

## Determination of the Incidence of Medicolegal Death in a Tertiary Health Institution in Abakaliki, Ebonyi State, South-East, Nigeria

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### Abstract

**Background:** Death is an inevitable end that comes when not expected. However, when death occurs as a result of violence or unclear and suspicious manner, a coroner inquest is instituted to determine the cause, manner and the mechanism of death.

**Aim:** To determine the incidence and causes of medicolegal death in Ebonyi State.

**Materials and Method:** This is a 5-year retrospective study of medicolegal autopsies reports of subjects whose cause of death were subject of litigation. The study analysed data between January 1, 2013, and December 31, 2017, at Alex Ekwueme Federal University Teaching Hospital, Ebonyi, Southeast, Nigeria. Data analysis was with the SPSS version 20.

**Results:** During the study period. A total number of 202 autopsies were performed. The age range of the deceased was from 2 years to 90 years, with a mean age of  $35.2 \pm 16.1$ . The predominant age group was 30–39 years (30.2%) while the least (0.5%) were between the age of 90 and 99 years. Males accounted for 158 (78.2%), and females were 44 (21.8%). Farmers (31.2%) and students (15.3%) were mostly affected by unnatural death in this study. Accidental deaths constituted 54.5% of cases, followed by homicidal death (36.6%). Impalement by sharp objects (41.9%) was a significant cause of death due to homicide in this study. In contrast, accidental deaths were mainly as a result of a road traffic accident (95.5%). The majority (60.4%) of those who died as a result of an accident sustained an injury at multiple body sites.

**Conclusion:** Road traffic accident and homicide were responsible for the majority of cause of death found in medicolegal autopsies in Ebonyi State. Proper road maintenance, safe driving culture, and making people adhere strictly to the rule of law are necessary to reduce the incidence of avoidable deaths in our environment.

**Keywords:** Incidence, medicolegal death, Ebonyi State, Nigeria

### 1. Introduction

An autopsy is a clinicopathological investigation on a deceased body to unravel the cause of death (Akhiwu, Nwosu, & Aligbe, 2000). Autopsies are grouped into medicolegal, clinical, anatomical and virtual autopsies (Duduyemi & Ojo, 2013). Medicolegal autopsies are postmortem examination performed on a deceased body at the instruction of the law to determine the cause of death and circumstance surrounding the death (Akhiwu, Nwosu, & Aligbe, 2000; Duduyemi & Ojo, 2013). Medicolegal deaths are classified based on the manner of death as natural, accidental, suicidal, homicidal and undetermined (Offia & Obiorah, 2014; Obiorah & Amakiri, 2014; Amakiri et al., 1997).

Medicolegal autopsies are conducted through the issuance of coroner forms by a coroner or any other authority as stipulated by the constitution of the country of practice (Duduyemi & Ojo, 2013). Different countries use varying systems. Some use the medicolegal methods, while others engage the medical examiner and the procurator fiscal system (Offia & Obiorah, 2014). The main aims for instituting inquest after death include: To avoid secret

homicides; for official death certification and proper demographic documentation (Obiorah & Amakiri, 2013). As far back as 44 BC, it was recorded that Julius Caesar was the subject of an official autopsy after his murder by rival senators (Obiorah & Amakiri, 2013). In Nigeria, records showed that the first medicolegal autopsies were in 1917 when the law stipulated that only sudden deaths involving the White colonialists were to be reported to the coroner for autopsy (Amakiri et al., 1997). However, in 1945, a medicolegal autopsy was extended to the indigenous Nigerians, as stated in the Coroner's Laws of Northern Nigeria published in 1963 (Uchendu, Nwachokor, & Ijomone, 2007).

The rate at which unnatural deaths occur in every society tends to be directly proportional to the law and order situation in a particular jurisdiction. In a society where such indices are low, it implies that the environment is peaceful and harmonious. And this indicates the institutionalisation of sound systems for the security of life and property (Mandong, Manasseh, & Ugwu, 2006). It can also be an extrapolation for social, mental health and overall, public health indices of the society (Bhulhar, Gorea, & Aggarwal, 2004). Global trend shows that deaths due to homicides are generally more prevalent among males. Conversely, the demise of females, especially mothers, have serious social, economic, mental, and psychological consequences on the family members and community (Peterson & Clark, 2006). Besides, gender inequality, domestic violence and burns related deaths appear to be more common among females (Adams, 2008).

