IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 16, Issue 6 Ver. IX (June. 2017), PP 61-64
www.iosrjournals.org

A Study Of Elderly Deaths In Medico-Legal Autopsies Performed In Warri, Nigeria.

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I. Introduction

Aging is a biological, inevitable and irreversible process. The actual definition of old age however lacks general acceptance as it varies across various societies. In developedcountries, the age of 65 years is generally accepted because this is the age at which these persons qualify for old-age social security benefits. In sub-Saharan Africa which is burdened with low life expectancy coupled with uncertainty in the chronological age, a much lower reference age may be considered more appropriate. The United Nation therefore agreed that the cutoff of 60+ years as the definition of elderly population.[1]

By the 2013 bureau of statistics report, the 60 years and above age group accounted for about 4% of the Nigerian population.[2] This grouphowever constitute a vulnerable portion of the populacewith a high prevalence of chronic diseases, physical disabilities, mental illnesses and other co-morbidities.[3]

Understanding the mortality pattern as well as pattern of violent death will go a long *way* in forming a frame-work on government policy and demographic projection for these senior citizens.[4]In developing countries like ours where vital registration system are almost non-existent and census are lacking,[5]medico legal autopsy becomes a relevant tool towards understanding the causes and manners of death.There is paucity of publication on autopsy-based studies of elderly mortality. This paper therefore examines the profile of medico legal death among elderly populace in Warri, Nigeria.

II. Materials And Method

This is a descriptive, retrospective study of all medico-legal autopsies involving elders in Warri, Delta state, by the authors during the study period ranging which range from 1st January 2003 to December31st 2016. All cases involving patients who were 60 years and above were included in the autopsy. Thorough post-mortem examination was carried out and backed up with histological, toxicological and radiological investigation where necessary.The results were collated to include the age, sex, causes and manner of death. These data were subsequently analyzed using SPSS version 22 and presented in tables and figures.

III. Results

Sixty-seven cases of medico legal autopsies were encountered during the study period representing 6.9% of medico legal autopsies in this study.The details on the manner of deaths are shown in table I with sudden natural death, homicide, accident and suicide representing 28 (41.8%),22(32.8%), 16(23.9%) and 1(1.5%) of the cases respectively.The study showed a male-female ratio of 6.4: 1 with male and female gender accounting for 58(86.6%) and 9(13.4%) cases respectively.The peak age for elderly medico legal cases occurred in the age range of 60-64 years, accounting for 29(43.3%) cases. Details of the age distribution are shown in table II.

Details of the various causes of medico legal death are shown in table III and IV.Firearm injuries, road traffic accident and coronary artery disease, accounted for majority of the cases, representing 19(28.4%),14(20.9%), and 13(19.4%) cases.A detail of their distribution according to age is shown in table.Details of distribution of natural deaths is shown in tableV, with coronary artery disease, cerebrovascular accident and malignancy accounting for 13(46.4%), 3(10.7%) and 3(10.7%) cases respectively.

Details of homicidal death is shown in table VI, with firearm injury, sharp weapon injury and battering accounting for 19(86.4%); 2(9.1%)and 1(4.5%) of cases respectively. The MFR is shown to be 6.3: 1.Table VII shows distribution of accidental cases. Road traffic accident represented 14(87.5%) of accidental cases. Drowning and burns accounted for one case each of the other causes of accidental death. A MFR of 4.3:1 is also observed.

IV. Discussion

The study showed that the proportion of adults aged 60 years and above subjected to post-mortem examination accounted for 6.9% of all medico-legal autopsies during the study period. We are of the opinion that this correlates with general demographic trend, thus corroborating earlier reports that Nigeria is composed mainly of child and youthful population.[6]

Across all age-groups studied, the number of medico legal deaths in elderly males greatly out-numbered that of their female counterparts. This is in agreement with earlier research by Akiwu and Igbe in Benin City, Nigeria.[7]Being a patriarchal society, the man is more likely to be involved in morerisky out-door behaviors, activities and occupation, with its attendant risk of more stress and injuries. He also has greater exposure to alcohol and tobacco which are known to be associated with increased risk of injuries, cancer and cardiovascular disease.[8]

