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ASSESSMENT OF KNOWLEDGE AND PERCEPTION ON THE NEED FOR ESTABLISHMENT OF FORENSIC DNA DATABASE IN NIGERIA

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ABSTRACT
A forensic DNA database is a computer database that contains records of DNA profiles primarily for the purpose of systematic comparison, and matching with a scene of crime sample or individual profile. Large body of reports have continued to emerge, demonstrating the extensive efficiency and effectiveness of the DNA database in assisting criminal investigations around the world. Therefore, the present study sought to assess the knowledge and perception on the need for the establishment of a forensic DNA database in Nigeria. In conducting this research, a total of 150 questionnaires were distributed around Benin City with focus on security agents, Judiciary and University students. The questionnaire comprised of three main categories: Socio-demographic characteristics, Knowledge on the use and application of forensic DNA database, and Information on the need for Forensic DNA Database for Criminal Investigation in Nigeria. In determining the level of awareness, the following responses were obtained. Of the total population: 48.67% were not sure about what forensic DNA is used for, 20.67 had no knowledge about forensic DNA database, and 30.67% demonstrated adequate knowledge on forensic DNA database. On the need for establishment of a forensic DNA, 57.33% were unsure, and 42.67% reported that there is a need for a forensic DNA database in Nigeria. In conclusion, our results demonstrated that there is an inadequate level of awareness on the prominent role of Forensic DNA database in the criminal investigation. Therefore, negatively impacting the perception on the need for the establishment of a forensic DNA database in Nigeria.

Keywords: Forensic, DNA Database, Forensics in Nigeria, and Criminal Investigation in Nigeria.

INTRODUCTION
The present study examines knowledge and perception on the need for the establishment of a Forensic DNA database, focusing on Nigeria, but also drawing on examples from the United Kingdom, the United States, and other countries with an operational DNA database. Going forward, a prolog on the description of crime would be useful. Based on vagaries in political, social, religious, psychological, and economic sceneries globally, it is presumed that there is no generalized description of crime (Usman et al., 2012). An act regarded as a crime in one location, may not necessarily be a crime in another location (Weisburd et al., 1018), and as a result, the discernment of an "act" to be a crime diverges with time and space (Usman et al., 2012). Summarily, crime is considered an unlawful act indictable as stated by a state's jurisprudence, and it is considered as one of the human security challenges confronting humanity globally (Nwankwo and James, 2016).

The growing prevalence of crimes and the struggle to contain it resulted to the use of various mechanism of crime detection and prevention. However, a proven approach, forensic approach through the use of forensic DNA database have been reported to greatly contribute in detecting crime, assisting criminal investigators to establish links between a particular suspect of a specific crime and other unsolved crimes, or can provide support to identify possible suspects while clearing other suspects in the early stages of an investigation particularly in categories where forensic evidence is expected to be collected at the crime scene (Bodnera et al., 2016; Kirsten, 2017; Johnson and Williams, 2004). Forensic DNA databases have evidenced to be an essential tool in averting miscarriages of justice and preventing offenders from further criminal activity (Machado and Silva, 2014; Hampikian and West, 2011). Therefore, the national DNA database (NDNAD) is presently a conventional part of the police investigation in the US, UK, Canada, England & Wales (Johnson and Williams, 2004; Milot et al., 2013, as well as more than a few European countries including The Netherlands, Austria, Germany, Finland, Norway, Denmark, Switzerland and Sweden (Schneider and Martins, 2001).

In Africa, creditable advancement has also been reported, particularly in South Africa. following the introduction of the Criminal Law (Forensic Procedures) Amendment Act (2013), DNA profiling technology then became the gold standard for criminal investigation in South Africa which led to the establishment of forensic DNA database that holds DNA profiles of suspect and offenders alike (Heathfield, 2014; Wet et al., 2011). Other Africa countries including Egypt, Morocco, Namibia, Botswana, and Sudan have also demonstrated awareness on the significant position of forensic in their corresponding criminal justice system and thus operates a DNA database. It is rather hapless that, Nigeria at present do not operate a National Forensic DNA Database notwithstanding the reported incidence of crime (Oguntunde et al., 2018). Remarkably, the particularity of the various nature of crime perpetrated in Nigeria tends to involve or leave behind biological evidence at the crime scene. This biological evidence is a key sample for DNA profiling and subsequent storage in a forensic DNA database. Therefore, the present study sought to assess the knowledge and perception on the need for the establishment of a forensic DNA database in Nigeria.

METHODOLOGY

Research Design

This study adopted the survey research design whereby-the entire population of the study were sampled through the administration of the questionnaire to the selected research participants of the total population. This design was considered appropriate because it can easily be used to reach a large population easily.

Population of the Study and sample size

The sample population of the present study was one hundred and fifty (150). The sample population was drawn from three categories using the stratified random sampling technique, the categories include the judiciary arm, the law enforcement, and University students.

