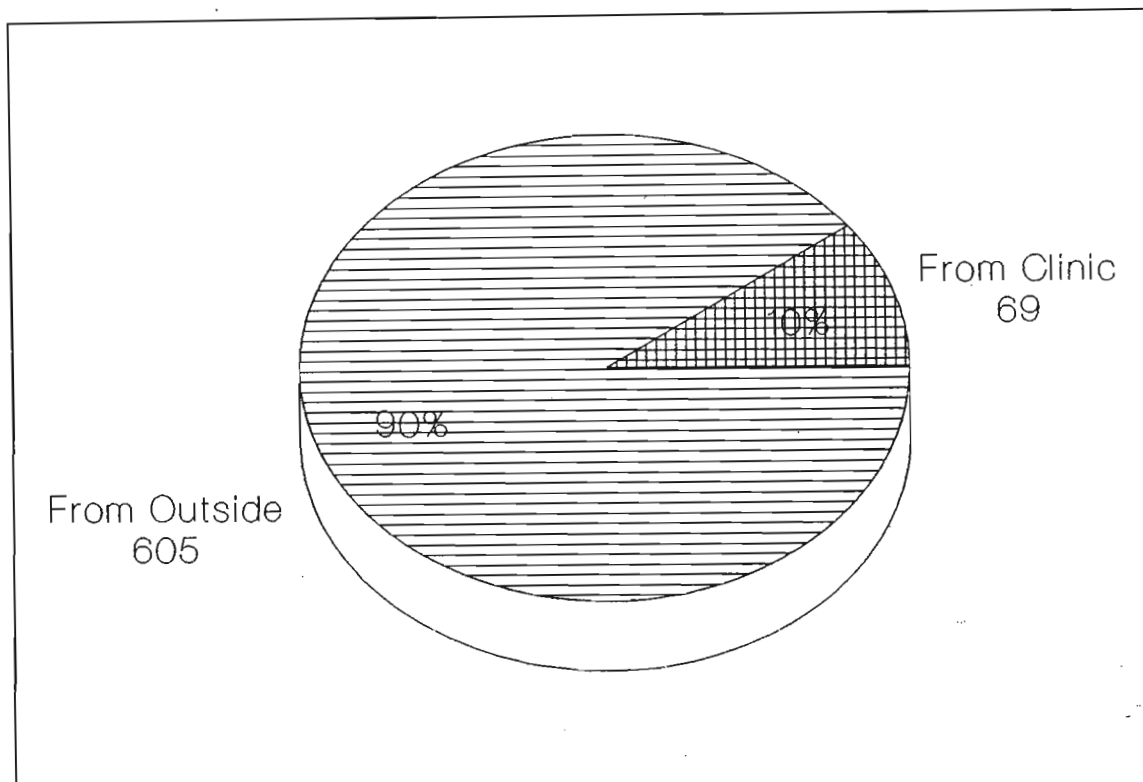


Figure 9 Hospitalisation of asthmatics during 1993

A total of 674 patients with asthma were admitted to the different wards at Addington Hospital during 1993. The patient was classified as 'asthmatic' if the first diagnosis on the admission form was asthma. Fig 8 includes all the patients either admitted from outside the hospital, medical clinics, casualty, and including patients attending the asthma clinic.

4.10 Irregular attendance clinic

Irregular attendance by 26 out of 250 patients:

Table VII	No of Patients	Percentage
PF Improvement	14	54
PF Non-Improvement	12	46
Total	26	100

Table VIII	No of Patients	Percentage
FEV1 Improvement	15	58
FEV1 Non-Improvement	11	42
Total	26	58

In spite of irregular attendance to the clinic, of the 26 patients 14 subjects still show a slight improvement in PF and 15 patients improvement in FEV₁.

Forty six subjects had irregular clinic attendance, but only 26 (56%) qualified for comparison of PF and FEV1 improvement.

