

**ORIGINAL ARTICLE****Willingness of Family Caregivers to Consent to Relative's Postmortem Examination that Die Suddenly in a Nigerian Tertiary Hospital****Samuel Anu Olowookere<sup>1\*</sup>, Adegboyega Adeleke Abiodun<sup>2</sup>, Joseph Gbenga Omole<sup>3</sup>, Akinwumi Oluwole Komolafe<sup>4</sup>, Akintunde Julius Olowookere<sup>5</sup>, Emmanuel Akande<sup>1</sup>, Ayodeji Babalola<sup>1</sup>, Oriyomi Sanni<sup>1</sup>, Joshua Ajala<sup>1</sup>, Thomas Ifogah<sup>1</sup>****OPEN ACCESS**

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**ABSTRACT**

**BACKGROUND:** *Postmortem examination is necessary to diagnose the cause of sudden death, and family caregivers are expected to consent to this examination. This study assessed knowledge, attitude, practices and willingness of family caregivers to consent to postmortem examination of their relative if they die suddenly in a Nigerian tertiary hospital.*

**METHODS:** *Descriptive cross-sectional study of family caregivers of our patients that completed an interviewer administered semi-structured questionnaire assessing their knowledge, attitude, practices and willingness to consent to postmortem examination of their relative if they die suddenly. Data were analyzed using descriptive and inferential statistics.*

**RESULTS:** *A total of 224 caregivers were interviewed. The mean age (SD) was 34.95 (11.74), ranging 22-75 years. They were parents (32.6%), siblings (37.9%), spouses (11.2%) and other relatives (18.3%). Only 17% had adequate knowledge, 44.6% positive attitude and 11.2% good practices to postmortem examination of sudden death. The majority (75.9%) would consent to postmortem examination of their relatives if they die suddenly. Sociodemographic variables associated with willingness to consent to postmortem examination after relative's sudden death include being male (AOR 3.61; 95%CI 3.09-8.92; p=0.001), having tertiary education (AOR 4.83; 95%CI 1.01-8.29; p=0.034), Christianity (AOR 2.59; 95%CI 1.25-5.35; p=0.010) and skilled worker (AOR 1.43; 95%CI 1.33-3.80; p=0.020).*

**CONCLUSION:** *Some family caregivers would not consent to postmortem examination of their relatives when they die suddenly. Sensitization programs targeting family caregivers are necessary to increase knowledge and enhance prevention of sudden death as well as improve willingness to consent to postmortem examination when their relatives die suddenly.*

**KEYWORDS:** *Family caregivers, postmortem examination, consent, relatives*

## INTRODUCTION

Sudden death is unexpected death in an apparently healthy individual (1,2). The prevalence of sudden death continues to increase worldwide (2,3). The cause of sudden death could vary, hence the need to conduct a postmortem examination in every case. Identifying the probable cause of death in apparently healthy individuals dying suddenly could enable the prevention of further deaths from this cause (3,4).

A family caregiver can be defined as a family member that lives with the patient and is closely involved in their activity of daily living, healthcare, and relates socially with them. Most caregivers are genetically related to the patient sharing the same household and community with them. They provide mostly unpaid service to the patient and share in their sufferings (5,6). They are affected physically, psychologically and socially when their relative dies. The suffering of the family caregiver could increase when somebody dies suddenly when they least expect. The cause of such death could be apparent while in some cases unknown (6,7).

A patient who dies suddenly or brought in death is declared a coronal case whose death must be investigated by the pathologist. The postmortem examination could include anatomical, pathological and toxicological examination of the dead patient. In Nigeria, this postmortem investigation requires the consent and payment of a sum to the hospital by the family caregiver before the procedure is carried out. Since this payment is most often not waived and the family caregiver might not have the funds ready or may be unwilling to pay, this situation might further delay or prevent this investigation from being done leading to misunderstandings between the family caregiver and the hospital management. In cases where the suspected cause of death has public health or medico-legal implications, the dead body might not be released for burial until this procedure is done which leads to societal conflicts requiring immediate burial of the dead due to cultural, religious and other reasons (7-9).

