

**JOURNAL OF COMMUNITY AND
HEALTH SCIENCES**



**JOURNAL OF COMMUNITY
AND
HEALTH SCIENCES**

THE RESEARCH JOURNAL OF THE FACULTY OF COMMUNITY AND HEALTH SCIENCES OF THE UNIVERSITY OF THE WESTERN CAPE

April 2013 Vol.8 No. 1



ISSN NUMBER—1990-9403

THE RESEARCH JOURNAL OF THE FACULTY OF COMMUNITY AND HEALTH SCIENCES OF THE UNIVERSITY OF THE WESTERN CAPE

April 2013 Vol.8 No. 1

Peer-Reviewed



CONTENTS

1.	Nurse delegation decision making D Weatherspoon, D Sullivan, D.R Wilson, L.C Parsons.....1
2.	Assessment of risk to indoor air pollutants among computer and photocopier business Operators in tertiary institutions in Zaria, Nigeria A Istifanus, S.S Andrew, M Stanley Andrew, A.A Dania.....12
3.	Assessment of the role of sports in fighting HIV/Aids in Bugulumbya sub– county I Charles, A Nankwanga.....20
4.	Prevalence and aetiological profiles of facial nerve paralysis: A five-year review of tertiary Health institutions in Kano state, Northwestern Nigeria C.A Gbiri, F.G Sumaila, J.S Usman.....32
5.	Sport safety policies and practices among soccer clubs in Rwanda A Nuhu, H Pharaoh.....41
6.	“My mother has aids”: Stories of adolescents living in Khayelitsha, South Africa P Tsweleng, N Roman.....47

Aim and Scope of the journal

The JCHS is a peer reviewed journal, published bi-annually. It covers a wide interest in community and health science related topics. The features that make JCHS so unique are:

- *It offers a platform debate between various disciplines which is essential in helping us to understand and learn from each other.*
- *While primarily of interest to those working within health and related areas it includes contemporary empirical and theoretical work from a wide range of disciplines, including anthropology, epidemiology, health promotion, medicine, public health, psychology, nursing and social work as well as basic and applied sciences that contribute to the promotion of health and prevention of diseases.*
- *The editorial team encourages original research but support the publication of scholarly papers and scientific systematic reviews.*



Prof. Jose Frantz
Editor
Journal of Community and Health Sciences
(JCHS)

Nurse Delegation Decision Making

Weatherspoon, D, Sullivan, D

Wilson, D.R & Parsons, L.C

Deborah Weatherspoon, **PhD, RN, CRNA, COI**

Middle Tennessee State University

Debra Sullivan, **PhD, RN, CNE, COI**

Tennessee State University

Debra Rose Wilson, **PhD, MSN, RN, IBCLC, AHN-BC, CHT**

Middle Tennessee State University and Walden University

Lynn C. Parsons, **DSN RN NE-BC**

Morehead State University

Corresponding Author:

Debra Rose Wilson, PhD, RN, IBCLC, AHN-BC, CHT

Associate Professor, Middle Tennessee State University

Murfreesboro, TN. 37132 – USA

Faculty

Walden University

Minneapolis, MN. 55415 – USA

Corresponding Author: debrarosewilson@comcast.net

Abstract

Nurse practice in today's world requires that nurses be adept at directing a multi-skilled and diverse workforce. In the U.S. the registered nurse must be clinically competent while simultaneously be knowledgeable of their practice guidelines to ensure safe and effective patient care delivery. In South Africa nurses practice under the South Africa Nursing Council Nursing Act guidelines; in the United States the National Council for State Board of Nursing provides rules and regulations for nurse practice. Nursing care practice guidelines, including delegation, are regulated by individual state boards of nursing with written nurse practice acts in the United States of America. The shortage of nurses may have an impact on safe and effective care to individuals with complex, acute, and chronic health care. Delegation of nursing procedures must be done in both countries to facilitate prudent use of the nurses' time for higher-level duties. In the United States increased longevity and expensive interventions directed toward preventable disease, and in South Africa the Acquired Immune Deficiency Syndrome epidemic are taxing health delivery resources in our respective countries. Clearly, the nurse must include management expertise, and especially nurse delegation in their practice skills repertoire. This article will share delegation via patient care management and decision-making models; review the nurses' role in specialty nursing areas; and offer strategies to best use the existing workforce, which includes unlicensed health care workers.