Table IX

Subject	PF+ (l)	PF- (l)	Signifi cant	FEV1+ (%)	FEV1- (%)	Signifi cant
1	60				9	
2		20		2		
3	30				1	
4	20			2		
5		30			5	
6		30		2		
7		40		3		
8		210			29	
9	10			3		
10		20			2	
11	20			2		
12	50			9		
13	100		*	10		**
14	50			3		
15		30			9	
16		60			6	
17	50			4		
18	30			5		
19		300			41	
20	90		*	11		**
21	50			6		
22		60			6	
23		60			1	
24	50			1		
25	60			8		
26		120			25	

(*) = Significant PF+ improvement.

(**) = Significant FEV1 improvement.

4.11 Lung Function Comparisons

Table X PF Comparisons

	Subjects with Improvement	Subjects not improved	Total
Ex- & Smokers	20 (63%)	12 (37%)	32 (100%)
Non-smokers	72 (67%)	36 (33%)	108 (100%)
Total	92	48	140

Table XI FEV1 Comparisons

	Subjects with Improvement	Subjects Not- improved	Total
Ex- & Smokers	19 (59%)	13 (41%)	32 (100%)
Non-smokers	72 (75%)	24 (25%)	96 (100%)
Total	91	37	128

FEV₁ = The Volume of air (in litres) expired in one(1) sec of the Forced Vital Capacity (FVC) and measured on the "Flow Volume Loop".

PF or PEF (Peak Flow) = The Forced Expiratory Flow in litres per sec and measured with the PeakFlow meter.

