



The Manner of Death in a Tertiary Institution, a Window to Life Expectancy: A Retrospective Post-Mortem Study

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ABSTRACT

The World Health Organization (WHO) had estimated the average life expectancy of Nigerians to be 54.5 years. It is very likely that a sizeable number of the recorded deaths in our environment could have been prevented thereby increasing the estimated life expectancy by WHO. An objective assessment of the manner of death at post-mortem speaks volume; therefore the aim of this study is to determine the manner of death at post-mortem at the University of Benin Teaching Hospital. This was a retrospective post-mortem study that was carried out at the Department of Morbid Anatomy, University of Benin Teaching Hospital over a 2 year period from 1st of January 2013 to 31st of December 2014. The subjects of this study were all post-mortem cases during the period under review. Data was obtained from the hospital and departmental archives. Data analysis was done using the Statistical Package for Social Sciences, version 20. The manner of death encountered in this study was natural (48.6%), accident (42.7%), homicide (5%), undetermined (3.3%) and suicide deaths (0.3%) in decreasing order of frequency. The mean age for natural death was in the 6th decade while it was in the 4th decade for other categories of manner of death. There was a male preponderance in each category of manner of death. A sizeable number of deaths recorded in this study were largely preventable. To this end, preventive measures are very important in reducing needless death with resultant increase in the life expectancy.

Key word: Manner of death, Natural death, Accidental death, Homicidal death, Suicidal death and undetermined death.

INTRODUCTION

The cause of death is the precise ailment (disease) or injury that results in death.¹ It is a term that is utilized to specify the medical cause of death on the death certificate.² On the other hand, the manner of death is the determination of how ailment/injury results in death.¹ The Coroner or Medical examiner investigate suspicious death not for the purpose of death certification, rather it is to determine the Manner of death.² To this end, Coroner's autopsies are performed either at the instance of the law or when a medical doctor is legally not empowered to issue a death certificate.^{3, 4} Death can be categorized using the manner of death into natural, accident, suicide, homicide, undetermined and pending.^{1, 2, 5} Natural death refers to one that is caused primarily by an ailment or natural process or internal malfunction of the body without the accelerated effect of either an injury or external force^{3, 6} while accidental death refers to an unnatural death resulting from an unintentional happening.² Traffic related fatalities, on the job related deaths (industrial deaths), deaths from unlawful drug or excessive medication use after ruling out homicide and suicide, and death from complication of therapy are classified as accidents.² It is important to note that traffic related deaths although classified as an accident does not prevent the prosecution as vehicular homicide by legal authorities.² Suicide refers to death from self-perpetrated injuries with evidence of resolve to die.² A close range gunshot wound to the head, chest and abdomen is considered an unspoken evidence of one's



resolve to die while evidence of this includes overt expression for example, suicide note or verbal threat and previous acts that established unspoken resolve to die.² Homicide refers to the act of an individual that directly results in the death of another individual with or without an established resolve to cause death.² It is important to note that all murders are homicides and not all homicides are murders.² When an individual kills another in a situation that is unintentional, it is the duty of the legal authorities to determine whether to prosecute such a case as "murder," "manslaughter" etc based on the facts before it.² An undetermined manner of death refers to those cases of unnatural death that are characterized by absence of clear preponderance of evidence supporting a specific manner of death be it accidental, homicide or suicide.² Pending may be recorded on a temporary base on the death certificate as a cause and/or manner of death in cases that requires additional investigation, information and/ or test results before certification can be made.² The world Health Organization has estimated the life expectancy of Nigerians to be 54 years (6th decade) for males and 55 years (6th decade) for females with an average life expectancy of 54.5 years.^{7, 8} It is plausible that majority of the recorded deaths in our environment could have been prevented thereby increasing the estimated life expectancy in our own environment is particular and in Nigeria in general. To this end, objective assessments of the manner of death at post-mortem speak volume. The aim of this study therefore is to determine the manner of death at post-mortem at the University of Benin Teaching Hospital.

MATERIALS AND METHODS

This was a retrospective post-mortem study that was carried out at the Department of Morbid Anatomy, University of Benin Teaching Hospital over a 2 year period from 1st of January 2013 to 31st of December 2014. The subjects of this study were all post-mortem cases during the period under review. The clinical case note of each subject, as well as the mortuary/autopsy register was consulted for details of patients' biodata including age and sex and the manner of death. The data obtained from this study was analysed using the Statistical Package for Social Sciences, version 20.

