RESULTS

R E S U L T S

The results are shown in the following tables :

Table 1 :

the distribution of cases and controls according to locality.

The Locality	No. of cases	%	No. of controls	%
Urban area	171	42.75%	36	36%
Rural area	229	57.25%	64	64%
Total	400	100%	100	100%

The number of cases from urban area were 171 cases representing (42.75%), & the cases from rural area were 229 (57.25%) & while the control ones were 36% from urban area & 64% from rural area.

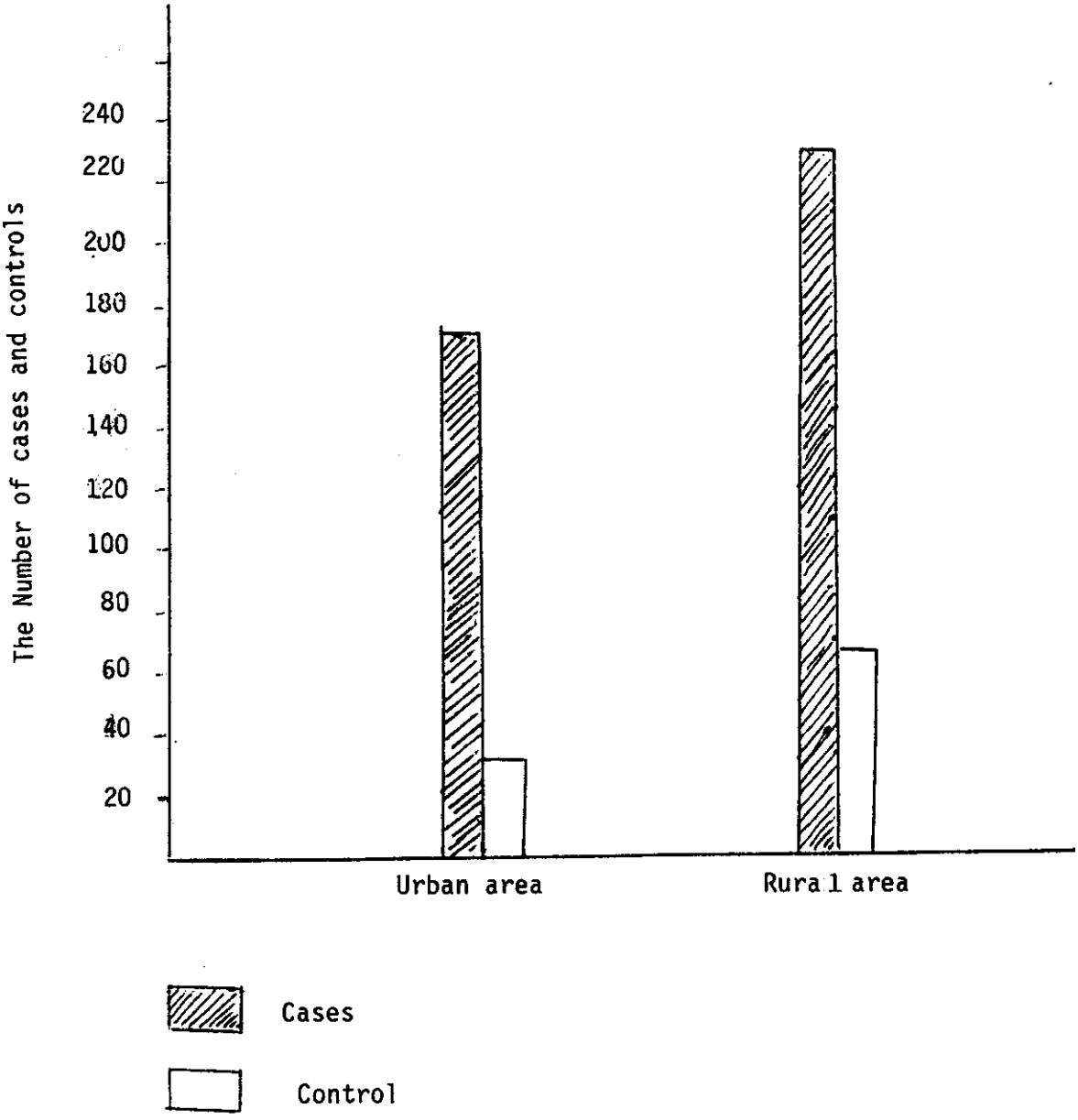

Fig. 1 : Demonstrate the distribution of cases and controls according to locality.

Table 2 :

Age distribution of the studied cases of diarrhea

Age	No. of cases	Percentage
Up to 6 months	57	14.25%
6 - 12 months	74	18.5 %
12 - 18 months	176	44 %
18 - 24 months	93	23.25%
Total	400	100 %

Shows the age of patients and the percentage of them in relation to the whole number of cases : The table shows that the older infants more affected by gastroenteritis than younger ones. This may be due to starting of weaning and walking so the infant is more exposed to infection from weaning methods which may be of sudden onset. Also, from contamination from the surrounding environment.

Fig. (2) :

