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Aero-disaster in Port Harcourt, Nigeria: A case study

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Abstract

Background: Aero-disaster in Nigeria is posing a serious problem to government, the public and relatives of victims, as many lives are lost in a single event.
Materials and Methods: A case study based on an incident at an international airport in Nigeria on December 10, 2005. Detailed autopsy was performed on 97 fully identified bodies out of the 106 victims. Variables considered include ages, sex, pattern of injuries and death as well as problems associated with identification of bodies.
Results: A total of 97 (91.5%) out of the 106 deaths recorded were autopsied. Nine (8.5%) bodies were beyond identification, and hence autopsy could not be properly done on them. Fifty-nine (60.8%) were males and 38 (39.2%) were females, giving a ratio of 1.4:1. Sixty-one (62.9%) were children and adolescents below the age of 20 years. Severe burns 27 (27.8%), multiple injuries with burns 21 (21.6%), inhalation of fumes 20 (20.6%), multiple injuries only 16 (16.5%), severe head injury alone 11 (11.3%) and ruptured viscous 2 (2.1%) were the causes of death at autopsy in that order of frequency.
Conclusion: Aero-disaster, though rare in Port Harcourt, is posing a serious problem in Nigeria in recent times. Various agencies should be established to adequately control mass disasters in Nigeria. Adequate maintenance of aircraft and strict observation and enforcement of aviation laws may drastically reduce the frequency of accidents and subsequent deaths.

Keywords: Aero-disaster, death, injuries

Résumé

Fond: Aero-catastrophe au Nigéria pose un sérieux problème au gouvernement, le public et les familles des victimes de nombreuses vies sont perdues dans un événement unique.
Design: Paramètre: Port Harcourt, Nigeria.
Méthodes: Une étude de cas sur incident à un aéroport international au Nigeria sur 10 ème de décembre 2005. Autopsie détaillée a été effectuée sur 97 corps entièrement identifiés par des victimes un cent six. Variables considérés comprennent: âge, sexe, patron de blessures et les décès ainsi que les problèmes liés à l'identification des organismes.
Résultats: Un total de 97(91.5%) de la 106 décès enregistrés ont été autopsiés. Neuf corps (8,5%) étaient au-delà donc identification autopsie ne pourrait pas correctement fait sur eux. Cinquante neuf (60,8%) étaient des mâles et 38(39.2%) les femelles, donnant un ratio de 1.4. Soixante un (62,9%) étaient des enfants et des adolescents de moins de 20 ans. 27(27.8%) De graves brûlures, de multiples blessures avec brûlures 21(21.6%), chose inhalation de vapeurs 20(20.6%), plusieurs des blessures seul 16(16.5%), 11(11.3%) seul grave blessure à la tête et 2(2.1%) visqueuses rupture étaient les causes de décès lors de l'autopsie dans cet ordre de fréquence.
Conclusion: Aero catastrophe bien que rare à Port Harcourt pose un problème grave au Nigeria en ces derniers temps. Divers organismes doivent être établies pour contrôler adéquatement catastrophe massive au Nigéria. Entretien d'aéronefs et de la stricte observation et d'application des lois de l'aviation peuvent considérablement réduire la fréquence des accidents et des décès subséquentes.

Mots clés: Aero-catastrophe, de blessures, de mort

Introduction

Mass disaster, critical incident or major incident are often used interchangeably by different agencies to describe death involving 12 or more victims in a single event, be it accidental or non-accidental.[1,2] Mass disaster is a well-known devastating event that can cause difficulties in various instances for many inexperienced practitioners worldwide as exemplified by the Hillsborough football stadium disaster in 1989.[3] The threat and reality of deliberate destruction of passenger carrying aircraft have become part of live rather than occasional sensation.[2] The result is an escalated loss of life as exemplified by the air-craft crash on September 11, 2001, at the world trade center in the US that killed 2,751 people.

In Nigeria, many incidences of aviation accident have been recorded since 1969 and are occurring nearly every year in recent times. The Port Harcourt international airport, which was constructed in 1985, recorded only two aviation accidents. One was not a disaster, whereas the episode of the December 10, 2005, claimed lives of 106 passengers and crew, with only two survivors to tell the tale. Nine of the 106 bodies could not be identified to meet the criteria for the study; hence 97 cases were thoroughly autopsied and used for the study.

This study is one of the earliest aero-disaster studies carried out in this country. It aims at elucidating the pattern of injuries and death, relating it to interventions that will be required to reduce morbidity and mortality.