RESULTS

A total of 832 post-mortems were performed from 1st of January 2013 to 31st December, 2014 in the post-mortem suite of the Department of Morbid Anatomy, UBTH. Of these, 13 cases were excluded from this study because of incomplete demographic data while 819 post-mortem cases (subjects) were included in this study. The ages of the subjects in this study ranged from < 1year to 104 years. While their mean age was 43.42 years (SD = 19.13), the median and modal ages were 42.00 and 32.00 years respectively. The peak age was in the 4th decade and it accounted for 20.14% of subjects (165 subjects). The peak ages in females and males were in 4th decades. Overall, there was a male preponderance in the occurrence of death. There were 539 males (51.2%) and 280 females (48.8%) giving a male to female ratio of 1.9:1, Table 1.



Table1. Demography of the study population

	Frequency	Mean Age	Median Age (years)	Modal Age (years)	Peak age (years)	Age range (years)
Male	539	44.31 ±18.19	42.0	40	30-39	< 1- 98
Female	280	41.73 ±20.74	39.5	32	30-39	< 1 - 104
Study population	819	43.42± 19.13	42.0	32	30-39	< 1 - 104

The manner of deaths encountered in this study were natural, accident, homicide, suicide and undetermined, Table 2. The natural death was the most common manner of death and accounted for 48.6% (398 subjects) of the study population, Table 2. Of these, 227 cases occurred in males while 171 cases (Table 3) occurred in females giving a male to female ratio of 1.3:1. The mean age for natural death was 50.13 ($SD = 18.99$) with an age range of < 1-104 years and a peak in the 6th decade. The mean ages for natural deaths in males and females were 52.99 years ($SD = 17.95$) and 46.33 years ($SD = 19.71$) respectively. The peak incidence of natural death in males and females were in the 6th and 4th decades respectively, Table 3.



Table 2: The categories of manner of death and their relative frequencies/percentages

Manner of death	Frequency	Percentage
Natural	398	48.6
Accident	350	42.7
Homicide	41	5.0
Suicide	3	0.4
Undetermined	27	3.3
Total	819	100.0



Table 3 Age and sex distribution of the manner of death

Manner of death			Sex		
			Male	Female	Total
Natural	Age group	0-9	4	7	11
		10-19	6	5	11
		20-29	14	22	36
		30-39	19	34	53
		40-49	44	31	75
		50-59	55	22	77
		60-69	45	28	73
		70-79	26	14	40
		80-89	11	7	18
		90-99	3	0	3
	100-109	0	1	1	
Total			227	171	398
Accident	Age group	0-9	6	9	15
		10-19	8	13	21
		20-29	54	27	81
		30-39	80	17	97
		40-49	48	8	56
		50-59	31	10	41
		60-69	14	6	20
		70-79	10	5	15
		80-89	2	2	4
Total			253	97	350

Accidental death was the second most common manner of death and accounted for 42.7% (350 subjects) of the study population. Of these, 253 cases occurred in males while 97 cases occurred in females giving a male to female ratio of 2.6:1. The mean age for accidental death was 37.45 ($SD = 16.78$) with an age range of 1-85 years and a peak in the 4th decade. The mean ages for accidental deaths in males and females were 38.91 years ($SD = 15.20$)



and 33.67 years ($SD = 19.93$) respectively. The peak incidence of accidental death in males and females were in the 4th and 3rd decades respectively, Table 3.

Table 4. Age and sex distribution of homicide, suicide and undetermined manner of deaths

			Sex		Total
			Male	Female	
Manner of death					
Homicide	Age group	20-29	18	0	18
		30-39	10	0	10
		40-49	8	1	9
		50-59	1	2	3
		70-79	1	0	1
Total			38	3	41
Suicide	Age group	20-29	2		2
		50-59	1		1
Total			3		3
Undetermined	Age group	0-9	2	1	3
		10-19	3	0	3
		20-29	4	1	5
		30-39	2	3	5
		40-49	1	0	1
		50-59	3	0	3
		60-69	1	3	4
		70-79	1	1	2
80-89	1	0	1		
Total			18	9	27



Homicidal death was the third most common manner of death and accounted for 5.0% (41 subjects) of the study population, Table 2. There was a male preponderance (Table 4) with a male to female ratio of 12.7:1. The mean age for homicidal death was 33.49 (SD = 12.75) with an age range of 5-78 years and a peak in the 3rd decade. The mean ages for homicidal deaths in males and females were 33.42 years (SD = 11.78) and 34.33 years (SD = 26.10) respectively. The peak incidence of homicidal death in males was in the 3rd decade, Table 4. Undetermined death was the 4th most common manner of death in this study and it accounted for 3.3% (27 subjects) of the study population, Table 2. Of these, 18 cases occurred in males while 9 cases occurred in females giving a male to female ratio of 2:1, Table 4. The mean age for undetermined death was 38.07 (SD = 24.01) with an age range of <1-81 years and a bimodal peak in the 3rd and 4th decade. The mean ages for undetermined deaths in males and females were 35.33 years (SD = 24.46) and 43.56 years (SD = 23.51) respectively. The peak incidence of undetermined death in males was in the 3rd decade while there was a bimodal peak in the 4th and 7th decades in females, Table 4. Suicidal death was the least most common manner of death and accounted for 0.4 % (3 subjects) of the study population, Table 2. These cases occurred in males while non-occurred in females, Table 4. Their mean age was 34.33 (SD = 20.65) with an age range of 20-58 years. Hypertensive heart disease was the most common cause of natural death and accounted for 142 cases, while road traffic accident (RTA), gunshot injuries, and ingestion of herbicide poisonous substance were the most common cause of deaths in accidental, homicidal and suicidal deaths respectively.

