

Coroner autopsies originating from complaints to the police in a Nigerian Urban centre

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Introduction

Coroner autopsies are post-mortem examinations performed at the instance of the law. The aim of this study is to determine the pattern and causes of death in coroner autopsies performed by a police pathologist.

Materials and methods

Autopsy registers and reports of the pathology section of police clinic Benin City, Edo State, Nigeria, from 2008 to 2012 were reviewed with respect to their demographic features, cause and manner of death.

Results

A total of 982 coroner autopsies were performed during the period, involving 773 males and 209 females, yielding a sex ratio of 3.7 : 1. The age group 20–29 years was the most commonly involved, accounting for 28.5% of cases. Accidental deaths were the commonest type of deaths (41.3%), followed by deaths because of homicides (40.8%); natural death was a distant third cause, accounting for 14.6%, whereas suicides and undetermined deaths accounted for 1.2 and 2.1%, respectively. Road traffic accidents were responsible for most accidental deaths (85.7%). Homicidal deaths were mainly by gunshots (66.5% of cases). Cardiovascular system diseases were the leading cause of natural death, with myocardial infarction and complications of hypertension each accounting for 44.4%.

Conclusion

Efforts to reduce road traffic accidents and control the number of guns in the hands of civilians should be intensified. The incidence of myocardial infarction is on the rise and health education is advocated to help reduce its adverse effects.

Keywords:

accidents, coroners, police, road traffic accidents,

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Introduction

Coroner autopsies are post-mortem examinations performed at the instance of the law, when a coroner or another authority is instructed to determine the cause, time and the circumstances surrounding the cause of death [1]. In 1944, the first law on coroner autopsies was established in Nigeria that stipulated that only sudden deaths involving non-natives were to be reported to the coroner; however, by 1958, it was extended to involve all individuals in Nigeria [2]. Under section 4(1) of the coroners law Cap 131 of 1954, laws of the federation of Nigeria and Lagos, magistrates are empowered to conduct inquests under the ordinance [3]. This law states that every magistrate is empowered to hold inquests about any suspicious death in his or her area of jurisdiction [3]. Coroner autopsies are performed when the clinician is legally not in a position to issue a death certificate [4]. Based on manner of death, coroner (medicolegal) deaths are classified as follows: natural deaths, accidents, homicides, suicides and undetermined on the basis of manner of death classification [5,6]. Reports to the coroner about such deaths originate through reports by complaints to the police, reports by health practitioners to the coroner or the police, etc.

Various Nigerian studies have reported a mixed pattern of death depending on the nature of coroner autopsies reviewed for the study, with natural deaths and accidental deaths taking the lead and both accounting for greater than 80% of causes of coroner deaths in all previous studies [7–11]. Natural deaths from the Nigerian studies had complications of hypertension as the most common cause whereas road traffic accidents (RTAs) accounted for most accidental deaths [7–11]. These studies also reported cases of homicide (mainly with the use of firearms and sharp objects) and a few cases of suicides [7–11]. Studies from other developing countries also reported complications of hypertension as the most common cause of natural deaths [12]. Ischaemic heart disease mainly because of coronary atherosclerosis is reported to be the most common cause of natural deaths in developed countries [13,14].

This is the first time that a study on coroner autopsies will be carried out using data from a police clinic. The role of the police surgeon in the investigation of sudden deaths is very important [15]. To determine the pattern and causes of death in coroner autopsies performed by a police pathologist, we studied 982 autopsy cases performed within a 5-year period.

Materials and methods

This is a review of all the coroner autopsies conducted by the police pathologist at the police clinic, Benin City, Edo State, Nigeria, from 2008 to 2012. Whenever there is a complaint of suspicious death in any locality in Edo State to a police station, the police officer, who is usually a coroner officer, conducts a preliminary investigation before the coroner requests for an autopsy, which is performed by the pathologist, who is also a senior police officer. This pathologist also visits the scene of the incident with the investigating police officers if required. The autopsies are performed in various mortuaries in Edo State by the pathologist and his team (including other pathologists, pathologist assistants and photographer) using standard autopsy procedures, with histological and toxicological analysis carried out where applicable. The major sources of information reviewed were the autopsy registers and reports of the police clinic. Their demographic features (age, sex), cause and manner of death were analysed statistically using SPSS version 17 (Chicago, Illinois, USA).

