

Possibility of a Human with a Bioagent Breaching a Country's Point of Entry: Perceptions of Security Officers at the Murtala Muhammad International (MMI) Airport, Lagos, Nigeria - Preliminary Report

George Edafese U Alakpa*

Department of Professional Securities, College of Professional Studies, New Jersey City University, USA

***Corresponding Author:** George Edafese U Alakpa, Department of Professional Securities, College of Professional Studies, New Jersey City University, NJ, USA.

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Abstract

The majority of past global pandemic crises have had their agents disseminated as a result of human movements between countries via various point of entries. Examples of recent globally disseminated agents are SARS, Influenza viruses, MER CoV, and most recent, the Ebola Virus outbreaks in West Africa, making travelling and POEs a major factor in the epidemiology of infectious agents and with bioagents (BAs) by terrorists. It is now known that terrorist groups desire to acquire BA and employ them to conduct terrorist acts. This study was conducted prior to the Ebola outbreak in Nigeria, to determine the knowledge level among security personnel about the possibility of a terrorist with a BA breaching security at the Murtala Mohammad International Airport's POE.

A total of 120 questionnaires and consent forms were distributed among security officers at the MMI airport between July and October 2015. Only 14 of the 52 respondents that returned the forms met the criteria for selection, thus constituted the sample size for this preliminary study.

Results showed that 87% of the respondents claimed it is possible to have human borne with bioagents (HBBA) to cause terrorism, while over 50%, believed it was possible for a HBBA terrorist to breach the security at the POE at this airport. 64.3% of respondents claimed that current procedures at the POE will either be not effective or somewhat effective against BA.

Results from this limited pre-study indicated that while officials at the MMI POE claimed to be well informed about biological agents (BA), they lack the necessary tools to conduct effective searches for BA. In addition, they questioned the effectiveness of some of their current search Tactics, Techniques and Procedures (TTPs) to be able to detect, deter or prevent a terrorist or individuals attempting to breach such POE with BA. A large percentage agreed that this form of attack is feasible and that the MMI POE is vulnerable to a bioterrorist breach. This perception was confirmed by the successful importation of the country's index case of the Ebola virus in 2014 by Mr. Sawyer through this POE.

Keywords: Bioterrorism; humans borne with bioagent; Security Officers Port of Entry; Lagos; Nigeria

Abbreviations: POE: Point of Entry; SARS: Severe Acute Respiratory Syndrome; MER CoV: Middle East Respiratory Corona Virus; MMI: Murtala Muhammed International; TTP: Tactics, Techniques and Procedures; IED: Improvised Explosive Device; CBRN; Chemical, Biological, Radiological, and Nuclear; HBBA: Human Borne with Bioagent; ECP: Entry Control Point; AT: Antiterrorism

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Introduction

The use of microorganisms or their products to cause terror or harm against humans or animals, dates back to the earliest centuries of human warfare. The mycotoxins from *Claviceps purpurea* a fungus, was reported used by the Assyrians to poison the wells of their enemies, while the Greeks used a purgative with cardiac glycoside effects to poison the water supply of their enemy at Krissa [1,2]. Catapults were used to deliver cadavers of people that died of plague (*Yersinia pestis*), during the siege of Kaffa, by the Tartar army in 1346 and the Russians against the Swedish city of Reval in 1710. Sir Jeffery Amherst, sent his soldiers blankets and handkerchiefs from smallpox stricken dead soldiers then sold them to the Native Americans allied with the French troops during the French and Indian wars. Similar technique was employed by Francisco Pizarro in his campaign against the natives (in today's Peru) in the 16th century [2-4].