In developing countries like ours, where necessary death registrations are deficient, and where a significant number of deaths occur outside the health-care facility, obtaining data for studies on medicolegal autopsies remain a daunting task. However, medicolegal autopsies remain an essential tool for studying unnatural death. Studies of medicolegal deaths of different categories have been published within and outside the country to determine the incidence, pattern and prevalence of medicolegal/unnatural deaths (Akhiwu, Nwosu, & Aligbe, 2000; Duduyemi & Ojo, 2013; Offia & Obiorah, 2014; Obiorah & Amakiri, 2013; Amakiri et al., 1997; Uchendu, Nwachokor, & Ijomone, 2007; Mandong, Manasseh, & Ugwu, 2006; Bhulhar, Gorea, & Aggarwal, 2004). But, there appears to be a dearth of data in the body of literature on medicolegal autopsy in Ebonyi State.

Therefore, this study is determined to study the incidence of medicolegal death and the prevalence of the manner of death in Ebonyi State.

## **2. Materials and Method**

### *2.1 Study Setting*

Alex Ekwueme Federal University Teaching Hospital (formerly known as Federal Teaching Hospital) Abakaliki is a tertiary hospital within Abakaliki, Ebonyi State, Nigeria. The Hospital receives a referral from all parts of the State and neighbouring States of Benue, Enugu, Cross River and Abia as well as any part of the country. Department of Pathology is one of the ten clinical Departments in the Hospital.

### *2.2 Study Design*

This is a 5-year retrospective study undertaken at the Department of Pathology, Alex Ekwueme Federal University Teaching Hospital, Abakaliki, Ebonyi State between January 1, 2013, and December 31, 2017.

### *2.3 Study Criteria*

The cases whose deaths were reported to the police and coroner forms issued to carry autopsies on the bodies and postmortem examinations on the corpses carried out at the Department of Pathology. Medical reports of the postmortem were documented on the section for doctor's summary in the coroner form.

### *2.4 Data Collection*

The information on the coroner forms was used to obtain personal data of the deceased person, manner of death, type of object used to cause death and type of injury sustained.

### *2.5 Statistical Analysis*

The data was entered and analysed using SPSS Version 22.0 (SPSS Inc., Chicago, IL, USA, 2013). Data are presented as mean (standard deviation) or as a percentage with range, as appropriate.

### *2.6 Ethical Consideration*

The approval for the study was sought and obtained from the Research and Ethics Committee of Alex Ekwueme Federal University Teaching Hospital, Abakaliki.

## **3. Results**

A total number of 202 autopsies were carried out during the period of study. The males accounted for 158 (78.2%),

and females were 44 (21.8%) given a male to female ratio of 3.6:1. The age of people that were involved ranged from 2 years to 90 years, with a mean age of  $35.2 \pm 16.1$ . Table 1 showed the age distribution of cases and the age group (30–39 years) as the predominant age group accounting for 61 (30.2%) cases. The age-group 20–29 years 55 (27.2%) was the second and the leastage-group 90–99 years with a value of 1 (0.5%). Table 2 showed male preponderance in unnatural deaths, with a total number of 158 cases representing 78.2% as against 44 cases in females representing 21.8%. Table 3 illustrated that farmers of 31.2% and students of 15.3% were mostly affected. Accidental deaths constituted 54.5%, followed by homicidal death while suicidal death was the least, 1% as shown in Table 4. The analyses of the causes of homicidal deaths in Table 5 indicated that sharp object was the major instrument implicated which accounted for 41.9% followed by Gun 29.7% while blunt objects caused 20% and drowning caused 2% of the deaths. In accidental deaths in Table 7, Road Traffic Accidents constituted 95.5% of deaths while electrocution and drowning were at the same rate of 1.8% each. The parts of the body that received most impart of the injury was the one which involved multiple sites accounting for 60.4% while the second most affected site is head with a value of 12.9%. Those parts of the body that were not included in Table 6 are categorised as others, and they constitute 6.9%. There is a combination of injuries in 16.1% deceased bodies as shown in Table 8; the injuries were as follows: Contusion 27.4%, laceration 24.9%, fractures 26.6% and penetration 25%.of the deceased bodies. Contusion and fracture had 8.4 %, contusion and laceration had 4.1% while penetration, fracture and abrasion had 3.7%.

