Chapter 6

RESULTS AND ANALYSIS OF DATA

The results of this work are shown in tables (4 to 27 and figures 9-19). The following are brief comments on the results.

Characteristics of the Survey Population:

A total of 10,000 school children were surveyed. The overall return rate was 81.4%, but 72.6% or 7258 parents actually completed the questionnaire correctly.

These studied pupils represented 35.3% of the whole school children of elementary schools in Benha City in the school year 1984/1985 (as the total number of pupils was 20,562). They were 3936 males and 3322 females with a male to female ratio of 1.2:1. Their ages ranged from 5 years up to 15 years (Tables 5 and 6).

Point Prevalence of Bronchial Asthma:

The overall point prevalence of childhood asthma in this study was found to be 3.6%. The prevalence in each school was reported in table (4). It ranged from 2.1% in school number 11 up to 4.9% in school number 2.

Sex Consideration: (Table 5)

The prevalence of bronchial asthma among males was 3.8% and among females was 3.5% with a male to female ratio of 1.1:1. The difference was insignificant ($p > 0.05$).

Age Consideration:

The prevalence of childhood asthma according to age is illustrated in table (6) and Fig. (9). The highest ratio was at the age of > 8 y - 9 y where it was 4.9%. The least value was at the age of > 14 y - 15 y where it was 2.2%. The difference between the 2 ratios was insignificant ($p > 0.05$). Age distribution of the asthmatic children (264 patients) is shown in Fig. (10).

Degree of Education of Fathers:

The prevalence of asthma was 6.3% in the group of children of the illiterate fathers. The prevalence decreased significantly in the other groups. It was 3.3%, 2.7%, 2.4% and 2.3% among children of fathers who could read and write, fathers finishing preparatory school education, fathers finishing secondary school education and college graduate fathers respectively as shown in table (7) and Fig. (11).

Degree of Education of Mothers:

The prevalence of bronchial asthma varied with different degrees of education of mothers whether illiterate, could read and write only, finishing their preparatory school education, finishing their secondary school education or college graduate. It was 5.2%, 2.1%, 4.8%, 1.8% and 2.3% respectively. In comparison with prevalence in the illiterate group, the difference was significant ($p < 0.01$) or highly significant ($p < 0.001$) as shown in table (8) and Fig. (11).

Occupation of Fathers:

Bronchial asthma was most prevalent among children of semiskilled fathers (6%) and least prevalent among children of professionals (2.2%). The difference was highly significant ($p < 0.001$). The prevalence of asthma in relation to occupation of fathers is shown in table (9) and Fig. (12).

Work of Mothers:

Prevalence of childhood asthma was higher among children of non-working mothers than those of working mothers. It was 4.2% and 2.2% respectively. The difference was highly significant ($p < 0.001$) (Table 10

Family Income:

The prevalence of bronchial asthma was highest (5.1%) among children whose family income was ⩽ 50 LE per month. The prevalence decreased significantly with rise in monthly family income as shown in table (11) and Fig. (13).

Family Size:

No significant difference in prevalence of childhood asthma in relation to family size was found as shown in table (12) and Fig. (14).

Crowding Index:

$$\text{Crowding index} = \frac{\text{No. of persons}}{\text{No. of rooms}} \text{ of the house}$$

Prevalence of bronchial asthma was as high as 6.9% in overcrowded houses with 5 or more persons living in one room. The prevalence of asthma decreased gradually with decrease in crowding index as shown in table (13) and Fig. (15).

Number of Persons Sharing the Pupil's Bed-room:

Prevalence of asthma was significantly high among children whose bed-rooms were overcrowded with 4 or more persons. Table (14) and Fig. (16) showed the prevalence of childhood asthma in relation to number of persons sharing the pupil's bed-room.

Family History of Bronchial Asthma:

Prevalence of childhood asthma was found to be 28.2% among children with positive family history of asthma and 2.6% among those with negative family history of asthma as shown in table (15). The difference was highly significant ($p < 0.001$).

Family History of Allergic Disease:

Prevalence of childhood asthma was as high as 24.5% in children with positive family history of allergic disease and it was 2.4% in children with negative history as shown in table (16). The difference was significant ($p < 0.05$).

Personal History of Allergic Disease:

Children with positive personal history of an allergic disease showed higher prevalence of asthma than those with negative history. Prevalence of asthma was 16.4% and 2.4% respectively. The difference was highly significant ($p < 0.001$) as shown in table (17).

Age of Onset of Bronchial Asthma:

Table (18) and Fig. (17) show the age of onset of bronchial asthma among 264 children. Most asthmatics

developed their illness below the age of 5 years and only 20.1% after this age.

Clinical Data:

Table (19) shows summary of clinical data of 30 asthmatic children. They were 17 males and 13 females. Their ages ranged from 3 years up to 14 years with a mean of 8 2/12 years.

A positive family history of allergic disease was found in 24 patients (80%).

Other allergic manifestations (allergic eczema or allergic rhinitis) were found in 8 patients and 2 patients had past history of infantile eczema.

The onset of bronchial asthma was very early, in the 1^{st} year of life in 3 patients, from 1 to 5 years of age in 12 children and after the age of 5 years in the rest 15 children.

Regarding the days of school absence due to asthma, 8 patients had no more than 1-2 days/month, 6 patients had about 4-8 days/month, 4 severely diseased children had 10 days or more / month and the other 12 children have not yet or very recently attended school.

Symptoms of asthma showed variations in most of our asthmatics. Diurnal variation was found in 18 patients being more severe at night and early morning. Twenty children had more severe and more frequent attacks in winter. Five children had exacerbations during spring.

Exacerbation of asthma attacks was not noticed by parents to be related to certain factors in case of some patients. Others suggested infection, cold weather, exercise, dust, egg , fish, smoke and other factors.

Six patients (20%) were diagnosed as having severe asthma according to careful history taking and repeated clinical examination.

Stool and Urine Analysis Results: (Tables 20 and 21)

Four cases had Giardia lamblia cysts in their stools. The other cases as well as the control children had the urine and stool negative for parasites.

Blood Eosinophilic Count Results: (Tables 20 and 21)

Eight cases had an absolute eosinophilic count less than 400 / c.mm.

Twenty-one cases had figures higher than 400/c.mm and only one case had blood eosinophilia more than 2000 per c.mm. The mean value of absolute blood eosinophilic count for all the cases was 661.9 / c.mm.

None of the control children had eosinophilic count more than 350 / c.mm. The mean blood eosinophilic count was 147 / c.mm.

Radiological Examination Results:

Four asthmatics who were x-rayed during an acute attack of bronchial asthma had marked overinflation with increased thoracic volume, flattened diaphragm and hyperlucency of lung parenchyma. The rest twenty-six cases showed normal radiological findings (Table 20).

Skin Testing Results:

All our selected asthmatic patients gave positive skin test reactions to more than two of the allergens used.

Skin sensitivity was highest to house dust (73.3%), then to house dust mite (D. Farinae) 53.3% of all cases. Among moulds, Cladosporium followed by Aspergillus

fumigatus, then Alternaria were most prevalent. They gave positive reactions in 40%, 36.7% and 33.3% of cases respectively. The results of skin test are shown in tables (22 and 23) and Fig. (18).

Thirteen children of the control group gave no reaction at all to the allergens used. Two children had mild positive reaction to house dust (Table 24). All the asthmatic and control children gave positive reaction to the histamine (positive control) and negative reaction to saline (negative control).

Total Serum IgE Determination Results:

The results are shown in tables (22 and 24-27) and Fig. (19). Total serum IgE levels determined by PRIST technique, ranged from 70 KU/L to 700 KU/L in our asthmatic children. The mean value was 235.5 KU/L compared to 39 KU/L for the control group. The difference was highly significant ($p < 0.001$) (Tables 22, 24, 25).

Mean total serum IgE level showed no significant difference in case of patients with severe and those of non-severe asthma as shown in table (26).

The mean total serum IgE level was 165.7 KU/L in patients suffering from asthma only (22 patients) and was 427.5 KU/L in patients having other atopic disease besides their asthma as infantile eczema or allergic rhinitis (8 patients).

The difference between the 2 levels was highly significant ($p < 0.001$) (Table 27).

Table (4):

Prevalence of childhood asthma in 15 schools in Benha city (7258 children).

School No.	Total Pupils			Boys			Girls		
	Total No.	Asthmatics No.	Prevalence of asthma %	Total No.	Asthmatics No.	Prevalence of asthma %	Total No.	Asthmatics No.	Prevalence of asthma %
1	396	13	3.3	194	8	4.1	202	5	2.5
2	895	44	4.9	461	24	5.8	434	20	4.6
3	894	23	2.6	536	17	3.2	358	6	1.7
4	874	41	4.7	444	24	5.4	430	17	4.0
5	188	7	3.7	90	4	4.4	98	3	3.1
6	417	11	2.6	231	6	2.6	186	5	2.6
7	470	27	5.7	245	9	3.7	225	18	8.0
8	562	15	2.7	291	8	2.7	271	7	2.6
9	349	10	2.9	163	6	3.7	186	4	2.2
10	279	7	2.5	138	6	4.3	141	1	0.7
11	513	11	2.1	294	4	1.4	219	7	3.2
12	403	16	4.0	212	5	2.4	191	11	5.8
13	272	11	4.0	272	11	4.0	-	-	-
14	550	19	3.5	550	19	3.5	-	-	-
15	546	16	2.9	-	-	-	546	16	2.9
Total	7258	264	3.6	3936	149	3.8	3322	115	3.5

N. B.: School names are shown in attachment I (page 85).

Table (5):

Sex incidence of series studied.

