

# AUTOPSY FINDINGS OF 15,823 NATURAL DEATHS IN ACCRA; GHANA

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## Summary

Autopsy was performed on 15,823 dead bodies in Accra, Ghana, who died of natural causes during 1981-1990.

Among the 11,531 adults, maximum died of Respiratory causes (22.64%) followed by causes in the Central Nervous system (19.81%), Cardio-vascular system (14.38%), Alimentary system (9.53%), Hepato-biliary system (7.75%) and Urinary system (7.42%). The maximum cause of deaths among 2,476 children was anaemias (34.57%) which includes malaria, sickle cell disease and others, followed by the causes in the Respiratory (22.86%), Alimentary (18.58%) and Central Nervous Systems (8.64%). The important causes of deaths among 1816 infants were Respiratory (35.79%), Alimentary (16.80%) and CNS (12.39%) diseases.

The leading causes of deaths among adults were C V A (13.93%), Lobar pneumonia (10.03%) and Hypertensive heart disease (7.54%). The important causes of deaths among the children were Malaria (18.46%) Bronchopneumonia (11.95%) and sickle cell disease (6.34%), while among the infants the leading causes were Bronchopneumonia (25.26%), Gastro-enteritis (8.20%), Congenital heart diseases (6.72%), and Malaria (7.05%).

The leading malignant cause of death among the adults was Hepatoma (1.93%), Cancer head of the pancreas (0.78%), Brain tumour (0.66%), Cancer prostate (0.55%) and Cancer stomach (0.54%). Among the children malignant causes accounted for 2.42% while, only one infant died of Hepatoblastoma.

## Introduction

The importance of post-mortem examination can not be denied in the proper development of medical science. In spite of all efforts for correct diagnosis and treatment, if a patient dies, autopsy is essential to find out the actual cause of death. If autopsy shows that the diagnosis and treatment were correct, it will provide confidence.

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while if it is otherwise, the mistake will help improve our knowledge for future. One post mortem if properly done and studied by the clinicians and the pathologists, may eliminate many mistakes later<sup>1</sup>. Willis (1973)<sup>2</sup> and Cameron (1973)<sup>3</sup> emphasized the importance of clinical necropsy inspite of highly sophisticated diagnostic methods developed in recent years. "A well conducted necropsy, presented jointly by a clinician who cares for the patient and the pathologist performing the necropsy, is still unsurpassed as a teaching method."<sup>4</sup>

Academic or clinical autopsy is common in Ghana. In the absence of reliable statistics, autopsy findings may indicate the pattern of deaths in any country where diagnostic post mortem is common. So far no reference is available on the autopsy findings of all age groups in Accra. There is one unpublished report on the autopsy findings of 963 cases of all age groups<sup>5</sup>. There are two reports on the child deaths in the largest hospital in Accra during 1968<sup>6</sup> and 1986-1987<sup>7</sup>.

Both these papers dealt with a small number of cases. The present paper deals with a large number of cases over a period of ten years which should provide reliable information. In Bangladesh, academic autopsy is almost unknown. This paper may inspire both the clinicians and the public to popularise diagnostic necropsy when indicated. In one of the rare occasion of academic autopsy in Dhaka diagnosed as a case of amoebic liver abscess, an unusual condition of Hepatic Ascariasis was revealed<sup>8</sup>. Though Ghana is a developing Commonwealth country, its autopsy record is noteworthy.

## **Materials and methods**

The paper is based on the records of autopsy findings preserved in the department of Pathology, University of Ghana Medical School, Korle-Bu, Accra, Ghana for the period 1981 to 1990.

Out of 21,665 dead bodies deposited in the mortuary, autopsy was performed on 19,710 (90.98%), as autopsy was not possible on 1,955 bodies (9.02%) due to non-availability of consent of close relations and advanced decomposition of the bodies. Routine post mortem examination was performed and relevant laboratory investigations were done when indicated. Parts of specimens which needed histopathological examination were preserved in 10% buffered formalin. After 24 to 48 hours, sections were taken for histopathology. All the autopsy reports and the histological sections were preserved for future reference.

In the present paper, only the causes of natural deaths of the adults, children and infants will be presented. The causes of unnatural or medico-legal cases have already been published<sup>9</sup>.