RESULTS

Table 1: Showing Socio-Demographic Information

Variables	Frequency	Percentage
Gender		
Male	86	57.3
Female	64	42.7
Age (Years)		
19-24	26	17.3
25-29	44	29.3
30-34	31	20.7
35-39	32	21.3
>40	17	11.3
Educational Level		
Less than tertiary education	12	8
Bachelor	123	82
Postgraduate	15	10
Occupation		
Law Enforcement	49	32.7
Judiciary	43	28.7
Students	58	38.7

Socio-demographic Characteristics

The result on socio-demographic characteristics of the participants (table 1), revealed that from a study population of one hundred and fifty participants, 57.77% were male and 42.67% female. As per the age distribution, it was found that the predominant age of the participants was in the range of 25-29 with 29.33% relative to the other ages including 35-39 (21.30%), 30-34(20.67%), 19-24(17.33%) and the least participant was found to be in age of >40 with 11.33%. The educational level of the participants showed that majority of the participants holds Bachelor degree as the highest level of qualification with 82% and 10% of the participants holds a Postgraduate degree, while 8% of the participants holds less that tertiary education. on occupation, it was distributed in the following hierarchy; students (38.67%), law enforcement (32.67%) and judiciary 28.67%.

Table 2: Showing Knowledge on the use and application of forensic DNA database

Variables	Frequency	Percentage
Have you heard about forensic DNA Database		
Yes	46	30.7
No	31	20.7
Not Sure	73	48.7
Does Nigeria hold a Forensic DNA Database		
Yes	20	13.3
No	39	26
Not Sure	91	60.7
What can forensic DNA Database be used to store		
DNA Profile	59	39.3
Not Sure	91	60.7
Can Forensic DNA Database be used for criminal investigation		
Yes	57	38
No	10	6.7
Not Sure	83	55.3
Does Forensic DNA Database contribute in crime reduction		
Yes	65	43.3
No	4	2.7
Not Sure	81	54

Application of forensic DNA database

The analysis of the responses on the use and application of forensic DNA database (table 2) revealed the following; have you heard about forensic DNA database, 48.67% of the participants reported that they were "not sure", 20.67% responded with a "No" and 30.67% responded with a "Yes". Does Nigeria hold a forensic DNA Database, 60.67% (Not Sure), 26% (No), and 13.33% (Yes). what can forensic DNA Database be used to store, 60.67% (Not Sure) and only 39.33% reported correctly (DNA profile). can forensic DNA database be used for criminal investigation? 55.33% (Not Sure), 6.667% (No) and rightly 38% responded with a (Yes). Does forensic DNA Database contribute in crime reduction, 54% (Not Sure), 2.667% (No), and 43.33% (Yes).

Table 3: Showing Information on the need for Forensic DNA Database for Criminal Investigation in Nigeria

Variables	Frequency	Percentage
Do you feel that Nigeria needs a Forensic DNA Database for criminal investigation		
Yes	64	42.7
Not Sure	86	57.3
Would the establishment of a forensic DNA database contribute in reduction of crime level		
Yes	56	37.3
Not Sure	94	62.7

The need for Forensic DNA Database for Criminal Investigation in Nigeria

The result on assessment on the need for a forensic DNA database for criminal investigation in Nigeria (table 3) revealed the following; Do you feel that Nigeria needs a forensic DNA Database for criminal investigation, 42.67% of the participants responded with a (Yes), while 57.33% of the participants responded with (Not Sure). would the establishment of a forensic DNA Database contribute to reduction in the level of crime, 37.33% (Yes), and 62.67% of the total study population reported (Not Sure).

DISCUSSION

A forensic DNA database is regarded as a computer database that holds archives of DNA profiles principally for the purpose of systematic comparison, and matching with a scene of crime sample or individual profile (Jakovski et al., 2017; Johnson and Williams, 2004). The expediency that genetic information has provided and continues to provide when concerned with identification purposes, is one that cannot be overstated, and in the contemporary criminal justice systems, forensic DNA databases remain an absolute tool for criminal investigation (Gamero et al., 2008). Thus, the present study sought to examine knowledge and perception on the need for the establishment of a forensic DNA database in Nigeria.

