

Barriers to Universal Precautions compliance among primary health care workers in Kaduna State, Nigeria: A qualitative study.

Nmadu Awawu Grace,

Department of Community Medicine, Kaduna State University, Kaduna, Nigeria

Kabir Sabitu¹,

¹Department of Community Medicine, Ahmadu Bello University, Zaria, Nigeria

Istifanus Anekoson Joshua,

¹Department of Community Medicine, Ahmadu Bello University, Zaria, Nigeria

Corresponding Address:

Dr Nmadu Awawu Grace

Department of Community Medicine,

Kaduna State University, Kaduna, Nigeria

Email: jumainmadu@yahoo.com

ABSTRACT

Background: Establishment of good infection control practices in Primary Health Care (PHC) facilities is critical to prevent the transmission of infectious pathogens among Primary Health Care Workers (PHCWs). The implementation of Universal Precautions (UP) in PHC centers in Kaduna has not been explored to identify barriers to good practice. The aim of this study is to explore the barriers to UP compliance among PHCWs in Kaduna State, Nigeria.

Methods: A qualitative exploratory study was carried out between September 2011 and May 2012 among 32 PHCWs purposively selected from two Local Government Areas (LGAs) in Kaduna State, Nigeria. Four focus group discussions were conducted with PHCWs in two LGAs. The Theory of Planned Behavior (TPB) was used as the theoretical framework for development of questions for the focus group discussion guide. Thematic analysis was performed manually to identify barriers to UP compliance.

Results: Factors related to UP compliance could be mapped into individual, job related, and organizational factors. Individual factors to poor UP compliance were lack of knowledge and the perception of negative influence of Personal Protective Equipment (PPE). The job-related factors were heavy workload and emergency situations. The organizational factors were the lack availability of PPE, lack of training and lack of support from management.

Conclusion: There is urgent need to develop effective interventions to address the individual, job related and organizational factors influencing the compliance of PHCWs to Universal Precautions.

Key words: Compliance, Nigeria, Primary Health Care Workers, Universal Precautions.

Introduction

Health care workers (HCWs) are at risk for occupational acquisition of infectious diseases because they are routinely exposed to blood and body fluids. Hepatitis B virus (HBV), Hepatitis C virus (HCV) and Human Immunodeficiency Virus (HIV) account for most cases of occupational infection, due to their prevalence in the population and the severity of the infections they cause (Tarantola et al, 2006). However, transmission of 60 different pathogenic species by occupational exposure to blood and body fluids has been documented. Exposure to blood can occur through a percutaneous injury (e.g. needle stick injury), cutaneous mucus exposure (e.g. splashes of blood or fluids containing blood in the eyes, nose or mouth) or contact with non-intact skin.

Among the 35 million HCWs worldwide, the World Health Organization (WHO) estimates that approximately 3 million experience percutaneous injuries each year. Worldwide, about 40% of HBV and HCV infections and 2.5% of HIV infections in HCWs are attributable to occupational sharps exposures. More than 90% of these infections occur in developing countries (WHO, 2002) and most of these exposures are preventable by good infection control practice, including strict compliance to UP.

Universal Precautions are practice guidelines developed to enhance HCW safety by minimizing the likelihood of exposure to blood, needles and sharps (Garner, 1996). Compliance to Universal Precautions has been found to be poor among health workers in Nigeria (Amoran & Onwube,

2013; Odusanya, 2003; Sofola & Savage, 2003; Izebu et al, 2006). Non-compliance to UP has been linked to a number of factors, including lack of knowledge, lack of personal protective equipment, high workload, low risk perception and low perception of organizational safety environment (Gammon & Gould, 2005).

Studies conducted in Nigeria to determine factors that affect compliance of HCWs to UP have been mostly quantitative (Sadoh et al, 2006; Adebamowo et al, 2002; Olubuyide & Olawuyi, 1995; Adinma et al, 2009). However, in order to develop effective interventions to address the issue of poor compliance to UP, it is necessary to gain a deeper understanding about the factors that influence compliance. In addition, there is paucity of qualitative studies assessing the barriers HCW face in complying with Universal Precautions. Thus, a qualitative study will provide deeper insight on barriers HCWs experience with regard to UP compliance.