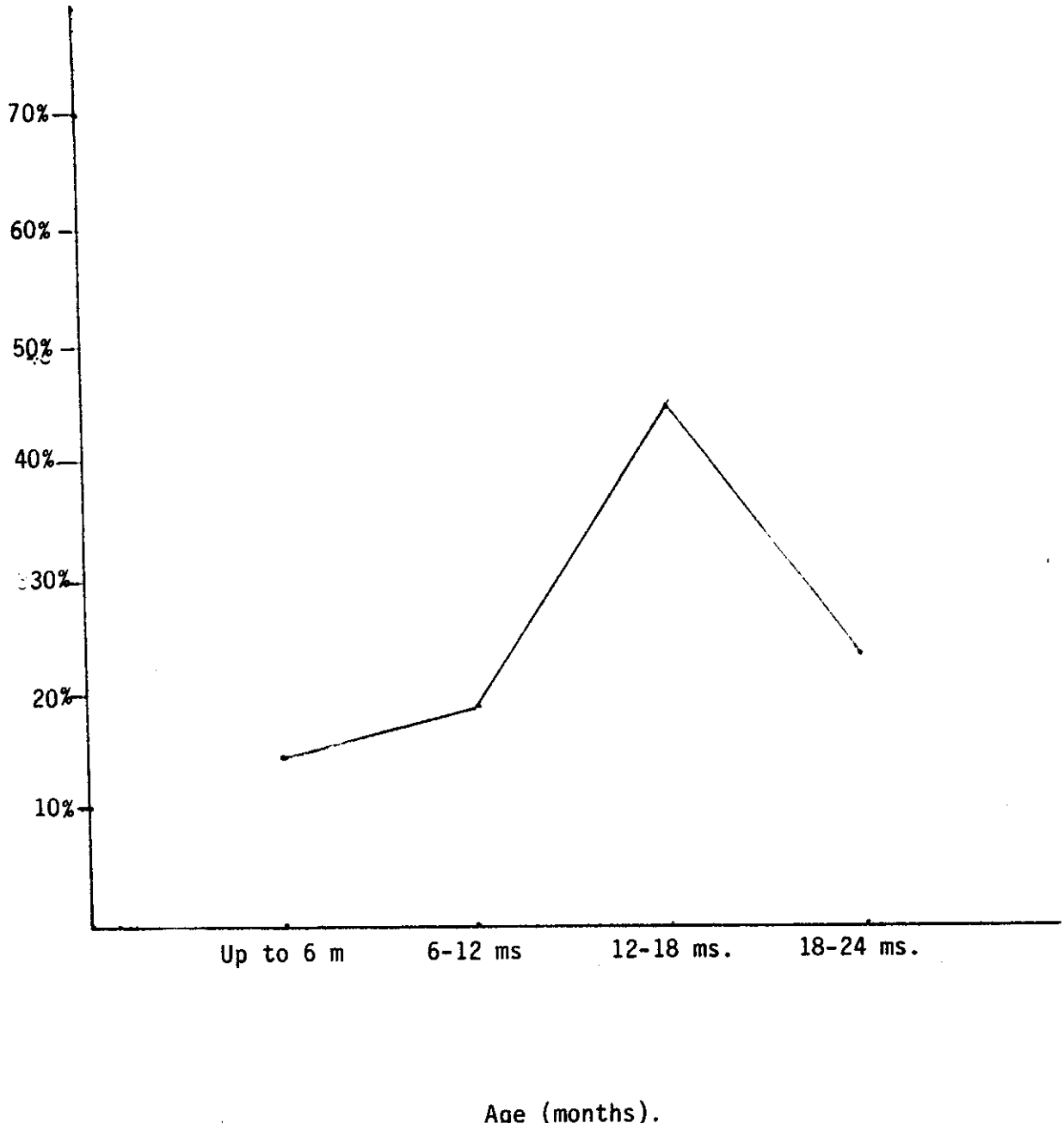

Fig. (2) : demonstrate age distribution of studied cases.

Table 3 :

The Sex distribution of the studied cases and their percentage

Sex	No. of cases	%
Males	252	63%
Famles	148	37%
Total	400	100%

The table showing that males are more exposed to infection than females, representing 63% (252 cases) & females 148 cases (37%).

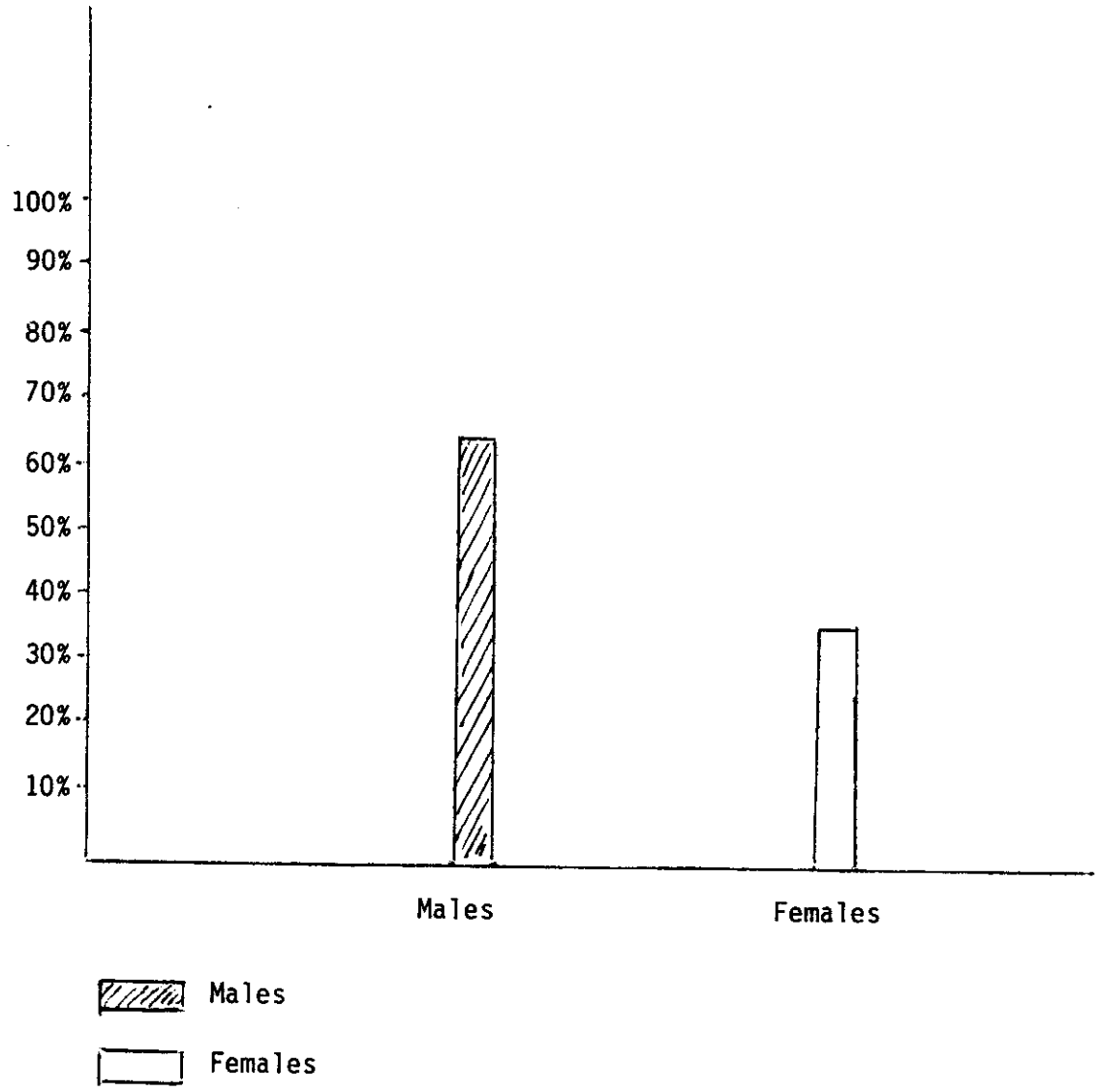

Fig. 3 : demonstrate sex distribution of cases.