Sex	Total number of studied pupils	No. of asthmatics	Prevalence (%) of bronchial asthma
Males	3936	149	3.8
Females	3322	115	3.5
Male/Female ratio	1.2 / 1	1.3 / 1	1.1 / 1
$Z = 0.734$ $p > 0.05$			

Table (6):

Prevalence of bronchial asthma in relation to age in years.

Age in years	Total number	No. of asthmatic children	Prevalence (%)
≤ 5	477	21	4.4
> 5-6	1037	32	3.1
> 6-7	892	30	3.4
> 7-8	936	39	4.2
> 8-9	872	43	4.9
> 9-10	833	26	3.1
> 10-11	780	24	3.1
> 11-12	524	21	4.0
> 12-13	472	18	3.8
> 13-14	300	7	2.3
> 14-15	135	3	2.2

N. B.:

Age > 8-9 v.s age > 14-15 $Z = 1.85$, $p > 0.05$.(insig.)

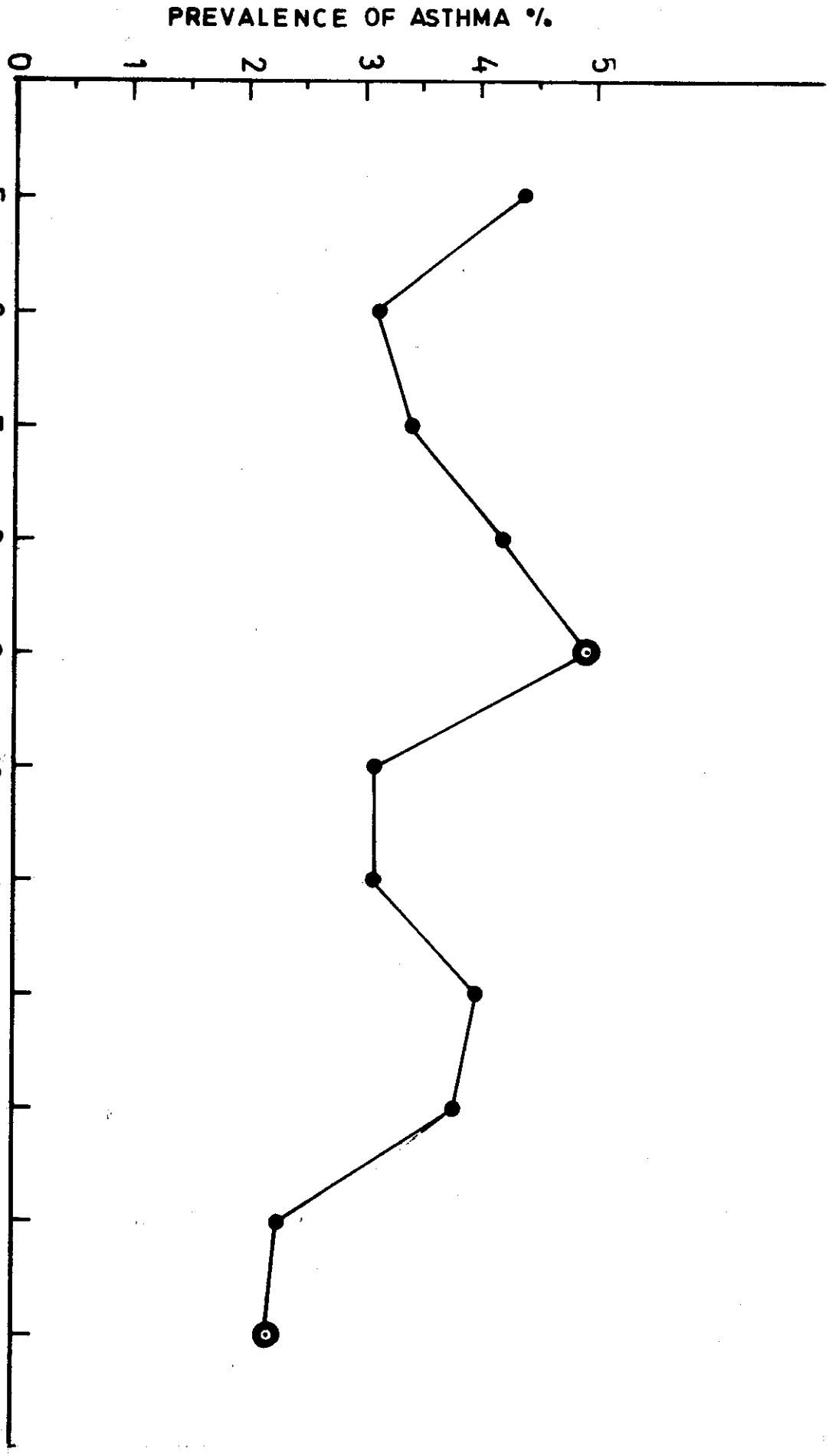

Fig.(9) Diagrammatic representation of Prevalence of Childhood Asthma in relation to Age.

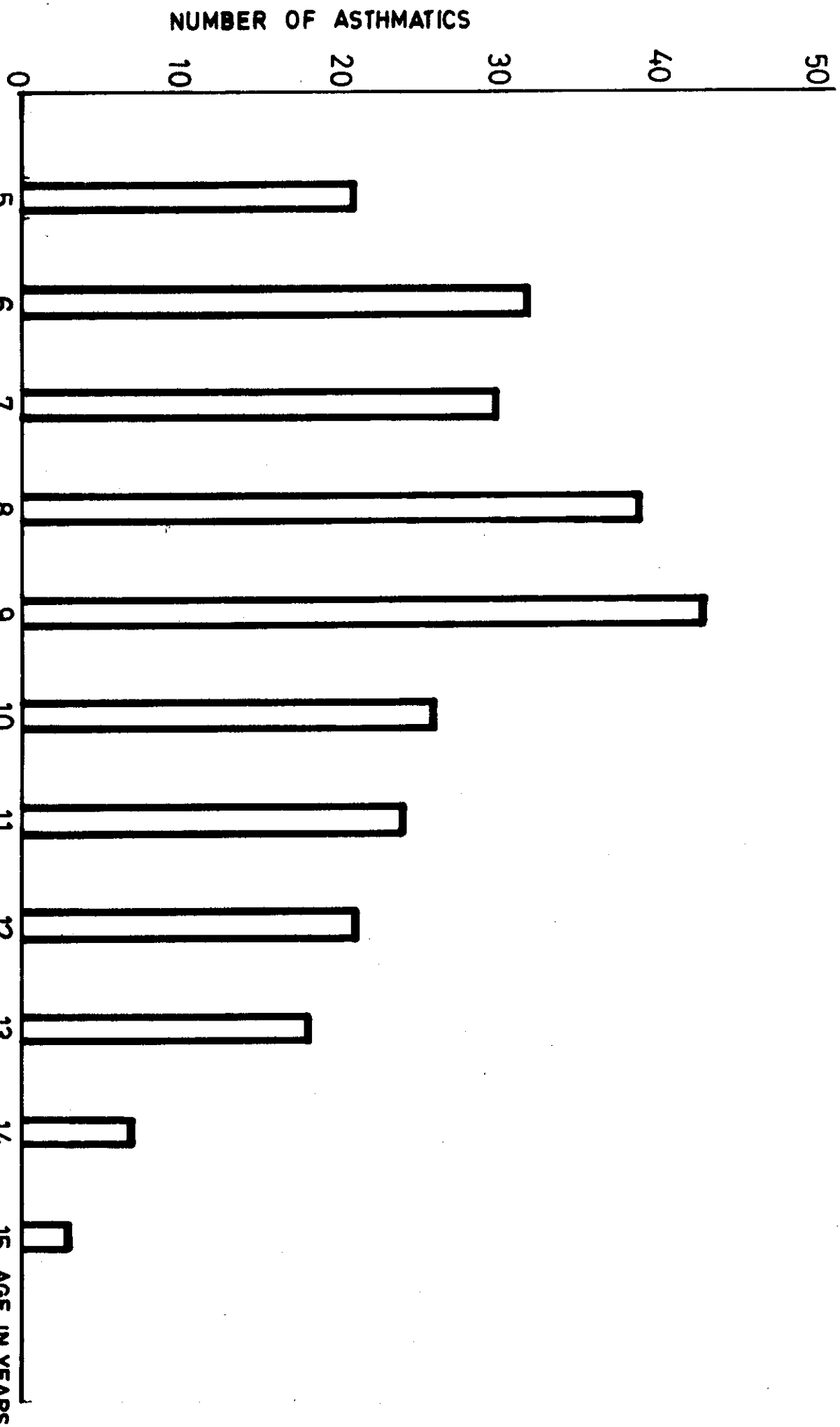

Fig.(10) Diagrammatic Representation of Age distribution of 264 asthmatic children in Benha.