In 1984 a religious cult group, "Bagwan Shree Rajneesh", in Oregon was reported to have contaminated a salad bar with *Salmonella*, while in 1996, *Shigella dysenteriae* type 2 was employed to contaminate muffins and donuts in Dallas Texas. In Washington, D.C and Los Angeles anthrax hoaxes were reported in 1997 and 1998 respectively, with an actual release of the most widely remembered, 2001 October postal mail anthrax incident [2,5]. Other bioterrorist events, reported by Tucker (1999) [6], include the 1970 "Weather Underground" revolutionary group attack on federal buildings; the 1972 college ecoterrorist group "R.I.S.E" employing eight microbial pathogens including typhoid fever, diphtheria, dysentery and meningitis; the 1980 "Red Army Fraction" group, a Marxist revolutionary ideological group; the 1984 deliberate contamination of salad bars by a "Rajneeshee Cult" with *Salmonella* bacterium; 1991, a ricin threat by the "Minnesota Patriots Council" for personal revenge, and while in 1998, one Larry Wayne Harris was arrested when he talked about obtaining and deploying anthrax to achieve a "white supremacist goal. Dudley [7] reported that between 1990 and 2000, a total of 1,368 cases of tularemia, one of the recognized disease caused by a bioagent *Francisella tularensis* (a biological agent) in the U.S.

While at this time there are no documented deliberate attempt of transportation, dissemination or terrorist act with bioagent (BA) in Nigeria, there is currently an active terrorist group, Boko Haram that has recently sworn allegiance to the Islamic State of Iraq and Syria (ISIS), which is a known offshoot of the Al Qaeda in Iraq [8]. The fact is, there is documentation that this Islamic extremist group is in quest of and desires to acquire and use biological agents as a weapon of choice to commit terror [5,9]. The dissemination of past and current pandemic infectious or emerging agents like SARS, Influenza virus or the recent, Middle East Respiratory Coronavirus (MER CoV) Syndrome and the Ebola Virus outbreaks, have been linked to both humans or animals crossing trans-international borders or via air travels [10].

On July 20, 2014, a Liberian, Patrick Sawyer, was reported to have deliberately and knowingly travelled through the Murtala Muhammad International (MMI) airport, Lagos while infected with classified bioagent, Ebola Virus [11]. In an article published on the 14th of August, 2014 in the LEADERSHIP Newspaper in Nigeria, it was reported that, the "presidency has tagged the man, Mr. Patrick Sawyer, credited with the importation of the virus into Nigeria, a terrorist" (p 6). Somorin [12] writing on the issue, quoted the Nigerian President, Dr. Johnathan Goodluck as making, "venomously un-presidential remark by calling the late importer of the virus, American-Liberian, Mr. Patrick Sawyer, claiming that he came with a deadly mission to kill, infect and destroy Nigeria with the Ebola Virus disease" (Paragraph 3). It was also reported that the Liberian Information Minister, Lewis Brown admitted that the government of Liberia was "aware of the health status of Dr. Patrick Sawyer, yet he was cleared to travel to Nigeria by the Country's Deputy Finance Minister for Fiscal Affairs, Mr. Sebastine Muah, in spite of his quarantine status" [13,14], increasing speculations in that this was a deliberate act of terrorist against Nigeria.

Murtala Muhammad International (MMI) airport is the largest and busiest airport in Nigeria, opened in 1979 with geographic coordinates of 6.58 latitude, 3.32 longitudes [15]. It is one of the most used routes of entry into the country and especially into the most commercial city. For some time the country has been engulfed in numerous terrorist activities in the northern part, while, the activities of the Niger Delta militant terrorist group, in the oil producing region of the delta, cannot be easily forgotten. Globally, terrorism especially by the militant Islamic extremist groups of Al Qaeda and its splintered or associated groups, are well documented, so is their quest to acquire bioagents.

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This study was conducted to determine the knowledge level of the possibility of human breaching security at point of entry (POE) with a bioagent and the effectiveness of current security measures among security personnel at this POE. This researcher is unaware of any such study conducted to elicit perceptions on biosecurity at any POE in Nigeria for biological agents.

Materials and Methods

The Instrument

The tool had three sections A, B, and C. Section A was comprised of questions to obtain information about the respondent's past military or security trainings without personal identification. Respondents without any anti-terrorism (AT) training or TTP knowledge are eliminated at this point. Section B obtained more specific TTP trainings and the perceptions about the possibility of a terrorist carrying a BA breaching the POE, with three questions of Five - Likert Scale answered options, becoming the first Construct. Section C obtained respondents' knowledge of various TTP measures employed at the POE, becoming the 2nd construct.