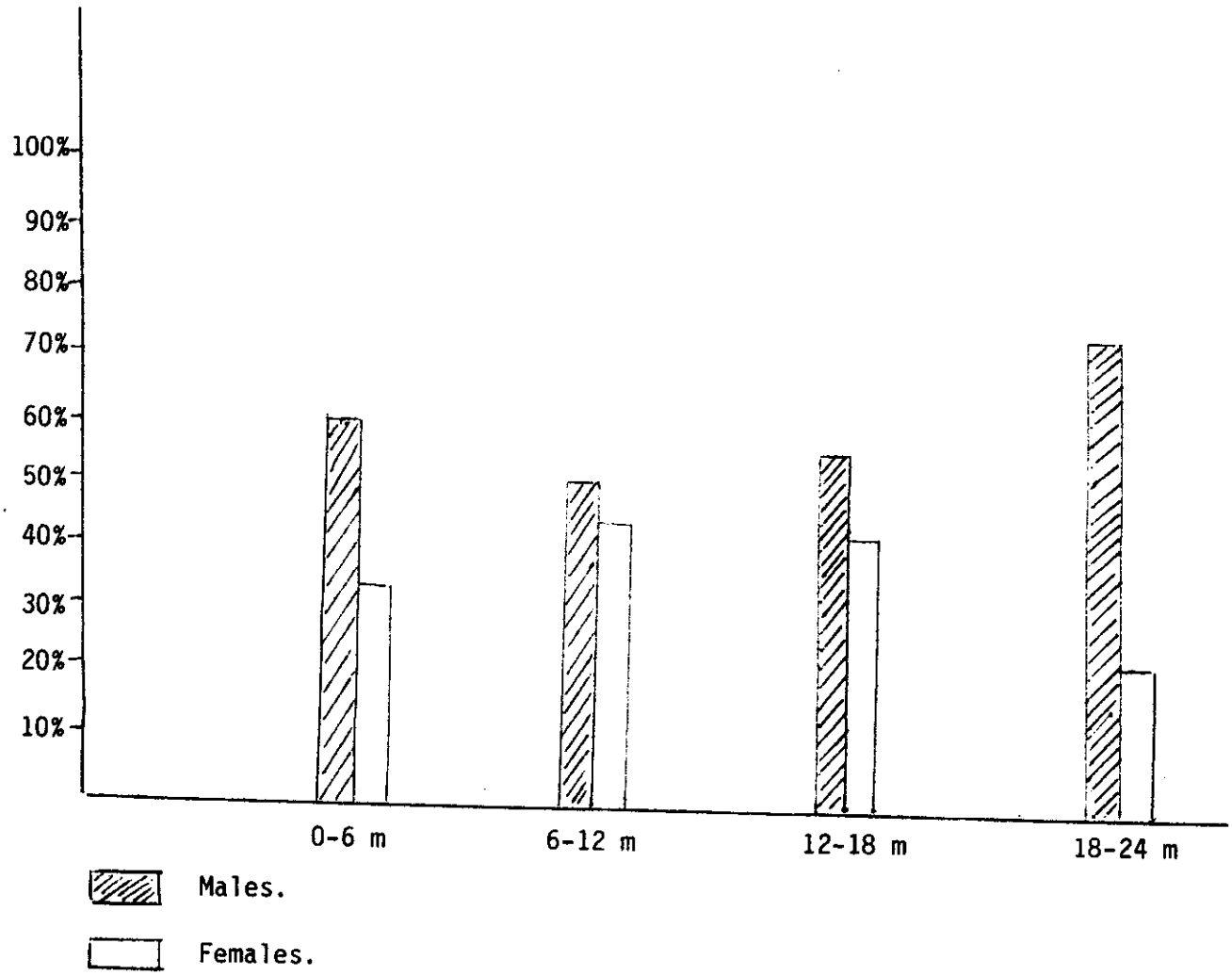

Fig. 4 : demonstrate age & sex distribution.

Table 5 :

Distribution of cases around the year.

Months	Total No. of cases	No. of cases (rural area)	No. of cases (urban area)	Percentage
Jan.	33	18	15	8.25%
Feb.	15	9	6	3.75%
Mar.	17	11	6	4.25%
April	30	20	10	7.5%
May	29	18	11	7.25%
Jun.	40	24	16	10 %
Jul.	80	45	35	20%
Aug.	62	34	28	15.5%
Sept.	37	15	22	9.25%
october.	33	20	13	8.25%
Nov.	14	9	5	3.5%
Dec.	10	6	4	2.5%

Table (5), shows the number of cases were taken every month through out the year and shows the cases from both urban and rural areas, and the percentage of each group to the total number of cases. It shows that the highest frequency was found in July 20% followed by August 15.5% th n June 10% the lowest frequency was found in December 2.5% . Most cases were from rural area.

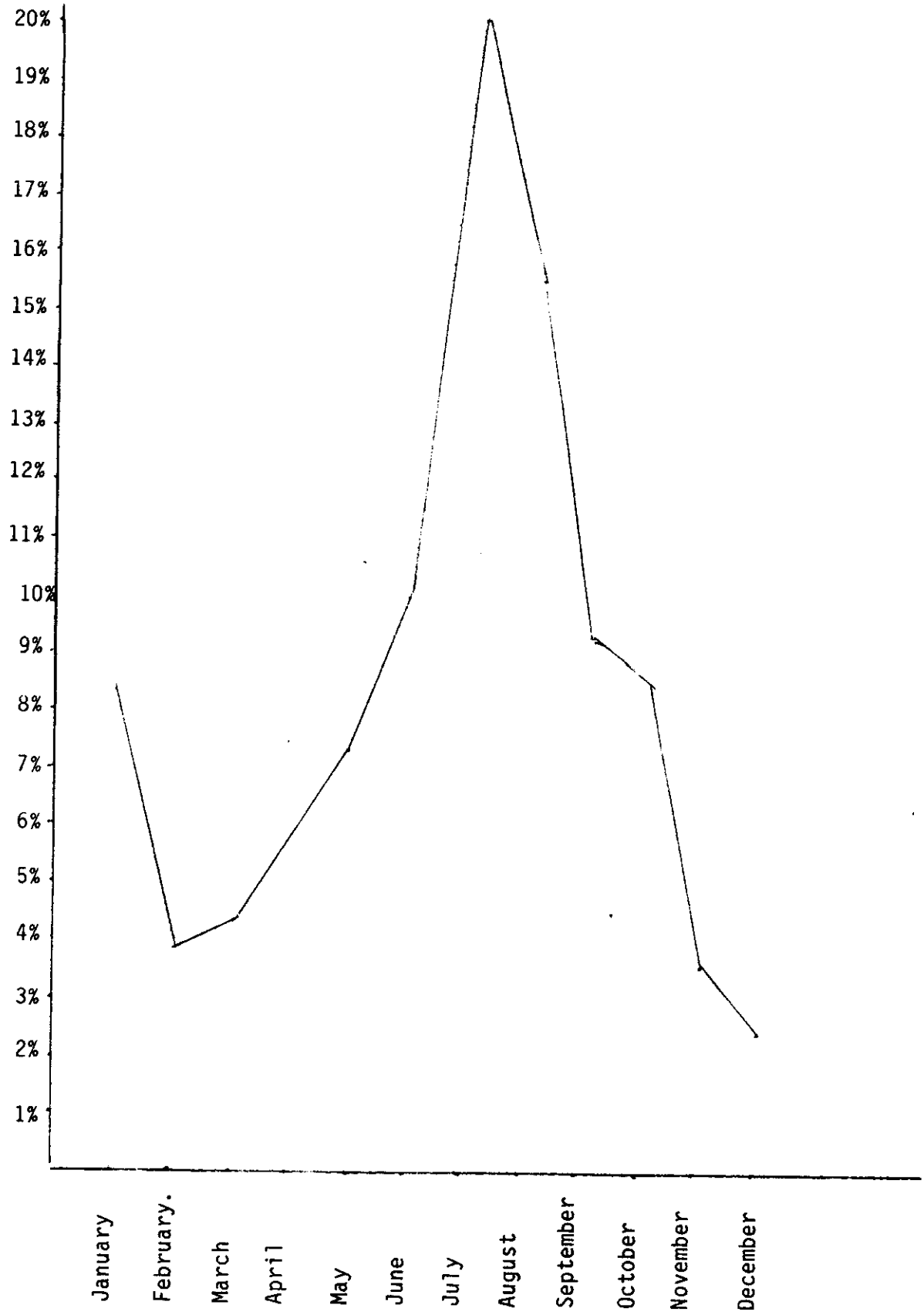

Fig. 5 : Demonstrates the monthly distribution of cases.

Table 6 :

Seasonal Variation in No. of cases

Season	No. of cases	Percentage
Dec.-Feb. (winter)	58	14.5%
Mar.-May (Spring)	76	19%
Jan-August (summer)	182	45.5%
Sep.-November (Autum).	84	21%
Total	400	100%

The table illustrating the seasonal variation in the number of cases which was more in summer (45.5%) followed by Autum (21%), Spring (19%) . The lowest frequency was in Winter Season, (14.5%).