Keywords: *delegation, delegation decision-making, licensure*

Introduction

South Africa (SA) and the United States (US), as well as other nations are experiencing significant nurse shortages to the point that workforce deficits are at a crisis level. Strategies to augment the professional or registered nurse (RN) workforce through employment of lesser skilled health care workers, some of whom are unlicensed, have been adopted. For this reason, nurses must learn and become skilled at safely delegating tasks to a diverse workforce, including assistive personnel (AP). This

purpose of this article is to review delegation and delegation decision-making strategies that can be used by nurses to facilitate safe care delivery while allowing the nurse to reserve their time for higher level skills. Systems theory and pragmatic delegation decision-making models will be examined. Further, delegation by advanced practice Registered nurses will be reviewed.

Concepts

Delegating patient care to others on the health care

team is within the registered nurse scope of practice in the United States (Bystedt, 2011) however, most RNs find delegation a difficult skill to put into practice. Therefore, it is important to teach delegation decision-making skills in nursing programs and to offer staff development/in-service sessions to practicing nurses. Conger (1994) supports that the concept of delegation can be taught to students and practicing Registered nurses, thereby ensuring delegation competencies integral to nurse practice. Research further supports that teaching delegation in multiple acute care specialties increases nurse delegation knowledge, confidence in making sound delegation decisions, and job satisfaction (Parsons, 1997). Specifically, nurses felt their decision-making autonomy and promotional opportunities were enhanced when they used delegation in their practice.

Delegation has been described as a nursing art and a special talent. In the United States RNs may delegate to a variety of allied health care professionals. Licensed Practical Nurses (1 year training from a vocational school) can provide effective uncomplicated bedside care and medication distribution under the direction of an RN. Certified Nurse Technicians receive 6 weeks of training and can assist with patient hygiene, vital signs, and ambulation. Practice of each of these assistive health care professionals (AP) is licensed and regulated by each state's Board of Health.

Having the skill of delegation is essential to effective time management and productivity for acute care nursing practice in the US (Buchwach, 2011). The US National Council of State Board of Nursing (NCSBN) and the American Nurses Association (ANA) believe that effective nurse delegation decision-making is crucial for excellence in nurse practice which will lead to safe and effective patient care delivery (ANA, & NCSBN, 2006). The American Nurses Association (ANA, 2005) defined delegation as transferring responsibility for the performance of a task from one individual to another *while retaining*

accountability for the outcome. Although the NCSBN defines delegation as the RN transfer of authority and the ANA defined delegation as a transfer of responsibility, both organizations agree that the RN can direct other team members to perform a task they would not normally perform; however, the nurse would retain accountability for the delegated task.

Delegation Principles

In 2006, the ANA and NCSBN released a joint statement that outlined the nine principles of delegation specific to the RN role. The principles of delegation include

1. Accountability and responsibility for nurse practice,
2. Determination of assistive personnel (AP) and direction of overall patient care,
3. Delegation of components of care, The RN components of the nursing process, assessment, planning, evaluation, and nursing judgment cannot be delegated,
4. Decisions to delegate based upon RN clinical judgment contingent upon patient condition, skill level of team members, and the level of supervision needed to safely deliver patient care,
5. Delegation of tasks that other team members have the knowledge and capability to perform,
6. Clear communication and verification of understanding about delegated tasks to AP,
7. Communication is shared between the RN and the delegate whether another RN or AP,
8. Uses clinical judgment and critical thinking for appropriate delegation, and
9. The nurse executive at the hospital or other facility is accountable for ensuring that effective systems are in place to assess, supervise, and provide ongoing communication to maintain effective nurse delegation in all practice settings.

Responsibilities

Nurse practice acts vary from state to state in the US and from country to country globally; however, all of the nurse practice acts address nurse delegation. Approximately half define delegation outright and the other states address delegation under the umbrella of supervision. In the U.S. the state nurse practice acts address the legal parameters that guide the RN in delegation of nursing care (Hudspeth, 2007). The RN has the authority to delegate patient care to other qualified team members who are competent to perform that task.

Accountability cannot be delegated.

Important to the provision of safe and competent care is the Registered nurses knowledge of delegation and what tasks/procedures can be legally delegated within their scope of practice as defined by their respective state nurse practice act. The RN is accountable for all delegation decisions made (Cipriano, 2010). *Accountability cannot be delegated.* The RN could be at risk for losing the license to practice if delegation is inappropriate (Eaton, 2009).

