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Abstract

This study reviewed factors associated with the prevention of healthcare-associated infections (HAIs) among primary healthcare workers (PHCWs) in North-central Zone Nigeria. Healthcare-associated Infections are the diseases contracted by healthcare workers from patients during healthcare delivery procedures in healthcare facilities. These infections may include hepatitis B and C, HIV, tuberculosis, Lassa fever and Ebola virus disease among others. Healthcare workers mostly affected are doctors, nurses, community health workers, laboratory technicians and Cleaners among others. This study however focused on primary healthcare workers (PHCWs) in Government owned primary healthcare facilities across Nigeria. PHCWs may have good knowledge, attitude but mostly with poor practice and unavailability of safety measures towards the prevention of these HAIs amongst themselves. Government insensitivity to the healthcare sector hence PHCWs face gross inadequate availability of safety measures towards preventing HAIs in healthcare facilities across Nigeria. Recommendations among others included that: Government should maintain training of primary healthcare workers; ensure adequate provision of safety measures and enforce global best practices towards the prevention of healthcare-associated infections among PHCWs in North-central Zone Nigeria.

Key Words: Healthcare-Associated Infections, Primary Healthcare Workers, Primary Healthcare

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Introduction

Healthcare Associated Infections (HAIs) are transmittable diseases like, HIV, tuberculosis, Ebola and Lassa fever among others, which healthcare workers acquire unknowingly from patients during care processes in healthcare facilities. Healthcare workers are expected to ensure that sick people recover from their illnesses however, it is worrisome that they contract some of these infections called healthcare-associated infections (HAIs), in the course of treating the sick. The unwanted consequences of these infections have been known for several decades and continue to escalate at an alarming rate (Oli, Okoli, Ujam, Adje & Ezeobi, 2016). The term healthcare-associated infections (HAIs) implies infections that affect healthcare workers during healthcare delivery processes in healthcare facilities. These infections by implication are occupationally contracted by healthcare workers (World Health Organisation-WHO, 2016). Brussaferro, Amoldo, Cattani, Fabbro, Cookson, and Gallagher (2015), reported that until recently, these nosocomial infections were earlier called "Hospital Acquired Infections" but now referred to as "Healthcare-Associated Infections". He further stated that these infections account for a major risk factor for serious health issues among healthcare workers leading to deaths. Invasive devices such as catheters and ventilators employed in modern health care practices, blood screening and transfusion among others, expose healthcare workers to these infections (Centre for Disease Control-CDC, 2016).

According to Malewezi, Omer, Mwagomba and Araru (2013), healthcare workers are at an increased risk of contracting Hepatitis B virus (HBV) in the workplace due to their potential contact with infected body fluid, such as blood, saliva, or vaginal fluid. World-wide HBV is estimated to have infected more than 2 billion people and causes 0.5% million deaths annually. Mortality is mainly an aftermath of chronic infection, such as liver cirrhosis and liver cancer. Prevalence of HBV infection among healthcare workers depends upon the rates of HBV infection in the region where they work, but studies reported rates between 0.8% and 74%. Despite the fact that health workers are an accessible and easily identifiable population to implement vaccination strategies, many countries (including Nigeria) could not address it as 24% of the health workforce worldwide remain unvaccinated against HBV. Osungbemi, Adejumo, Akinbodewa and Adelosoye (2016), reported in Nigeria that majority of the government healthcare workers in Ondo State

are prone to occupational hazard resulting from poor compliance to safety measures despite high awareness of safety measures to prevent healthcare-associated infections among healthcare workers.

Safety measures includes complying with healthcare environmental hygiene, use of protective equipment, and vaccination among others. Khan, Baig, and Mehboob (2017), reported that unhygienic environment serves as the best source for the pathogenic organisms to spread. Air, water and food can get contaminated and transmitted to the patients under healthcare delivery. There must be policies to ensure the cleaning and use of cleaning agents on walls, floor, windows, beds, baths, toilets and other medical devices. Proper ventilated and fresh filtered air can eliminate airborne bacterial contamination. Regular check of filters and ventilation systems of general wards, operating theatres and ICUs must be maintained and documented. Infections attributed to water are due to failure of healthcare institutions to meet the standard criteria. More so, World Health Organization (WHO) has recommended that high-risk groups, including health workers, be targeted for routine provision of HBV vaccine to protect them from infection (Malewezi, Omer, Mwagomba and Araru, 2013). Factors militating against the prevention of HAIs among PHCWs in this review include: knowledge, attitude, practice and availability of safety measures and devices.