Table (7):

Prevalence of childhood asthma in relation to degree of education of fathers.

Group No.	Degree of education of fathers	Total no. of fathers	Asthmatics		$Z^{@}$	P
			No.	%		
1	Illiterate	1875	118	6.3		
2	Read and write	1784	59	3.3	4.208	$< 0.001^{**}$
3	Preparatory school	603	16	2.7	3.438	$< 0.01^{*}$
4	Secondary school	1189	29	2.4	4.865	$< 0.001^{**}$
5	Graduate	1807	42	2.3	5.905	$< 0.001^{**}$

@ All comparisons are versus the group of illiterate fathers.

* $p < 0.01$ significant

** $p < 0.001$ highly significant

Table (8):

Prevalence of childhood asthma in relation to degree of education of mothers.

Group No.	Degree of education of mothers	Total no. of mothers	Asthmatics		Z@	P
			No.	%		
1	Illiterate	3178	165	5.2		
2	Read and write	1349	28	2.1	4.747	< 0.001**
3	Preparatory school	580	28	4.8	2.982	< 0.01*
4	Secondary school	1268	23	1.8	5.054	< 0.001**
5	Graduate	883	20	2.3	3.690	< 0.01*

@ All comparisons are versus the group of illiterate mothers.

* $p < 0.01$ significant

** $p < 0.001$ highly significant

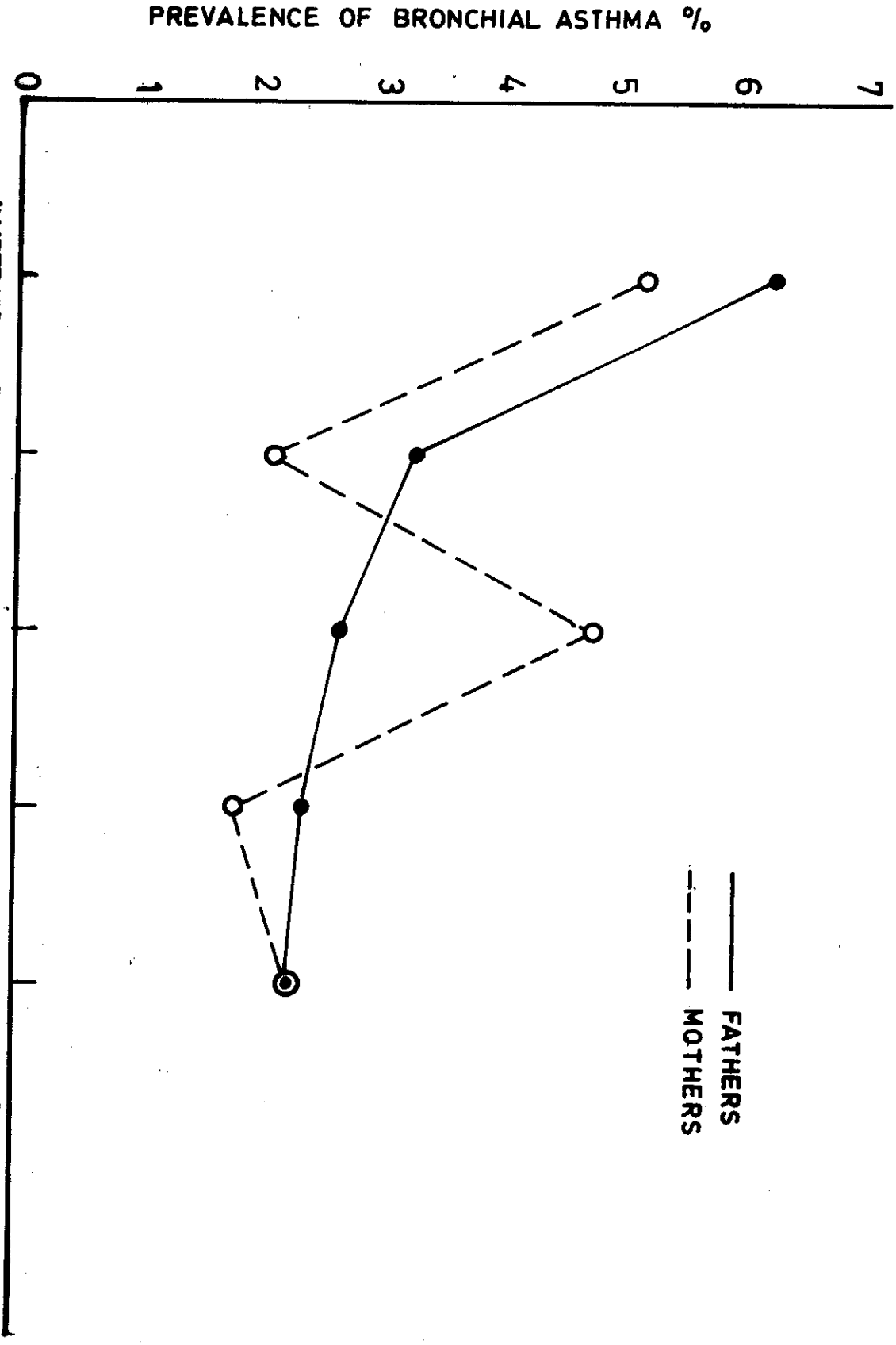

Fig. (11) Diagrammatic Representation of Prevalence of childhood Asthma in relation to degree of education of parents.

Table (9)

Prevalence of childhood asthma in relation to occupation of fathers.

Group No.	Occupation of father	No. of fathers	Asthmatics		$z^{@}$	p
			No.	%		
1	Unskilled	278	13	4.7	0.851	$> 0.05^{\dagger}$
2	Semiskilled	1116	67	6.0		
3	Traders	721	30	4.2	1.724	$> 0.05^{\dagger}$
4	Skilled	1174	45	3.8	2.407	$< 0.05^{*}$
5	Professionals	3298	74	2.2	6.174	$< 0.001^{**}$
6	None	671	35	5.2	-	-

@ All comparisons are versus the group of semiskilled fathers.