A theoretical framework that has been used in behavioural studies and that has successfully provided a reliable platform for exploring reasoned behaviour and the attitudes and beliefs which influence individual behaviour is the TPB (Godin et al. 2008). It has also been used to evaluate barriers to using clinical guidelines (Dyson et al. 2013) and universal precautions (Hedayati et al, 2014). The TPB states that a person's intention to engage in a given behaviour such as compliance to UP can be predicted by three factors: attitude to behaviour (perception about UP); subjective norm (a person's perception of the opinion of others concerning UP); and perceived behavioural control (a

person's perception of the ease or difficulty in performing the target behavior).

In Nigeria, PHC facilities constitute major sites for health service delivery to the vast majority of the population. The important role played by PHCWs

Materials and Methods

Study Areas

The study was carried out in Zaria and Kaduna North LGAs of Kaduna State in North-Western Nigeria each with populations of 408,198 and 357,694 respectively (National Population Commission, 2006). Zaria LGA had one tertiary hospital, two general hospitals, two

Study design

A qualitative exploratory study was carried out between September 2011 and May 2012 using focus group discussions. A focus group discussion interview involves purposively selecting participants to gather opinions on a

Sampling technique and sample size

A multistage sampling technique was used to select participants. Two LGAs were purposively selected from a list of 23 LGAs in Kaduna State. Two PHC centers were selected from each of the LGAs by simple random sampling and in each of the PHC centers. Four nurses and four clinical attendants were purposively selected from each of the two PHC centers to participate in the focus group discussions.

Data collection

Data was collected from separate FDGs of nurses and clinical attendants. Four focus group

in provision of health care makes their safety an important health concern. The aim of this study is to explore the barriers associated with compliance to Universal Precautions among PHCWs in Zaria and Kaduna north LGAs of Kaduna State, Nigeria.

comprehensive health care centers, thirteen PHC centers, twenty health clinics and twenty eight private clinics. The thirteen PHC centers had total staff strength of 350. Kaduna LGA had two secondary health care facilities, twelve public PHC facilities and 62 private clinics. The twelve PHC facilities had staff strength of 320.

given topic within an in-depth group interview framework (Krueger & Casey, 2000).

Study population

The study population included all PHCWs who were directly involved in patient care and were at the risk of contact with blood and/or blood products.

discussions each comprised of 8 participants, lasted about 1 hour were conducted by the same moderator and note taker. The FGD questions were constructed to explore the barriers affecting participants' compliance to Universal Precautions using the TPB. The FGD questions addressed 3 domains: attitudes, subjective norms, and behavioral control, which were considered the main influences of behaviors (Table 1). The principles of trustworthiness as described by Guba (1981) were adhered to in order to enhance the rigor of the study.

Table 1 Focus Group Discussion Topics.

Topics	Questions
Attitudes	Have you ever heard of UP? What is the UP? Is it necessary to follow UP at the clinical practice?
Subjective norms	How do other HCWs influence UP practice?
Perceived behavioral control	Does anything prevent HCWs from following UP? Have you experienced difficulties in following UP? How could practice of UP be improved?

Data analysis

All FGDs and interviews were voice recorded and transcribed verbatim. Thematic analysis was used to identify barriers of UP compliance. The transcripts were coded by 2 different persons and the researchers reviewed codes and categorized them and extracted themes separately which were later discussed together.

Ethical considerations

Ethical approval was obtained from the Ethical and Scientific Committee of Ahmadu Bello University Teaching Hospital. Permission was

obtained from the Director of Primary Health Care, the PHC coordinators of the LGAs and all the supervising heads of the selected PHC facilities before the study was conducted. Informed written consent was sought from the participants before carrying out the study.

Results

Four FGDs were conducted, with a total of 32 participants: 16 nurses (all women) and 16 clinical attendants (all women). The average age of the nurses was 35.8 ± 4.8 years and for clinical attendants was 36.6 ± 7.4 years (Table 2).

Table 2: Demographic profile of the participants

Category	Age range	Mean \pm SD	Median
Nurses			

Age (in years)	30 - 44	35.8 \pm 4.8	38
Years of experience	2 - 19	8 \pm 6.4	5
Clinical attendants			
Age (in years)	26 - 50	36.6 \pm 7.4	35
Years of experience (in years)	2 - 22	8.3 \pm 6.3	7

Factors related to UP compliance could be mapped into individual, job related, and organizational factors.