DISCUSSION

The manner of death in this study ranged from natural, to accidental, homicidal, suicidal and undetermined. From the same environment as this study, Aligbe et al in a previous prospective study carried out over a 2 year period in the 1990s observed that the manner of death for 33.2 % of their study population was of natural death.⁹ They noted that there was an increase in the risk of dying of natural ailment due to a surge in the acquisition of dietary and life style habits of the developed western world.⁹ Giving credence to this observation, previous studies by Akhiwu et al from this same environment, Amakri et al from UCH Ibadan and this study reported that natural death accounted for 65.5%, 55.6% and 48.6% of the study populations respectively.^{10, 11} Natural deaths in these 3 studies were the most prevalent in contrast to the much earlier study by Aligbe et al that reported that natural deaths were next in frequency of occurrence to accidental deaths.⁹ In the same vein, other previous studies in Nigeria and Saudi Arabia reported a lower frequency of occurrence of natural death in comparison with this study.^{4, 12-16} Wang et al from Singapore reported that natural death in their study had a comparative similar value to the findings of this study.¹⁷ They reported that natural death accounted for 48.93% of cases of manner of death.¹⁷ This study noted that more males died of natural death in keeping with the observation of previous studies^{10, 18} Accidental death was the second most common manner of death in this study. This is in keeping with the reports of previous studies from Port Harcourt, Ibadan and Benin City by Obiora et al, Amakri et al and Akhiwu et al.^{10, 11, 15} It is however contrary to other previous studies done in Nigeria where it was the most



prevalent manner of death.^{4, 5, 12, 13} in this study, accidental deaths were more in males compared to females. This is in keeping with the observation of previous studies.^{10, 19} Death from homicide was next in frequency of occurrence after accidental death, thus making it the third most common manner of death. It accounts for 4.6% of the study population. This is comparatively similar to the observations by Amakri et al from Ibadan, Odesanmi from Ile-Ife and Akhiwu et al from Benin city who reported that homicide was the 3rd, 4th and 3rd most common manner of death that was responsible for 3.1%, 3.75% and 5% of their respective study population.^{4, 10, 11} other studies in Nigeria have reported much higher figures of homicidal deaths in comparison to the findings of this study.^{5, 12, 13, 16, 20} In these studies, homicidal death ranged from 20.7% to 50.5%, thus accounting for the most common or second most common manner of death.^{5, 12, 13, 16, 20} This high prevalence could be due to the additive effects of a poor economic state, poor human capital development and a disproportionately high income inequality on one hand that breeds violent crimes chiefly homicide on the other hand.²⁰ The male to female ratio in homicidal death in this study was skewed in favour of male in keeping with previous studies.^{10, 12, 20} Undetermined death was the 4th most common manner of death in this study and it falls within the range of undetermined death as determined by previous studies in Nigeria. These studies reported that the undetermined death accounted for 0.4 to 3.8% of the manner of death.^{4, 5, 10, 16} A much higher prevalence of 12% was reported from a previous study done in South Africa by Tiemensma et al.²¹ In this study, the frequency of occurrence of undetermined death was more in the males. This is consistent with the observation of previous studies.^{5, 10} Deaths of these nature most often results from lack of access to advanced medical tools and technologies.¹⁰ Suicidal death was the least most common manner of death in this study. Previous studies had observed that suicidal death accounted for 0.3% - 1.9% of the manner of deaths in Nigeria.^{4, 5, 10-12, 16} Prevalence of suicidal death in this study was 0.4% which falls within the observed prevalence range of suicidal death in relation to the manner of death in Nigeria. This low rate of suicide may be a pointer to the low levels of psychotic ailments with depression in Nigerians and Africans.²² Suicidal death occurred solely in males in keeping with previous studies that reported a male preponderance.^{5, 10, 22, 23}

CONCLUSION

Accidental death (42.7%), homicidal death (4.6%) and suicidal death (0.4%) constitute about half the deaths recorded in this study. A great majority were in their 4th decades, thus giving credence to the World Health Organization report that most Nigerian will die by their 6th decade. An insight to the composition of the manner of death in this study has shown that preventive measure is a key in reducing death and also in having a longer life expectancy.

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