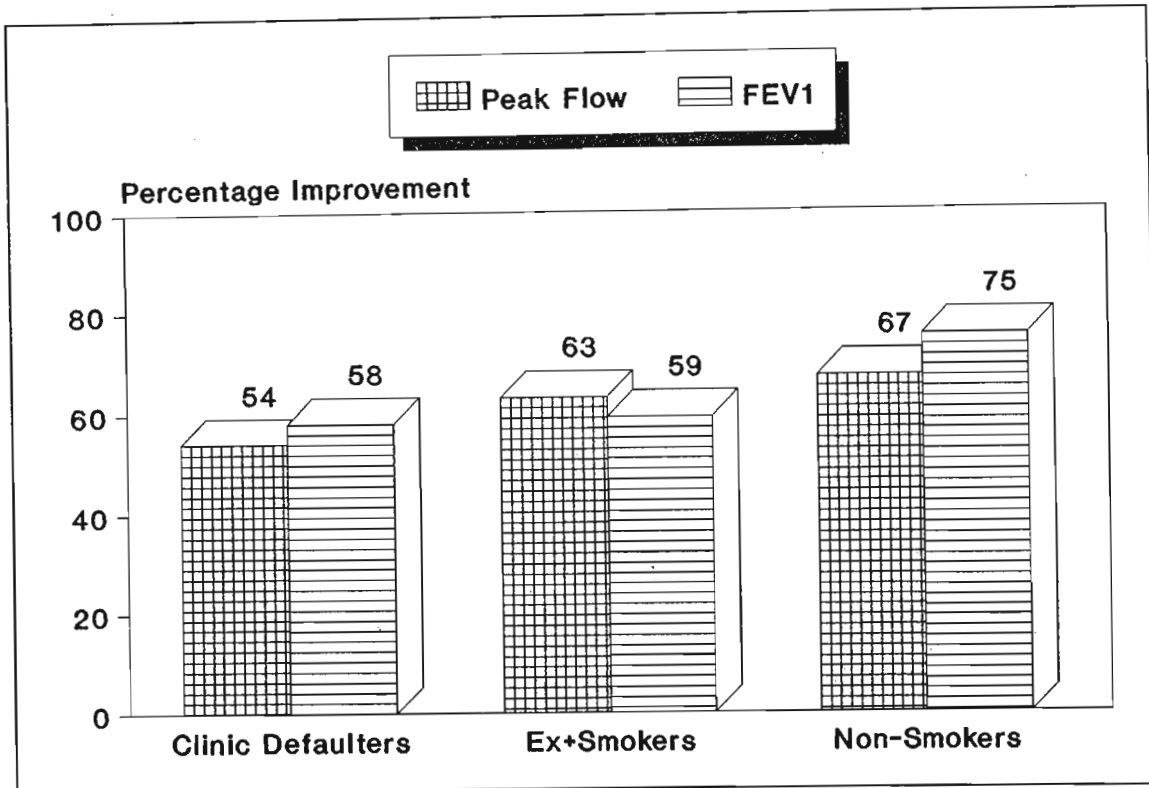


Figure 10 Comparison of lung function improvement for clinic defaulters, ex- and smokers, non-smokers.

A comparison was made of the three representing groups above. The following results emerged:

1 Non-Smokers. The greatest improvement in Lung functions was observed in this group. Sixty seven percent had improvement in PF and 75% in FEV1

2 Smokers and Ex-Smokers group show less improvement in Lung functions.

3 As expected, the Defaulter group shows the least improvement in Lung functions (see Fig 10)

Chapter 5

Discussion.

In this chapter are discussed the results presented earlier on.

Demographics

Attendance to the asthma clinic at Addington Hospital, Durban vary considerable according to race, i.e. Coloured 92 (37%), Indian 76 (30%) and Whites 60 (24%) subjects were seen most often. This trend may be attributed to the policy change about the use of hospital facilities, taking place in the country. Addington hospital prior to 1990, under the apartheid laws¹, provided a service to the Coloured and White communities only. Hence the high attendance by the Coloured and White patients. The high attendance of Indian and a growing number of African subjects 12 (9%) may be because these communities live close to the hospital. However, most African patients live outside the Durban area and transport is not easily available or affordable. It has been demonstrated that proximity and easy access to health services influences its use (Pillay, 1993)

According to the results more females 180 (72%), than males 70

¹ With the abolishment of the apartheid laws, other race groups were allowed access to this facility. The high attendance by Indian patients may be the result of there being a number of Indian residential areas near Addington hospital. As more people of colour move into the areas previously restricted to Whites, this profile of attendance is expected to change.

(28%) attended the clinic. A trend which is also seen in other studies (Pillay 1993). One of the reasons being that females more readily seek help than their male counterpart.

Feeny, Gilmartin, Gleeson, Harris, Kiely (1993) also found that among adults, slightly more females (51.4%) than males (48.6%) attended the outpatient clinics in Ireland.

Isoaho, Puolyoki, Huhti, Kivela, Tala (1994) in an epidemiology survey of Asthma in Finland, in the population aged 64 years and over, found that of the 1196 participants 488 (41%) were men and 708 (59%) were women, showing again that more females than males seem to be affected by asthma in the elderly people.

The difference in prevalence between males and females was greatest amongst the smokers, which may be due to a previous high mortality among asthmatic men who had been smoking, or a lack of the typical characteristics of asthma in men with long histories of smoking.

The above is supported in our study as well, where females above 50 years of age represented 55 (81%) of the subjects, compared to 13 (19%) males. The total amount of patients still smoking was 7 (10%) who were in the elderly age group of 50 years and over as well.

The age distribution of patients attending our clinic showed that there was a steady rise in asthma from adolescents to adulthood, peaking in the thirties and there after decreasing again. Feeny et al. (1993) in their study found that there was a peak in early adolescence (10-14 years - 50%) and again in later life (55-64

years of age - 13.4%). Weiss and Budetti (1993) reports that asthma is the most prevalent chronic illness in childhood. They further add that it is a condition that affects patients of all ages, its incidence is highest among children and young adults, a finding also supported in our studies.