An example of how the state of Tennessee outlines delegation of patient care to AP is as follows: (1) The RN is accountable for patient care and determines what can be safely delegated to AP, (2) the RN only delegates tasks/procedures to staff that are qualified to execute the task/procedure, (3) the RN has the right, authority, and responsibility to delegate patient care activities, (4) the RN assessment of the patient's condition influences delegation decisions and is guided by the Five Rights of delegation.

- Right Task
- Right Circumstance
- Right Person
- Right Directions and Communication
- Right supervision and evaluation

(Tennessee Nurses Association, 2009).

Nurses in South Africa and the United States need definitive guidelines to safely practice clinical nursing and to direct and develop a multi-skilled workforce. The state nurse practice acts in the United States and the South Africa Nursing Council Nursing Act

guidelines should provide standards to effectively supervise a diverse workforce. It is imperative that nurses are aware and function within their scope of practice set forth by their state/country practice guidelines. Equally important is that nurses delegate only those activities which the AP is competently trained to perform.

Barriers

One of the biggest barriers to effective delegation by RNs is lack of confidence in delegation skill and inadequate training on delegation (Conger, 1993, 1994; Parsons, 1997, 1998, 1999). Table 1 displays other reasons Registered nurses cite as a difficulty with delegation in practice. There is a lack of fiscal resources in many health care facilities to provide continuing education and staff development to practicing RN's on safe delegation in practice. In the United States and South Africa RNs may fear legal repercussions for delegation errors and are concerned about being responsible for all aspects of patient care. The fear increases when a high number of AP are included in the unit staffing plan. To reduce this concern and increase confidence for delegation it is important for nurses to understand guiding principles of delegation.

Communication

Communication by the RN is important in the provision of safe, effective care and attainment of quality patient care outcomes (Anthony & Vidal, 2010). Communication is the founding principle of the five rights of delegation and instrumental in shaping quality and safety outcomes (Anthony & Vidal, 2010). However, in a qualitative study conducted by Standing and Anthony (2008) the authors indicated that although communication was thought to be the most important element in regards to delegation, it was still a significant barrier. Most problems occurred when people did not communicate effectively.

Interpersonal Relationships

Team members are most effective and collaborative when they follow an RN who they trust. Lack of a trusting relationship can impede effective delegation by the RN and learning the skill level of all team members. The RN may choose to perform the task versus making a delegation error and risking liability. Appropriate delegation builds trust and includes supervision to determine that the delegated task had

a desirable outcome (Kleinman & Saccomano, 2006).

A qualitative research study undertaken by Bittner and Gravlin (2009) was conducted to learn how nurses use critical thinking to delegate patient care to team members. The researchers determined that effective delegation was contingent on these four elements, (1) work relations among Registered nurses and team members, including AP, (2) communication, (3) systems management support, and (4) nursing leadership. Poor communication and or weak interpersonal relations between members of the healthcare team can lead to harmful patient outcomes. Ineffective communication, a lack of communication for delivery of needed patient care, distrust, and negative attitudes have been linked to missed or delayed patient care. Bittner and Gravlin (2009) determined that frequently missed care was usually basic nursing care that included maintaining a turning schedule for immobile patients, ambulation, feeding, oral care, and toileting.

Bittner and Gravlin's work complemented that of Potter, Deshields, and Kuhrik, (2010) who found that effective nurse delegation was related to the positive working relationship among the RN and AP, excellent communication, personal initiative and a desire to collaborate within the workplace. The professional nurse must know the scope of nurse practice or job duties written in position descriptions for all team members. Knowledge of each of the team member's roles builds confidence and trust. The effective RN remembers that all team members, which includes AP, are important to effective patient care delivery and positive outcomes.

Models to Guide Nurse Delegation Decision-Making

Nurses benefit from learning the concepts of nurse delegation while in nursing school. Seminal research done in the 1990s supported that delegation was a skill that could be taught and learned by both student nurses and practicing Registered nurses (Conger, 1993, 1994; Parsons, 1997, 1998, 1999). Basic systems models explain inputs of delegation content, the throughput of application of knowledge learned and the output of increased delegation skill in clinical practice environments. Figure 1 shows the Delegation Systems Schematic.