Materials and Methods

An autopsy study of 97 victims of December 10, 2005, aeroplane accident in Port Harcourt international airport was carried out at the University of Port Harcourt Teaching Hospital (UPTH) and Braithwaite Memorial Hospital (BMH) in Port Harcourt by the authors. The casualties were collated and selected according to the severity of injury. The live victims were first attended, resuscitated and referred to the intensive care units of the UPTH and Shell Petroleum Development Company (SPDC) hospital for proper medical attention. The dead bodies were recovered and transported to the UPTH and BMH mortuaries for reconstruction and embalmment using their facilities. Adequate dissemination of information through different media to alert the public to come for identification of bodies at least visually was made. The information contained the number of casualties, location of the accident and where the casualties including the deceased can be located. These deceased bodies were thoroughly examined after being identified by relatives.

Variable considered for the study include the age, sex, type of injury and cause of death. In all cases, thorough autopsies were performed and reports given to the coroner. The results were collated and tabulated in multi-way frequency table.

Results

Nigeria has recorded 20 aeroplane accidents since 1969 to the time of writing, resulting in the death of 1,274 people. Of this number, six incidences do not fit into the definition of mass disaster and the number of deaths summed up to 11 (0.9%). The total number of death from mass disaster therefore was 1,263 (99.1%). The highest frequency of death, 246 (19.5%) was recorded in 1996 in four disasters. This was followed by decreasing order of frequency by the 1991 incidents that claimed 239 (18.9%) lives in a single event, then that of 2005, which recorded 223 (17.6%) deaths in two aero-disasters. Other include, a single disaster in 1992 that claimed 163 (12.9%) lives, then 2001 that claimed the lives of 120 (9.5%) people, while 2006 had two disasters that caused the death of 114 (9.0%) 1969 had 87 (6.9%) 1983 had 57 (4.5%) deaths in single disaster and that of 1995 claimed 15 (1.2%) lives in a single episode. This study is based on the 2005 aero-crash in Port Harcourt international airport where 106 lives were lost, and which accounted for 8.4% of the total death from such accidents Table 1.

Of the 106 passengers and crew involved in the accident, nine (8.5%) were unidentifiable due to dismembering of the bodies and severe burns to skeletal level. This study is therefore based on 97 cases of which, 59 (60.8%) were males and

Table 1: Yearly distribution of Aero-accidents in Nigeria

Year of Aero-accident	Number of Aero accidents	Number of casualties per accident	Total number of deaths
1969	1		87
1983	1		57
1991	1		239
1992	1		163
1994	2	(5+2)	7
1995	1		15
1996	5	(77+14+0+12+143)	246
1997	1		1
2000	2	(1+2)	3
2001	1		120
2005	2	(117+106)	223
2006	2	(18+96)	114
Total	20		1276

38 (39.2%) females, giving a ratio of 1.4:1. The youngest victim was 10-year-old male while the eldest was 64 years female, the highest frequency 61 (62.9%) occurred in the age group 10-19 years, while the least 3 (3.1%) occurred in the age group 60 years and above Table 2.

Table 3 shows the type of injuries sustained during the accident. The most frequent was severe burns 27 (27.8%) and the least was rupture of viscera with severe bleeding 2 (2.1%). The others in decreasing order of frequency were multiple injuries with burns 21 (21.6%), inhalation of fumes 20 (20.6%), multiple injuries only 16 (16.5%) and severe head injury alone 11 (11.3%).

Discussion

Since 1969, there have been 20 aviation accidents in Nigeria, of which 14 (70%) were mass disasters. The Port Harcourt international airport recorded only two cases aero accidents of which the December 10, 2005, accident fall within the definition of mass disaster.[1]

Majority of the casualties (62.9%) were children and adolescents aged below 20 years who had vacated from a school at Abuja the capital city of Nigeria and were travelling to Port Harcourt. The cause of aero-accident, like motor vehicular accidents depend largely on operator of the machine, the machine itself or the environment in which the machine is used.[4,5] The mood of the pilot may also be responsible for the accident. He may be on central acting drugs for the treatment of certain ailments or may be under the influence of alcohol. He could also be suffering from some form of heart disease, leading to sensory instability.[6] Also, frank negligence of the pilot to metrological forecast can cause aero-accident. Aviation accident may also occur when the aircraft engine develops sudden fault or when the engine is not regularly serviced. The use of refurbished aircraft may also be another reason for the high frequency of aero-accidents. A particularly useful example of the aforementioned engine related accidents was that of Manchester in 1985,[6] which occurred immediately after take-off. Another was in Western Nigeria, which occurred immediately after the craft took off from the Mortala Mohammed international airport, Ikeja, killing 117 passengers and crew in 2005. It was also noticed that, decompression of aircraft cabin at high altitude may suck out the passenger who may die instantly and sustain various forms of barotraumas and associated complications.[7]

Sudden weather change as against metrological forecast may make it difficult for the pilot to manoeuvre the vessel. This aircraft may crash-land and may be set ablaze. Other factors that may cause aero-accidents include adulterated aviation fuel, implanted bombs, fear and panic during hijacking, and suicide squad operations, as exemplified by the September 11, 2001, air crash into the world trade center building in the US.