Knowledge of Safety Measures towards the Prevention of Healthcare-Associated Infections (HAIs) among Primary Healthcare Workers (PHWs)

Considering knowledge of primary healthcare workers towards the prevention of healthcare-associated infections (HAIs), education on safety measures plays an integral parts in the prevention of the infections. Studies of Vaz, Mcgrowder, Alexander, Gordon, Brown and Irving (2010), explored the knowledge, perceptions and attitudes of healthcare personnel towards the transmission of healthcare-associated infections in different patient groups. They found that knowledge played an important role in the prevention and spread of (HAIs). Furthermore, Parmeggiani, Abbate, Marinelli and Angelillo, (2010); Ogoina, Pondei, Chima, Isichei, and Gidado, (2015); Habib, Khan, Shan-E-Abbas, Bhatti and Zafar (2011); Gadzama, Bawa, Ajinoma, Saidu and Umar, (2014) reported that there are disparities in knowledge of infection

control among the cadres of Healthcare Workers (HCWs). Their studies also revealed differences in terms of actual knowledge of infection transmission and control, its interpretation and application by healthcare workers.

The knowledge of many infection control measures, such as appropriate hand hygiene and the correct application of basic precautions during invasive procedures are not difficult and of low-cost safety measures, but requires staff accountability and behavioural change, in addition to improving staff education, reporting and improved surveillance systems to thrive in the control of infections (Bouallègue, Naija, Said, Nouria, Jaidane, Dhidah, & Boujaafar, 2013). Additionally, Mannava, Durrant, Fisher, Chersich and Luchters (2015), documented that a broad range of negative Maternal Healthcare Practice (MHCP) attitudes and behaviours affecting patients' well-being and satisfaction with care was reported during patients' interactions, as far outweighing their positive conducts. The nature of factors which influence healthcare workers' attitudes and practices suggested that strengthening healthcare systems, and workforce development, including communication and counselling skills, are important. Greater attention is required to the attitudes and behaviour of healthcare workers towards preventing healthcare-associated infections.

Attitude towards Safety Measures in the Prevention of HAIs among PHCWs

Attitude of healthcare workers on safety measures remains an issue in the prevention of healthcare-associated infections. It is well recognized that the risk of transmission of pathogens when providing medical care and the rates of the incidence of HAIs can be kept low through positive zeal of healthcare workers to appropriate standardized preventive procedures (Harbarth, Sax, Gastmeier, 2009 & Ferguson, 2009). However, it has been documented that the attitude towards safety measures against HAIs by Primary healthcare workers (HCWs) has been observed to be poor. Among the different strategies, healthcare workers' willingness to adherence to the guidelines for disinfection is an essential ingredient for activities aimed at preventing the HAIs. Several reports indicated lackadaisical approach by healthcare workers to these measures (Sessa, Giuseppe, Albano & Angelillo, 2011).

Centre for Disease Control (CDC, 2012), recommended standard precautions to include: handling any patient regardless of their presumed infection status, should be handled with good safety measure; handling of equipment and devices that are contaminated or suspected of contamination, and in situations of contact risk with blood, body fluids, secretions and excretions except sweat, without considering the presence or absence of visible blood and skin with solution of continuity and mucous tissues should be done with all precautions. They also included precautions against agents that are transmitted by the following routes of transmission: air-borne, droplet and contact routes (CDC, 2012 & Vaz, et al., 2010). Noncompliance with recommended guidelines by negligence of healthcare workers expose them and the patients to abundance of pathogens in the healthcare facilities (Costello, Graham, Morrow, Morrow, PotterBynoe, Sandora, Pigula, & Lausse, 2010).