† $p > 0.05$ insignificant

* $p < 0.05$ significant

** $p < 0.001$ highly significant

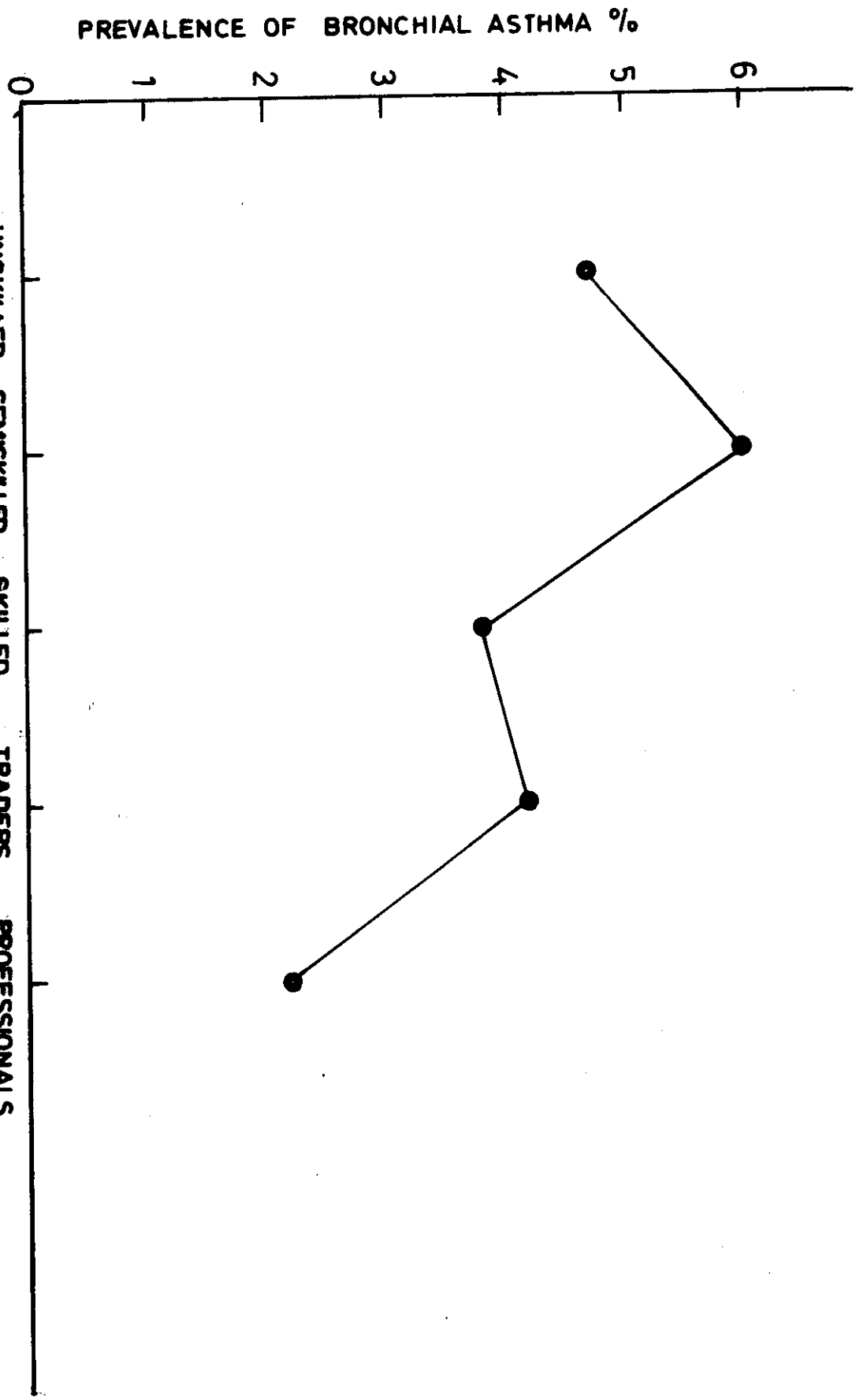

Fig. (12) Diagrammatic Representation of Prevalence of childhood Asthma in relation to occupation of fathers.

Table (10):

Prevalence of childhood asthma in relation to work of mothers.

	No. of mothers	Asthmatics	
		No.	%
Non-working mothers	5285	220	4.2
Working mothers	1973	44	2.2
$Z = 3.913$ $p < 0.001$ (highly significant)			

Table (11):

Prevalence of childhood asthma in relation to family income.

Group No.	Family income L.E/month	No. of families	Asthmatics		Z@	P
			No.	%		
1	⩽ 50	1593	81	5.1		
2	> 50-100	2303	83	3.6	2.263	< 0.05*
3	> 100-150	931	28	3.0	2.477	< 0.05*
4	> 150-200	1812	53	2.9	3.234	< 0.01*
5	> 200	619	19	3.0	2.048	< 0.05*

@ All comparisons are versus the group of family income ⩽ 50 L.E/month.

* $p < 0.05$ and $p < 0.01$ significant

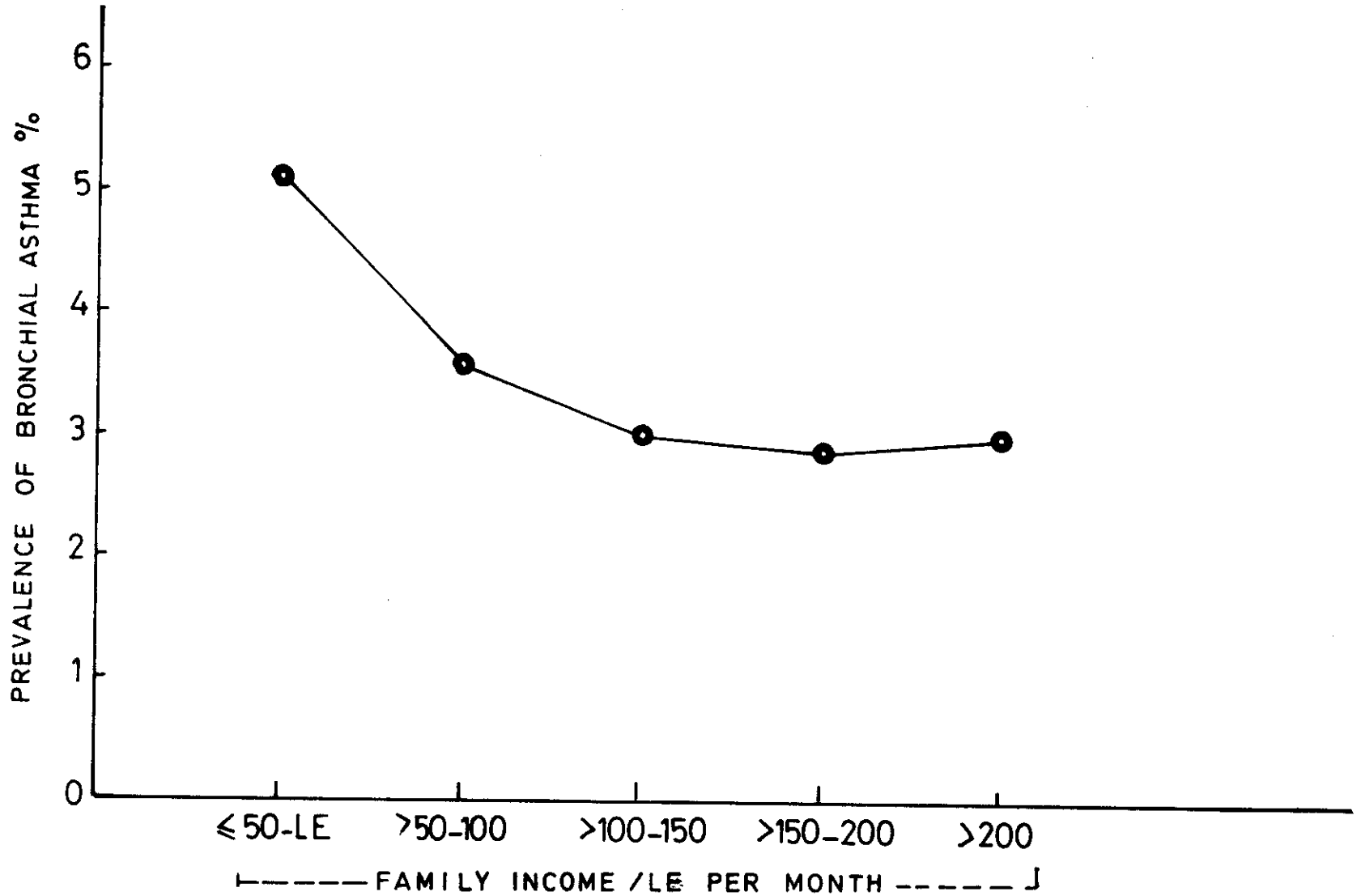

Fig.(13) Diagrammatic representation of Prevalence of childhood asthma in relation to family income / month.

Table (12):

Prevalence of childhood asthma in relation to family size.

Group No.	Family size	No. of families	Asthmatics		Z@	P
			No.	%		
1	3-5	3111	118	3.8		
2	6-8	3318	115	3.5	0.701	> 0.05†
3	9 or more	829	31	3.7	0.072	> 0.05†

@ All comparisons are versus the group of family size 3-5 persons.