## Results

**Table 1.** shows the different categories of dead bodies :

	Adults	Percent	Child	Percent	Infant	Percent	Total	Percent
Number								
Nat. deaths	11.531	78.25	2476	80.44	1816	95.76	15823	80.28
Number unnatural deaths	3.205	21.75	602	19.56	80	04.24	3887	19.72
Total	14.736	74.76	3078	15.62	1896	09.62	19710	100.00

From the table 1 we find that those who died of natural causes, represent 78.25% among adults, 80.44% among children and 95.76% among infants making a total of 80.28% of all the autopsy cases.

**Table 2.** shows the yearly distribution of natural deaths of all age groups :

Year	Adults		Children		Infants		Total :	
	Natural	Un-natural	Natural	Un-natural	Natural	Un-natural	Natural	Un-natural
1981	1019	322	302	49	333	10	1654	381
1982	1179	336	397	65	449	06	2025	407
1983	1303	365	285	54	287	11	1875	430
1984	821	262	149	60	133	10	1103	332
1985	577	439	141	80	58	04	776	523
1986	1079	246	176	69	68	08	1323	323
1987	1226	356	243	52	106	11	1575	419
1988	1295	327	261	66	153	06	1709	399
1989	1477	321	280	68	140	09	1897	398
1990	1555	231	242	39	89	05	1886	275
Total	11531	3205	2476	602	1816	80	15823	3887

There were lowest number of natural deaths and the highest number of unnatural deaths during 1985, the reason of which is not clear. (Table 2).

**Table 3.** shows the systemic distribution of the causes of deaths among the adults, children and infants :

System	Adults	Percent	Children	Percent	Infants	Percent	Total	Percent
Resp. System	2610	22.63	566	22.86	650	35.79	3826	24.18
C.N.S.	2361	20.48	214	8.64	225	12.39	2800	17.70
C.V.S.	1557	13.50	73	2.95	126	6.94	1756	11.09
G.I.T.	1089	9.44	460	18.58	305	16.80	1854	11.72
Hep-Biliary	894	7.75	60	2.42	40	2.20	994	6.28
Urinary	876	7.61	88	3.55	27	1.49	991	6.26
Endocrine	148	1.28	07	0.28	-	-	155	0.98
Lymph-Retic	98	0.85	27	1.09	-	-	125	0.79
Female Genital	656	5.69	-	-	-	-	656	4.15
Male Genital	126	1.09	-	-	-	-	126	0.80
Malaria	138	1.20	457	48.46	128	7.04	723	4.57
Sickling	292	2.53	157	6.34	-	-	449	2.84
other anaemias	464	4.02	309	12.48	270	14.87	1043	6.59
Miscellaneous	222	1.93	58	2.35	45	2.48	325	2.05
<b>Total</b>	<b>11531</b>	<b>100.00</b>	<b>2476</b>	<b>100.00</b>	<b>1816</b>	<b>100.00</b>	<b>15823</b>	<b>100.00</b>

Maximum number of adult deaths were due to respiratory causes (22.63%) followed by Central nervous system (20.48%) and Cardio Vascular system (13.50%) making a total of 56.61%. Significant number of deaths were also due to causes in the alimentary, hepato-biliary, urinary and female genital systems. Deaths due to anaemia was also high. Leading causes of deaths among the children are diseases in the Respiratory system (22.86%) followed by the diseases of the alimentary system (18.58%), sickling (6.34%) and other anaemias caused 309 (12.48%) deaths. Important causes of deaths among the infants are Respiratory diseases (35.79%), Alimentary diseases (16.80%), and CNS (12.39%) diseases. The number of deaths due to Malaria among infants (7.04%) is much lower than 18.46% among the children but much higher than the Malarial deaths among the adults (1.20%). Deaths due to other anaemias among the infants are 14.87% which is higher than 12.48% among the children but much higher than among the adults (4.02%).

In a report of 610 autopsy cases in the Bahamas<sup>10</sup> 49.15% died of Respiratory diseases which was more than double found in the present series (24.18%) in Ghana among all age groups (Table 3).