Practice of Safety Measures towards the Prevention of HAIs among PHCWs

The practice of primary healthcare workers towards safety measures in preventing healthcare-associated infections is another consideration in this study to determine its role in curbing the spread of these infections. D'Agata, Horn, Ruan, Webb and Wares (2012), Chen, Sheng, Wang, Chang, Lin and Tien, (2011), Hanmore, Maclaine, Garin, Alonso, Leroy and Ruff (2013), reported that several studies have shown the benefits of practicing effective infection control measures in decreasing the morbidity and mortality of healthcare-associated infections and prevent the spread of the infections among healthcare workers. Simple hand hygiene when performed well can reduce the prevalence of HAIs substantially. Improved compliance in hand hygiene with standard alcohol-based rub can reduce the rate of nosocomial infections by as much as 40%. Standard precautions are defined as "group of infection prevention practices that apply to all patients, regardless of suspected or confirmed diagnosis or presumed infection status" (Center for Disease Control, 2012). These precautionary principles should be imbibed by healthcare workers in their practice of handling patients in healthcare facilities, if only the objectives of safety measures are to be met.

Availability of Safety Measures towards the Prevention HAIs among PHCWs

Availability of safety measures in the prevention HAIs among primary healthcare workers is an essential aspect, as posited by Verbeek, Ijaz, Mischke, Ruotsalainen, Makela, Neuvonen, et al. (2015), that for health care workers, the main strategy for reducing physical exposure to highly infectious diseases is through personal protective equipment (PPE). These equipment include and not limited to: coveralls, gowns, hoods, masks, eye shields and respirators to prevent skin and mucous membranes from becoming contaminated. In this context, we will not only concentrate on PPE for highly infectious diseases that have serious consequences for health like Ebola and Lassa. Other infections also implicated here are: HBV, HCV, Tuberculosis, HIV, among others, with health consequences so different that we expect the effect of PPE will also be different. Severe Acute Respiratory Syndrome (SARS) for example, is highly infective with fatal consequences for HCWs hence the need to heed, the general recommendations to use full body protection which needed instruction and training towards the prevention of SARS.

In the context of this study, the scope will not be complete without the understanding of primary healthcare and the workers involved. According to White and Halifax (2015), Primary Health Care (PHC) implies essential health care made accessible at a cost that a country can afford, with methods that are practical, scientifically sound and socially acceptable. Everyone is expected to have access to healthcare and be involved in it, like other sectors of the society. PHC components include: education on prevailing health problems, health promotion and disease prevention; provision of adequate food and nutrition; safe water supply; basic sanitation; maternal, child health care and family planning; prevention and control of endemic diseases; immunization against vaccine-preventable diseases; appropriate treatment of common diseases and injuries and provision of essential drugs. Herman (2012) listed primary health care workers to include: Health Educators; Community Health Extension Workers; Nurses; Pharmacists; Laboratory Technicians; Environmental Health Technicians; Nutritionists; Attendants and Cleaners.

The alarming rate of healthcare-associated infections among healthcare workers and issues surrounding the scourge across Nigeria and particularly in North-central Zone Nigeria, provoked the thoughts, questioning the trainings healthcare workers acquired on prevention of diseases hence, the

need for this study to review factors (knowledge, attitude, practice and availability of safety measures) associated with the prevention of prevention of healthcare-associated infections among Primary Healthcare Workers in North-central Zone Nigeria.

Problems Militating against the Prevention of HAIs among PHCWs

Preventive programmes of healthcare-associated infections' in Nigeria seems to be a serious challenge among primary healthcare workers (PHCWs). The recurrent cases of various forms of healthcare-associated infections contracted by PHCWs during handling of patients is worrisome. In line with this, Gordon (2016), reported that healthcare workers get exposed to infections like Hepatitis B virus, HIV/AIDS, tuberculosis, Syphilis; Pneumonia, Ebola, Lassa fever among others, as they attend to their patients in healthcare facilities and unconsciously transferring same to their family hence its spread. Most healthcare facilities in Nigeria seem not to have adequate safety measures in place for the prevention of healthcare-associated infections hence the consideration of these associated factors, knowledge, attitude, practice and availability of safety measures towards the prevention of these infections among primary healthcare workers.