Construct 1: Tactics, Techniques, and Procedures (TTP) Effectiveness against a terrorist with a biological agent at the POE. It was comprised of three questions; questions 10 to 12 on the questionnaire, with Five-Likert Scale answers: Not Effective, Somewhat Effective, Neutral, Effective and Very Effective. It was meant to obtain the perceptions of respondents about the effectiveness of current TTPs against a terrorist with biological agents at their POE.

Construct 2: TTP measures /mitigations at the POE. Covers questions 13 to 33 on the questionnaire, with Five-Likert Scale answers options: Not possible, somewhat possible (SWP), Neutral (Neu), Possible (Pos) and Very possible (V. Poss). It was meant to obtain the respondents' perceptions about the possibilities of the current procedures or TTPs employed at the entry control point (ECP) for explosive devices detections, and how these may be effective for BA detection.

Pre-Testing for Reliability

Respondents: The target population selected for this pre-test was security professionals stationed at the MMI airport, Lagos, Nigeria. A total of 120 questionnaires with consent forms were distributed to personnel, who indicated an interest in participating, between July and October 2013.

Study design: Research design: This was a cross sectional survey based preliminary study that was time limited, with the administration of the validated questionnaire to respondents. Survey tool was administered using a single-blind approach to ensure no direct contact occurred between the researcher and the respondents. Hard copies of the questionnaires with consent forms were left with a senior staff member who was the point of contact (POC) at the location.

Data Collection: Data from target population was collected with the validated survey-questionnaire-tool. Only those questionnaires that were fully completed or with no more than four missing items, and in which respondents demonstrated knowledge or training of / on antiterrorism POE TTP were accepted for analysis.

Data Analysis: Data collected were analyzed employing the Statistical Product and Service Solution (SPSS) statistical software (Base Grad Pack Shrink wrap version 21.0) for both descriptive and Scale Reliability, --Cronbach's alpha analysis.

Results and Discussion

Of the 120 questionnaires plus consent forms disseminated, only 52 respondents returned theirs with the consent forms signed, 24 of which were rejected as per selection criteria: all those without AT training/knowledge or having < 90% completed were automatically disqualified leaving a study sample size of 14 (n = 14). Cronbach's Alpha value of Construct 1 is 0.853

Descriptive Data

Of the 14 respondents, 42.9% claimed to belong to the Nigeria military while 57.1% primarily considered themselves as “Homeland Point of Entry” Security officers. More than sixty percent of those studied, were officers and 35.7%, and were enlisted. Seventy-one percent, claimed they had combat deployment experience.

Questions (Q)

Is it possible to have a human borne with bioagent (HBBA)? And, Q2. What is the possibility that a terrorist carrying a biological agent will successfully breach your ECP undetected?

To the question, is possible to have a human borne with bioagent (HBBA)? 85.7% of respondents at this POE said “yes”, it is possible (Figure 1). However, when asked “what is the possibility that a terrorist carrying a BA will successfully breach our ECP-entry control point- undetected?”, only 28.6% claimed this was “not possible”, with over 50% of respondents, claiming it was either very possible or possible (Figure 2). This perception is limited, due to the small sample size, but it reflected the sincere assessment of officers, whose duties it is to daily assess and screen passengers entering the country from the POE.

What could have precipitated these responses that may indicate vulnerability at this very busy entry route to the most commercial city of the country and West Africa? The respondents’ response to questions from construct 1 (Table 1), indicated that, 64% of the officers at this POE/ECP claimed the ECP/ IED TTPs are either not effective or somewhat effective, at detecting a person with a bioagent. However 50% thought whatever their CBRN (Chemical, Biological, Radiological or Nuclear) TTPs was, it would either be effective or very effective in the detection of an HBBA, but this might not be true, as over 60% of the officers claimed that security officers at the POE lacked the necessary devices to conduct or detect any BA (Table 2).