The type of injuries in aero-accidents depends on the speed and angle of impact of the air craft.[6] This probably explains the diversity of sustained injuries in this study. The impact was very severe, setting the plane ablaze and this resulted in the death of almost everyone by deceleration injury or multiple trauma from seat belts or from disruption of fuselage, as reported in another study.[7] This study recorded severe burns as the most common cause of death. Each victim had at least 30° full thickness burns, and they must have died either from the direct heat of the fire or severe dehydration from the heat produced or inhalation of carbon monoxide (fumes), mirroring the pattern of death reported in other fire-related deaths.[8] The various injuries may be associated with panics following impending accident. This resulted in severe head injuries, multiple injuries including fracture of bones and rupture of viscera, corroborating the pastern of death in another study.[9]

Litigation is now very common all over the world after mass disasters. This could be by the surviving victim himself, relatives of deceased or sympathisers. Autopsies were performed in relatively public atmosphere because of public interest. Failure

Table 2: Age and sex distribution of casualties of December 10, 2005 Aero disaster in Port Harcourt

Ages in Years	Sex		Total	(%)
	M	F		
10 – 19	39	22	61	62.9
20 – 29	7	4	11	11.3
30 – 39	7	2	9	9.3
40 – 49	2	6	8	8.2
50 – 59	3	2	5	5.2
60 and above	1	2	3	3.1
Total	59 (60.8%)	38 (39.2%)	97	100.0

Table 3: Type of injuries sustained in December 10th 2005, Aero accident in Port Harcourt

Types of injuries	Total	(%)
Severe burns only	27	(27.8)
Multiple injuries with burns	21	(21.6)
Inhalation of fumes	20	(20.6)
Multiple injuries (more than one anatomic site)	16	(16.5)
Severe head injury alone	11	(11.3)
Ruptured viscous	2	(2.1)
Total	97	(100.0)

to do so could lead to legal action and, in some cases, the development of psychiatric problems, which was recorded in one of our victim's relation, mirroring the report in another study.[6] Delay in autopsy or in returning the autopsied bodies to the next of kin also could precipitate the same problem.[10] In addition, unsatisfactory arrangements of the bodies for viewing by the relative could also cause psychiatric problem.[6,11] Some of the next of kin were interested in knowing the extent of injuries that led to death, the time of death and pains suffered. It may be interesting to note that failure to explain this satisfactorily may lead to the request of secondary autopsy.

The role of the pathologist is also very important in mass disasters. The authors organise the mortuaries for the post mortem examination of the bodies, corroborating the report in another study elsewhere.[12] The security and privacy of the mortuary is also the responsibility of the pathologist. Free access was accorded to the deceased relatives to identify their victims visually. X-ray facilities in the mortuary would have been very important to correctly diagnose the number and sites of fracture of bones in each body but this facility was not available in these settings at the time of this communication. The bodies were embalmed, refrigerated, encoffined, and released to the relations on identification, after performing the autopsy.

Finally, the following suggestion may be useful while managing a mass disaster. First, is the inauguration of aviation accident investigation board (AAIB) as instituted in the United Kingdom (UK),[2] whose responsibility is to establish the cause of the accident and aftermath of the accident. Their modus oparandi should be directed towards safety and preservation of life in future. Second, there should be mass disaster planning team (MDPT), which should include the pathologist, clinicians, dentists, hospital administrators, and police. This should be in place, especially in big cities like Port Harcourt that have international airport, harbour, oil refineries, gas industries, chemical industries, major railway and motorways.

Plans for accessing the bodies, evacuation of victims, committed hospital care, blood transfusion, radiography and other services should be put in place to attend to the victims of mass disaster swiftly any time it occurs.

In conclusion, aero-disaster is becoming a yearly event in Nigeria, though rare in Port Harcourt. It is posing considerable public health problem on the Federal Government and relations of victims. Strict observation and enforcement of aviation laws and putting in place aviations accident investigation board (AAIB), MDPT and other agencies may reduce the occurrence of such accidents, which will eventually reduce morbidity and mortality.

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