The study showed that the most common manner of medico legal death among these senior citizens is sudden natural deaths. Of these, vascular diseases,consisting of coronary artery disease, hypertension and cerebrovascular accident altogether accounted for 17 cases representing60.7% of the natural deaths and 1 of every 4 medico legal deaths studied. These vascular disorders are predisposed by the age-related increasing vascular rigidity, decreased vascular compliance and accumulation of atherosclerotic plaques.[9]Since there are modifiable factors in the pathogenesis of these diseases, adopting healthy life style such as physical exercise, decreased intake of fat diet, alcohol beverages and cigarette smoking; weight reduction and prophylactic aspirin therapy will go a long way curbing the trend.[10]The high burden of cancer-related mortality is also highlighted in this report. This may be related to the age-related risk of cancer, lack of government health policy on cancer prevention in Nigeria as well as accumulated risk associated with diet, tobacco, alcohol, lack of exercise and rapid industrialization in aging population.[11]Public health education, targeted screening, early detection as well as greater understanding of cancer management are noteworthy preventive measures. Obviously, our observation agrees with the epidemiological transition in mortality pattern in developing countries from infectious disease to chronic non-communicable diseases.[11,12]

Death from injuries is the leading cause of death among the elderly populace in this study, accounting for 72% of the cases. The three topleading causes in this research, in decreasing order are firearm injuries,road traffic accident and sharp weapon injuries. This is a sharp contrast from earlier report by Akiwu and Igbe in Nigeria showing that road traffic accident was the leading cause, followed in succession by firearm and fall.[7] In USA, unintentional fall was the leading cause, followed successively by motor vehicle injuries and suicide.[13]Some of these citizens may not be able to access proper health care because of poverty, which is perpetuated by declining family support, lack of social welfare scheme for elders, collapsing pension scheme and the ugly economic situation of their children.[14]Treatment outcome is often worsened by presence of multiple morbidities, poor response to therapy and the physiological challenge of coping with the demand of the injury.[14,15]

Firearm injury is the leading cause of premature injury-related death among the elderly population, accounting for nearly one of every 2 violent deaths and predominantly affecting males. All cases were homicidal death. This may be attributed to the large number of people *in possession of*firearms.Stringent licensing criteria for ownership of firearms as well as enforcement of law and order will play vital role in reducing this trend.

Most of the elderly victims of RTA were observed to bepedestrians which concur withearlier report in Benin City.[7] These accidental death is partly attributed to cognitively impairment and sensory deficit associated with aging.[16,17]Improving the state of our roads, as well as enforcement of traffic rules among others will improve the safety of the elders on the roads.

Despite the overwhelming challenges faced by elders in Nigeria, only one case of suicide was encountered.Historically there has been a general negative attitude towards suicide and suicide ideation among various cultural groups in Africa.[18]Religious and cultural sanctions may follow reported cases of suicide in some regions. Conversely thesesocio-cultural factor may lead to concealing and therefore under-estimation of the true magnitude of the problem.[19]

In conclusion, the elderly citizens constitute a vulnerable proportion of Nigerian population as reflected by their burden of violent injuries, non-communicable diseases and cancer. Adopting preventive measures as well as improving their social welfare will significantly reverse this trend.

Table I: Manner Of Death (According To Gender)

Gender	ACCIDENTAL	HOMICIDE	SUICIDE	NATURAL	Total (%)
Male	13 (22.4)	19 (32.8)	1 (1.7)	25 (43.1)	58 (86.6%)
Female	3 (33.3)	3 (33.3)	0	3 (33.3)	9 (13.4%)
Total	**2**	**22**	**1**	**28**	**67 (100%)**

Table II: Age And Sex Distribution Of Cases

Age Group	Male [No (%)]	Female [No (%)]	Total Frequency
60 - 64 yrs	26 (89.7)	3 (10.3)	29 (43.3%)
65 - 69yrs	11 (78.6)	3 (21.4)	14 (20.9%)
70 - 74yrs	9 (90)	1 (10)	10 (14.9%)
75 - 79yrs	8 (88.9)	1 (11.1)	9 (13.4%)
80 - 84yrs	4 (80)	1 (20)	5 (7.5%)
Total	**58 (86.6)**	**9 (13.4)**	**67 (100%)**

Table III: Causes Of Death (According To Age)