† p > 0.05 insignificant

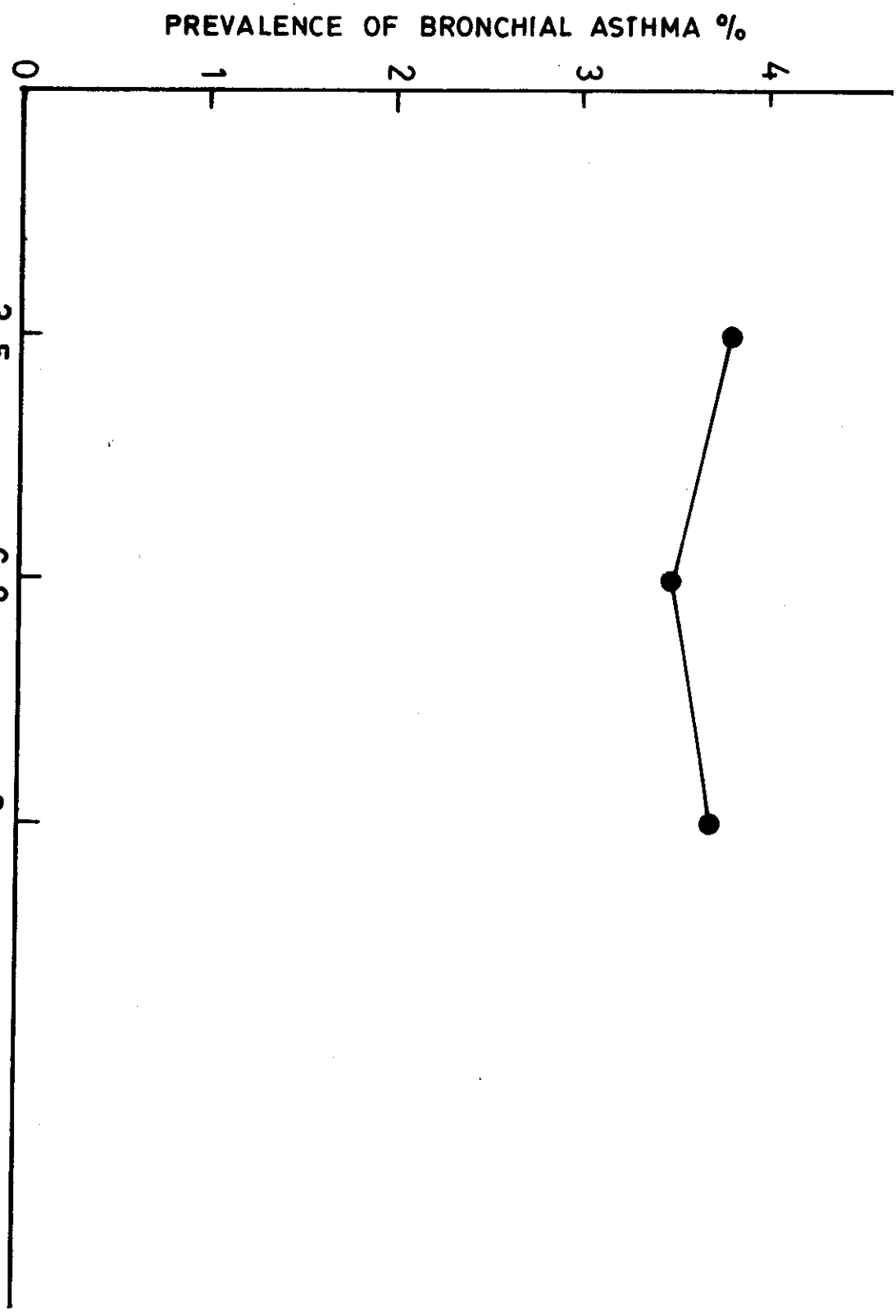

Fig. (14) Diagrammatic representation of Prevalence of childhood asthma in relation to family size.

Table (13):

Prevalence of childhood asthma in relation to crowding index.

Crowding index	Total No. of pupils	Asthmatics		$z^{@}$	p
		No.	%		
1	2852	93	3.3	4.092	$< 0.001^{**}$
2	2092	64	3.1	4.190	$< 0.001^{**}$
3	1147	41	3.6	3.069	$< 0.01^{*}$
4	619	28	4.5	1.779	> 0.05 †
5 or more	548	38	6.9		

N. B.:

Crowding index = $\frac{\text{No. of persons}}{\text{No. of rooms}}$ in the same house

@ All comparisons are versus the group of crowding index 5 or more persons.

† $p > 0.05$ insignificant

* $p < 0.01$ significant

** $p < 0.001$ highly significant

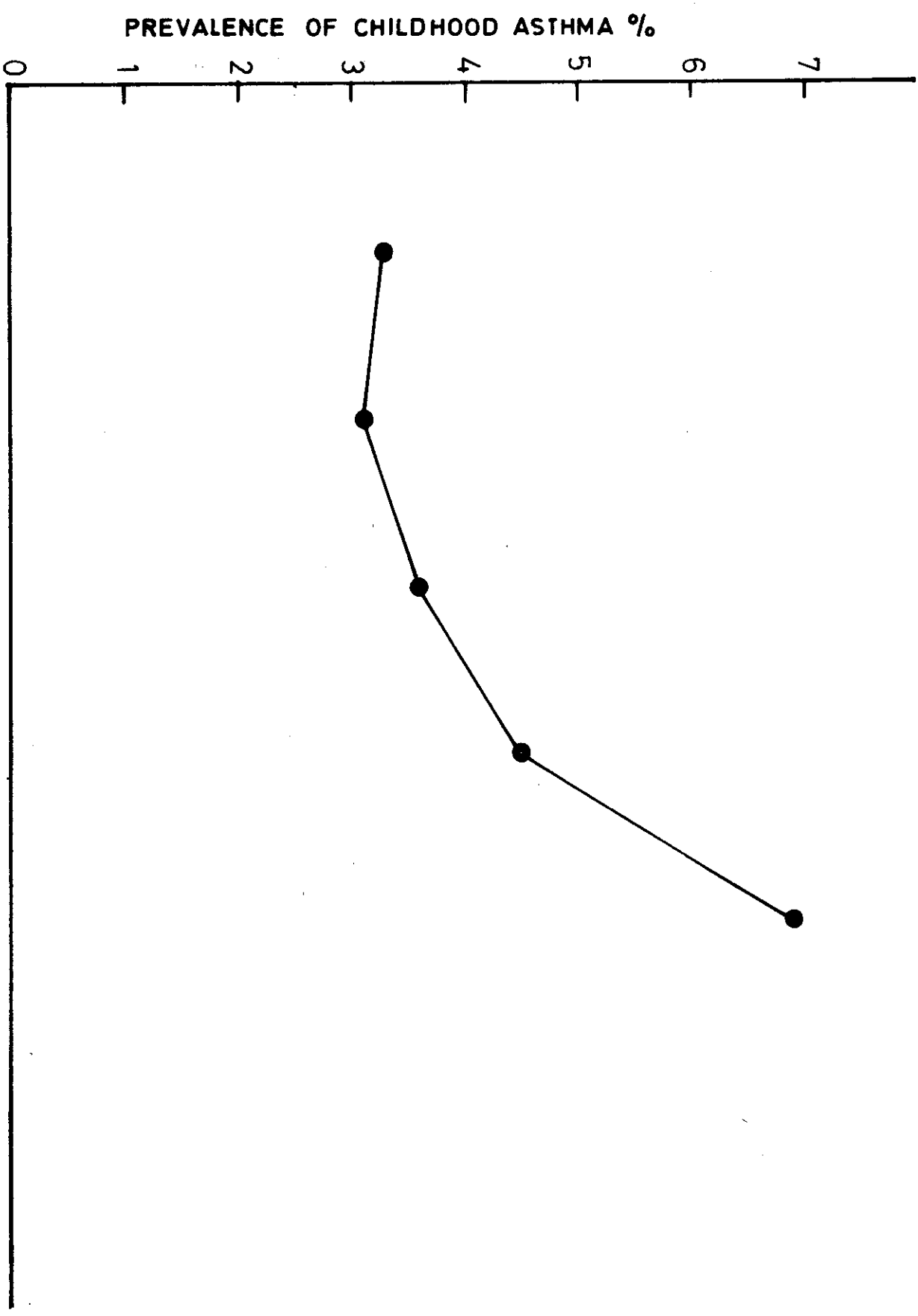

Fig. (15) Diagrammatic representation of Prevalence of Bronchial asthma in relation to Crowding index.

Table (14):

Prevalence of childhood asthma in relation to number of persons sharing the pupil's bedroom.

Group No.	No. of persons with the pupil in the same bedroom	Total No.	Asthmatics		$Z^{@}$	p
			No.	%		
1	0	167	4	2.4	2.279	$< 0.05^{*}$
2	1	1335	32	2.4	5.66	$< 0.001^{**}$
3	2	2859	79	2.8	6.519	$< 0.001^{**}$
4	3	1482	50	3.4	4.413	$< 0.001^{**}$
5	4 or more	1415	99	7.0		

@ All comparisons are versus the group of 4 persons or more.