Regarding educational status of the subjects, 122 (49%) had primary education, 120 (48%) had secondary education, and a small percentage 8 (3%) had tertiary education. Of these, 39 (33%) subjects were still attending high school

As seen in Figure 5. From the results that emerged, most subjects reported having asthma at an early age, i.e. 143 (57%) at either birth or before the age of 10 years. The second highest onset was between 10 and 30 years, 58 (19%). After this there is a decline in onset from 40 to 70 years, only 2 (1%) reported the onset of asthma after the age of 70 years. Feeney et al. (1993) found that the age of diagnosis of asthma was very different among adult asthmatics and the present-day children with asthma. In the 34 adults diagnosed before the age of fifteen, 50% presented before the age of five. In the paediatric group (all diagnosed before the age of fifteen), 70% had their asthma diagnosed before the age of five. The implication being that presently asthma is either manifested at a younger age or that there has been a major change in diagnostic patterns. Charlton, Charlton, Broomfield, Campbell (1972) evaluated a

nurse-run clinic and found that in 105 patients whose ages ranged from 8 to 83 years; the mean age of adults (aged above 16 years) was 56.4 years. In our study the subject's age ranged from 13 to 82 years with a mean of 40,5 years. This thus means our patients fall into a younger age group. See Figure 3.

According to our study the factors which precipitate acute asthma attacks were: viral infections in 211 (84%) of subjects and change in weather in 147 (59%) of subjects. Bardin, Johnston, Pattemore (1992) found that viruses were a major cause of asthma attacks. According to them,

"asthmatics tend to develop frequent colds setting in motion a sequence of events culminating in airway obstruction and symptoms of wheezing, coughing and chest tightness. Those may reflect independent inflammatory changes caused by a simple additive effect of viral damage to the mucosa, super imposed upon pre-existing allergic inflammation. Few if any symptoms will develop in normal subjects with a mild cold, where as significant symptoms may ensue if the cold is severe and induces marked lower airway swelling, secretions and smooth muscle contraction. In an asthmatic even a mild cold frequently induces exacerbation of symptoms, while serious life threatening asthma attacks may occur associated with a severe cold. The combined effect of both asthma and viruses may thus be amplified and result in a sustained and refractory period of airway obstruction, severe symptoms and unstable asthma. Spread of viruses through the community to

susceptible individuals may be the single most important cause of sustained exacerbation of asthma" p 819.

Gergen, Weiss (1992) in their study found the same and stated that viral infections are well recognized as important precipitants of asthma attacks.

Another factor precipitating acute asthma attacks was the change in weather. One hundred and forty seven (59%) of subjects reported acute attacks with a change of weather; very hot and humid or hot and dry weather followed by a thunder storm or a sudden cold spell. Bellomo, Gigliotti, Treloar, Holmes, Suphioglu (1992) states that "seasonal factors are released into the atmosphere during a storm, preceded by a hot and windy day." p836. They documented the occurrence of two thunder storms associated epidemics of asthma in the city of Melbourne, Australia; both epidemics had a significant impact of the city's health system, which was stressed by the sudden influx of patients, the rise of asthma induced emergency hospital attendances, being approximately ten fold.

Another factor that contributed to the precipitation of asthma attacks was exercise, especially in the young adolescents and early adulthood - 64 (26%). It has been found that exercise induced bronco-spasm develops in 70% to 90% of patients with asthma, following cessation of an appropriate exercise stress

test (Wright & Martin 1995). Broncho-constriction with wheezing develops within 10 minutes of cessation of exercise, and airway obstruction returns to baseline by 30 to 60 minutes after stopping the exercise. Physical activities most likely to trigger asthma are; the type, duration and intensity of the activity, as well as the environment in which the activity is pertained, affects the development of broncho-spasm. Strenuous activities that increase ventilation are most likely to provoke symptoms. The strongest known exercise in development of broncho spasm is running, particularly in cold weather. Even jogging and fast walking may start broncho spasm. Low temperature and low humidity are aggravating factors. Duration of exercise for more than 6 minutes is another significant stimulus (Wright et al. 1995).