American Nurses Association Delegation Model

The American Nurses Association (ANA), the largest US professional nursing organization, provides information on many issues including nurse delegation. The RN is ultimately responsible for all aspects of nurse delegation. The ANA clearly supports that accountability for delegation rests with the RN (McInnis & Parsons, 2009). The five rights of delegation are integrated within the ANA delegation model and the reader is referred to Figure 2 to view the ANA delegation model.

The ANA clearly differentiates the differences in the role of the RN and the licensed practice nurse. The *Principles for Delegation Paper* addresses the RN professional nurse practice role. This ANA document gives definitions for common terms for nurse delegation, key tenets that guide the professional nurse role, practice approaches, staff development/in-servicing for delegation education, and the ANA delegation model. Additionally, nursing practice is based upon a social contract with society and recognizes the nurse's rights and responsibilities while simultaneously being accountable to the public for their nurse practice (ANA, 1995). Information contained within the paper provides the RN with practice strategies when delegating all aspects of patient care to AP.

There are four (4) major concepts within the ANA Model and include the patient, the practice setting, the delegate (person being delegate to), and the task (Figure 2, ANA, 1995). The RN is accountable for all aspects of patient care and must know the exact skills of team members and the patient's acuity level before assigning tasks/procedures to address the care needs of patients. When assigning tasks to AP, it is best practice to choose those activities that have predictable outcomes. Examples include passing ice water, delivering food trays, assisting with eating, and answering patient call lights. Another example may be assisting a stable five day post-operative hip fracture repair patient with walking.

In sum, the ANA gives clear guidelines for safe delegation including that it is imperative that the RN knows components of all team members position/job description. This knowledge will help the RN safely delegate tasks to other healthcare personnel. The RN holds the delegate responsible for completing a

task within their performance capabilities and their specific job description. The RN will mainly delegate the “intervention” step of the nursing process to AP, however, is responsible for activity supervision.

Conger's Delegation Decision-Making Model

The Nurse Delegation Decision-Making Model was first introduced in the literature in 1993 by Conger. The reader is referred to Figure 3 to view the three-step model. The model has three (3) major steps. First, the nurse must determine what tasks need to be completed. Physicians and Registered nurses can identify needed tasks and procedures that need to be done for the patient. Agency policies provide guidelines regarding how often certain tasks need to be done; (i.e. change peripheral intravenous (IV) tubing every three (3) days, change the central venous catheter (CVP) tubing every 24 hours). Following agency policy is a form of indirect delegation that provides practice guidelines for all Registered nurses.

The second step includes identifying patient problems whether physical, psychological or spiritual in nature. In this step the RN must learn if the patient can manage their health care situation independently. For example, an 88 year old insulin dependent diabetic patient being discharged home may be knowledgeable of how to draw up their insulin and their disease process; however, if their visual acuity is impaired due to decreased visual acuity they may not be able to draw up their insulin in the syringe. If the patient is capable (knowledgeable) the nurse must assess their motivation to follow through with care directives from their healthcare provider.

The third and last step in the delegation model is to evaluate the most appropriate person for care delivery. To make this decision the RN will take into consideration the AP's education level, agency position/job descriptions, agency policies/protocols, state licensing legislation (nurse practice act), and demonstrated competency (ability). This last component is very important as each individual nurse and AP has different capabilities. For example, many states in the United States allow for licensed practical nurses to start peripheral intravenous (IV) lines and administer certain IV medications. It may be that the most proficient person to start an IV on

your team for a given shift is the licensed practical nurse. The RN must always keep in mind that an AP with 25 years of experience may be more proficient than the new RN graduate for certain task completion within their individual scope of practice.

Delegation Role and the Advanced Practice Nurse

The Registered Professional Nurse (RPN) and the Registered Nurse Midwife (RNM) have similar roles in South Africa as Advance Practice Nurses (APN) and Midwives in the United States. The RPN and RNM practice is regulated by the South African Nursing Council's Nursing Act No. 33 of 2005. The scope of practice defined in the Nursing Act is broad and simply states that the person is qualified, competent, responsible and accountable for their practice. A legal registration is required and an appointed Registrar determines the individual's competency for the title. Although a broad scope of practice guideline may be intended to provide greater autonomy, other legislation inhibits crucial areas of advanced nursing practice. An example is seen in the Medicines and Related Substances Control Act which limits the nurse's role in prescribing medication in the US (Bierman & Muller, 1994). While the nurse may not prescribe medication for a patient, a stock of medication may be kept and dispensed by the nurse as a delegated role under the direction of a medical practitioner.