	60 - 64 yrs	65 - 69yrs	70 - 74yrs	75 - 79yrs	80 - 84yrs	Total
Beating	Nil	1 (7.1)	Nil	Nil	Nil	1 (1.5%)
Burns	1 (3.4)	Nil	Nil	Nil	Nil	1 (1.5%)
CA Prostate	Nil	Nil	Nil	2 (22.2)	Nil	2 (3%)
Cardiovascular Disease	1 (3.4)	Nil	Nil	Nil	Nil	1 (1.5%)
Cerebrovascular Accident	3 (10.3)	Nil	Nil	Nil	Nil	3 (4.5%)
Coronary Artery Disease	4 (13.8)	4 (28.6)	3 (30)	1 (11.1)	1 (20)	13 (19.4%)
Cut and Stab	1 (3.4)	Nil	Nil	1 (11.1)	Nil	2 (3%)
Drowning	1 (3.4)	Nil	Nil	Nil	Nil	1 (1.5%)
Femoral Neck Fracture	0	1 (7.1)	Nil	Nil	Nil	1 (1.5%)
Firearm	10 (34.5)	4 (28.6)	2 (20)	3 (33.3)	Nil	19 (28.4)
Hanging	1 (3.4)	Nil	Nil	Nil	Nil	1 (1.5%)
Hypertensive	2 (6.9)	1 (7.1)	Nil	Nil	Nil	3 (4.5%)
Liver Failure	1 (3.4)	Nil	Nil	Nil	Nil	1 (1.5%)
Malaria	Nil	Nil	Nil	1 (11.1)	Nil	1 (1.5%)
Malnutrition	1 (3.4)	Nil	Nil	Nil	Nil	1 (1.5%)
PUD	1 (3.4)	Nil	Nil	Nil	Nil	1 (1.5%)
RTA	2 (6.9)	3 (21.4)	5 (50)	1 (11.1)	3 (60)	14 (20.9%)
Vulva CA	Nil	Nil	Nil	Nil	1 (20)	1(1.5%)
Total	**29**	**14**	**10**	**9**	**5**	**67 (100%)**

Table IV: Causes Of Death (According to Gender)

	MALE (%)	FEMALE (%)	Total
Beating	Nil	1 (11.1)	1 (1.5%)
Burns	Nil	1 (11.1)	1 (1.5%)
CA Prostate	2 (3.4)	Nil	2 (3%)
Cardiovascular Disease	1 (1.7)	Nil	1 (1.5%)
Cerebrovascular Accident	3 (5.2)	Nil	3 (4.5%)
Coronary Artery Disease	12 (20.7)	1 (11.1)	13 (19.4%)
Cut and Stab	2 (3.4)	Nil	2 (3%)
Drowning	1 (1.7)	Nil	1 (1.5%)
Femoral Neck Fracture	Nil	1 (11.1)	1 (1.5%)
Firearm	17 (29.3)	2 (22.2)	19 (28.4)
Hanging	1 (1.7)	Nil	1 (1.5%)
Hypertensive	3 (5.2)	Nil	3 (4.5%)
Liver Failure	1 (1.7)	Nil	1 (1.5%)
Malaria	1 (1.7)	Nil	1 (1.5%)
Malnutrition	1 (1.7)	Nil	1 (1.5%)
PUD	1 (1.7)	Nil	1 (1.5%)
RTA	12 (20.7)	2 (22.2)	14 (20.9%)
Vulva CA	Nil	1 (11.1)	1(1.5%)
Total	**58**	**9**	**67 (100%)**

Table V: Natural Death Vs Gender

Types	Male(%)	Female(%)	No of Cases	% of Cases
CA Prostrate	2 (8)	Nil	2	7.1
Cardiovascular disease	1 (4)	Nil	1	3.6
Cerebrovascular Accident	3 (12)	Nil	3	10.7
Coronary Artery disease	12 (48)	1 (33.3)	13	46.4
Femoral Neck Fracture	Nil	1 (33.3)	1	3.6
Hypertensive Heart disease	3 (12)	Nil	3	10.7
Liver failure	1 (4)	Nil	1	3.6
Malaria	1 (4)	Nil	1	3.6
Malnutrition	1 (4)	Nil	1	3.6
PUD Perforated	1 (4)	Nil	1	3.6
Vulva CA	Nil	1 (33.3)	1	3.6
Total	**25**	**3**	**28**	**100%**

Table VI: Homicide Cases Vs Sex Distribution

Types	Male (%)	Female (%)	No of Cases	% of Cases
Beating	0	1 (33.3)	1	4.5%
Cut & Stab	2 (10.5)	0	2	9.1%
Fire arm	17 (89.5)	2 (66.7)	19	86.4%
Total	**19**	**3**	**22**	**100%**

Table VII: Accidental Cases Vs Sex Distribution

Types	Male	Female	No of Cases	% of Cases
Burns	0	1 (33.3)	1	6.3**%**
Drowning	1 (7.7)	Nil	1	6.3**%**
RTA	12 (92.3)	2 (66.7)	14	87.5**%**
Total	**13**	**3**	**16**	**100%**

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