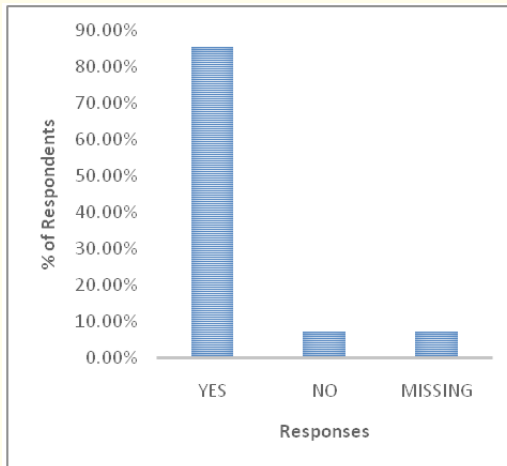


Figure 1: Is it possible to have a human borne with bioagent?

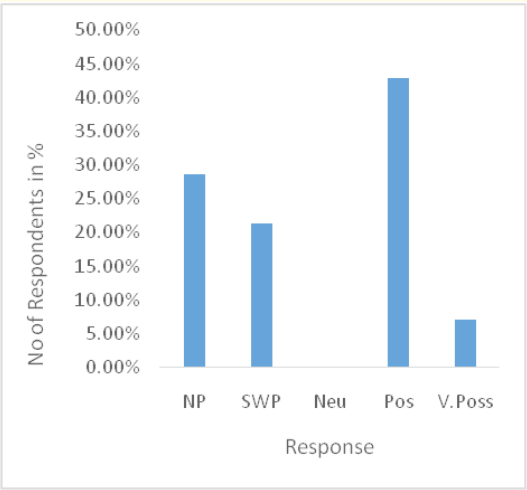


Figure 2: Is it the possible to breach the ECP with a BA?

Keyword: NP: Not possible; SWP: somewhat possible; Neu: neutral; Pos: possible; V.Poss: very possible

Questions	Numbers of Respondents in %				
	NE	SWE	Neu	Eff	VE
How effective is your current ECP TTP against BA?	14.3	50.0	7.1	14.3	14.3
How effective is your current IED TTP against BA?	21.4	42.9	14.3	7.1	14.3
How effective is your current CBRN TTP against BA?	7.1	21.4	21.4	28.6	21.4

Table 1: Respondents’ response to Construct 1 questions on effectiveness of TTP.

NE: not effective; SWE: somewhat effective; Neu: Neutral; Eff: Effective; VE: very effective; IED: Improvised Explosive Device; BA: Bioagent

Table 2 results display the MMI POEs’ perceptions and knowledge as to the effectiveness of their daily search procedures, and practices, with its ability to identify or detect a passenger or terrorist with a BA. Like in most countries, the Biometric Automated Toolset System (BATS), and metal detectors remain the main search TTPs at this POE, and the majority of officers in this pre-study agreed that these procedures would be effective in preventing a breach by a terrorist with BA. These procedures may be effective if prior intelligence revealed the terrorist carrying a BA, however, a terrorist with an IED, could be detected via a personal search if the IED is metallic and not in situ. These responses raise an important question as to the knowledge level about BA and terrorist identification among these security officers.

Questions	Numbers of Respondents in %				
	SD	D	N	A	SA
Verification of persons at the ECP using the biometric automated toolset system (BATS) will effectively prevent the breaching of an ECP by a terrorist with IED?	14.3	0.0	7.1	42.9	28.6
Verification of persons at the ECP using the biometric automated toolset system (BATS) will effectively prevent the breaching of an ECP by a terrorist carrying a bio-agent?	0.0	7.1	7.1	50.0	35.7
The use of hand held or portal metal detectors during personal body search at an ECP, will effectively prevent the breaching of the ECP by a terrorist carrying a bio-agent.	0.0	21.4	14.3	35.7	14.3
Every security personnel at the ECP is adequately knowledgeable as to how and what to look out for, to effectively identify an HBBA (a human terrorist with a bio-agent).	7.1	35.7	7.1	28.6	21.4
Every security at the ECP, have devices that can effectively detect traces of bio-agent borne on a person.	14.3	42.9	21.4	7.1	7.1
Biological intelligence would facilitate in the effective identification of terrorist with a bio-agent at the ECP.	0.0	7.1	35.7	42.9	14.3
The deployment of biological agent detectors in the area of search will prevent the breaching of an ECP by a terrorist with a bio-agent.	0.0	7.1	14.3	57.1	21.4
The Biological warfare attack warning system will prevent the breaching of an ECP by a terrorist	0.0	14.3	14.3	42.9	28.0

