

RAPID ASSESSMENT OF CEMETERIES IN A NIGERIAN STATE DURING THE COVID-19 PANDEMIC

Tobin, E.A¹, Tandoh, K.A.²Oko-oboh, G.A.³, Okogbenin, S.⁴, Obaseki, D.E.⁵, Okonofua, M.¹Okundia, P.⁶,Irowa, O.A.W⁶

¹ Institute of Lassa Fever Research and Control, Irrua Specialist Teaching Hospital, Irrua, Edo state,

²Office of the Deputy Governor, Edo State Government; ³ Department of Community Health, University of Benin Teaching Hospital, Benin city, Edo state; ⁴ Department of Obstetrics and Gynaecology, Irrua Specialist Teaching Hospital, Irrua, Edo state, ⁵ Department of Anatomic Pathology, University of Benin Teaching Hospital, Benin City , Edo state; ⁶Edo State Ministry of Health

Corresponding Author: ekaete.tobin@gmail.com +2348155368412

ABSTRACT

The study assessed the physical state and functionality of cemeteries in Edo state in the early phase of the COVID-19 pandemic. The cross-sectional survey included the completion of a structured questionnaire by Local government chairmen in the 18 local government areas. Elements assessed included ownership, infrastructure, personnel, revenue generation and facilities. Data were analyzed using Microsoft Excel 2013 and presented as descriptive data. All 18 local government councils completed the questionnaire. Fourteen (77.8%) local government areas (LGA) had at least one cemetery with ownership as the local government council owned in 7 LGAs. Majority of the cemeteries lacked perimeter fence, entrance gate, internal roads, and were overgrown with bushes. Work tools and personnel were non-existent in 12 LGAs. Cemeteries in 13 LGAs had space for new graves, while 5 LGAs acknowledged there was no land for creating new cemeteries. Home burial was practised in all LGAs. The public cemeteries in Edo state are in a state of disrepair, a situation that in the current COVID-19 pandemic, encourages home burials of COVID-19 corpses with its antecedent risk to public health. Responsible government authorities should explore possibilities of engaging private establishments to complement their efforts in cemetery maintenance for more sustainable solutions.

Keywords: Burial, Cemetery, COVID-19, Practices

INTRODUCTION

Corona virus Disease 2019 also known as COVID-19 is a potentially severe pneumonia-like illness caused by the severe acute respiratory virus SARS-CoV-2 (Unal and Irez, 2020). The disease is primarily zoonotic, with human to human transmission occurring through inhalation of respiratory droplets produced by sneezing, coughing or talking from an infected individual (Bhagavathula *et al.*, 2020). The elderly and persons with pre-existing illnesses have a higher risk of severe disease and mortality. So far, there is no antiviral drug recommended for definitive treatment, while there is a race to develop a vaccine in the shortest possible time.

Since the start of the pandemic, the number of recorded deaths from COVID-19 has been lower in Africa than in Europe and the Americas, where the high death toll has resulted in mass burials such as what has been recorded in Italy, Spain and the United States of America(British

Broadcasting Corporation, 2020; Businessinsider, 2020). In these countries, the burial of COVID-19 corpses has been of concern to national public health authorities as burial grounds and crematoria facilities have exceeded or near exceed their capacity (Nabil, 2020).

Cemeteries and burial grounds hold historical, cultural, and spiritual significance for local communities across the world. Apart from being burial sites for loved ones, they provide places to remember and connect with departed loved ones and safeguard the stories of the past (Olajide and Abiodun, 2010). In most parts of Africa, cultural practices related to burials may contaminate soil and pollute underground water (Zume, 2011). Heavy metals from wood preservatives and paint in caskets and coffin ornaments, embalming chemicals, jewellery, and pathogens from the decomposing corpse seep into surrounding soil and pollute ground water (Jonker and Olivier, 2012; Ucisik and Rushbrook, 1998). Microbial and chemical contamination can also occur from poorly

Tobin *et al.*, IJCR, 2020; 9(4): 82 -88

82

Endorsed By: Innovative Science Research Foundation (ISREF) and International Society of Science Researchers (ISSCIR).