Recent events worldwide, including Nigeria, have reported individuals and at times families dying at the same period from natural events such as flooding, house collapse, food poisoning, carbon monoxide poisoning, epidemics (such as cholera, yellow fever outbreaks) and death

from criminal activities (such as armed robbery, kidnapping and banditry/Boko Haram activities). Also, the need for postmortem examination in death resulting from substance use especially in drugs eliminating memory of events which could include incidence of gang rape, suicide, parasuicide, and homicide (1,3,9,10). Since it is a requirement for death certificate to be issued before burial, sudden deaths most of the time require extensive investigation on the probable cause or causes of death, hence, the need for this study.

This study assessed knowledge, attitude, and practices of family caregivers regarding postmortem examination in sudden death. Also, the study assessed their willingness to consent to postmortem examination of their relatives if they die suddenly in a Nigerian tertiary hospital.

## METHODS

**Study site:** This study was conducted in Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Nigeria. The hospital is a 576-bed tertiary health centre, 200 kilometres northeast of Lagos and serves as a referral centre for the neighbouring states of Oyo, Kwara, Ondo, Ekiti, and Kogi. An average of 2 clinical/coroner postmortem examinations are performed daily in the hospital.

**Study design:** A descriptive cross-sectional study was employed.

**Study population:** The study population include family caregivers of patients attended to at the medical and surgical clinics, intensive care unit, emergency department and wards of the hospital.

**Sample size calculation:** A sample size of 250 was calculated with 8.7% family caregivers willing to consent to autopsy on their relatives and non-responders taken into consideration (11,12).

**Inclusion criteria:** The inclusion criteria were family caregivers of patients attended to at the medical and surgical clinics, intensive care unit, emergency department and wards of the hospital.

**Exclusion criteria:** Family caregivers who did not consent to the study were excluded.

**Sampling technique:** The family caregivers were consecutively recruited by five final year medical students who were trained on data collection.

**Data collection:** These family caregivers were approached for written consent after explaining the purpose of the study and requested to complete a

pre-tested interviewer administered questionnaire. This instrument contained questions on their socio-demographic characteristics, their knowledge of sudden death, its causes and prevention, attitude towards having postmortem examination on relative after sudden death, hindrances to postmortem examination of sudden death and willingness to consent to postmortem examination of relatives after sudden death. The questionnaire was prepared after adequate review of literature with face validity of the questionnaire done by the authors to ensure that it answered its set objectives. Pre-testing of the questionnaire was done among family caregivers not included in this study.

**Ethical considerations:** The ethical approval was obtained from the Ethics and Research Committee of the Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Nigeria. Participation was entirely voluntary, and confidentiality was ensured; codes, rather than participants' names, were used as personal identifiers, and the data were stored in a computer that was accessible only to the lead author.

## MEASURES

**Knowledge of sudden death and postmortem examination:** Respondents were asked fifteen questions that assessed knowledge of sudden death, its causes, prevention and postmortem examination. Appropriate responses had scores of '+1' while inappropriate responses had scores of '0'. These scores were summated with mean score used as cut off point and those scoring equal to or above the mean having adequate knowledge and those scoring below having inadequate knowledge.

**Attitude towards sudden death and postmortem examination:** Participants were asked nine questions on their attitude towards occurrence of sudden death and postmortem examination. For family caregivers that had no knowledge of postmortem examination, the procedure was explained before proceeding with further questioning. Statements were either positively or negatively phrased with response to each question rated on the Likert scale ranging from 'strongly agree' to 'strongly disagree'. The most appropriate responses had scores of '+4' while the least inappropriate responses had scores of '0'. These

scores were summated with mean score used as cut off point and those scoring equal to or above the mean having positive attitude and those scoring below having negative attitude.

**Practice regarding sudden death, postmortem examination and willingness to consent to postmortem examination of relatives that die suddenly:** Participants responded to eight questions on their practice regarding sudden death, postmortem examination and willingness to consent to postmortem examination of their relatives if they die suddenly. Appropriate responses had scores of '+1' while inappropriate responses had scores of '0'. These scores were summated with mean score used as cut off point and those scoring equal to or above the mean having good practice and those scoring below having poor practice.