A factor also causing acute attacks in 3 (1%) subjects was the fumes from spray painting. These patients still continued to work since it is their only means of income and are thus exposed to the precipitating factor. Palmer & Topping (1995) documented in their study spray painting as one of the activities responsible for asthma and acute exacerbations. The substance used in spray painting that is responsible for acute attacks is isocyanate.

Gannon, Weir, Robertson, Burge (1993) observed that as Asthma is defined as a reversible disease, removal of the causative agent

in occupational asthma is expected to lead to complete recovery. Unfortunately, several of their studies have shown that this does not usually occur. However, they showed that the socio-economic factors such as a considerable loss of earnings is the reason for patients continue under those circumstances which cause their acute asthma attacks.

Stress at work and at home precipitated acute attacks in 42 (17%) of subjects. No relevant literature was found on stress and asthma, except about family dysfunction in asthma (Gustafsson, Bjorksten, Kjellman, 1994). They state that family interaction seems to be a result rather than the cause of the wheezing.

One hundred and sixty five (66%) of subjects attending the asthma clinic at Addington hospital reported a family history of asthma. This trend is also well documented in literature. Feeny et al. (1993) found that the familial influence in asthma is striking with 55% of adults and 75% of children having a close relative with asthma.

Asthma and allergies often go together, a trend seen in this study. One hundred and fifty three (61%) subjects reported concomitant allergies. Hayfever was found in 142 (57%) of subjects, excema in 8 (3%) and allergic conjunctivitus in the young adolescents 3 (1%). Hopkins (1994) in his lecture about Wheeze, Sneeze and Genes stated that

"Recurrent wheeze and sneeze are becoming prevalent symptoms in developed countries. The principal cause is atopy or an

allergic response to otherwise innocuous inhaled antigens - as house dust mite and grass pollens. In the mucosa of the lungs or nose, an acute reaction finds place with swelling, itching and the characteristic symptoms of allergic asthma and rhinitis; including wheeze, cough, chest tightness, sneeze, nasal discharge and blockage. Atopy results from the inter action of genetic and environmental factors, most atopic individuals respond to multiple allergens. There has long been a strong clinical impression of familial aggregation of atopy, but no simple mode of inheritance has been found." p 560

In this study the relationship between smoking behaviour and asthma was as follows: subjects who started asthma at an early age - birth and below one year - were not inclined to start smoking in later life; only 16 (11%) out of 144 patients became smokers. The patients who started smoking during adolescents and adulthood were more inclined to start smoking in later life. Forty two (40%) out of 104 subjects reported smoking. From early adolescents to adulthood the onset of asthma seems like to be correlated with smoking. Gergen et al. (1992) stated that cigarette smoke is a well known respiratory irritant and, for many families, an important source of in-door air pollution. The smoking by the primary care taker - usually the mother - appears to be the most important exposure source for the child. According to Rees et al. (1995), a common non-specific stimulus is cigarette smoking. Up to a fifth (20%) of asthmatics continue to smoke and strenuous efforts should be made to discourage smoking in both asthmatics and their families. This study showed

that most subjects had stopped their smoking 46 (88%) and only 7 (12%) of patients continued smoking.

However, a trend observed in this study is that patients had stopped smoking for a period which varied from 1 to 30 years. The greatest number stopped smoking within the past 5 years, i.e. 30 (65%) out of a total of 46 patients. Possible reasons being worsening of their clinical condition, recurrent chest infections and also education at the asthma clinic about the hazards of smoking.

All the patients treated at the clinic (250) were on a preventative inhaler, i.e. either Corticosteroid 224 (90%), Lomudal (sodium cromoglycate) 29 (12%) or Tilade (nedocromil sodium) 3 (1%). Only 4 (1.5%) subjects were unable to use a pump because of poor coordination. Symptomatic treatment used by the patients attending the clinic consisted of Inhaled-B2 agonist 245 (97.5%) out of 250 subjects and second most used medication was oral Theophyllin 185 (73%). Oral B2 agonist was also used by 26 (10%) of subjects, Anti-Histamine 72 (29%) and Nasal Spray - preventive cortisone in 24 (10%).