Indexed By: African Journal Online (AJOL); Texila American University; Genamics; Scholarsteer; EIJASR; CAS-American Chemical Society; and IRMS Informatics India (J-Gate)



managed and incorrectly sited local sanitation services such that wastewater containing microorganisms flows into cemeteries (Van-Wyk, 2020). Poorly maintained cemeteries pose a threat to the public as they serve as breeding grounds for vermin and disease-bearing vectors, are easily accessible to grave exhumers and grave robbers, and indirectly place an emotional strain on relatives of the dead (Emmanuel and Titilayo, 2013). In Nigeria, home burial is common and promoted by unsanitary cemeteries amongst other factors.

The COVID-19 pandemic has raised much controversy and genuine concern in many countries on whether burying the bodies of COVID-19 victims may facilitate the spread of the virus through the unsaturated zone to the groundwater table. The epidemiology of COVID-19 is evolving, and to date, the survival time of the virus in soil or its ability to leach into and contaminate groundwater to cause human infection is not known (Van-Wyk, 2020). As at the time this manuscript was prepared, Edo state accounted for 114 (11.4%) of the 1,004 deaths from COVID-19 in the country with a case fatality rate of 4.5% compared to the national average of 3%. The gradual increase in the number of deaths in the state necessitated a

rapid assessment of the state of burial grounds and cemeteries, including the availability, physical state and functionality, with the aim to provide evidence for the expansion of existing cemeteries or creation of new ones.

MATERIALS AND METHODS

Study area and design: The descriptive cross-sectional study was carried out in Edo State located in the South-South geopolitical zone of Nigeria. The state has a landmass of 19,743 km², and is bounded by Kogi State to the North-East, Anambra State to the East, Delta State to the South-East and Ondo State to the West and the North-West. Population estimate as at 2019 was 4,592,961. (Figure 1) Edo State comprises 18 Local Government Areas (LGA), divided into three senatorial districts namely, Edo North, Edo Central and Edo South. The capital of Edo State is Benin City. Benin City occupies a strategic position as the gateway to the Eastern, Western, Southern and Northern parts of the country. The survey was conducted in May 2020 with participation from all 18 LGAs.



Figure 1: Map of Nigeria showing Edo state with LGA work

Data collection methods: Information was retrieved using a standard checklist completed by the Local government authorities. The checklist was developed after a comprehensive literature review of the topic and

validation by the Edo State Taskforce on COVID-19 and Edo State Ministry of Health. The checklist was structured in 5 sections including Environment (presence of signboard, access roads), Facilities (gatehouse, gate, fence,

electricity and water supply) Personnel, Community burial practices and Availability of communal land for expansion/creation of new cemeteries.

Data analysis: Data from the checklist were analyzed using Statistical Package for Social Sciences SPSS version 20 (IBM Corporation, Armonk, NY, USA). Categorical variables were displayed as frequency tables, bar and pie charts.

RESULTS

All 18 LGAs participated in the survey. Fourteen (77.8%) LGAs had at least one cemetery(**Figure 2**). There were 204 cemeteries and burial grounds in the state(**Table 1**).The local government council owned cemeteries in 7 out of 14 LGAs, 3 LGAs had only private cemeteries, 3 LGAs had only community-owned cemeteries and burial grounds. The ownership of cemeteries by LGA is presented in **Table 2**.