* $p < 0.05$ significant

** $p < 0.001$ highly significant

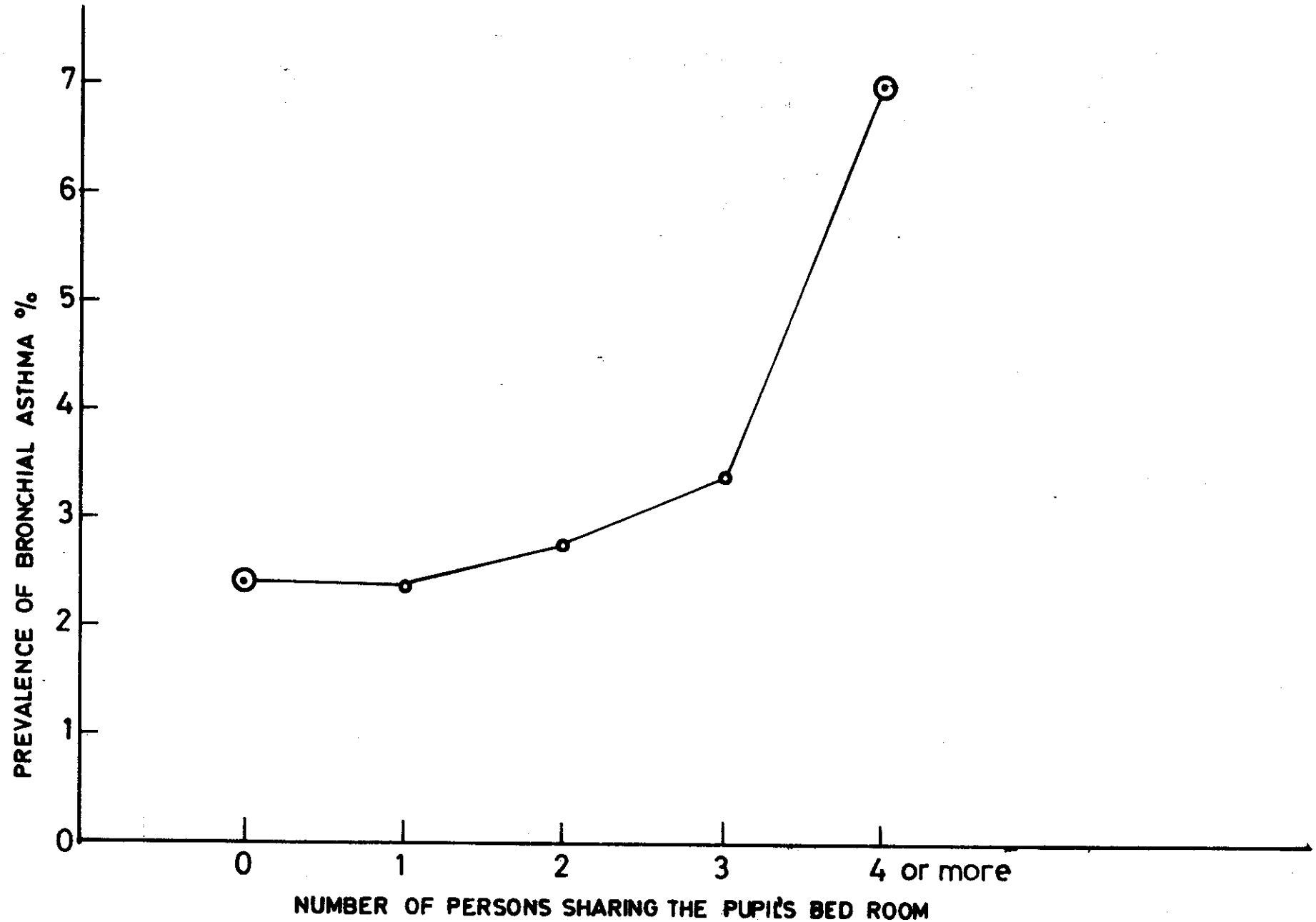

Fig. (16) Diagrammatic representation of prevalence of childhood asthma in relation to number of persons sharing the pupil's bed-room

Table (15):

Prevalence of childhood asthma in relation to family history of asthma.

Family history of bronchial asthma	Total No.	Asthmatics	
		No.	%
Positive	291	82	28.2
Negative	6967	182	2.6
Z 22.824			
p < 0.001 (Highly significant)			

Table (16):

Prevalence of childhood asthma in relation to family history of allergic diseases.

Family history of allergic disease	Total No.	Asthmatics	
		No.	%
Positive	416	102	24.5
Negative	6842	162	2.4
Z	2.163		
p	< 0.05 (Significant)		

Table (17):

Prevalence of childhood asthma in relation to personal history of allergic disease.

Personal history of allergic disease	Total No.	Asthmatics	
		No.	%
Positive	645	106	16.4
Negative	6613	158	2.4
Z	18.186		
p	< 0.001 (Highly significant)		

Table (18):

Age of onset of bronchial asthma in 264 asthmatic children (in Benha).

Age of onset in years	≤ 1 y	> 1-3	> 3-5	> 5 y
No. of cases	76	78	57	53
% of total	28.8%	29.5%	21.6%	20.1%

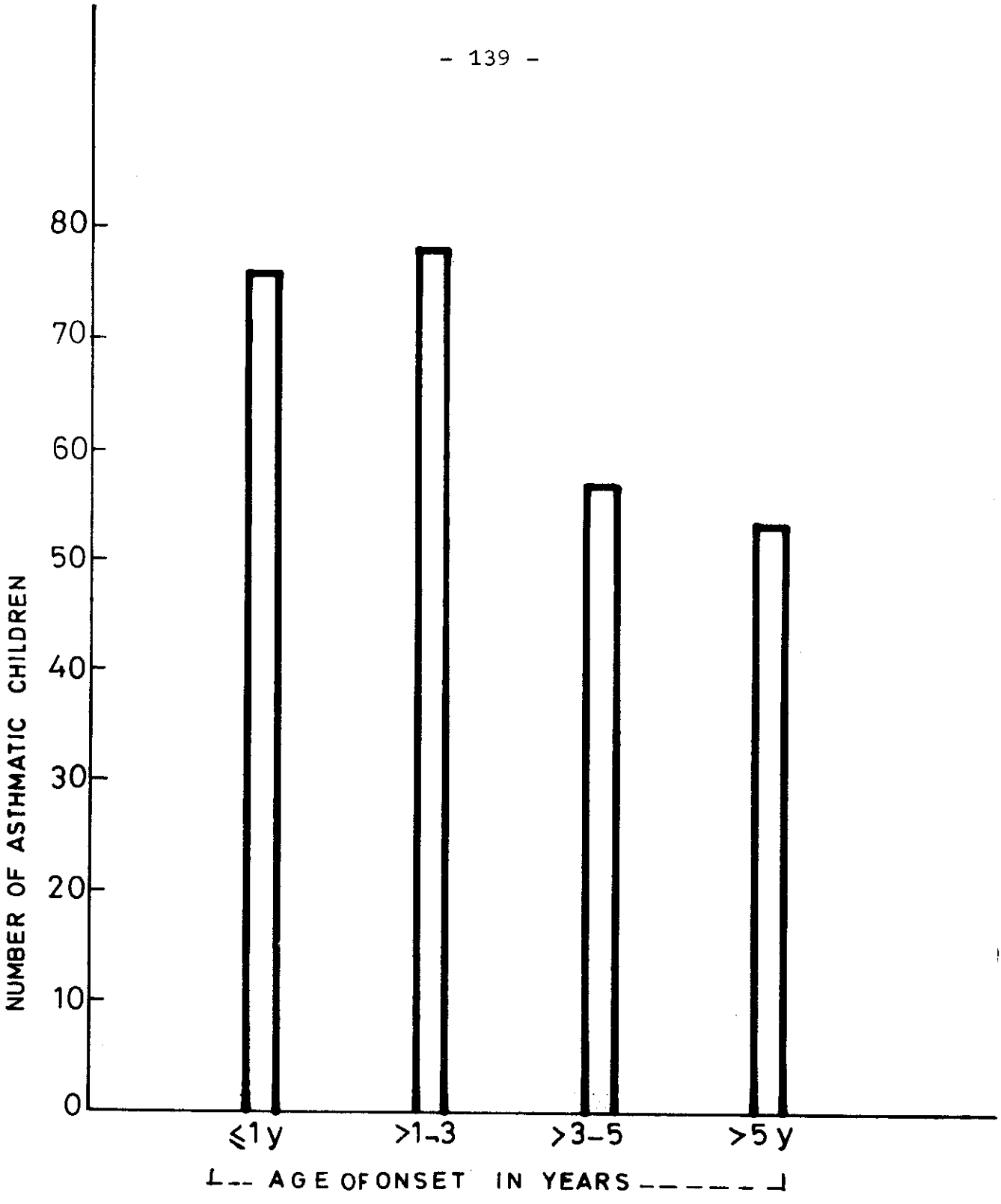

Fig. (17) Diagrammatic Representation of Age of onset of bronchial asthma in 264 asthmatic children (in Benha)

Table (19): Summary of clinical data of the asthmatic children under study.

Serial No.	Name	Age in years	Sex	Clinical diagnosis	Duration in years	Past hist. of allergic disease	Family history	Variations of symptoms		School absence Days/m.
								Seasonal	Diurnal	
1	S.A.	3	M	Bronchial asthma	2¼	-	+	N.S.V.	N	-
2	S.S.	3	M	Bronchial asthma	1	-	+	N.S.V.	N	-
3	M.M.	4	M	Asthma (severe)	1½	-	+	N.S.V.	-	-
4	M.A.	4	M	Bronchial asthma	½	-	+	N.S.V.	N	-
5	A.A.	4	M	Asthma + Eczema	3½	-	+	W	N	-
6	R.A.	4½	F	Bronchial asthma	3	-	-	W	N	-
7	N.T.	4½	F	Bronchial asthma	4	-	+	W	N	-
8	N.A.	5	F	Bronchial asthma	1½	-	+	W	N	-
9	A.S.	5	M	Bronchial asthma	3	-	+	W	-	-
10	S.A.	6	M	Asthma (severe)	1½	-	-	N.S.V.	-	-
11	M.S.	6	M	Asthma + Rhinitis	2	-	-	W	N	-
12	H.M.	6	M	Asthma	3	Allergic eczema	+	W	N	-
13	S.R.	6½	F	Asthma (severe)	1½	-	+	N.S.V.	N	10
14	A.S.	7	F	Asthma	3	-	+	W. & Sp.	N	6-8
15	R.S.	7	M	Asthma	1½	-	+	N.S.V.	N	1-2
16	A.A.	8	F	Asthma + Rhinitis	2	-	+	Sp. & W.	-	2
17	N.H.	8½	F	Asthma	3	-	+	W	-	1-2
18	A.R.	8½	F	Asthma (severe)	3½	-	+	W	-	10-12

Table (19): (Continued)

Serial No.	Name	Age in years	Sex	Clinical diagnosis	Duration in years	Past hist. of allergic disease	Family history	Variations of symptoms		School absence Days/m.
								Seasonal	Diurnal	
19	N.A.	9	F	Asthma + Eczema	3	-	+	Sp. & S.	N	4-5
20	M.E.	10	M	Asthma	4	-	-	W	-	1-2
21	D.M.	11	F	Asthma	5	-	+	W	N	5-6
22	T.K.	11½	M	Asthma	4	-	+	W	N	1-2
23	H.A.	12	F	Asthma (severe) + Rhinitis	6	-	-	N.S.V.	-	10-12
24	Y.R.	12	M	Asthma	6½	-	+	W	N	1-2
25	E.F.	12	M	Asthma + Rhinitis	3	Allergic eczema	+	W	-	1-2
26	G.M.	12½	F	Asthma	4½	-	+	W	-	1-2
27	H.A.	13	M	Asthma + Rhinitis	6½	-	-	Sp. & W.	N	6
28	S.A.	13	F	Asthma (severe)	7	-	+	N.S.V.	-	10
29	A.M.	14	M	Asthma + Rhinitis	8	-	+	W. & Sp.	-	5-6
30	R.I.	14	M	Asthma	8	-	+	W	N	4-6

Abbreviations: N.S.V. = No seasonal variation
W = Winter
Sp. = Spring
S = Summer
N = Night and early morning

Table (20):

Summary of the results of the routine investigations done to 30 asthmatic children.