**Table 4.** shows the leading ten causes of natural deaths among the adults :

Sl. No.	Diseases	Number Male	Number female	Total deaths	Percent in system	Percent in the series
1.	C.V.A. (CNS)	1030	576	1606	66.53	13.93
2.	Lobar pneumonia	859	298	1157	44.33	10.03
3.	Hyp. Ht. diseases	528	342	870	55.88	7.54
4.	Pulm. tuberculosis	394	122	516	19.77	4.47
5.	Pyo. meningitis	331	153	484	2.05	4.20
6.	Renal failure	234	125	359	40.98	3.11
7.	Cirrhosis of liver	263	81	344	38.48	2.98
8.	Sickle cel crisis	138	154	292	48.99	2.53
9.	Congestive Cardiac Failure	139	96	235	15.09	2.04
10.	Hepatoma	178	45	223	24.94	1.93

From the table 4 we find that the maximum number of adults died of Cerebrovascular accidents (CVA) followed by Lobar pneumonia, Hypertensive heart disease, Pulmonary tuberculosis and Pyogenic meningitis. High incidence of lobar pneumonia, tuberculosis and pyogenic meningitis indicate poor level of health care and low body resistance. Alcoholism may be a reason for the low body resistance against bacterial infections in this age of effective antibiotic arsenal. Similar high incidence of lobar pneumonia (8.16%) was reported from the Bahamas where the population is mostly Negroid and alcoholism is also very common<sup>11</sup>.

Sickle cell disease and cirrhosis of the liver are endemic in that part of Africa. The incidence of 2.84% sickle cell death in the series (Table 3) is much higher than 0.51% found in the Bahamas<sup>11</sup>. 2.98% cirrhosis of the liver is slightly more than 2.04% found in the Bahamas<sup>12</sup> but lower than 4.10% among the autopsy findings in USA, where it is more common among the whites<sup>13</sup>.

**Table 5.** shows the top ten malignant conditions noted in Accra, Ghana among the adults.

Sl.No.	Malignant diseases	No. male	No. Female	Total	Percent in the series
1.	Hepatoma	178	45	223	1.93
2.	Cancer, pancreas	56	34	90	0.78
3.	Brain tumour	34	42	76	0.66
4.	Cancer prostate	63	-	63	0.55
5.	Cancer stomach	40	22	62	0.54
6.	Non-Hodg. lymphoma	28	18	46	0.40
7.	Lung cancer	23	15	38	0.33
8.	Cancer Urin. bladder	29	08	37	0.32
9.	Cancer large gut	24	08	32	0.28
10.	Lukaemias	21	07	28	0.24
	Total	496	199	695	6.03

Except the rare tumour Hepatoma (1.93%) the incidence of other Malignant diseases are low. (Table 5) In the report on the autopsy findings in Accra during 1965 and 1966<sup>5</sup>. 'Hepatoma is the leading cancer seen at autopsy in Accra'. The incidence of Hepatoma in the Bahamas was only 0.34%.<sup>15</sup>

**Table 6.** shows the leading causes of death among the children :

Sl.No.	Causes of death	No. male	No. female	Total	Percent in system	Percent in present series
1.	Malaria	244	213	457	45.16	18.46
2.	Bronchopneumonia	160	136	296	52.30	11.95
3.	Sickle cell disease	84	73	157	18.34	6.34
4.	Lobar pneumonia	80	65	145	25.62	5.86
5.	Other anaemias	150	159	309	36.59	12.48
6.	Castroenteritis with dehydration	68	60	128	27.83	5.17
7.	Malnutrition	65	62	127	27.61	5.13
8.	Enteric fever	60	63	123	26.74	4.97
9.	Pyo meningitis	50	55	105	49.06	4.24
10.	Septicaemia	30	37	67	53.60	2.71

From the table above it is evident that Malaria which is endemic in West Africa is by far the commonest cause of child death (18.46%) in Ghana, which is higher than 17.86%<sup>6</sup> and 15.01%<sup>7</sup> reported in the largest hospital in Accra, Ghana. This is followed by Bronchopneumonia (11.95%), and Sickle cell disease (6.34%).