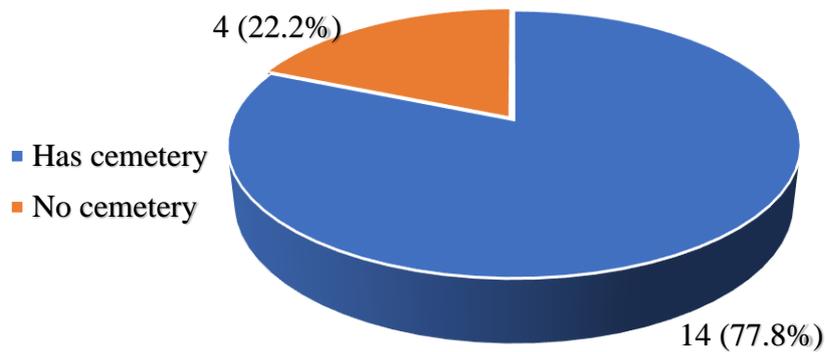


Figure 2: Distribution of cemeteries and burial grounds in the LGAs

Table 1: Number of cemeteries in the LGAs

Name of LGA	Number of cemeteries and Burial grounds
Igueben	1
Ovia North East	1
Owan East	1
Esan South East	1
Esan West	1
Ovia South West	1
Esan West	1
Owan West	2
Estako East	4
Oredo	4
Uhunmwonde	6
Estako Central	30
Estako west	49
Akoko Edo	68
Esan Central	35



Table 2: Distribution of cemeteries and burial grounds in the LGA.

Description	Number
LGAs with government only cemetery	6
LGAs with only private cemetery and/or burial ground	1
LGAs with only Faith-based cemeteries and burial grounds	0
LGAs with government and private cemeteries and burial grounds	1
LGAs with only community-owned cemeteries and burial grounds only	3
LGAs with private and community-owned cemeteries and burial grounds	1
LGAs with faith-based and community-owned cemeteries and burial grounds	1

Cemeteries in 8 LGAs (57.1%) had no gate, 6 (42.9%) LGAs reported at least one cemetery with a standing gate or one that was broken down. A gatehouse was absent in cemeteries in 10 LGAs. Cemeteries in 2(14.3%) LGAs had directional signboards, 7 (50.0%) LGAs had at least one cemetery with an intact fence or fence with broken sections, cemeteries in 9 (64.3%) LGAs had no internal road, and 13 (92.9%) had space for new graves. Cemeteries were overgrown with weeds in 12 (85.7%) LGAs, with only one cemetery each in 3 LGAs well maintained, namely Estako East, Ovia North-East and Oredo LGAs.

Diggers, supervisors, and clerks were employed to work in 4 (28.6%), 3 (21.4%) and 2 (14.3%) LGAs respectively. Day security was not available in 12 (85.7%) LGAs, and night-time security reported by only 2 (14.3%) LGAs. Work tools(pickaxe, shovels, wheelbarrows, cutlass, and torch lights) were absent in cemeteries in 12 (85.7%) LGAs (**Figure 3**).

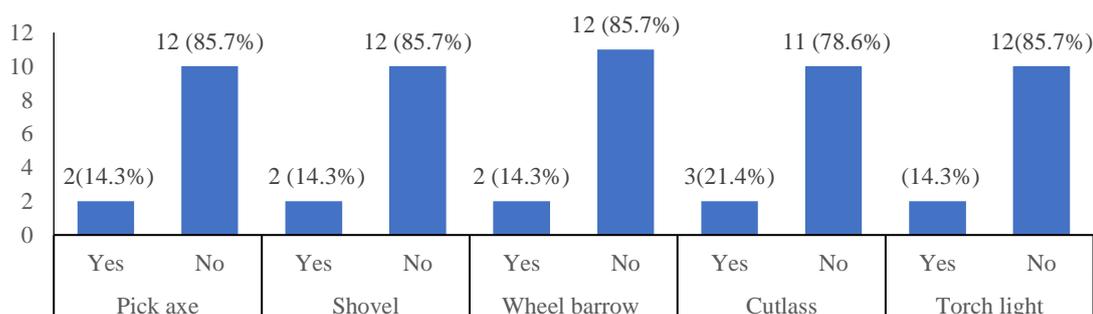


Figure 3: Presence of Work tools in the LGAs



Death records were maintained in only 2 (14.3%) LGA cemeteries. Home burials were practised in all LGAs. Fees for burial were not charged in 11 (64.7 %) LGAs, and burials were paid for in 6 (35.3%) LGAs. Cost of burial ranged from ₦1,000 to ₦20,000. The number of burials was in the ranges of 1-50 monthly. Grave exhumation was not reported in any LGA. Cemeteries were used to bury people in the low-income strata in 12 LGAs and middle-income strata in 6 LGAs, paupers, destitute and children. Only 2 LGAs (Owan East and Estako West) had high-income earners buried in the cemeteries. Thirteen LGAs had space in their cemeteries for more graves, while 5 LGAs acknowledged there was no land for constructing new cemeteries.