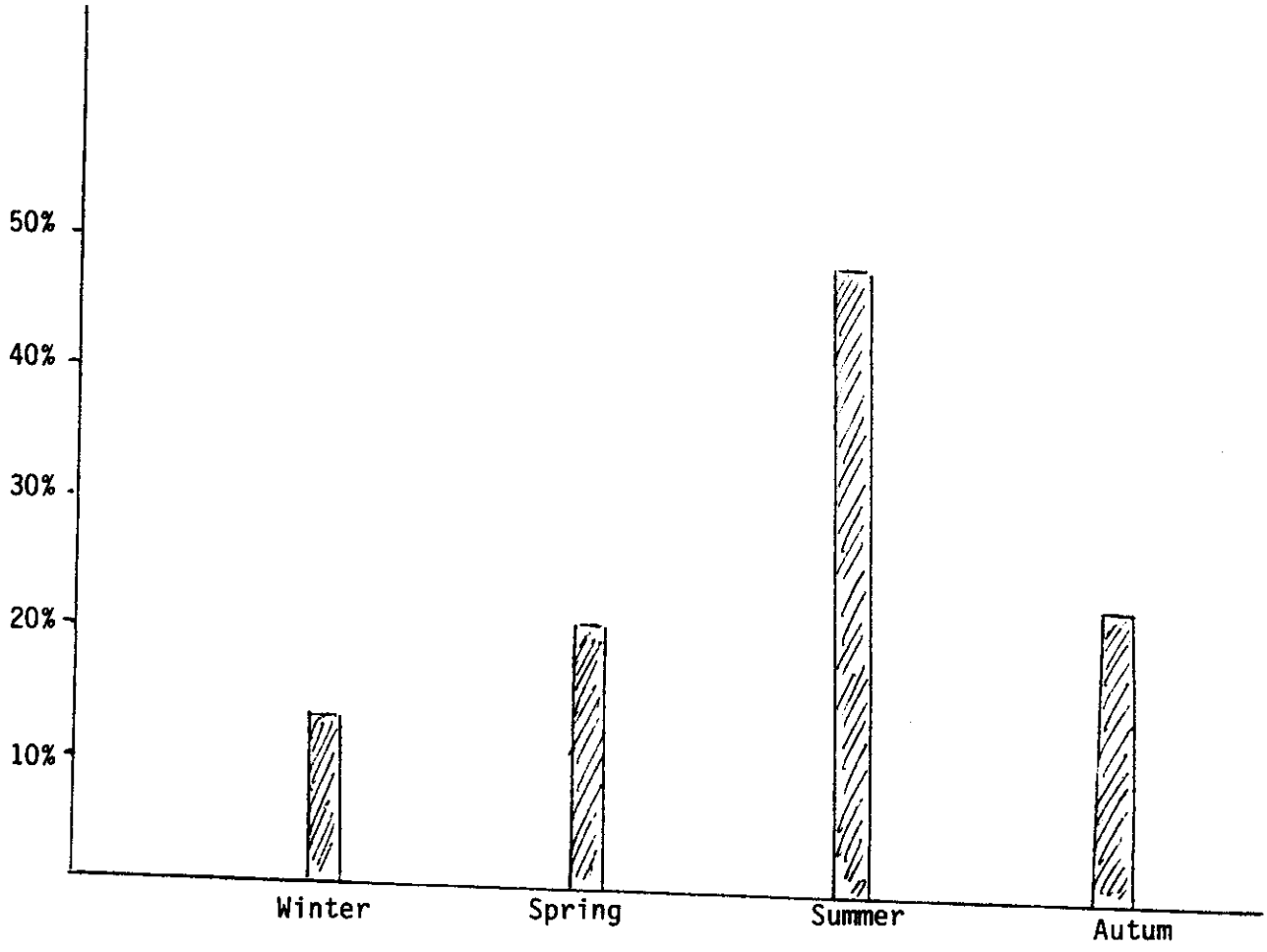

Fig. 6 : Illustrate the seasonal variation in No. of diarrheal cases.

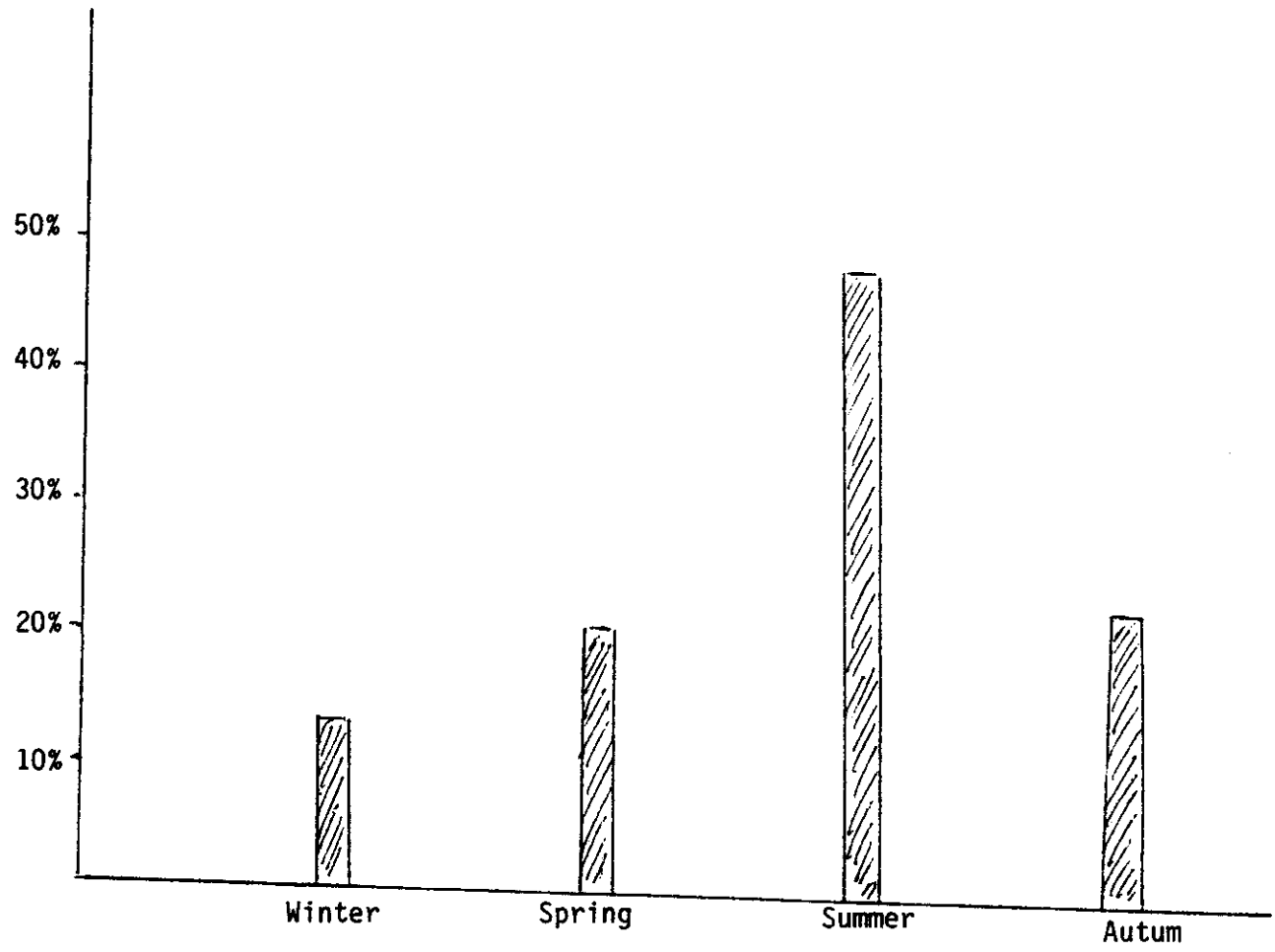

Fig. 6 : Illustrate the seasonal variation in No. of diarrheal cases.

Table 7 :

The isolated organisms from cases and their percentage.

