

# Umbilical Hernia in Zambian School Children

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2,638 Zambian school children (1,220 boys, 1,418 girls) between the ages of six and eighteen years were examined for the presence of umbilical hernia. A total of 178 children had umbilical hernia giving a percentage of 6.7. The diameter of the umbilical ring was less than 5mm in 103 and in 34 it was more than 10mm. The ratio of incidence of umbilical hernia, males to females was 5.6 : 7.8 percent showing a slight preponderance in females.

## INTRODUCTION

There is no data regarding the frequency of umbilical hernia in Zambian school children. The infantile type of hernia occurs within the first three years after birth due to yielding of the umbilical cicatrix after separation of the umbilical cord. This has not drawn much attention because it disappears as the child grows older and usually is not associated with any complication or anomalies. Crump (1952) on examining 1,237 Negro infants and school children in Nashville demonstrated umbilical hernia in 329 of them showing a frequency of 26.6 percent. Jones (1941) has drawn attention to the fact that umbilical hernia is seen with far greater regularity in Negro infants than in Whites. Evans (1941) in his study of a large number of Coloured and White infants at Cleveland, Ohio, below the age of one year, revealed that 24.7 percent and 3 percent respectively showed umbilical hernia.

Various causes have been advanced to explain the occurrence and frequency of umbilical hernia. At birth umbilicus is surrounded by a distinct fibrous umbilical ring. Persistence of this condition precedes the appearance of umbilical hernia. Jaffe (1947) stated that majority of the children were undernourished and also had family history of hernia in one or both parents. Constipation, colic,

excessive crying, phimosis, poor natal and post natal care are also considered to be contributing factors.

## MATERIAL AND METHODS

After obtaining permission from the Chief Education Officer of Lusaka area, certain schools were randomly selected from the city of Lusaka for the study. The method of sampling aimed at getting about 100 children of each age and sex from different parts of the city. Age was ascertained on the basis of the birth certificate and recorded in decimal notation.

The study team consisted of two anatomists, one chief technician and two nurses. 2,638 school children (1,220 boys and 1,418 girls) with the age range from six to eighteen years were examined in the medical examination/sick room attached to the school. An umbilical hernia was considered to be present when the patent umbilical defect permitted exploring finger tip to advance with facility into the space of the abdominal cavity. All the hernias were classified in one of the three groups depending upon the diameter of the ring as, (a) less than 5mm, (b) between 5-10mm, (c) more than 10mm.

## RESULT AND DISCUSSION

A total of 2,638 children were examined between the ages of six and eighteen years. 178 of these children had umbilical hernia showing a frequency of 6.7 percent. In 103 children the diameter of the umbilical ring was less than 5mm and only in 34 cases the size of the ring was greater than 10mm (Table 1).

A hernial protrusion at the umbilicus may be congenital, may appear at birth through the fibrous umbilical ring or can appear in the adult. Iason

TABLE I:

Ages in Years	Boys			Girls			Umbilical Hernia Diameter in mm			Total With Hernia
	Number Examined	With Hernia	Percentage	Number Examined	With Hernia	Percentage	Less than 5 mm	5 - 10mm	More than 10 mm	
5.5 - 6.4	23	0	0	18	2	11	2	0	0	2
6.5 - 7.4	68	4	6	115	22	19	11	10	5	26
7.5 - 8.4	120	6	5	166	27	16.2	20	8	5	33
8.5 - 9.4	145	5	3.4	147	20	13.5	16	4	5	25
9.5 - 10.4	106	9	8.5	142	14	9.8	13	3	7	23
10.5 - 11.4	103	8	7.7	111	9	8.2	6	6	5	17
11.5 - 12.4	106	6	5.6	95	4	4.2	6	3	1	10
12.5 - 13.4	102	4	4	105	3	2.8	4	1	2	7
13.5 - 14.4	106	11	10.3	102	4	4	11	3	1	15
14.5 - 15.4	103	6	5.8	110	2	1.8	7	0	1	8
15.5 - 16.4	96	7	7.3	121	2	1.7	4	3	2	9
16.5 - 17.4	75	1	1.3	103	1	1	2	0	0	2
17.5 - 18.4	67	1	1.5	83	0	0	1	0	0	1
Total	1220	68	5.6	1418	110	7.8	103	41	34	178

(1948) lists five areas on the posterior surface of an umbilicus where herniation can take place. Dunham (1948), Hess and Lundean (1949) were of the opinion that it is more often found in premature infants than those born at full term. Wakely (1930) was of the view that the artificial feeding habit and traction on the cord at the time of birth or within one week of birth played a part in the occurrence of umbilical hernia. Mack (1945) found the incidence of umbilical hernia to be 60% during the first year, gradually decreasing to 7% by the 15th year. Woods (1953) in England showed that 93% of umbilical hernia disappeared during the first year. Though we do not have any data regarding the time of disappearance of umbilical hernia, the incidence is lower in the higher age group and is found more frequently in younger age group.

Hess and Lundean (1949) state that sex exerted little influence on the frequency of umbilical hernia. Barrington - Ward (1947) suggests that the umbilical hernia is usually found in the female, but does not present any data to display the sexual predominance. Ladd and Gross (1948) estimate that umbilical hernias are about twice as common in girls as in boys. In our observation, the ratio of umbilical hernia between boys and girls was 5.6 : 7.8, with a slight predominance in girls, which may have a relation to their less well developed musculature.

Jones (1941) has drawn attention to the fact that umbilical hernia is seen with far greater regularity in Negro infants than in Whites. Evans (1941), has observed umbilical hernia in only 3% of the White children below the age of one year. In our observation, of Zambian Negro children above 5 years the incidence was 6.7%. Majority of umbilical hernias are known to resolve without treatment during the first

year (Mack 1945; Woods 1953). So this high percentage (6.7) of umbilical hernia observed in Zambian children above the age of 5 years is indicative of its greater frequency in Negro children.

Mahorner (1940) attributes the higher incidence of umbilical hernia in Negroes to the greater percentage (40%) of absence of umbilical fascia in them. This is probably the only anatomical explanation for the higher incidence in Negro children. Fewer cases of umbilical hernia in higher age groups associated with smaller diameter of the umbilical ring probably indicates that the process of resolution continues till adolescence.

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