DISCUSSION

The need for preparedness planning in the event of mass casualties in the state prompted the survey. In an outbreak of this magnitude, there are bound to be large numbers of casualties, and attention to affording the dead a safe and dignified burial place that also provides solace to grieving family members is paramount to the emotional healing of communities.

The study showed cemeteries in the study area were owned by government, communities, and religious bodies. Most cemeteries were in a state of neglect even as the pandemic gradually leaves a trail of death, and corpses that require a safe and dignified burial. A similar state of abandonment of public cemeteries has been reported in other states (Douglas, 2013; Ngbokai *et al*, 2020). The neglect of cemeteries, and absence of cemeteries in some LGAs contributes to promote the practice of home burials, in the study, and other parts of the country (Douglas, 2013; Onwuanyi, 2017).

Fundamentally, the constitutional responsibility for the establishment and maintenance of cemeteries is that of the local government (Federal Government of Nigeria, 1999). Nevertheless, the presence of non-government owned cemeteries necessitates that the owners should take responsibility for the maintenance of such cemeteries, while the local government provides supervision and technical support to maintenance. Cemetery maintenance covers the access and internal roads and walkways, signboards, perimeter fence and gates and buildings. Environmental and horticultural maintenance includes lawn mowing, weed and pest control, planting and pruning of trees, shrubs and flowers, sewer and storm-

water drain maintenance (South African Local Government Association SALGA, 2016).

Cemeteries in most of the LGAs were poorly secured, a finding common to cemeteries in the Southern part of the country. The low report of grave vandalism could be from the sacrilege associated with desecration of graves in Nigeria. However, the absence of security leaves other risks as the cemeteries can become a hiding place for petty thieves, drug users/ dealers and other social miscreants (Douglas, 2013). An unsecured cemetery easily becomes a thoroughfare for the community.

The gross understaffing and lack of work tools are one reason why the cemeteries are left untended, a factor that may itself be due to budgetary constraints at the level of the local government (SALGA, 2016). These low patronage of cemeteries in turn negatively impacts on the local government by reducing the revenue that may be generated from payments for burial levies. Most of these cemeteries have been in existence for several years, and burial levies may not realistically reflect the costs to the local government for maintenance of the cemeteries. Currently the charges are meant to cover grave digging and the administrative processes associated with conducting the funeral including documentation. Running cost for maintenance of cemeteries including security and amenities are often not factored into charges for burials (SALGA, 2016). Raising burial fees may, however, be to the detriment of the poor in the society even as the study showed cemeteries were patronized by the poor, destitute and unclaimed bodies.

The availability of land for expansion and creation of new cemeteries is worthy of note, as the pandemic has left several countries without land for expansion and forced communities to look at alternative ways of burying their dead such as cremation (SALGA, 2016). The expansion should take into consideration the suitability of the land as cemeteries should be distant from underground water sources to avoid contamination of underground water through water-permeable soil (Onwuanyi, 2017). It is also a good opportunity for local governments to build public-private partnerships to ease the burden of cemetery management from the local government. Communities and religious bodies can be encouraged to jointly manage cemeteries and burial grounds with the local government.

The survey has several limitations. Site visits were not held to verify the claims from the local government





authorities. The questionnaire collected high-level information on the state of cemeteries in the LGAs, thus limiting the depth of statistical analysis that could be performed on the data collected. Future studies should address these gaps.

Conclusion

Cemeteries in the Edo state are poorly maintained, understaffed and poorly managed with a high practice of home burials. The rising number of deaths from COVID-19 requires urgent investment in upgrading the cemeteries to reduce the risk to humans from burials of COVID-19 corpses in dwelling places. The state can also use this opportunity to encourage partnerships between the local government and community or faith-based organisations for effective cemetery management.

Conflict of interest. None declared

ACKNOWLEDGEMENT:

The authors wish to acknowledge the contributions of the 18 local government chairmen who provided the information used to compute the analysis.