Results

A total of 982 coroner autopsies were performed during the period, involving 773 males and 209 females, yielding a sex ratio of 3.7 : 1. The youngest individual was 3 months old, whereas the oldest was 110 years old, with a mean of 38.3 and an SD of 17.3. The age group 20–29 years was the most involved (28.5%), followed by the age group 30–39 years (22.6%), whereas individuals older than or equal to 90 years (0.7%) were the least involved as shown in Table 1.

Based on the manner of death, accidental deaths were the most common cause of death and accounted for (406; 41.3%), closely followed by deaths because of homicides (401; 40.8%). Coroner autopsies because

of natural deaths were a distant third, accounting for 14.6%, whereas suicides and undetermined deaths accounted for 1.2 and 2.1%, respectively, as shown in Table 2. RTAs were responsible for most accidental deaths (85.7%). The RTA occurred in the following circumstances in descending order of frequency: car versus car (head-on collision 31.3%), car versus pedestrian (27.6%), car versus motorbike (24.1%) and car somersaulting on its own 10.1%.

Table 5 shows the various causes of homicidal deaths, with death caused by gunshots being the most common (66.5%). Sharp object injuries were responsible for 15.2% of deaths and the use of blunt objects led to death in 12.5% of cases. Cardiovascular system diseases were the leading cause of natural deaths, with myocardial infarction and complications of hypertension each accounting for 44.4%. Distant second and third causes were respiratory system diseases and pregnancy-related complications, accounting for 12.6 and 10.5%, respectively, as shown in Table 6. Hanging (75%) was the main form of suicide, whereas substance ingestion was common in 25% of cases. Only one victim, a woman, left a suicide note and the death of this individual resulted from both substance ingestion and hanging (Tables 1–7).

Table 1 Age and sex distribution of medicolegal deaths

Age group (years)	Sex		Total [n (%)]
	Male	Female	
0–9	15	13	28 (2.9)
10–19	32	14	46 (4.7)
20–29	237	43	280 (28.5)
30–39	182	40	222 (22.6)
40–49	135	35	170 (17.3)
50–59	87	22	109 (11.1)
60–69	48	19	67 (6.8)
70–79	27	14	41 (4.2)
80–89	7	5	12 (1.2)
≥90	3	4	7 (0.2)
Total	773	209	982 (100)

Table 2 Frequency of manner of death, in relation to sex and age

Age group	Accident (%)		Homicide (%)		Natural (%)		Suicide (%)		Undetermined (%)		Total (%)
	M	F	M	F	M	F	M	F	M	F	
0–9	9	9	2	4	2	—	—	—	2	—	28
10–19	11	6	16	6	2	1	1	—	2	1	46
20–29	89	21	132	13	9	7	4	2	3	—	280
30–39	77	11	85	9	13	18	2	2	5	—	222
40–49	51	16	61	9	21	10	—	—	2	—	170
50–59	44	12	23	7	20	3	—	—	—	—	109
60–69	19	3	12	9	15	6	1	—	1	1	67
70–79	14	8	5	2	7	3	—	—	1	1	41
80–89	1	2	4	—	2	2	—	—	—	1	12
≥90	1	2	1	1	1	—	—	—	—	—	7
Total	316	90	341	60	93	50	8	4	16	5	982
	406 (41.3)		401 (40.8)		143 (14.6)		12 (1.2)		21 (2.1)		100

Table 3 Types of accidental deaths

Causes of death	Males	Females	Total [n (%)]
RTA	270	78	234 (85.7)
Drowning	13	7	20 (4.9)
Burns	9	2	11 (2.7)
Electrocution	10	—	10 (2.5)
Industrial accident	5	1	6 (1.5)
Others	9	2	11 (2.7)
Total	316	90	100

RTA, road traffic accident.

Table 4 Types of road traffic accidents

RTA type	Male	Female	Total [n (%)]
Motor V vs. motor V	86	23	109 (31.3)
Motor V vs. pedestrian	64	32	96 (27.6)
Motor V vs. motorbike	76	8	84 (24.1)
Motor V somersault	25	10	35 (10.1)
Motorbike vs. pedestrian	5	2	7 (2.0)
Motor V ran into bush	6	—	6 (1.7)
Motor bike vs. motor bike	5	—	5 (1.5)
Motor V vs. bicycle	2	2	3 (1.0)
Fall from a moving car	1	1	2 (0.7)
Total	270	78	348 (100.0)

Motor V, motor vehicle; RTA, road traffic accident.