Individual factors

Knowledge of Universal Precautions

In general, the participants reported a low knowledge of UP. Many did not know about the concepts of UP and had wrongly assumed that UP was synonymous with general infection control practice. Most of the participants were not aware of a policy or protocol on Universal Precautions. Participants expressed that they had heard the term but did not know the specific definition of UP or its measures. One of the participants understanding of UP was that, "*It is a way of preventing yourself and your patient from harm*". Another understood it to be, "*A means of prevention of hazards*". Another understood UP as, "*It is how we use hand gloves while working and after working we remove the gloves and wash our hands, when in labour room we can put on boots and use aprons to prevent spread of infection*".

Perception of Universal Precautions and risk of infection

Although participants had a vague understanding about UP concepts, they

Personal barriers

A number of PHCWs identified the interference of PPE to performance of their duties as a barrier to

appreciated and acknowledged the importance of UP in protection of health worker from risk of infection. To buttress their value of the importance of UP, they expressed concern about inadequacy of protective materials essential for compliance to UP and protection from risk of infection. They recognized their deficiency in knowledge and additionally expressed their desire for trainings to be conducted so that they could be equipped with updated knowledge on UP. Respondents were aware of the risk of being continuously exposed to microorganisms and their susceptibility contract diseases from patients, majority of them considered their personal safety to be very important. One respondent stated that "*I do not take any chances at all, I always make sure that I protect myself at all times*". Some participants expressed concerns about the fact that they may transmit infections to their family members.

compliance to UP. Some participants complained that they experienced discomfort when they wore PPE. One respondent said, "*I*

don't like to wear gloves because I have itching and rashes when I wear them". Others said, "I don't wear plastic aprons because I don't trust that the aprons are washed properly, so I do not feel comfortable wearing them"; "When I wear a face mask it is like I cannot breathe properly". A

Job related factors

The pressure and demands of the job were identified as barriers to UP compliance. This was attributed to high patient load and inadequate manpower to cope with it. Many of the PHCWs complained that patient turnover was high and this reduced their ability to comply with UP. One respondent said, *"It is virtually impossible to wash hands after each patient contact considering the large number of patients we attend to on a daily basis".* Participants suggested that the local

Organizational factors

Another perceived barrier to UP compliance reported by participants was the lack of protective equipment. The participants stated that they often came across situations where they must use protective equipment, but this was not possible because PPE were not available at that point in time and not provided for by the management. Personal protective equipment mentioned not to be readily available at all times were gloves, gowns, goggles and aprons. A respondent said, *"We have only one apron in the labour room and sometimes we have three to four deliveries at the same time".* Another respondent said, *"We have to spend our own money to buy the basic items needed for cleaning".* Another stated that, *"It is only the nurses that wear aprons and boots, we only have access to gloves and there are times that gloves are not available".*

few of the respondents said that they were influenced by how their colleagues work and do not use the recommended precautions because their workmates do not use them.

government authorities should provide support in terms to manpower to aid compliance of UP. Many participants described emergency situations, a common occurrence related to their job as an obstacle to UP compliance. The participants reasoned that in situations of emergencies, saving the life of the patient is the primary concern instead of taking time to use protective equipment. A respondent said, *"During an emergency you do not have time to put on protective equipment, you act immediately to save the patient's life".*

A lack of supportive environment necessary for compliance to UP was echoed by participants as a barrier to UP compliance. They expressed dissatisfaction over the poor state of the resources necessary for UP compliance and suggested that management should provide resources in terms of manpower, PPE and supplies to improve UP compliance. Participants also complained about lack of adequate managerial support towards staff training in UP. A respondent stated that, *"We need training regarding UP and this training should include all carders of health workers, particularly the clinical attendants, who are usually left out of workshops and seminars".* Another said, *"We need to continually learn more and be updated in our knowledge, new information might be discovered which we might not have heard about."*

Discussion

This study explored the barriers that influence PHCWs compliance with Universal Precautions in order to avoid occupational exposure to microorganisms. Many of the emerged factors, contributing to noncompliance such as lack of knowledge; feeling uncomfortable when wearing the protective equipment; lack of supplies; and heavy workload are in accordance with findings of previous quantitative studies (Kermode et al, 2005; Cameron, 1996; Stein et al, 2003; Kelen et al, 1990; Oliveira et al, 2010). Caution should be taken when comparing the current study to literature as most of these studies had not used a theoretical model as background. Some of our findings were similar to findings of studies conducted with theoretical backgrounds of non-compliance in Iran, Indonesia, Brazil, Korea and China which reported barriers to UP compliance to include knowledge deficit, heavy work load, emergency situations, lack of equipment and negative influence of PPE (Kim & Oh, 2015; Hedayati et al, 2014; Marjadi & McLaws, 2010; Efastathiou et al, 2011; Wu et al, 2008).