The result of the present study on socio-demographic characteristics (table 1) revealed that from a study population of one hundred and fifty participants, 57.77% were male and 42.67% female, inferring that the was a high number of male participants in comparison to the female participants. As per the age distribution, it was found that the predominant age of the participants was in the range of 25-29 with 29.33% relative to the other ages including 35-39 (21.30%), 30-34(20.67%), 19-24(17.33%) and the least participant was found to be in age of >40 with 11.33%. The educational level of the participants was also surveyed, and the result of the study revealed that majority of the participants holds Bachelor degree as the highest level of qualification with 82% and 10% of the participants holds a Postgraduate degree, while 8% of the participants holds less that tertiary education. finally, the occupation/profession of the participants was also examined. The result shows a distribution in following hierarchy; students (38.67%), law enforcement (32.67%) and judiciary 28.67%. the study was restricted to students, judiciary, and law enforcement owing to the findings of Nwawuba and Akpata (2020). The study of Nwawuba and Akpata (2020), reported that student, judiciary, and law enforcement demonstrated a higher level of awareness on role of forensic DNA database in criminal investigation vis-à-vis the general population. Therefore, was adopted as the inclusive criteria for the present study.

To determine the extent of understanding and knowledge on the use and application of forensic DNA database, the present study examined the following responses as revealed in table 2; have you heard about forensic DNA database, 48.67% of the participants reported that they were “not sure”, 20.67% responded with a “No” and 30.67% responded with a “Yes”. Does Nigeria hold a forensic DNA Database, 60.67% (Not Sure), 26% (No), and 13.33% (Yes). what can forensic DNA Database be used to store, 60.67% (Not Sure) and only 39.33% reported correctly (DNA profile). can forensic DNA database be used for criminal investigation? 55.33% (Not Sure), 6.667% (No) and rightly 38% responded with a (Yes). Does forensic DNA Database contribute in crime reduction, 54% (Not Sure), 2.667% (No), and 43.33% (Yes). The result of the present study is consistent with the finding of Alisigwe and Oluwafemi (2019), reporting that there is state of privation on the knowledge and use of forensic methodology for criminal investigation in Nigeria, hence it is still a common practice for the use of traditional method for criminal investigation in Nigeria (Alisigwe and Oluwafemi, 2019). In another study, Nwawuba and Akpata (2020) reported that there is a dearth of knowledge in Nigeria on the function and relevance of forensic DNA database for criminal investigation. The use of forensic DNA database around the world has been established and recognized in extensive body of evidences. According to Jakovski et al., (2017), back-of-the-envelope assert that the marginal cost of averting each crime, proves that DNA databases are much more cost-effective vis-à-vis other common law enforcement tools (Jakovski et al., 2017; Nwawuba et al., 2020).

Additionally, the present study examined the perception of the participants on the need for establishment of a forensic DNA database for criminal investigation in Nigeria. the following responses were observed (table 3); Do you feel that Nigeria needs a forensic DNA Database for criminal investigation, 42.67% of the participants responded with a (Yes), while 57.33% of the participants responded with (Not Sure). would the establishment of a forensic DNA Database contribute to reduction in the level of crime, 37.33% (Yes), and

62.67% of the total study population reported (Not Sure). The present result demonstrates a lack of knowledge on the critical role forensic DNA database in criminal investigation. It has been established that Forensic DNA databases expedites the resolution of crimes and also accelerates judiciary processes (Santoz et al., 2013; Kirsten, 2017. The efficiency of DNA technology as an identification tool revolutionized the criminal justice system (Panneerchelvam and Norasmi, 2003). Owing to credible impact of a forensic DNA database in criminal investigation, many countries around the world now operate forensic DNA-databases to identify owners of crime-related stains (Kees, 2016). In has been reported that well around 69 countries now operates a national forensic DNA database, and others are being expanded or established in at least 34 additional countries (Machado and Silva, 2019; Wienroth et al., 2014). Going forward, more than a few numbers of reports and studies have demonstrated a remarkable increase in criminal activities in Nigeria. Reports have it that, Nigeria is considered among the leading countries for a sizable network of organized crime, and a heightened national security challenge (Alisigwe and Oluwafemi, 2019). In recent times, security challenges including, Boko Haram Insurgence, Killer Fulani Herdsmen, Banditry, and Kidnapping have continued to garner momentum, resulting in an atmosphere of insecurity and unrest (Nwawuba et al., 2021). To comprehend the scope of the security state of affairs in Nigeria, reports shows that there is upsurge in the murder cases and latest updated Crime Statistics by the National Bureau of Statistics validates this as the report revealed that a total of 125,790 cases were reported in 2016 and offense against persons recorded 45,554 cases (National bureau of statistics, 2016). Remarkably, the nature of all forms of crime committed in Nigeria clearly creates a crime scene, and every contact every leaves a trace. This traces in the form of biological evidences are samples for DNA profiling and subsequent storage in a forensic DNA database (Kirsten, 2017). Therefore, it has become very essential that Nigeria considers establishing a forensic DNA database to better the fight against the surge of many forms of crimes against human presently desolating the society.

CONCLUSION

In conclusion, our results demonstrated that there is an inadequate level of awareness on the prominent role of Forensic DNA database in the criminal investigation. Therefore, negatively impacting the perception on the need for the establishment of a forensic DNA database in Nigeria.

Conflict of Interest

The authors declare no conflict of interest.

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