Table 1. Age Distribution of sudden Natural Death Cases

Age group	Frequency	Percentage
0 - 9yrs	10	5.0%
10 -19yrs	11	5.4%
20 - 29yrs	55	27.2%
30 - 39yrs	61	30.2%
40 - 49yrs	29	14.4%
50 - 59yrs	18	8.9%
60 - 69yrs	13	6.4%
70 - 79yrs	2	1.0%
80 - 89yrs	2	1.0%
90 - 99yrs	1	0.5%
Total	202	100.0%

Table 2. Sex

Sex	Frequency	Percentage
Male	158	78.2%
Female	44	21.8%
Total	202	100%

Table 3. Occupation

<b>Manner</b>	<b>Frequency</b>	<b>Percentage</b>
Student	31	15.3%
Driver	24	11,9%
Civil servant	20	9.9%
Tailor	14	6.9%
Trading	23	11.4%
Farmer	63	31.2%
Technician	9	4.5%
Others	18	8.9%
<b>Total</b>	<b>202</b>	<b>100%</b>

Table 4. Manner of death

<b>Manner</b>	<b>Frequency</b>	<b>Percentage</b>
Accident	110	54.5%
Homicide	74	36.6%
Suicide	2	1.0%
Undetermined	16	7.9%
Total	202	100.0%

Table 5. Type of homicide

<b>Homicide</b>	<b>Frequency</b>	<b>Percentage</b>
Sharp	31	41.9%
Blunt	15	20.3%
Drowning	2	2.7%
Gun shot	22	29.7%
Strangulation	4	5.4%
<b>Total</b>	<b>74</b>	<b>100.0%</b>

Table 6. Site of injury

<b>Site</b>	<b>Frequency</b>	<b>Percentage</b>
Head	26	12.9%
Neck	11	5.4%
Upper limb	7	3.5%
Trunk	10	5.0%
Lower limb	12	5.9%
Multiple sites	122	60.4%
Others	14	6.9%
<b>Total</b>	<b>202</b>	<b>100.0%</b>

Table 7. Type of Accident

Accident	Frequency	Percentage
RTA	105	95.5%
Electrocution	2	1.8 %
Drowning	2	1.8%
Fall from Height	1	0.9%
<b>Total</b>	<b>110</b>	<b>100.0%</b>

Table 8. Nature of injuries

Types of Injury	Frequency	Percentage
Laceration*	60	24.9%
Contusion*	66	27.4%
Penetration	25	10.4%
Burns	10	4.1%
Fractures*	59	24.5%
Amputation	4	1.7%
Abrasion*	14	5.8%
Others	3	1.2%
<b>Total</b>	<b>241</b>	<b>100.0%</b>

Some individuals had two to three types of injuries as indicated by the asterisk in 39 (16.1%).

#### 4. Discussion

Postmortem examination provides the most reliable approach to determining the cause of death. In this study, the significant finding was that road traffic accident, and homicide constituted the reasons for the majority (91%) of medicolegal autopsies in this environment. We also found out that medicolegal issues constituted the main reason deceased relatives accept postmortem in this environment, as medicolegal autopsies were responsible for almost 100% of all postmortem examinations. The significance of this finding is that 54.5% of these deaths were avoidable and could be controlled by instituting well-structured safe-driving practice and sustainable road maintenance policies. In addition to this, improvement in the security for life and property in this tropical environment is likely to reduce the rate of deaths in our society.

Out of 202 medicolegal autopsies with identified causes of death during the period of this study, there were about threefold incidence in males than females. This result is similar to findings by Mandong et al. in Jos ; Uchendu et al., in Warri and Akhiwu et al., in Benin. This relative gender discrepancy in unintentional and violent injury-related mortality may be linked to the difference in risk exposure and risk-taking behaviour across both genders. Interestingly, it shows the overall reduced involvement of women in the economic landscape of sub-Saharan Africa. Relatively less number of accidental cases is reported to the coroner resulting in overall low-rate of medicolegal autopsy rate among females. We think that since it is a patriarchal society, there is a socio-cultural tendency to overprotect the female gender, leading to an inherent tendency to report more male death cases to the coroner for investigation than female cases.