**Data analysis:** Data obtained were analyzed using SPSS version 16. Simple descriptive and inferential statistics were done. Test of significance was conducted using appropriate statistical methods. Bivariate chi-square test and multivariate logistic regression analysis were performed on family caregivers' characteristics and willingness to consent to postmortem examination of their relatives if they die suddenly. Variables in the bivariate test with p-value <0.2 were included in the multivariate model with odd ratio (OR) and 95% CI presented and used as measures of the strength of association. Significant level was put at p<0.05.

## RESULTS

**Demographic data:** A total of 224 caregivers with completed questionnaire were analyzed (response rate 89.6%). Their mean age (SD) was 34.95 (11.74), ranging 22-75 years. They were parents (32.6%), siblings (37.9%), spouses (11.2%) and other relatives (18.3%). Most family caregivers had tertiary education (73.2%), were females (69.6%), married (54%), Christians (76.8%), skilled workers (56.7%) and Yoruba (85.7%), a Nigerian tribe (Table 1).

Table 1: Socio-demographic characteristics of Family caregivers

Variable	Frequency (n=224)	%
Family caregiver		
Father	17	7.6
Mother	56	25.0
Brother	50	22.3
Sister	35	15.6
Cousin	25	11.2
Nephew	16	7.1
Spouse	25	11.2
Age group (years)		
22-29	105	46.9
≥30	119	53.1
Gender		
Male	68	30.4
Female	156	69.6
Level of education		
Primary	12	5.4
Secondary	48	21.4
Tertiary	164	73.2
Marital status		
Single	95	42.4
Married	121	54.0
Divorced	8	3.6
Religion		
Islam	52	23.2
Christianity	172	76.8
Ethnicity		
Igbo	32	14.3
Yoruba	192	85.7
Occupation		
Unskilled worker	97	43.3
Skilled worker	127	56.7

Figure 1 reports the knowledge, attitude and practices regarding postmortem examination of sudden death. It shows that only 17% had adequate knowledge, 44.6% had positive attitude and 11.2% had good practices regarding postmortem examination of somebody that dies suddenly.

Table 2 reports the knowledge, attitude, practices and willingness of family caregivers to consent to

postmortem examination on relatives that die suddenly. All family caregivers have heard of sudden death with cardiac arrest reported as the commonest cause by the majority (65.2%). Three-quarters knew that sudden death is preventable with routine medical checkup seen by most (70.8%) as the commonest way to prevent it. Only 16% of the respondents had done medical checkup in the previous year. However, most respondents (88.4%) agreed that sudden death also has a spiritual cause with the majority agreeing that postmortem examination done after sudden death is basically for research purpose (94.5%) while some respondents saw it as unnecessary mutilation of the dead body (54%). Some respondents agreed that their culture (50.4%) and religion (45.5%) do not support postmortem examination with 67.4% agreed that it is informative to do postmortem examination in sudden death. Although the majority (90.6%) had heard of somebody dying suddenly with reported circumstances of death including person slumped and died (46.3%), died while sleeping (39.9%) and died in road traffic accident (13.8%). Only 5.9% of those that died suddenly had postmortem examination with their family caregivers not aware of the actual cause of death. Five (2.2%) family caregivers ever consented to postmortem examination of their relatives that died suddenly with only one (20%) receiving the postmortem report. Identified hindrances to postmortem examination of sudden death were misconceptions about the examination (84.4%), seeing it as a waste of time (70.1%), religious (65.2%) and cultural (62.9%) beliefs, payment for the examination (48.7%) and age of the dead (36.1%). The majority (75.9%) would consent to postmortem examination of their relatives that die suddenly while 85.3% would support other people to consent to postmortem examination of their relatives that die suddenly.