Knowledge of safety measures towards preventing healthcare-associated infections among primary healthcare workers seems to be a problem in Nigeria. It was a disturbing experience to see that patients with chronic infections were found not isolated from those with mild infections and their superiors are not even bothered about possible spread even among the PHCWs. Stone, Herzig, Pogorzelska-Maziarz, Carter, Bjamadottir and Semeraro (2015), reported that infections' prevention and control guidelines have been developed by Centre for Disease Control but implementation by health care workers is not yet known in Nigeria. These preventable infections are mostly caused by several pathogens in healthcare facilities. Therefore, the need for PHCWs' appreciate, that their knowledge on sources of these infections in various healthcare procedures to include: Labour; Blood transfusion; Injections; collection of fluid as specimens for laboratory procedures among others, becomes pertinent.

Attitude of some primary healthcare workers as a factor towards safety measure in the prevention of healthcare-associated infections remains a serious concern particularly in some rural areas of North-Central Nigeria. Apparently, PHCWs seem to feel use of injection safety boxes and screening of patients' blood before transfusion is an added duty to their routine therefore not enthusiastic which leads to the thriving of HAIs. In some rural healthcare facilities there are primary healthcare workers who don't like wearing protective devices such as nose masks and aprons when handling patients. In defense of their attitudes, they put the blame on shortage of staff in the hospitals. These shortfalls apparently are attributed to numerous patients with few staff and facilities to use (Obinna, 2011).

Availability of safety measures and devices for effective prevention of HAIs among healthcare workers is another factor considered in this review. Ogoina, Pondei, Chima, Isichei and Gidado (2015), opined that many primary healthcare workers in Nigeria, practice without safety measures like foot wears, wearing of hand gloves and observing hand hygiene during handling of patients. Ogoina, et al (2015), reported also that poor practice of hand hygiene was characterized despite good knowledge among some healthcare workers in two tertiary hospitals in Nigeria. Insufficient water supply, antiseptics among others, has been shown to affect the practice of hand hygiene among health care workers in Nigeria. Apparently, these issues of seemingly poor practice may not be unconnected with Government's insensitivity to the provision of basic amenities hence poor availability of safety measures, for the prevention of HAIs among PHCWs in Nigeria.

Considering all the above issues of knowledge, attitude, practice and availability of safety measures towards the prevention of healthcare-associated infections among primary healthcare workers in Nigeria, remains a menace. Therefore, it becomes pertinent to proffer solutions towards an improved knowledge, attitude, practice and availability of safety measures towards the prevention of these infections among the healthcare workers in Nigeria.

Conclusion

Based on the fore mentioned militating factors against the prevention of HAIs among PHCWs, conclusion was drawn as thus. Knowledge of safety measures towards the prevention of healthcare-associated infections among

primary healthcare workers across Nigeria remains a serious menace requiring urgent attention and action by the Government. Attitudinal change is required towards safety measures in the prevention of healthcare-associated infections among primary healthcare workers across Nigeria because non-challant conduct in healthcare delivery is still a constraint in the fight against the scourge. Poor practice of safety measures towards the prevention of healthcare-associated infections is characterized among primary healthcare workers across Nigeria requiring urgent attention and action by the Government. Poor availability of safety measures towards the prevention of healthcare-associated infections among primary healthcare workers, characterizes healthcare facilities across Nigeria which calls for Government's urgent attention.

Recommendations

On the basis of the above conclusions, the following recommendations were made:

1. Government should maintain training and re-training, on knowledge of safety measures towards the prevention of healthcare-associated infections among healthcare workers across Nigeria to sustain and keep updating the acquired skills of safety measures.
2. Government should motivate and encourage healthcare workers to imbibe more positive attitude towards safety measures for the prevention of healthcare-associated infections by prompt payment of their salaries and allowances. This will encourage healthcare workers not to relent in their positive attitude imbibed and to see safety measures not as extra duties but protection.
3. Legislation should be made to mandate Ministries of Health across the states to establish task force to monitor and enforce global best practices among healthcare workers towards use of safety measures in preventing healthcare-associated infections with penalties to erring healthcare workers.
4. Government should ensure that adequate safety measures are available across healthcare facilities in Nigeria, towards preventing healthcare-associated infections among healthcare workers.

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