Table 2: Respondents' Knowledge about the effectiveness of current POE TTPs against HBBA Construct 2.

SD: strongly disagree; D: disagree; N: neutral; A: agree; SA: strongly agreed.

Do you think there is the need for any modifications of ECP TTPs in order to enhance security against any human terrorist with a biological agent?

Fifty-seven percent of the officers at the MMI airport said there is need for a modification of the ECP TTP at this POE in order to enhance security against any human terrorist with a biological agent. The majority of these respondents were mostly interested in the provision of devices and training to accomplish such security.

One limitation of this study is the sample size, being the first such study of this type, there was reluctance of many to participate for fear of retribution by "higher authority" by security personnel stationed at this POE. This limitation makes this study a preliminary one about the perceptions of these officers regarding the security of the most populous Black Country in the world, but it should be heard. This study was conducted months before the first case of Ebola virus outbreak was reported in Nigeria, coincidentally, the first index case, Mr. Patrick Sawyer was reported to have entered the country through this POE with the virus undetected. Could this be tied to the responses proffered by the respondents above; like that their current TTPs at this POE/ ECP were either not effective or somewhat not effective (Table 1) against BA, or the claim that, they (the security officer at this POE) lack effective devices to detect BA at the ECP search areas?.

The issue is that, despite its limitations, this study has reported for the first time, the perceptions of security personnel stationed at the busiest international airport in Nigeria, and it is in their opinion that the country's POE is highly vulnerable to breach by anyone in possession of a bioagent, either with the deliberate intention to infect the citizens or unintentional dissemination of biological agents, just like the Ebola Virus. Not addressing these perceptions, will make the implementations of any policies, especially post Ebola Virus outbreak, difficult.

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A trip by the researcher to the one of the land crossing border entries into Lagos and two international airport POEs in Nigeria (prior to the Ebola incident), revealed that at the land crossing, there is practically an absence of any serious standard personal or vehicle search for Improvised Explosive Devices (IEDs) or worst BAs. At the airports' POE, one observes the baggage screening and human body searches for metallic or explosive objects, procedures, which is good, but less effective especially when the officers, lack the tools or the knowledge of what a biological agents is or how to react, when one is found. In this era of MER CoV Syndrome, Influenza virus and others like the recent Ebola incidence, there is the need for the government and leaders to reassess and modify, POEs' search procedures with biosecurity and public health in mind, so as to design a more practical, localized TTPs for their POE, just as suggested by majority of the respondents in this study. There is also the need for the development of a national biosecurity strategy that would involve multidisciplinary professionals and security agencies. It will be scientifically productive to conduct similar studies with a much larger sample size post the Ebola incident in Lagos, Nigeria, to see if there has been a change in perception among the security personnel at this POE.

Conclusion

This study was conducted prior to the Ebola incident and during the nations' response to the activities of an extremist Islamic religious sect that has sworn allegiance to the Islamic State of Iraq and Syria (ISIS) and carried out numerous fatal attacks on the citizens and government security agencies. Results from this limited pre-study reports that while officials at the MMI POE claimed to be well informed about biological agents (BA), they lack the necessary tools to conduct effective search for BA and they questioned the effectiveness of their current search TTPs, to be able to detect, deter or prevent a terrorist or individuals attempting to breach such POE with a BA. A large percentage agreed that this form of attack is feasible and that the MMI POE is vulnerable to such breach, a perception confirmed by the successful importation of the country index case of the Ebola virus in 2014 by Mr. Sawyer through this POE.

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