Serial No.	Stool analysis	Urine analysis	Blood picture		X-ray chest
			T.L.C.	A.E.C.	
1	-ve	-ve	9000	90	Normal
2	-	-	5200	728	Normal
3	-	-	8000	80	Normal
4	-	-	7000	840	Hyperinflated lungs
5	-	-	7200	576	Normal
6	-	-	7800	546	Normal
7	-	-	4000	440	Hyperinflated lungs
8	-	-	7400	296	Normal
9	-	-	6300	756	Normal
10	-	-	6000	360	Normal
11	-	-	8800	704	Normal
12	-	-	5500	660	Normal
13	-	-	7600	152	Normal
14	Giardia lamblia cyst	-	6000	240	Marked overinflation of both lungs
15	-	-	6600	1056	Normal
16	Giardia lamblia	-	6000	480	Normal
17	-	-	13000	390	Normal
18	-	-	5400	540	Normal
19	Giardia lamblia	-	6000	720	Normal
20	-	-	10000	600	Normal
21	-	-	4000	440	Normal
22	-	-	6000	480	Normal
23	-	-	13600	1360	Normal
24	Giardia lamblia	-	7200	360	Normal
25	-	-	6900	1104	Normal
26	-	-	10800	432	Normal
27	-	-	8000	2400	Marked over-inflation of both lungs
28	-	-	6550	262	Normal
29	-	-	9500	950	Normal
30	-	-	6700	1809	Normal

Mean of absolute eosinophilic count $\bar{x}$ 661.9

$\pm$S.D. 498.5

T.L.C. = total leucocytic count

A.E.C. = absolute eosinophilic count

Table (21):

Results of routine investigations to control group.

Serial No.	Stool analysis	Urine analysis	Blood picture		X-ray chest
			T.L.C.	A.E.C.	
1	-ve	-ve	11,200	224	Normal
2	-ve	-ve	6,400	0	Normal
3	-ve	-ve	7,400	74	Normal
4	-ve	-ve	10,000	200	Normal
5	-ve	-ve	6,200	62	Normal
6	-ve	-ve	11,200	112	Normal
7	-ve	-ve	5,600	112	Normal
8	-ve	-ve	5,000	100	Normal
9	-ve	-ve	4,800	96	Normal
10	-ve	-ve	6,800	0	Normal
11	-ve	-ve	10,800	216	Normal
12	-ve	-ve	7,400	222	Normal
13	-ve	-ve	10,000	100	Normal
14	-ve	-ve	10,200	306	Normal
15	-ve	-ve	11,200	366	Normal

Mean of absolute eosinophilic count $\overline{X} = 147$

$\pm$S.D. = 106.096

T.L.C. = total leucytic count
A.E.C. = absolute eosinophilic count

Table (22):

Results of the immunological tests of the asthmatic children.

Serial No.	Skin Testing Results																	Total serum IgE
	H.D	HDM	Poll.	Feath.	An. Dand.	Moulds									Milk	Egg	
						Mix.	Asp.	Clad.	Alt.	Can.	Pen.	Hel.	Phom.	Fus.			
1	-	-	-	-	+	++	++	-	-	+	-	-	-	-	-	-	90
2	-	-	-	-	-	++	+	++	-	-	++	-	-	-	-	-	90
3	+	-	-	-	-	+	+	+	-	+	-	-	-	-	-	-	200
4	+	+	-	-	+	+	+	-	-	-	+	-	-	-	-	-	130
5	+++	+++	-	++	+	+	+	-	+	+	-	-	-	-	-	-	480
6	-	-	-	-	-	+	-	-	-	-	+	-	-	+	-	-	75
7	+++	++	-	+	-	-	-	-	-	-	-	-	-	-	-	-	200
8	++	++	-	-	+	-	-	-	-	-	-	-	-	-	-	-	110
9	+	+	-	-	-	+	-	-	+	-	-	-	-	-	-	+	80
10	+	+	-	-	-	+	-	+	-	-	+	+	-	-	-	-	280
11	-	-	+	-	-	++	++	-	+	-	++	-	-	-	-	-	390
12	-	-	-	-	-	++	+	++	-	+	-	-	+	-	+	-	200
13	+	-	-	-	++	+	-	+	-	-	-	-	-	+	-	-	230
14	++	+	-	+	-	+	+	-	-	-	-	-	-	-	-	-	200
15	+	-	-	-	+	+	-	-	-	-	-	+	+	-	-	-	180
16	+	-	++	-	-	+	-	-	-	-	-	+	-	+	-	-	190
17	++	++	-	-	+	+	-	+	+	-	+	-	-	-	-	-	130
18	++	++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210

Table (22): (Continued)

Serial No.	Skin Testing Results																Total serum IgE
	H.D	HDM	Poll.	Feath.	An. Dand.	Moulds									Milk	Egg	
						Mix.	Asp.	Clad.	Alt.	Can.	Pen.	Hel.	Phom.	Fus.			
19	++	++	+++	–	–	+	+	–	+	+	–	–	–	–	–	–	700
20	+	+	–	++	–	+	–	+	–	–	–	+	–	–	–	–	190
21	+	–	–	+	–	+	–	–	–	+	–	–	–	–	–	–	90
22	–	–	+	–	–	+	–	–	+	–	–	+	–	–	–	–	70
23	–	–	++	++	–	++	–	+	++	+	–	–	–	–	–	–	230
24	++	+	+	–	–	+	–	+	–	–	–	–	+	–	–	–	180
25	+	+	++	+	–	+	+	–	+	+	–	–	+	–	–	–	500
26	+	+	–	–	–	+	–	+	–	–	–	–	–	–	–	–	180
27	++	++	++	+	–	++	–	+	+	+	++	–	–	–	–	–	500
28	+	–	–	–	+	+	–	–	–	+	–	–	+	–	–	–	330
29	–	–	+	–	+	+	+	+	+	–	–	–	–	–	–	–	430
30	++	+	–	–	–	+	–	–	–	–	+	+	–	–	–	–	200

Mean total serum IgE $\bar{X}$ = 235.5 ± S.E. 28.8

H.D = House dust
Feath. = Feathers
Asp. = Aspergillus fumigatus
Can. = Candida albicans
Phom. = Phoma betae

HDM = House dust mite
An. Dand. = Animal dander
Clad. = Cladosporium
Pen. = Penicillium notatum
Fus. = Fusarium

Poll. = Pollen (mixed)
Mix. = Moulds (mixed)
Alt. = Alternaria tenus
Hel. = Helminthisporium

Table (23):

Results of skin testing in the asthmatic children.