Accidental deaths were responsible for 54.5% of deaths in this study; the significant burden of unintentional deaths is as a result of a road traffic accident which represents the single overall most common cause of death in this study. These victims are mostly pedestrians and passengers as the use of women as commercial motorcycle or vehicle drivers, conductors, or road haulage workers is still unpopular in Nigeria. The high rate of a road traffic accident in Nigeria is attributed to the deteriorating road network, unworthy cars driven by miscreants, the use of motorbikes as significant means of transport, disobedience to safety rules, and lax safety regulating officials (Adams, 2008; Kitulwate et al., 2017; Edirisinghe & Kitulwate, 2009; Albrektsen & Thomsen, 1989; Dere & Rojo, 2011). Banning of the use of motorcycles will not only reduce road traffic accident rate but also will reduce the rate of homicide-related deaths in major cities of the country since it has also provided an efficient and flexible

transportation means for hoodlums.

This study has demonstrated that suicide death is relatively rare in this region, accounting for only 1% of medicolegal deaths, and lagging behind Accidental and homicide deaths as causes of unnatural death. This Figure is, however, lower than 1.8%, 1.5%, reported in Benin City (Akhiwu, Nwosu, & Aligbe, 2000), Abuja (Duduyemi & Ojo, 2013), but higher than 0.9%, 0.8%, 0.5% and 0.3% reported in Aba (Offia & Obiorah, 2014), and Port Harcourt (Obiorah & Amakiri, 2013), and River State (Amakiri et al., 1997) and Ibadan (Uchendu, Nwachokor, & Ijomone, 2007). These facts powerfully depict the low rate of suicide may be under-reported. This depressed rate can be attributable to the coroner, or medical examiners feel reluctant at classifying some cases of suicide as such, especially if the supporting data is not convincing. However, because of the intense religious and cultural stigmatisation of relatives of suicide victims, family members are better off if such deaths are concealed or reported to police as non-suicidal cases. Highly religious societies are generally known to have a low suicide rate, and this may be the Nigerian situation (Akhiwu, Nwafor, & Igbe, 2013; Okafor, 2007). Also although psychiatric illness, frustration, and unemployment abound in our environment, the reduced suicide rate in our environment may also be due to close family ties and supportive, communal living and way of life prevalent in developing economies.

Homicide was responsible for more than one-third of the medicolegal autopsies in this study, affecting mainly the young and the male gender. Most of the deaths that were as a result of homicide were caused by violent use of sharp objects (41.9%), followed by Gunshot injury 29.7%. This fact is in agreement with the study done in Jos, Nigeria (Mandong, Manasseh, & Ugwu, 2006); public enlightenment, respect for the rule of law and sustainable security for life and property would reduce the incidence as well as the severity of home and communal violence. Homicide is generally conceived as the killing of an individual by another (Coroner's Law of Northern Nigeria; Cap 27 of 196). However; it is killing of one person by another and criminal homicide as the act of purposefully, knowingly, recklessly or negligently causing the death of another human being. According to Coke in the Nigeria Law Repository, 2014, it is when a man of sound memory and age of discretion, unlawfully killing within any country of the realm any reasonable creature in rerum natural under the king's peace, with malice, aforethought, either expressed by the party or justifiable homicide, murder or manslaughter (Edirisinghe & Kitulwatte, 2009). Justifiable homicide occurs in self-defence from danger.

In addition, our findings indicated that the peak age range for coroner's autopsies was in the 30 to 39 age range at 37.2%. This differs from the peak age range of 41 to 50 at 36% on medicolegal autopsies in Jos (Mandong, Manasseh, & Ugwu, 2006). However, Akhiwu et al. reported a lower peak age of 20 to 29 at 28%; and Uchendu et al. reported a similar peak age range of 21 to 30 years at 35% (Akhiwu, Nwosu, & Aligbe, 2000; Uchendu, Nwachokor, & Ijomone, 2007). This parallels the peak age of physical and entrepreneurial activity in males. This age also spans through the reproductive age and therefore may be partly related to exposure to intimate partner and domestic violence.

## 5. Conclusion

In conclusion, Road Traffic Accident and Homicidal deaths are the most common form of unnatural death in our environment. They are the typical indication for medicolegal autopsy in the study and are beneficial to the law enforcement and jurisprudence. Although the number of autopsies in our centre are low compared to the southwestern part of the country where there is growing awareness on the benefit of autopsies which may hopefully yield fruitful results in terms of research and auditing of causes of death in our environment.

## Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

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