**Table 7.** shows the leading causes of deaths among the infants :

Sl.No.	Causes of deaths	No. male	No. female	Total	Percent in system	Percent in the series
1.	Bronchopneumonia	314	145	459	70.62	25.27
2.	Other anaemias	141	129	270	57.00	14.86
3.	Gastroenteritis with severe dehydration	80	69	149	48.85	8.20
4.	Malaria	68	60	128	45.07	7.05
5.	Congenital Heart deases	65	57	122	96.83	6.72
6.	Septicaemia	43	71	114	71.70	6.28
7.	Intracranical haemorrhage	60	50	110	48.89	6.06
8.	Pyogenic meningitis	45	38	83	36.89	4.57
9.	Malnutrition	48	32	80	26.23	4.40
10.	Haemolytic disease of the Newborn	46	28	74	26.06	4.07

Bronchopneumonia accounts for 25.27% of infant death which is much higher than 11.95% among the children while malarial death among the infants account for only 7.05% which is very low in comparison to the 18.46% among the children. (Table 7).

60 (2.42%) children died of malignant diseases the leading causes being the intracranial tumours (21) and Nephroblastoma (17). Only one case of hepatoblastoma was found among the infants (0.56%).

**Table 8.** shows the leading causes of death among the children and the infants reported in the 1968<sup>6</sup> and 1986-87<sup>7</sup> series as compared to the present series :

Causes of Death	Percent 1968 series		Percent 1986-87 series		Percent 1981-90 series	
	Children	Infants	Children	Infants	Children	Infants
1. Malaria	17.86	2.94	15.01	4.47	18.46	7.05
2. Bronchopneumonia	16.00	24.87	9.92	25.70	11.95	25.27
3. Gastroenteritis	9.28	16.04	4.02	12.85	4.68	8.20
4. Lobar pneumonia	12.76	-	-	-	5.86	-
5. Malnutrition	6.73	4.28	-	-	5.13	4.41
6. Sickle cell dis.	4.41	-	3.22	-	6.34	-
7. Other Sr. anaemias	4.41	1.60	8.58	12.85	12.48	3.96
8. Enteric fever	-	-	4.02	-	4.97	-
9. Pureul Meningitis	4.87	-	8.31	7.26	4.20	-
10. Congenital Ht. disease	-	5.61	1.34	4.47	-	6.72
11. Septicaemia	3.25	11.50	1.87	3.35	2.71	6.28
12. Haem. dis of Newborn	-	7.22	-	3.91	-	4.62

From the Table 8, it is evident that Malaria and Bronchopneumonia are the main killing diseases for the children, while among the infants the main killing diseases are Bronchopneumonia, Gastroenteritis and Malaria.

**Table 9.** shows the important miscellaneous causes of death in the three age groups :

**Adults:**

Causes of death	No. male	No. female	Total	Percent
Tetanus	51	04	55	0.48
Miliary TB	20	04	24	0.21
Carcinomatosis	10	08	18	0.15
Bone TB	05	05	10	0.09
Ca. Thyroid	02	08	10	0.09



## Children

Causes of death	No. male	No. female	Total	Percent
Miliary TB	10	13	23	0.93
Tetanus	08	03	11	0.44
S. tiss. Sarcoma	06	02	08	0.32

  

<b>Infants</b>				
Causes of death	No. male	No. female	Total	Percent
Prematurity	08	05	13	0.72
Miliary TB	06	04	10	0.55
Tetanus	06	03	09	0.50
Multiple Cong. defects	05	04	09	0.50

## Conclusion

Post-mortem findings of ten years provide a pattern of deaths due to natural causes in Accra, Ghana.

Respiratory causes are responsible for 22.63% deaths in adults, 22.86% among children and 35.79% among infants making an overall 24.18% deaths (Table-3). Among the adults however, the maximum died of cerebro vascular accident (13.97%) followed by lobar pneumonia (10.03%) (Table-4). For the children malaria (18.46%) is the chief cause of death, followed by bronchopneumonia (11.95%) (Table-6) while among the infants bronchopneumonia was the chief cause (25.27%) (Table-7).

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**হে ঈমানদারগণ! তোমাদের উপর রোযা ফরজ করা হয়েছে যেমন তোমাদের পূর্ববর্তী (উম্মতদের) উপর ফরজ করা হয়েছিল; যেন তোমরা 'তাকওয়া'র গুণ অর্জন করিতে পারো। (২:১৮৩)**

**এবং তোমরা যদি বুঝিতে পার তবে রোযা রাখি তোমাদের জন্য কল্যাণকর হইবে। (২:১৮৪)**