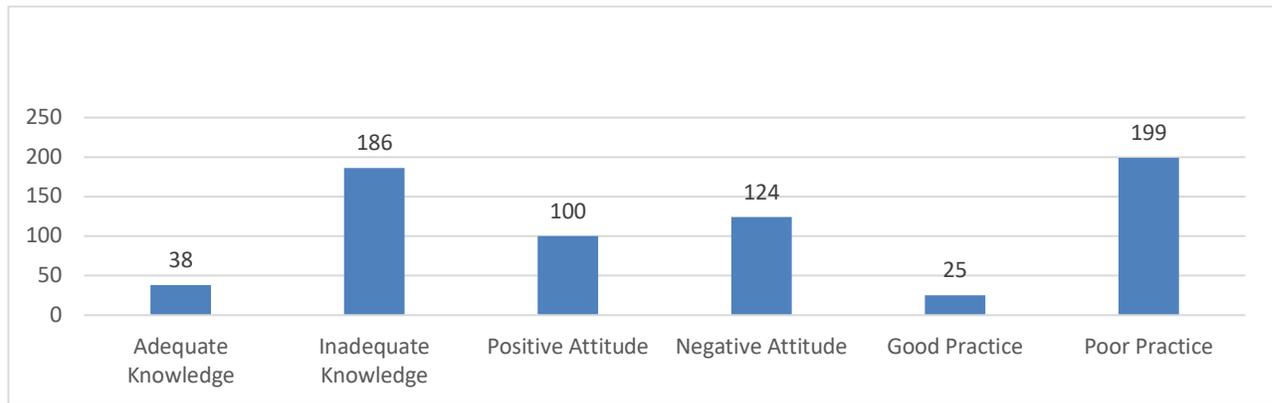


Figure 1: Knowledge, attitude and practices regarding postmortem examination of sudden death

Table 2: Knowledge, attitude, practices and willingness of family caregivers to consent to postmortem examination on relatives that die suddenly.

Variable	Frequency	%
<b>Knowledge</b>		
Ever heard of sudden death (Yes)	224	100.0
<b>*Common causes of sudden death</b>		
Cardiac arrest	146	65.2
Asthmatic attack	43	19.2
Road traffic accident	35	15.6
Food poisoning	32	14.3
Suicide	29	12.9
Substance abuse	23	10.3
<b>Sudden death can be prevented</b>		
Yes	168	75.0
No	56	25.0
<b>*Ways to prevent sudden death (n=168)</b>		
Regular medical check up	119	70.8
Prayer	98	58.3
Adequate exercise	31	18.5
Keeping to good diet	25	14.9
<b>Visit a hospital for medical checkup in the last 12 months (yes)</b>	36	16.1
<b>Reason for medical checkup (n=36)</b>		
Require to travel	11	30.6
Require at school	9	25.0
Require for national service	8	22.2
Require for pre-employment	8	22.2
<b>Attitude</b>		
<b>Sudden death could have spiritual cause</b>		
Agree	198	88.4
Disagree	26	11.6
<b>Postmortem examination is unnecessary mutilation of the dead body</b>		
Agree	121	54.0
Disagree	103	46.0
<b>Postmortem examination is done for research purpose</b>		
Agree	212	94.5
Disagree	12	5.5

Table 2. Continued...

<b>My culture does not support postmortem examination</b>		
Agree	113	50.4
Disagree	111	49.6
<b>My religion does not support postmortem examination</b>		
Agree	102	45.5
Disagree	122	54.5
<b>It is informative to do postmortem examination in sudden death</b>		
Agree	151	67.4
Disagree	73	32.6
<b>Practices/willingness</b>		
<b>Heard of somebody dying suddenly</b>		
Yes	203	90.6
No	21	9.4
<b>Circumstances of the sudden death (n=203)</b>		
Person slumped and die	94	46.3
Die while sleeping	81	39.9
Road traffic accident	28	13.8
<b>Postmortem examination was done (n=203)</b>		
Yes	12	5.9
No	191	94.1
<b>Postmortem examination findings (don't know)</b>		
	12	100.0
<b>Ever consent to postmortem examination of a relative that die suddenly</b>		
Yes	5	2.2
No	219	97.8
<b>Received postmortem examination report (n=5)</b>		
Yes	1	20.0
No	4	80.0
<b>*Hindrances to postmortem examination of sudden death (n=224)</b>		
Misconceptions about the examination	189	84.4
See postmortem examination as a waste of time	157	70.1
Religious belief	146	65.2
Cultural practices	141	62.9
Payment for the postmortem examination	109	48.7
Age of the dead relative	81	36.1
<b>Will consent to postmortem examination in sudden death</b>		
Yes	170	75.9
No	54	24.1
<b>Will support other people to consent to postmortem examination in sudden death</b>		
Yes	191	85.3
No	33	14.7