The Pathogens	No. of cases	%
E. coli	153	38.25%
Shigella	56	14%
Klebsiella	45	11.25%
Proteus	43	10.75%
Staph. aureus	21	5.25%
Ps. pyocyanaeus	15	3.75%
Salmonella	12	3%
Campylobacter	5	1.25%
Candida	11	2.75%
No growth	39	9.75%
Total	400	100%

The table (7),illustrates the types of pathogens isolated from the diarrheal cases. It was found that about 39 cases (9.75%), giving no growth on bacteriological exam . While the remaining % (90.25%) 361 cases giving +ve bacterial pathogens. The most frequency pathogens were E. coli 38.25% followed by Shigella 14%, (S. flexneri 39 cases % S. dysent., 16 cases & one case not agglutinable), & klebsiella 11.25% then proteus 10.75% followed by staph. aureus 5.25% then P. pyocyaneus 3.75% & salmonella 3% & campylobacter 1.25% where candida was detected in 11 cases 2.75%

* The most common combinations found in cultures were : E. coli , Proteus & E. coli , klebsiella & Klebsiella , Proteus.

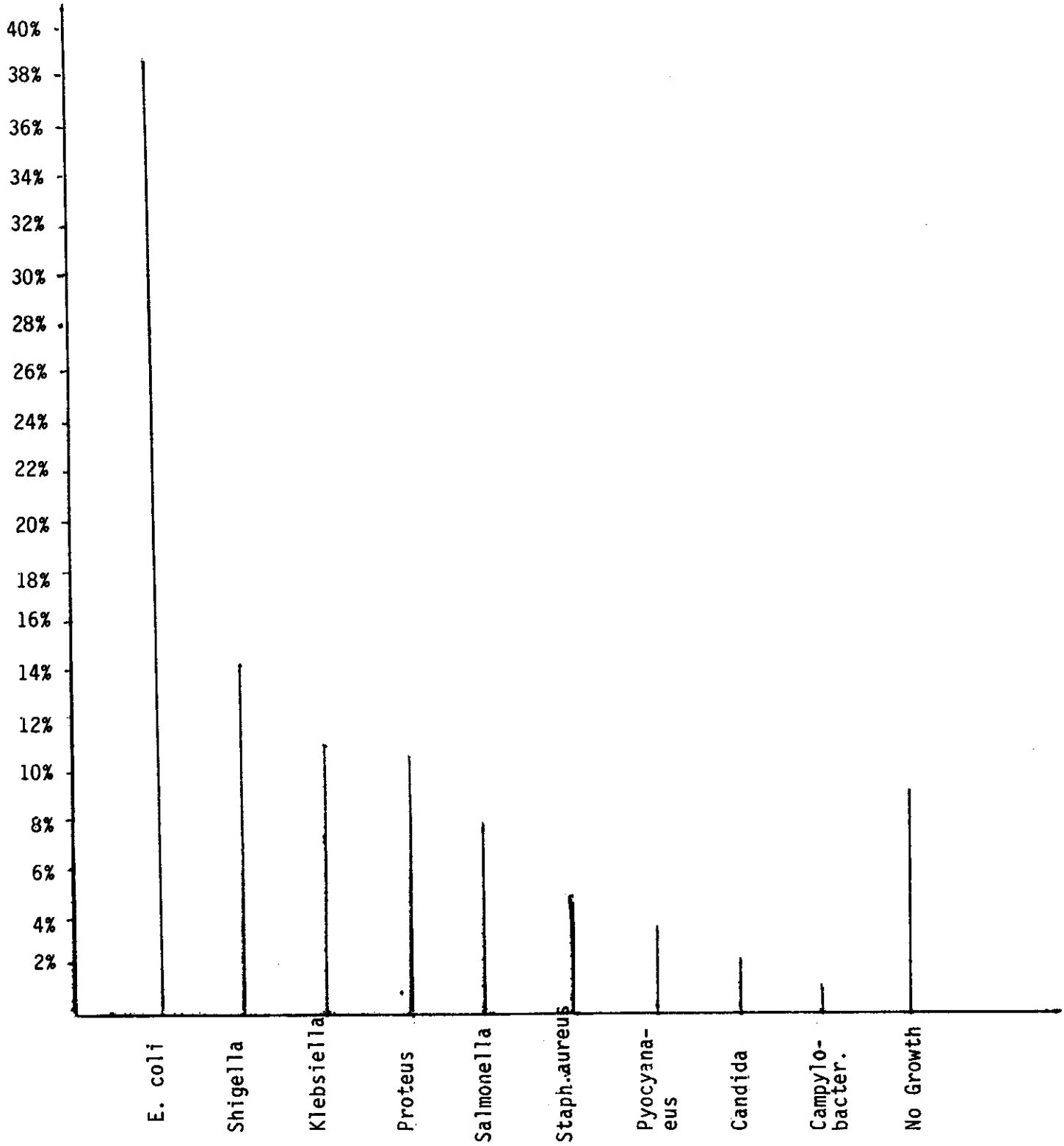

Fig. 7 : demonstrate the percentage of organisms isolated from diarrheal cases.

Table 8 : Demonstrate types of detected organisms months.

The Organism	Jan.	Feb.	March	April	May	June	July	August	Sep.	Oct.	Nov.	Dec.	Total
E. coli	8	13	10	14	11	10	29	22	18	12	2	4	153
Shigella	2	-	-	-	-	9	18	14	-	10	2	1	56
Klebsiella	3	1	3	3	7	6	5	12	4	-	-	1	45
Proteus	1	-	3	2	8	6	14	3	1	2	2	1	43
Staph.	1	1	1	1	3	-	3	4	-	4	1	2	21
Ps.pyocy.	1	-	-	2	-	2	6	2	-	-	1	1	15
Salmonella	3	-	-	-	-	3	4	-	-	-	2	-	12
Campylobacter	-	-	-	2	-	1	-	1	1	-	-	-	5
Candida	2	-	-	2	-	1	1	-	3	-	2	-	11
No growth	12	-	-	4	-	2	-	4	10	5	2	-	39
* total	33	15	17	30	29	40	86	62	73	33	14	10	400