Rivo et al. (1992) stated that "the goals of therapy are to maintain normal pulmonary function rates and normal activity levels, prevent chronic and troublesome symptoms, minimize exacerbations and avoid adverse effects of asthma medications. Proper management of asthma involves continuous attention to four

essential elements:

- (1) asthma status must be monitored using objective measures, such as PEFR;
- (2) appropriate pharmacologic therapy is necessary to relieve or prevent symptomatic airway narrowing in mild asthma and to reduce bronchial inflammation in moderate and severe asthma;
- (3) asthma exacerbations should be reduced by minimizing exposure to allergens and irritants, and
- (4) physicians must establish a therapeutic relationship with patients and their families that will encourage patients to gain the skill and confidence to take an active role in managing their asthma.

Rees et al (1995) stated that there has been a general move to be more aggressive in the treatment of asthma; the goal being freedom of symptoms rather than tolerance of shortness of breath and the frequent need of broncho dilators; B2 agonist on demand rather than treatment with B2 agonist and Theophylline twice per day, when necessary. There is also renewed interest in their possible anti inflammatory role. Regular inhaled Corticosteroids, however decreases reactivity as (probably) do sodium cromoglycate and nedocromil sodium. There is now evidence that regular use of prophylactic agents reduces inflammation of the airways. The hope is that reduction in the inflammation will prevent damage to the airways, which would otherwise go to produce irreversible obstruction.

B2 agonists are the most effective bronchodilators in asthma. They start the work quickly within 15 minutes and last for from

4 to 6 hours. In this study 245 (98%) of the patients were on inhaled B2 agonist. In addition, 10 (4%) were on a long acting preparation of inhaled B2 agonist, used twice daily, when not controlled on short acting B2 agonist and inhaled cortico-steroid pump. According to Rees et al (1995), long acting B2 stimulants should be used only in addition to inhaled cortico-steroids. They further stated that Theophylin is an effective bronchodilator and may also have anti-inflammatory actions. Theophyllins are an alternative to long acting oral B2 agonists. However, both can be used for controlling nocturnal asthma.

A very large number of patients in our study 183 (73%) use theophylin in addition to being on an inhaled B2 agonist and inhaled cortico-steroid. Further, 21 (8%) were on nebulising with a B2 agonist and Ipatropin bromide (an anticholinergic agent) and used this in acute exacerbations.

Seventy two (29%) of patients were using antihistamine at night for hayfever and 24 (10%) use a preventative nasal cortico-steroid spray for hayfever.

Forty one (14%) patients in our study were on oral steroid, high doses for short periods (20-40mg a day for 7-10 days), when needed for acute attacks. Only 4 (1.5%) of patients were on a maintenance dose of oral steroids (5-10mg a day for many months to years). Rees et al (1993) points out that occasional

asthmatic patients have to take longterm oral cortico-steroids, but this should be only after failure of vigorous treatment with other drugs and when the symptoms of risks of the disease is balanced against the adverse effects of longterm treatment with oral cortico-steroids. It is important to remember that, in contrast, short courses of oral steroids for exacerbations of symptoms, and inhaled steroids have few serious problems. Short courses of oral steroids may be stopped abruptly or tailed off over a few days.

Out of the 250 patients attending the asthma clinic during the study period, only 58 (23%) needed casualty treatment, because of acute attacks. The remainder of the patients, 192 (77%) had no casualty attendances at all. They only attended the Asthma clinic from 2 to 4 times a year for maintenance treatment. From the 58 (23%) patients needing casualty treatment 47 (19%) attended casualty once, 10 (4%) attended twice and 1 patient (0.4%) needed treatment for acute exerbation three times that year. Feeny et al (1993), found that on average the patients had 5 General Practitioner visits and 2 casualty attendances in the preceding year.