Regarding individual factors affecting UP compliance the study revealed an alarmingly low level of knowledge of UP guidelines among the health workers which could be related to lack of investment in training health workers on UP. This is consistent with previous studies that found UP knowledge in PHCWs to be relatively low (Timilshina et al, 2010; Amin & Al Wehedy, 2009). Though participants mistook UP for the general principles of infection, they were aware of the risk for exposure to pathogens in clinical practice and had a good perception of the importance of UP.

Many participants asserted that they had not received in-service training on UP which they believed had an influence on their compliance with UP. Health workers decried the lack of management investing in training of staff on UP protocols. Knowledge is a prerequisite for positive health behaviour (Bedworth & Bedworth, 1992), including the adoption of safe practices that would minimize transmission of occupationally acquired infections and the subsequent ill health that may emanate. Studies have shown that training of providers on universal precaution is an important way to improve compliance (Krishnan et al, 2007; Wang et al, 2003). Advocacy to health facility management is needed to ensure that healthcare workers and patient safety are not compromised due to failure of equipping staff with adequate knowledge on UP.

The negative influence of personal protective equipment on UP compliance mentioned by some PHCW in this study has also been reported in other studies (Oliveira et al, 2010; Efstathiou et al, 2011). Skin irritation and hand pain from the use of gloves were factors inhibiting health care workers from using such PPE. Recent research shows that healthcare personnel still believe that PPE can interfere with the patient-provider relationship and/or reduce the quality of care. For example, concerns about PPE include decreases in the field of vision or reductions in manual dexterity (Visentin et al, 2009; Daugherty et al, 2009). There is a need to conduct research to better understand the role of behavioural factors on PPE usage in healthcare settings.

Regarding job related factors heavy work load was reported by participants as a factor inhibiting

their compliance to UP. Participants reported that there was usually not enough time to comply with UP considering the fact that they were short staffed and overwhelmed with a large volume of patient flow, and as a result were under pressure to see patients quickly. High job stress has been shown to lead to low levels of compliance with UP (Gershon, 2005). Overwork can put workers at risk of occupational accidents and injuries. It is therefore important for managers in organizations to identify work stressors and as much as possible help workers overcome or reduce the barriers associated with compliance. Emergency situations at work was cited in this study as affecting compliance to UP due to the necessity to act quickly to save a patient's life, leaving little time to consider donning of PPE has been reported in other studies (Madan et al, 2002, Efstathiou et al, 2011). However, it is imperative that UP should be observed in all situations and it is important that health workers are intimated on proper procedures to follow in emergency situations. Interactive training sessions for health workers on what they should do in emergency situations to care for patients and also protect themselves may be helpful in this regard.

Organizational barriers identified in this study were lack of training, lack of availability of PPE

Conclusion

UP compliance among PHCWs was influenced by a mix of individual, work-related and organizational factors. A multi-pronged approach

and lack of organizational support for UP. Participants expressed dissatisfaction about organizational commitment to UP. This according to them was reflected by the management's lack of provision of adequate manpower, PPE, supplies and equipment to promote UP compliance. Similar findings of lack of supportive environment to promote UP compliance have been reported in other studies (Marjadi & McLaws, 2010; Efstathiou et al, 2011). When the safety climate is deficient, this can result to lower rates of compliance to UP, putting the health of workers at risk to occupational accidents. Studies have highlighted the importance of organizational culture in improving UP compliance (Kim & Oh, 2015; Hedayati et al, 2014). A supportive safety climate in organizations positively affects the safety behaviour of workers (DeJoy, Schaffer, Wilson, Vandenberg, Butts, 2004) and should be part of interventions necessary to improve compliance to UP among PHCWs.

A limitation of our study is the small sample size used which limits the ability to generalize our findings to other settings. However, our study was aimed at gaining an in-depth understanding of barriers PHCWs faced in compliance to UP (Rice and Ezzy, 1999).

is therefore required to address these factors. Programs for preventing occupational exposure to blood borne pathogens need to take into account the obstacles to following UP within clinical practice, and to emphasize organizational

support for safety at work. It is important to conduct further research to explore how the attitudes and beliefs of practitioners can be influenced and changed to reinforce compliance

to Universal Precautions within the clinical practice setting.

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