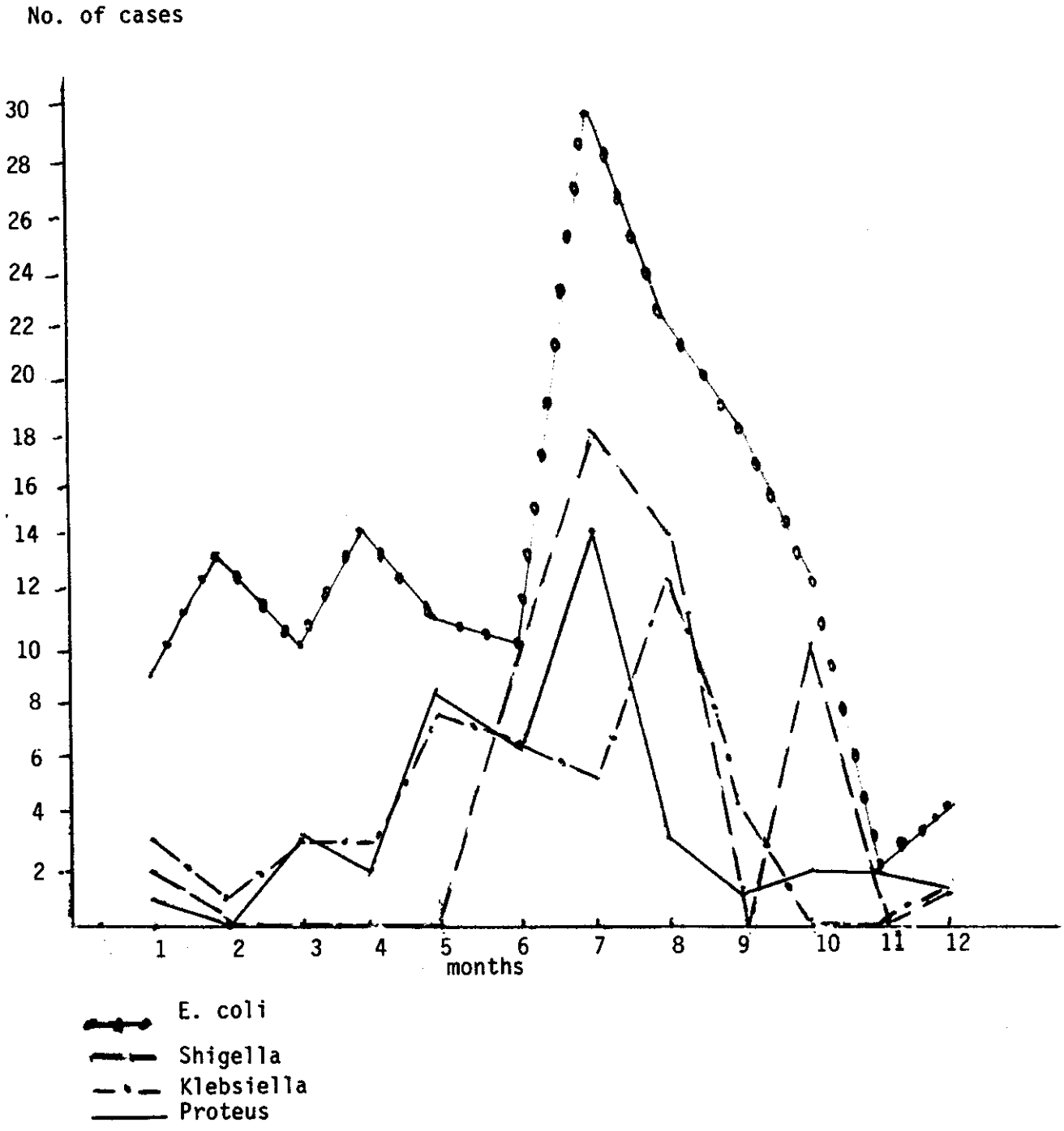

Fig. 8 : The most common pathogens isolated from this study (E. coli , shigella, Klebsiella, Proteus) & their distribution monthly.

Table 9 :

The Seasonal distribution of each organism.

The Org.	Total	The Season			
		Winter	Spring	Summer	Autum
E. coli	153	25	35	61	32
		16.34%	22.88%	39.97%	20.91%
Shigella	56	3	-	41	12
		5.85%		73.21%	21.44%
Klebsiella	45	5	13	23	4
		11.11%	28.89%	51.11%	8.89%
Proteus	43	2	13	23	5
		6.5%	30.23%	53.50%	11.62%
Staph. aureus	21	4	5	7	5
		19.05%	23.81%	33.33%	23.81%
P. pyocaneus	15	2	2	10	1
		13.33%	13.33%	66.67%	6.67%
Salmonella	12	3	-	7	2
		25%		58.33%	16.67%
Campylobacter	5	-	2	2	1
			40%	40%	20%
Candida	11	2	2	2	5
		18.9%	18.9%	18.9%	43.3%
No growth	39	12	4	6	17
		30.76%	10.25%	15.38%	43.61%
	400	58	76	182	84

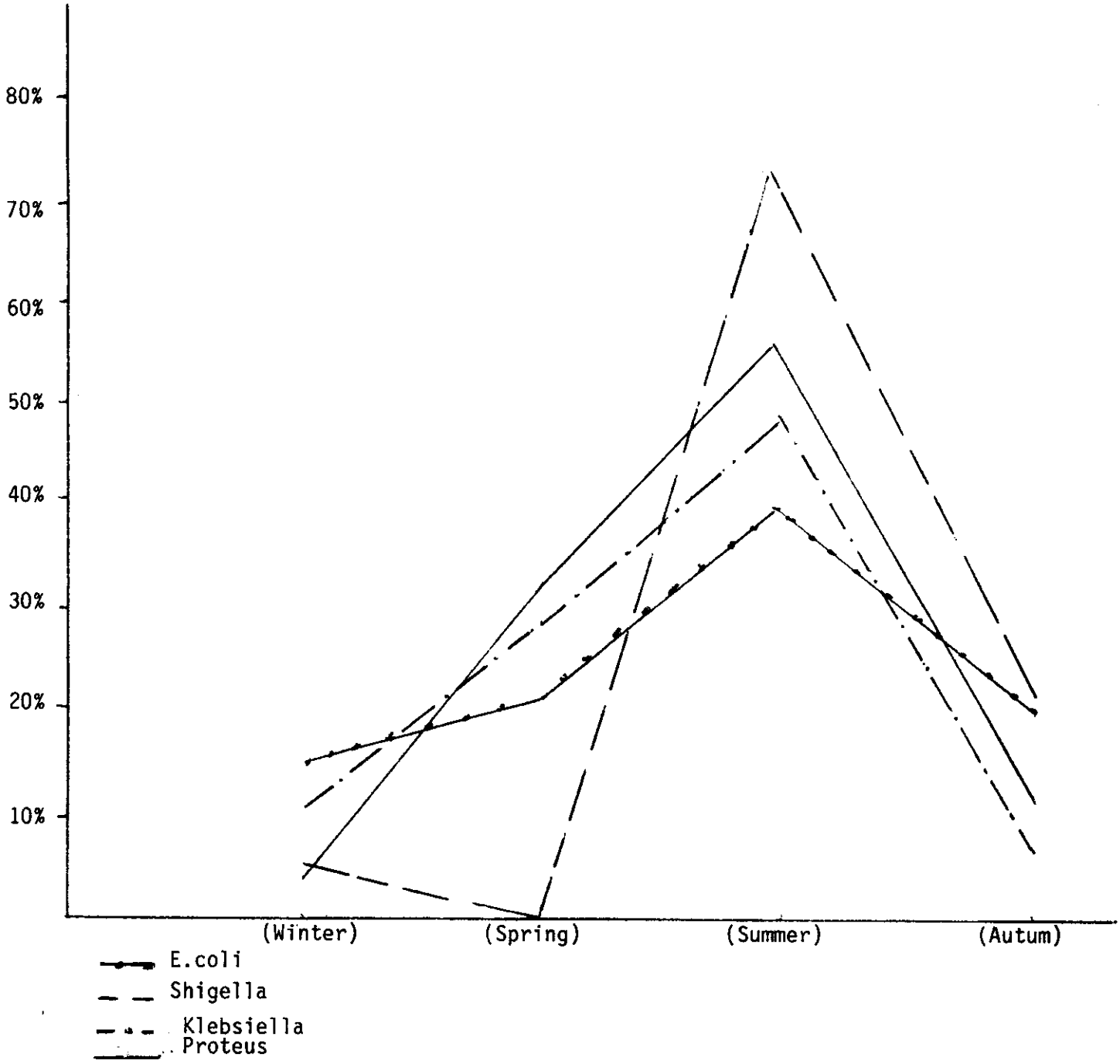

Fig. 9 : The Seasonal distribution of the most common pathogens (E. coli, Shigella, Klebsiella, Proteus).

Table 10 :

Distribution of pathogens according to Age.