Only 69 (28%) of the patients attending the clinic during 1993 were admitted as in-patients to the wards. They had an average stay of 3 days in hospital before they were discharged home and referred to the clinic for follow-up. After their discharge from hospital they were given a month supply of medicine and a follow-

up visit was made at the asthma clinic for assessment beside their normal follow-up booking.

Of the total of 674 of asthma patients admitted to Addington Hospital to the different wards during 1993, only a small percentage 69 (10%) of these patients belonged to the Addington asthma clinic. The other admissions, 605 (90%) patients had never attended our clinic. They were admitted from different sources: referred from private doctors, other hospitals, medical clinics inside Addington hospital, direct admittance from casualty by patients having sudden and unexpected attacks (often people on holiday or visiting Durban).

Of the 250 subjects attending the clinic, the majority 204 (86%) had regular attendance and only 46 (14%) had irregular attendance.

Irregular attendance is described as not attending the clinic at the appointed dates for follow-up and medications. Twelve subjects showed a decrease in Peakflow and 11 subjects showed a decrease in FEV1, as can be expected. However, 14 subjects still showed a slight improvement in Peakflow and 15 in FEV1. Only two patients showed a significant improvement in Peakflow of 100 and 90 litre and an improvement of 10% and 11% in FEV-1 respectively. The possible reason for this latter improvement was that the overall condition of their asthma had improved, with the result that the patients cut down on their medication, which made their

medicine last longer.

Some of the patients, 46 (18%) who had been smoking in the past (ex-smokers), showed an improvement in lung functions. Statistics were available on only 32 subjects; 20 patients (63%) showed an improvement in Peakflow and 19 (59%) showed an improvement in FEV1. However there were 12 (38%) patients who showed no improvement in Peakflow and 13 (41%) patients who did not show an improvement in FEV1. See Table X.

The most likely reasons for these negative results may be that:

- (1) some patients are still smoking, 7 (3%),
- (2) patients with a long history of smoking often have chronic obstructive airway's disease, which is only partly reversible on treatment.

Good results were seen in the non-smokers. Statistics were available for 108 and 96 patients respectively for PF and FEV1. Seventy two (67%) of patients showed an improvement in Peakflow. Seventy two (72%) showed an improvement in FEV1. The above results might not be statistically significant, but has shown to be of clinical significance with the patients having less overall casualty attendance and hospital admissions. Only 23% of the patients needed casualty treatment during the study period and 28% of the clinic's patients had hospital admissions for the same period.

In contrast to the above, Weiss et al (1993) reported a 6%

increase of asthma related hospitalisations during the past decade for patients of all ages. Drummond, Abdalla, Buckingham, Beattie, Lindsay (1994) stated that the prevalence of asthma is increasing as are admission rates for adults.

McFadden, Hejal (1995) stated that 1.8million patients in the USA each year seek care for acute episodes in emergency departments.

Rutten-Van Molken, Doorslaer, Rutten (1992) stated that the number of hospitalisations due to asthma has been shown to be increasing significantly in children.

Tetttersell (1993) highlighted that asthma morbidity appeared to be improved by attendance at a nurse-run asthma clinic. This is also seen in our study.

Garrett, Kolbe, Richards, Whitlock, Rea (1994) stated that in New Zealand hospital admission rates, which had begun to increase at the same time as mortality rates, remained elevated throughout the 1980s.

Phelan (1994) found that Hyndman and colleagues in a study from East Anglia found that the increase in admission to hospital of children with asthma, which has been reported from many countries may be reaching a plateau or even falling.

Griffiths, Naish, Sturdy, Pereira (1996) stated that they had shown an association between asthma prescribing and morbidity experienced by patients with asthma, as reflected in admissions to hospital. Practices with higher prescribing ratios had lower admission rates to hospital. A trend also seen at Addington Hospital asthma clinic, which showed a high prescribing profile and less hospital admissions.

Chapter 6

CONCLUSIONS

In this study of the asthma clinic it was shown that the clinic served Durban and surrounding areas.