Antigen	No. of positive cases	%
House dust	22	73.3
House dust mite	16	53.3
Pollen (mixed)	9	30.0
Feathers	8	26.7
Animal dander	9	30.0
Moulds (mixed)	27	90.0
Cladosporium	12	40.0
Aspergillus fumigatus	11	36.7
Alternaria tenus	10	33.3
Candida albicans	10	33.3
Penicillium notatum	8	26.7
Helminthisporium	6	20.0
Phoma betae	5	16.7
Fusarium	3	10.0
Milk (cow)	1	3.3
Egg	1	3.3
Histamine	30	100.0
Saline	-	0

Total number of children = 30

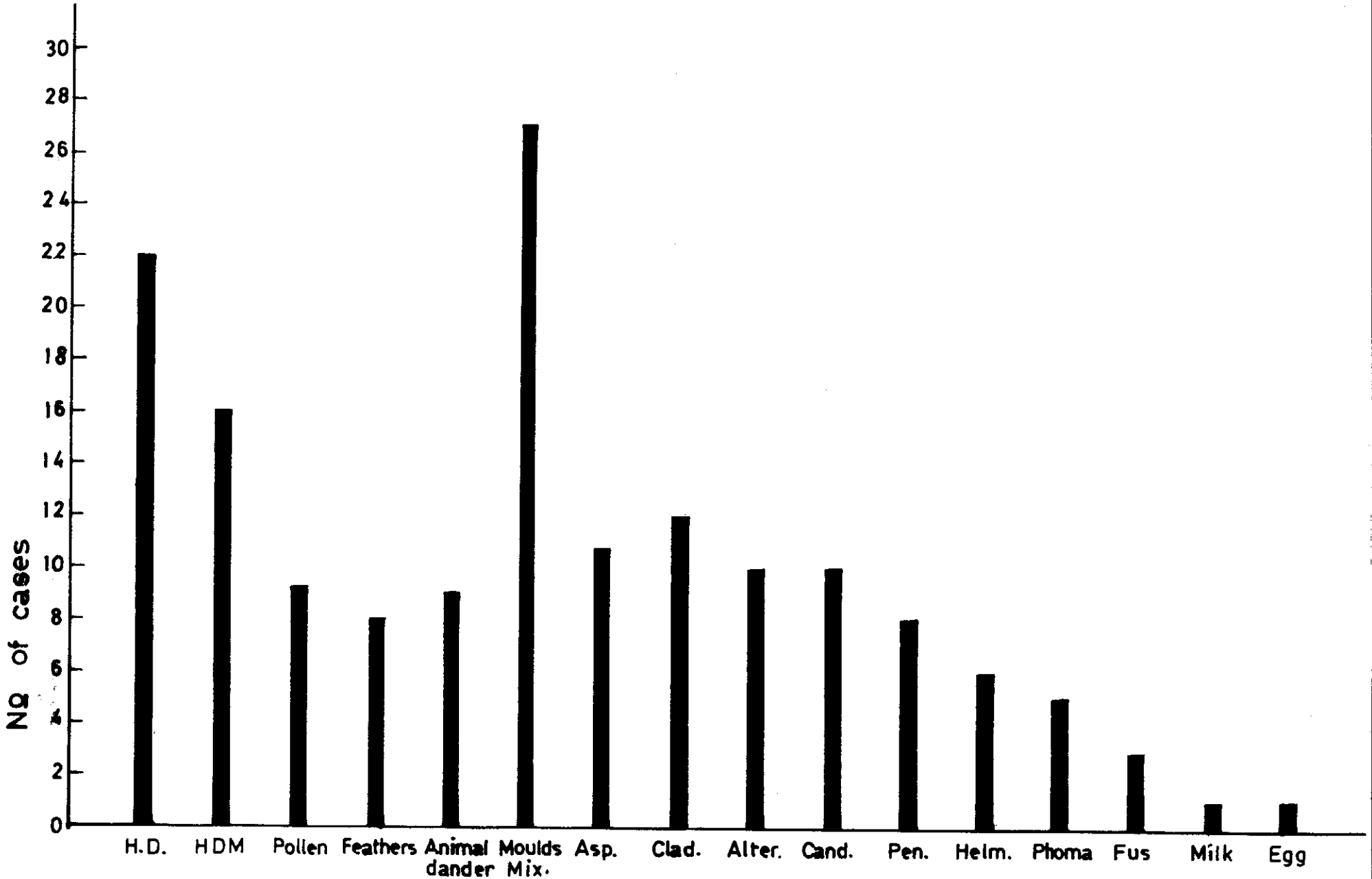

Fig. (18) Diagrammatic representation of incidence of positive skin test with different Allergens used in Asthmatic children under study .

Table (24):

Results of immunological tests of the control group.

Serial No.	Age in years	Skin testing result	Total serum IgE
1	2	-	20
2	2½	-	69
3	3	-	9
4	4	+ H.D.	18
5	5	-	25
6	5½	-	12
7	6	-	40
8	7	-	16
9	7½	-	63
10	8	+ H.D.	50
11	9	-	25
12	10	-	20
13	10½	-	50
14	12	-	68
15	14	-	100

Mean serum IgE $\overline{X}$ = 39.0

$\pm$S.E. = 6.7

H.D = House dust

Table (25):

Comparison between mean total serum IgE in the asthmatic and control children.

	No. of cases	Mean total serum IgE (mean ± S.E.)
Asthmatic children	30	235.5 ± 28.8
Control children	15	39.0 ± 6.9
t	6.51	
p	< 0.001 (Highly significant)	

Table (26):

Comparison between mean total serum IgE in cases of severe and non-severe asthma.

Diagnosis	No. of cases	Mean total serum IgE (mean ± S.E.)
Severe bronchial asthma	6	246.7 ± 20.1
Non-severe asthma	24	232.7 ± 34.9
t	1.27	
p	> 0.05 (Insignificant)	

Table (27):

Mean total serum IgE in the control and asthmatic children with and without other atopic manifestation.

Group No.	Clinical Diagnosis	No.of cases	Mean total serum IgE (mean ± S.E.)	t@	p
1	Bronchial asthma only	22	165.7 ± 16.1		
2	Bronchial asthma + other atopic disease	8	427.5 ± 53.7	4.82	$<0.001^{**}$
3	Control children normal	15	29.0 ± 6.9	32.9	$<0.001^{**}$

@ Comparisons are versus the group of bronchial asthma.

** Highly significant at $p < 0.001$

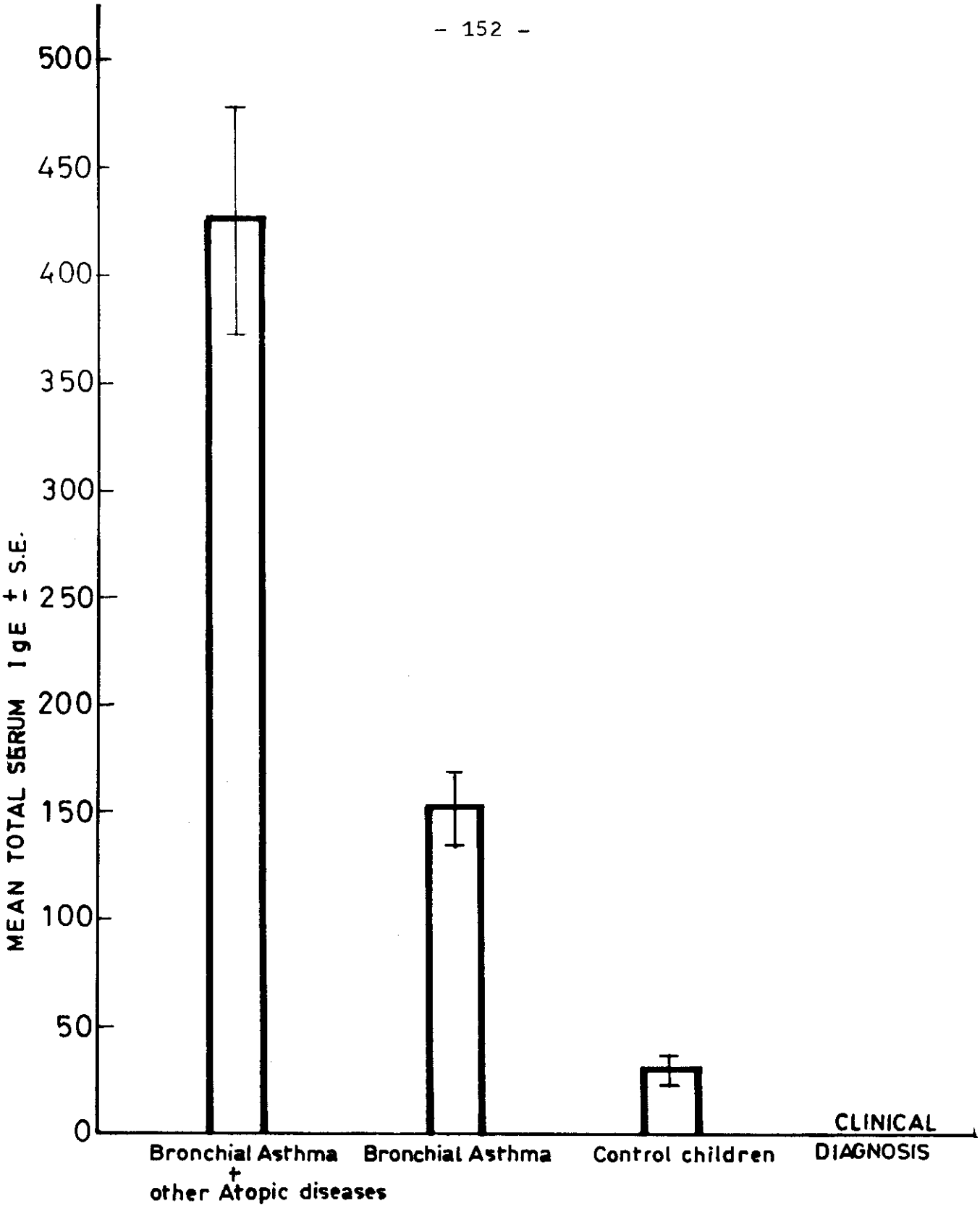

Fig. (19) Diagrammatic representation of mean total serum IgE in the studied children