The Organism	Total	Up to 6 m	6-12 m	12-18 m	18-24 m
		No. of cases			
E. coli	153	12	39	68	34
Shigella	6	-	4	45	7
Klebsiella	45	-	8	20	17
Proteus	43	19	8	13	3
Staph. aureus	21	2	3	8	8
Ps. pyocyaneus	15	-	3	6	6
Salmonella	12	-	3	5	4
Campylobacter	5	-	1	1	3
Candida	11	-	-	4	7
No growth	39	24	5	6	4
Total	400	57	74	176	93

The distribution of pathogens according to age group : 0-6 months & 6-12 months & 12-18 months & 18-24 months . it is clear that Shigella & E. coli had a higher frequency after one year of age, while E. coli only had higher frequency under one year of age. The age group 0-6 months had no infection of Salmonella, shigella, klebsiella, P. pyocyaneus of Candida. Candida occur in infants after one year of age.

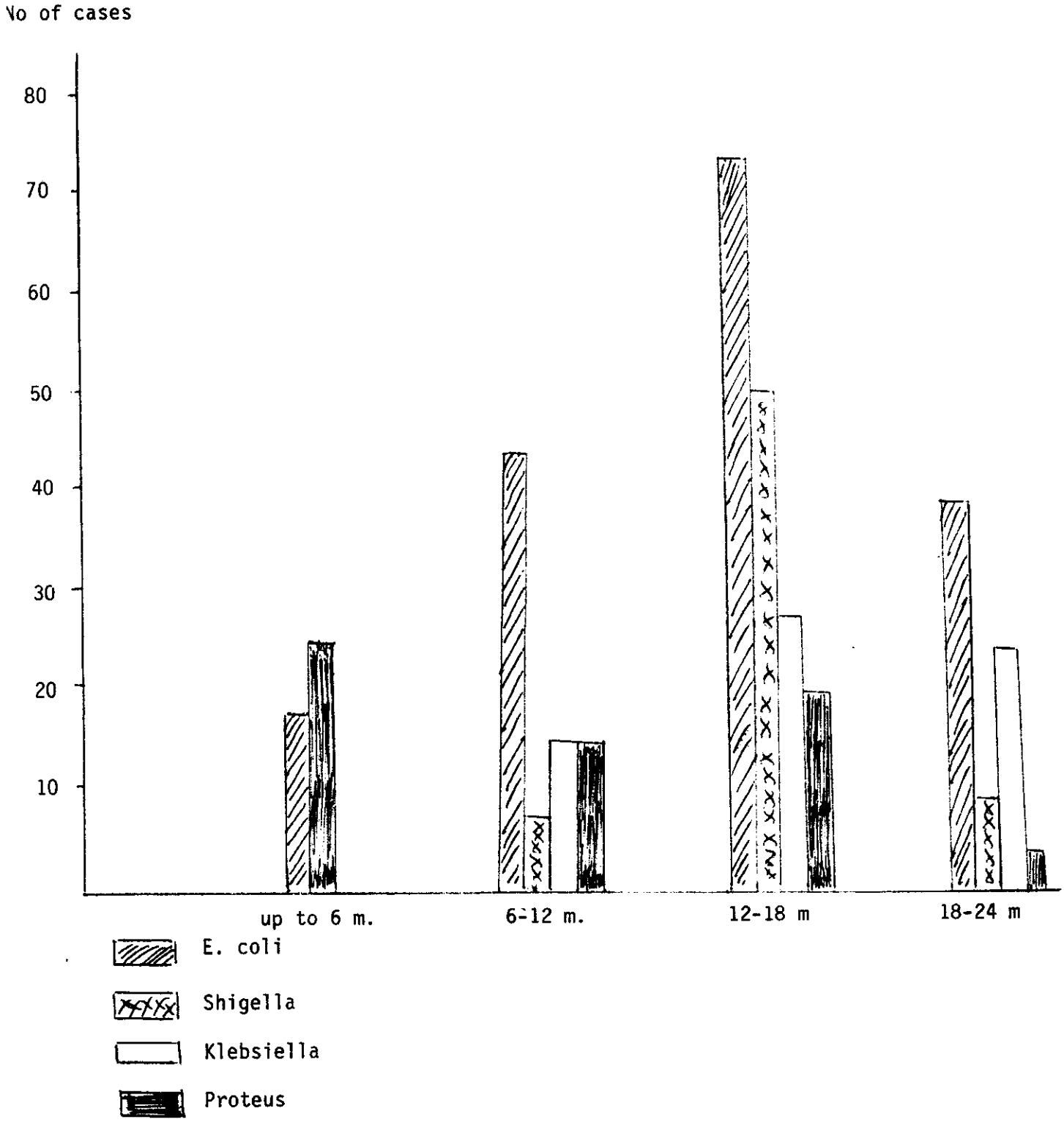

Fig. 10 : Show the distribution of most common pathogens isolated from this study (E. coli, Shigella, klebsiella, Proteus), according to age.

Table 11 :

Table 11 : demonstrate No. of cases of each group of feeding and their percentage. It shows that the highly affected group is the combined group. Then weaned then artificial fed group, were higher than breast-fed group.

Type of feeding	No. of cases	%
Breast	47	11.75%
Artifical	105	26.25%
Combined feeding	126	31.5%
Weaned group.	122	30.5%
Total	400	100%