The clinic however was relatively small and held only once a week for four hours. Education at the clinic was done by a special trained sister and time was taken to instruct the patients about the use of their pumps and medication.

Only a small percentage of the patients attending the clinic had visits to casualty during the corresponding period. Hospital admissions from the clinic patients amounted to 28% only.

Nearly all the patients were on a preventative pump (inhaled corticosteroid and/or Lomudal Tilade).

An average of 19 patients per clinic session was seen.

In conclusion it was found that the great total of asthmatics admitted to Addington Hospital during 1993 only ten percent were clinic attenders. Therefor, 90% of patients admitted with Asthma during 1993 never attended the Asthma Clinic.

Of all the patients attending the asthma clinic, the non-smokers (who attended regularly) did very well and showed clinical and lung function improvement.

Chapter 7

RECOMMENDATIONS

1) Improvement in the services of the clinic should include the following:

a) More time should be available for clinic sessions, at least two to three times per week,

b) More staff should be available for patient education.

c) The patients should be advised to purchase their own peak-flow meters and if they can't afford this, to procure one through the hospital at a reduced price. In this way they will be able to assess their condition more accurately and prevent unnecessary attendance of casualty or admission to hospital,

d) Emphasis should be placed on regular attendance and use of medication and to stop smoking,

e) Patients who are well controlled should be moved out of the clinic to attend the relevant outpatient department or peripheral clinics. More space would be available for new patients in this way and an increased turnover of patients would be possible.

2) Asthma patients discharged from the wards should be referred to the asthma clinic instead of other medical-outpatient clinics.

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Appendix 1

QUESTIONNAIRE

(1) Patients:

Number [.....] Age [.....]yrs Sex [...] M or F

Race [.C.] [.I.] [.W.] [.A.]

Marital status [.M.] [.S.] [.D.]

(2) Address:[.....]

[.....]

Are there any nearby factories or industries? [No]

[Yes,]

(3) Family size: Are you living with your family [No] [Yes]

(4) Has any other member of your family asthma? [No] [Yes]

(5) Are you suffering from any allergies? [No] [Yes]

Excema[...], Hayfever[...] or other[.....]

(6) Are you employed at the moment? [No] [Yes]

What is your occupation?

[Unskilled] [Skilled] [Factory] [Business] [Professional]

If un-employed: [Housewife] [Scholar] [Pensioner] [Grant]

What is your education? [Primary] [Matric] [College]

- (7) 1) Do you smoke? [No] [Yes]
- 2) Have you smoked before? [No] [Yes]
- 3) And how long ago did you stop? [.....]
- (8) At what age did you start getting asthma?[.....]
- (9) When last were you admitted to hospital? [.....]
- And for how long? [.....]
- When last treated at Casualty? [.....]
- (10) Any specific factors which bring on an acute attack?
- [.....]
- [.....]
- (11) What treatment are you on?
- 1) Inhaled: Cortico Steroid [1..] [2..] [3..]
- Sodium Chromoglycate [4..]
- Tilade [5..]
- Oral Cortico Steroid [...]
- 2) Theophylline.[.....]
- 3) Beta2-adrenergic agonist [.....]
- 4) Antihistamine.[.....]
- 5) Nasal spray.[.....]

Appendix 2.

FLOW SHEET

FLWSHEET			
DATE			
PATIENT NAME			
NUMBER			
ADDRESS			
SEX			
AGE			
ONSET			
PEAK FLOW			
FEV ₁			
ATTENDANCE AT CLINIC: a) Regular b) Default			

Appendix 3.

CONSENT FORM

I,hereby give my
 unreserved consent to Dr.A.W.Lubbinge to be examined
 medically and to allow her permission to perform whatever
 tests she may deem necessary for the purpose of the study of
 which I have been fully informed. All information will be
 handled in the strictest confidence.

Dated: .../.../19...

Signature:.....

Witness:.....

Dr.A.W.Lubbinge