REFERENCES

British Broadcasting Corporation. (2020). Coronavirus: New York ramps up mass burials amid outbreak. Retrieved July 4, 2020, from <https://www.bbc.com/news/world-us-canada-52241221>.

Bhagavathula, A. S., Aldhaleei, W. A., Rahmani, J., Mahabadi, M. A., and Bandari, D. K. (2020). Knowledge and Perceptions of COVID-19 Among Health Care Workers: Cross-Sectional Study. *JMIR Public Health and Surveillance*, 6(2), e19160. <https://doi.org/10.2196/19160>.

Businessinsider(2020). Brazil's mass graves: Experts predict that it will surpass 125,000 deaths by August. Retrieved July 4, 2020, from <https://www.pulse.ng/bi/politics/photos-of-mass-graves-in-brazil-show-the-stark-toll-of-the-coronavirus-as-experts/pvvk4zx>.

Douglas, K. E. (2013). Current State of Public Cemeteries in River State, Nigeria. *Nigerian Health Journal*; 13(1), 58-61-61.

Emmanuel, S. and Titilayo, O. (2013). Problem and Prospect of Housing the Dead in Nigeria. *International Journal of Engineering Inventions*; 11:9-15. Retrieved July 4, 2020 from www.ijejournal.com

Federal Republic of Nigeria (1999). Constitution of the Federal Republic of Nigeria 1999. Retrieved July 5, 2020 from <https://www.wipo.int/edocs/lexdocs/laws/en/ng/ng014en.pdf>

Jonker, C. and Oliver J. (2012). Mineral contamination from cemetery soils: case study of Zandfontein cemetery, South Africa. *Int J Environ Res Public Health*; 9 (2): 511-520

Nabil, S. (2020). The search for a place to bury Iraq's COVID-19 victims. Retrieved June 16, 2020, from <https://observers.france24.com/en/20200407-iraq-baghdad-covid-19-coronavirus-bodies-burial-victims>

Ngbokai, R., Edozie, V., Aliyu, A., Ramoni, R., Auwal, A., Umar, S. (2020). State of cemeteries shame the dead. Daily Trust. Retrieved July 20, 2020 from: <https://dailytrust.com/state-of-cemeteries-shame-the-dead>

Olayide, S.E., Abiodun, O.A. (2013). Socio-economic and environmental impact of indiscriminate burials on property transactions in Ado-Ekiti. *Nig Journal of Environmental and Earth Science*; 3(1): 131-139

Onwuanyi, N. (2017). Public Cemeteries of Benin City: Examining a Neglected Dimension of Urban Nigeria. *Nigerian Journal of Environmental Sciences and Technology*; 1(2), 367-378.

Ucisik, A.S., Rushbrook, P. (1998). The impact of cemeteries on the environment and public health. An introductory briefing. WHO regional office for Europe. Retrieved July 12, 2020 from: [https://apps.who.int/iris/bitstream/handle/10665/108132/EUR_ICP_EHNA_01_04_01\(A\).pdf?sequence=1](https://apps.who.int/iris/bitstream/handle/10665/108132/EUR_ICP_EHNA_01_04_01(A).pdf?sequence=1)

Unal, M. and Irez, T. (2020). COVID 19 Disease Caused by Coronavirus 2 (SARS-CoV-2) (Severe Acute Respiratory Syndrome). *Asian Journal of Medicine and Health*; 1-11.

Van-Wyk, Y. (2020). Covid-19: More research needed on possible groundwater contamination from burial grounds.





Retrieved June 16, 2020, from <https://www.bizcommunity.com/Article/196/604/204057.html>.

Zume, J. (2011). Assessing the potential risks of burial practices on groundwater quality in rural north-central Nigeria. *Journal of Water and Health*; 9(3): 609-616.

AUTHOR'S CONTRIBUTION

TEA, TKA, IOAW and OP developed the concept note and participated in data collection. TEA analysed the data using the data analysis plan agreed upon by all authors. Draft manuscript was written by TEA, TKA, OG, ODE. All authors read and approved the final manuscript.