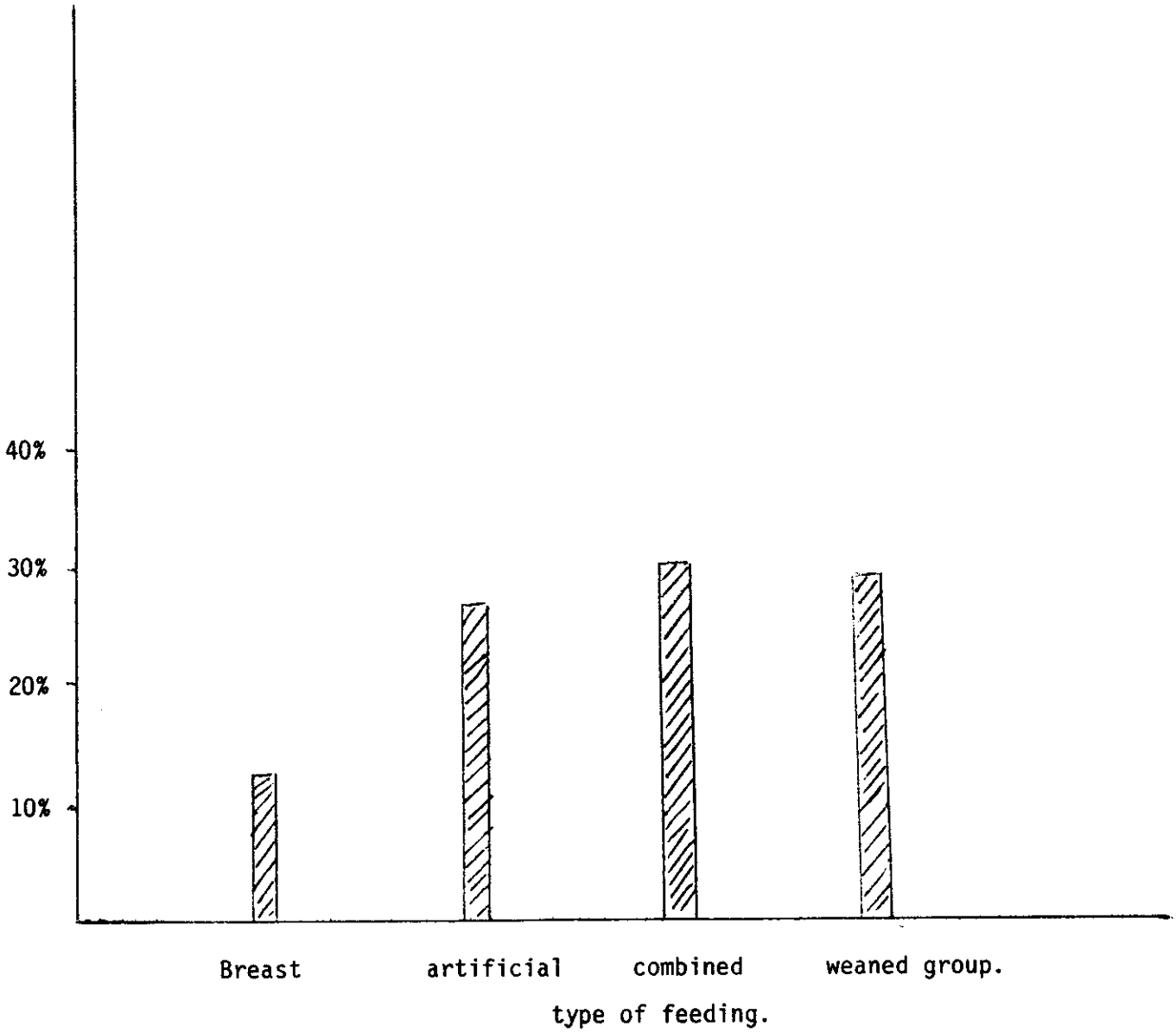

Fig. 11 : Distribution of cases according to the type of feeding.

Table 12 :

Comparison between No. of cases &

type of feeding & pathogens

The Pathogen	Breast fed cases	Artifical fed cases	Combined cases	Weaned cases
E. coli	15	37	48	53
Shigella	4	16	19	17
Klebsiella	5	11	15	14
Proteus	5	17	9	12
Staph. aureus	-	9	11	1
P. pyocyanaeus	3	5	4	3
Salmonella.	1	3	4	4
Campylobacter	-	2	-	3
Candida	-	2	7	2
No growth	14	3	9	13
Total 400	47	105	126	122

Table 12 : shows comparison between no . of cases & pathogens isolated from different breast, artificially fed , combined feeding and weaned cases.

There was high incidence of diarrhea in the last three groups than the breast feeding group. We found that most staph. aureus & Candida and campylobacter infection occured in artificially fed group and combined & weaned groups.

Table 13 : Typing of the isolated E. coli strains.

Agglutinating Poly-valent E.coli serum.	No. of strains
Poly-valent I	72 cases
Poly-valent II	32 cases
Untypable E. coli	49 cases

Typing of the isolated E. coli strains revealed 72 strains positive with poly-valent I & 32 with poly-valent II . The number of the untypable strains were 49 strains.

Table 14 :

Serotypes of isolated identified strains of E. coli.

The mono-valent	No. of strains.
Polyvalent I :	
O26 K 60 (B6)	23
O55 K 59 (Bs)	9
O78 K 80 (B-)	7
O86 K 61 (B7)	18
O111 K 58 (B4)	5
O114 K - (B-)	6
O119 K 69 (Bl4)	4
Polyvalent II :	
O124 K 72 (Bl7)	-
O125 K 70 (Bl5)	11
O126 K 71 (Bl6)	8
O127 K 63 (B8)	8
O128 K 67 (Bl2)	5

Table 15 :

The result of Bacterial Examination of rectal swabs from 100 normal controls.

The Organism	No. of cases	Percentage
E. coli	65	65%
Salmonella	-	-
Shigella	-	-
Proteus	27	27%
Klebsiella	-	-
Staph.aureus	-	-
Staph. albus	8	8%
Pseudomonas	-	-
Campylobacter	-	-
Candida	-	-
Total	100	100%

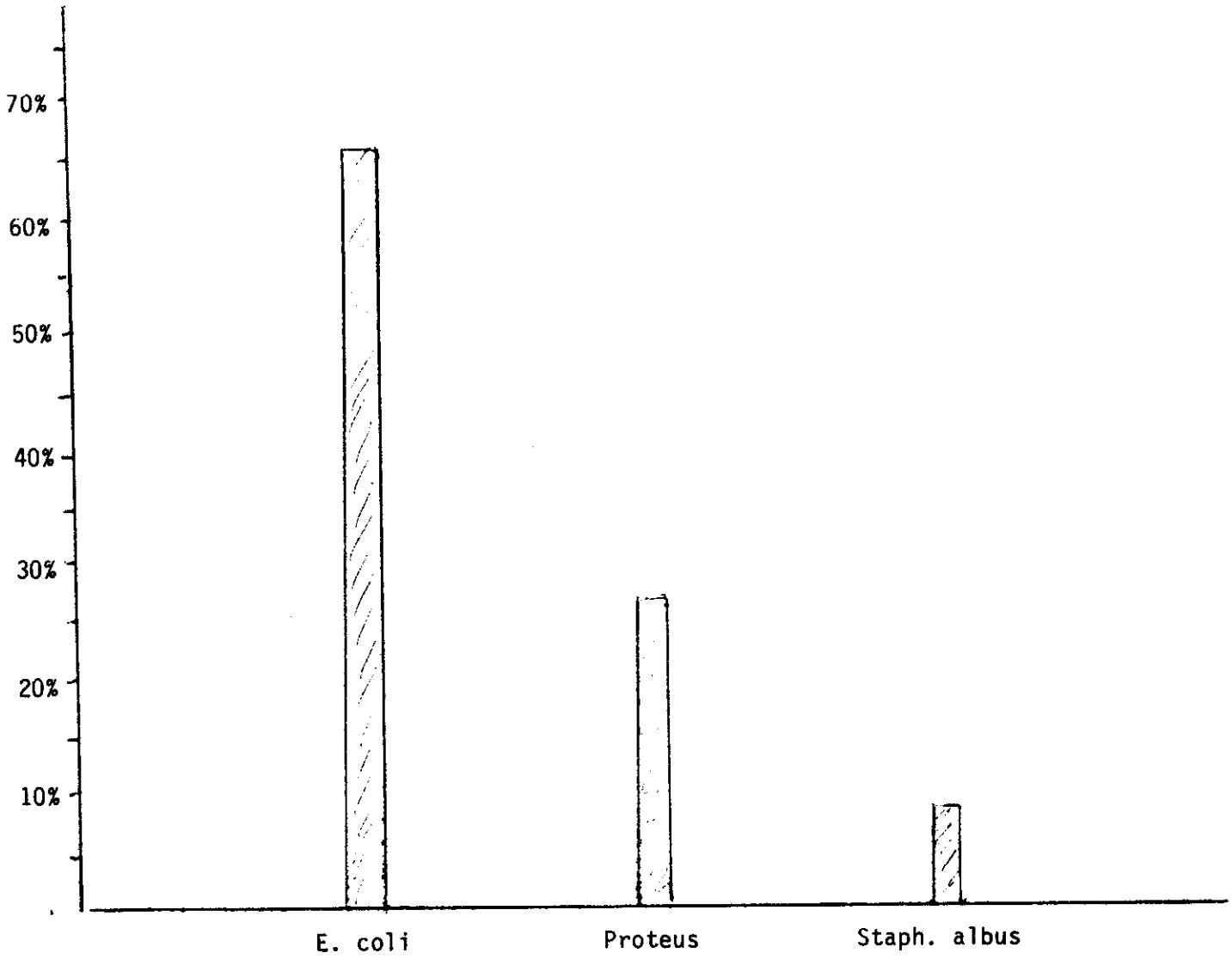

Fig. 12 : demonstrate the percentage of organisms isolated from normal controls.