Table 5 Types of homicidal deaths

Causes	Male	Female	Total [n (%)]
Gunshot : rifle gun	102	6	108
Shot gun	143	15	158 (66.5)
Sharp objects	42	19	61 (15.2)
Blunt object	40	10	50 (12.5)
Strangulation	5	1	6 (1.5)
Suffocation	6	—	6 (1.5)
Burns	3	3	6 (1.5)
Criminal abortion	—	5	5 (1.3)
Total	341	59	400 (100)

Table 6 Causes of natural deaths according to the systems involved

Systems	Male	Female	Total [n (%)]
Cardiovascular	68	22	90 (62.9)
Respiratory	11	7	18 (12.6)
Genitourinary	1	16	17 (11.9)
Gastrointestinal	10	1	11 (7.7)
Immune	3	4	7 (4.9)
Total	93	50	143 (100)

Table 7 Methods used to commit suicide

Methods	Male	Female	Total [n (%)]
Hanging	7	2	9 (75)
Substance ingestion	1	2	3 (25)
Total	8	4	12 (100)

Other causes of death included falling from a moving car, from a tree and in construction sites, two cases each. Suffocation under sand, narcotic drug overdose, burst tire, asphyxia because of foreign body

aspiration (meat) and CO₂ poisoning accounted for one case each.

Discussion

Young individuals between ages 20–49 were mostly involved in this study. This strengthens previous observations [7,8,10]. This means that a large proportion of the workforce is lost, with major consequences for the families left behind.

Accidents were the leading cause of death in this study. This is in agreement with some previous studies [9,11] and not in agreement with others [7,8,13] in the same country or even in the same geographical zone. The major reason for this is the setting in which the study was carried out. Whereas hospital-based studies had natural deaths as a leading cause of death, non-hospital-based studies had accidental deaths as a leading cause. In this study, which was carried out in a police clinic, it was not surprising that accidents were the leading cause of death. This is because most coroner autopsies in Nigeria are on victims of RTA and all fatal RTA are investigated by the police, who then report them to a coroner, who in turn orders autopsies on all such cases [11]. The police are coroner officers and usually present/serve the coroners form to the police clinic, who have a pathologist who performs the autopsies. Despite the fact that RTA is reported to the police, the high number of deaths because of RTA (85.7%) is alarming. The common autopsy findings on victims were massive intracranial haemorrhage because of skull fracture, followed by multiple skeletal and soft tissue injuries with death resulting because of elevated intracranial pressure and hypovolaemic shock. The high numbers of head-on collisions, knocking down of pedestrians and collision of vehicles with motor bikes imply that serious efforts should be made to reduce such occurrences. Drivers should be well trained and government agencies should live up to their expectation [15]. Nigeria and other developing countries are considered to have some of the highest rates of RTA. Various factors such as poor road infrastructure and human factors have been implicated [15]. Other factors contributing towards this high rate are general poor economic conditions, with attendant consequences of poor motor vehicle maintenance, corrupt law-enforcement agencies and palpable lawlessness [16]. Individuals obtain a driving license without a test. This improper possession of driving license manifests when drivers fail to recognize common driving caution signs on the roads. The use of motorcycle as a means of transportation has also led to an increase in the casualties on our roads. It has been found that both the rider and the pillion rider usually

wear no helmets. If mass transit buses are introduced, it can go a long way towards reducing this problem. Provision of side lanes for pedestrians will be very helpful as its absence results in pedestrians struggling for right of way with motor bikes and vehicles. Even in a few areas where there are side lanes, street traders establish mini markets, defeating the purpose of its construction in the first instance. Hawking on the major roads has also increased the number of victims of RTA. The government should ban buying or selling on side lanes and enforce a law making it compulsory for all motor bike riders and pillion riders to wear helmets. 'A no helmet no bike ride rule' should be established and enforced. In 10% of the RTA, the car somersaulted and killed the driver and occupants. Occasionally RTA occurred on good roads because the cars were not road worthy or were running on very old worn out tires. On a few occasions, the only eyewitness account was that the car had driven a few minutes before the accident at a high speed. Vehicle inspecting officers and road safety officers should wake up to their duty, by ensuring that only cars in good conditions ply on our roads.

Ten men were electrocuted when they attempted to reconnect their different houses to high-tension cables. On autopsy, all the bodies showed points of electric burns with characteristic features of Joule burns at points of entry and exit of electric current (burns and blisters characterized by puckering of skin around the edges of the electrical burns without reddening of the base of the injury). Laceration wounds of the exit points and central cyanosis were observed in a few cases. All the internal organs were normal, except in one victim, who also had a skull fracture following fall from the ladder upon electrocution. Generally, the causes of death in electrocution are ventricular fibrillation, paralysis of the respiratory centre, paralysis of respiratory muscles (leading to deaths by asphyxia) and secondary causes such as mechanical injuries secondary to circumstances of electrocution [17]. None of the previous studies had reported this form of accidental death. People should be educated on the dangers of climbing high-tension electricity poles unaided, unprepared and unprotected. Light supply to individual homes should be improved to discourage people from attempting to reconnect electric cables themselves when they are disconnected from the major supply.