\*Multiple response

Table 3 shows the relationship between sociodemographic variables and willingness to consent to postmortem examination after relative's sudden death. A higher proportion of the parents, spouses and siblings would consent to postmortem examination. Other significant variables include being male, skilled worker, Christian, and having tertiary education. Table 4 reports the logistic regression analysis of sociodemographic variables associated with

willingness to consent to postmortem examination after relative's sudden death. Sociodemographic variables associated with willingness to consent to postmortem examination after relative's sudden death include being male (AOR 3.61; 95%CI 3.09-8.92; p=0.001), having tertiary education (AOR 4.83; 95%CI 1.01-8.29; p=0.034), Christian (AOR 2.59; 95%CI 1.25-5.35; p=0.010) and skilled worker (AOR 1.43; 95%CI 1.33-3.80; p=0.020).

Table 3: Relationship between sociodemographic variables and willingness to consent to postmortem examination after relative's sudden death.

Variable	Willingness		Test statistics
	Yes (%)	No (%)	
<b>Family caregiver</b>			
Father	10 (58.8)	7 (41.2)	50.095; 0.0001
Mother	36 (64.3)	20 (35.7)	
Brother	49 (98.0)	1 (2.0)	
Sister	28 (80.0)	7 (20.0)	
Cousin	14 (56.0)	11 (44.0)	
Nephew	8 (50.0)	8 (50.0)	
Spouse	25 (100.0)	0 (0)	
<b>Age group (years)</b>			
22-29	84 (80)	21 (20)	1.822; 0.177
≥30	86 (72.3)	33 (27.7)	
<b>Highest level of education</b>			
Primary	6 (50.0)	6 (50.0)	10.181; 0.006
Secondary	31 (64.6)	17 (35.4)	
Tertiary	133 (81.1)	31 (18.9)	
<b>Gender</b>			
Male	67 (98.5)	1 (1.5)	Fisher's p=0.0001
Female	103 (66.0)	53 (34)	
<b>Marital status</b>			
Not married	82 (79.6)	21 (20.4)	1.441; 0.230
Currently married	88 (72.7)	33 (27.3)	
<b>Occupation</b>			
Skilled worker	104 (81.9)	23 (18.1)	5.765; 0.019
Unskilled worker	66 (68.0)	31 (32.0)	
<b>Religion</b>			
Islam	31 (59.6)	21 (40.4)	9.807; 0.002
Christianity	139 (80.8)	33 (19.2)	
<b>Ethnicity</b>			
Igbo	31 (96.9)	1 (3.1)	Fisher's p=0.001
Yoruba	139 (72.4)	53 (27.6)	

Table 4: Logistic regression analysis of sociodemographic variables associated with willingness to consent to postmortem examination after relative's sudden death.

Variable	COR; 95%CI; p-value	AOR; 95%CI; p-value
<b>Age group (years)</b>		
22-29	1.54; 1.82-2.87; 0.079	1.59; 1.10-6.10; 0.029
≥30 (ref.)	1	1
<b>Gender</b>		
Male	3.48; 3.26-9.29; 0.001	3.61; 3.09-8.92; 0.001
Female (ref.)	1	1
<b>Highest level of education</b>		
Primary (ref.)	1	1
Secondary	1.82; 0.51-6.54; 0.356	1.25; 0.23-1.33; 0.183
Tertiary	4.29; 1.30-14.21; 0.017	4.83; 1.01-8.29; 0.034
<b>Religion</b>		
Islam (ref.)	1	1
Christianity	2.85; 1.46-5.58; 0.002	2.59; 1.25-5.35; 0.010
<b>Occupation</b>		
Skilled worker	2.12; 1.14-3.95; 0.018	1.43; 1.33-3.80; 0.020
Unskilled worker (ref.)	1	1