Homicides accounted for 40.8% of coroner autopsies. This is higher than that reported by all the previous studies in Nigeria and in Japan, but less than the rate in South Africa [7–11,18]. The high rate of homicide is because of justifiable (approved by law) homicides during gun battles between thieves/kidnappers and security operatives. This accounted for 40.6% of gunshot homicides. However, the rate of criminal homicides (unlawful homicides that could be murder,

man slaughter or infanticide) [19] was high. These were mainly because of rival secret cult killings in numerous higher institutions in Edo State and the high incidences of armed robbery and kidnapping. Most of these criminal homicides were committed using shot guns or double-barrel guns cut down to a small size. Following these fatal gunshots, parts of the body involved are usually multiple, followed by gunshots to the chest only and abdomen only. Possession of guns in Nigeria, let alone in Benin, is illegal. The reason for the high rate of homicides in this series may be because Benin City and its environs are known to be the most notorious zones of armed banditry in Nigeria [16]. Children should be taught from primary through secondary school of the fatal consequences of joining gangs and becoming members of secret cults, and to value life.

None of the previous studies reported burns as a cause or a method used to commit homicide. Although reported very less, accounting for 1.5% of cases, this is significant because it is a new observation; therefore, not all cases of burns in our setting should be considered as accidental. Generally homicide by burning is not a popular method, however it is commonly used in India [20].

Natural deaths accounted for 14.6% of coroner autopsies. This is slightly higher than reports from Jos and Ife, but less than findings from Benin, Port Harcourt, Ibadan, Jamaica and South Africa [7–13]. The small percentage is because of the non-hospital-based nature of this study. Unlike in most studies from developing countries, where hypertension and its complications accounted for most natural deaths because of cardiovascular system disease [7–12], an important observation from this study was the equal contribution of myocardial infarction (44.4%) and hypertensive heart disease (44.4%) towards the complications of cardiovascular diseases. In the past, asymptomatic hypertensive heart diseases were the most common cause of sudden death in Nigerians as against ischaemic heart disease in developed countries [13,21]. Autopsy in these cases of myocardial infarction showed greater than 85% occlusion of the left anterior descending coronary artery in 55% of cases, previous scar/fibrosis in 17% and rupture with cardiac tamponade in 8%, whereas in 20% of cases, no obvious sign was observed, but the presenting complaints were suggestive, although this rate may appear slightly exaggerated because staining with triphenyl tetrazolium chloride was not performed, except for histological examinations. This finding of large number of ischaemic heart disease implies that its burden may be high in our environment, after all there has been a reported increase in the incidence of noncommunicable diseases in Sub-Saharan Africa [22]. Behavioural changes and lifestyle modifications should be encouraged through mass health education to reduce

the risk factors of myocardial infarction. Strategies to identify hypertensives and to initiate effective blood pressure control in the community are needed to reduce the incidence of sudden cardiac death in Nigerians.

Suicides accounted for 1.2% of deaths, which was lower than reports from Ife and far lower than the rates in India [8,10,11,23]. An interesting observation is that one of the suicide victims, a woman, left a note, which is not common in our environment. However, our rate of 1.2% may not be a true reflection of suicide in our society because risk factors such as psychiatric illness, frustration and unemployment abound in our environment, and also because of the customary practice of immediate burial of suicide victims, as such deaths are considered an abomination rather than a reflection of the traditional extended family system that enhances family ties [7,16].

Deaths in the undetermined category included exhumation cases, severely decomposed bodies, mummified bodies and skeletonized remains. Our findings are in agreement with observations from Ife [11]. Studies have shown that to reduce the number of coroner autopsies grouped under this category, it is necessary to have the body examined before burial and on time in all cases of sudden and unnatural deaths so that the offender does not evade imprisonment because of lack of evidence as autopsies following exhumations are not useful [24].

Conclusion

The first police clinic autopsy series have been documented and results have shown that RTA and deaths caused by gunshots are common in our environment. Good roads and good driving lessons will help reduce this. Strict gun control and use should also be enforced. The issue of licensing guns for gambling and hunting should be seriously reviewed. Myocardial infarction may be on the rise and health education is advocated to help reduce its incidence.

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Conflicts of interest

There are no conflicts of interest.

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