## DISCUSSION

This study assessed the willingness of family caregivers to consent to postmortem examination of their relatives if they die suddenly in a Nigerian tertiary hospital. It reported that some caregivers would not consent to postmortem examination if their relatives die suddenly. Prior studies had reported falling rates of postmortem examination due to sociocultural reasons and religious beliefs (13-17). In order to increase consent for postmortem examination especially in sudden death, it will be necessary to create awareness about this procedure that will unravel the cause of death which could further prevent future death in the family, community or population.

This study reported that the majority of the family caregivers had inadequate knowledge, negative attitude and poor practices towards postmortem examination when somebody dies suddenly. Despite inadequate knowledge, all family caregivers were aware of sudden death with the majority associating the cause with cardiac arrest. Several studies have reported this to be the case in sudden death worldwide (1-4). This awareness reflects the high level of formal education of our respondents as the majority had tertiary education. However, their recommendation of regular medical checkup to prevent sudden death did not correlate with their practice as the minority have undergone such checkup in the previous year. This implies that strategies to improve family caregivers' knowledge, attitude and practices, including undergoing routine medical checkup, to avoid early death from preventable causes should be put in place (17-19).

Most respondents reported spiritual cause as a cause of sudden death. This population showed high level of spirituality as all our respondents identified with a religious group. Hence, the interactions between illness, disease, death and spirituality might be difficult to separate as most religions and their adherents tend to interrelate them. Even the World Health Organization includes spiritual wellbeing as essential for good health (20,21).

The attitude of some respondents toward postmortem examination of sudden death was positive while some respondents' attitude was negative. For instance, while most respondents considered postmortem examination after sudden

death as an academic and research exercise that would unravel the cause of death which might assist in preventing further deaths, some respondents saw it as mutilation of the dead body. Although the majority saw postmortem examination in sudden death as informative, some respondents agreed that their culture and religious beliefs were against it. Several studies have reported differing findings (21-23). This finding further implies that awareness creation is important targeting community and religious leaders on prevention of sudden death and giving consent to postmortem examination when community members or religious adherents die suddenly.

Most respondents had heard of somebody who died suddenly with circumstances of death including a person slumped and died, died during sleep and road traffic accident. This implies that sudden death is becoming common which shows the urgency in putting in place strategies in controlling and preventing its occurrences. The reported low proportion of people that die suddenly being investigated through postmortem examination shows the reason to create awareness on need for this procedure to prevent more sudden deaths (24,25).

Also, very few family caregivers ever consented to postmortem examination of their relatives that died suddenly with only one receiving the postmortem report. The lack of feedback to family caregivers on the cause of death of their relatives could hamper future consent to such procedure, hence the need for those concerned to always give comprehensive feedback, including necessary steps to prevent future sudden death. If adequate feedback is given in all cases of sudden death after postmortem examination, it will remove hindrances to this procedure (25-27). The issue of payment for this procedure could be waived by government or the concerned hospital management when relatives have no money to pay or when there is no relative to take responsibility for payment to prevent delay in conducting the procedure. This will further increase the proportion of family caregivers that will consent or encourage others to consent to this procedure when required.

This study shows that the parents, spouses and siblings were willing to consent to postmortem examination of their relatives that die suddenly.

Also, being male, Christian, having tertiary education and being a skilled worker were socio-demographic factors associated with willingness to consent to postmortem examination of their relatives that die suddenly. These findings could be explained by the cultural and religious practices of the respondents with decision making lying with the male sex and those employed (27,28). In Nigeria, Christians usually delay burial while Muslims bury their dead immediately which could partly explain this study findings (24).

This study is limited by its cross-sectional study design and being self-reported but it obtained information which could be very useful to policy makers and hospital managers. Some family caregivers would not consent to postmortem examination of their relatives when they die suddenly. Sensitization programs targeting family caregivers is necessary to increase awareness and enhance prevention of sudden death and improve willingness to consent to postmortem examination of their relatives who die suddenly.

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