Another area of nurse practice that is limited is the diagnosis and prescription of medical care by the RPN. This is particularly problematic in a country where the critical shortage of medical providers forces an unrealistic responsibility on a medical practitioner who may only be available to the community health clinic one hour per week (Bierman & Muller, 1994). Necessity often forces the nurse to prescribe medical care and medication, with or without authorization. Informal agreements between medical providers and RPNs may delegate many role functions to the RPN that are not recognized legally.

As the crisis for healthcare in South Africa continues, it is imperative that the nurse's role is recognized as an important part of providing primary care at the community level. The use of Registered nurses and RNMs to provide primary and obstetric care is already an essential element that should be

recognized and given legal authority. As the frontline provider, often available twenty-four hours a day, the RN is ideally suited to co-ordinate the multi-disciplinary health care team (Bierman & Muller, 1994). Recognizing the RPN and RNM's knowledge and experience gives credibility to their ability to delegate tasks and coordinate care of groups of clients in a situation where medical providers are simply not available. Nurses are professionals who have responsibility for tasks that are delegated to them and for tasks they delegate to others. This professionalism provides a safe and effective mechanism for South Africa.

Nurse Delegation within Nursing Specialty Fields

The role of the RN relative to delegation is influenced by the cohort being cared for in the practice setting. Registered Nurse need to refer to the standards of practice for their respective fields relative to delegation to other health care workers. An example of the pediatric specialty will be explored as it is particularly pertinent to Registered nurses practicing in South Africa in caring for a large numbers of children that are HIV positive.

Pediatric Specialty

The South African Nursing Act of 2005 allows for a

broad scope of practice for the staff nurse and the auxiliary nurse. The only requirement is that the person is educated to practice nursing to the level prescribed (South African Nursing Act, 2005). Although this allows much flexibility for the nurse's practice, it also has expanded the scope of nursing practice in other African countries (Wilson, 2011). For this reason, it is imperative that nurses in this type of environment have guidance on how to delegate responsibilities to those with less education and training. Pediatric nursing presents unique challenges in delegation which are discussed.

When working with children, AP play an invaluable supportive role with proper training and supervision (Shelly & Coyne, 2009). AP should be trained to adhere to strict protocols and procedures which would allow them to care for a medically stable child, how to recognize signs and symptoms of worsening conditions, and how to call for help (Nursing and Midwifery Council [NMC], 2007). According to the Royal College of Nursing (2008), there are procedures that could be delegated to non-health qualified staff after a pediatric nurse assessment has been completed. It must be noted however, that the nurse is still accountable for the appropriateness of the delegation (NMC, 2007).

Examples of safely taught procedures that can be delegated to a health care aid would

include:

- Administering medicine in premeasured dose via nasogastric tube, gastrostomy tube, or orally, bolus or continuous feeds through a nasogastric tube or using a pump via a gastrostomy tube
- Tracheostomy care, including suction using a suction catheter
- Injections (intramuscular or subcutaneous).
- Intermittent catheterization and catheter care

- Care of Mitrofanoff
- Stoma care
- Rectal medication with a pre-packaged dose, that is, rectal diazepam
- Emergency treatments covered in basic first-aid training, including airway management
- Assistance with inhalers, cartridges and nebulizers
- Assistance with prescribed oxygen administration
- Ventilation care for a child with a predictable medical condition and stable ventilation requirements.

Procedures that should not be delegated to a health care aide:

- Assessment of care needs, planning a program of care or evaluating outcomes of a program of care
- Re-insertion of nasogastric tube, Percutaneous Endoscopic Gastrostomy (PEG) tube, or other gastrostomy tubes
- Injections involving assembling syringe or intravenous, administration
- Programming of syringe drivers
- Deep suctioning
- Siting of indwelling catheters
- Medicine not prescribed or included in the care plan
- Ventilation care for an unstable and unpredictable child.

Nurse delegation of medication administration by AP is an area of concern; however its prevalence is growing. In the United States the American Disability Act aims to provide persons with a disability the necessary tools to live as independently as possible. In response to this policy and the nursing shortage in the United States, many state policies have been changed to allow medication administration by non-licensed personnel. The nurse is responsible for supervising the medication administration by the delegate (Herschel, Crowley, & Cohen, 2005). Registered nurses are responsible for training delegates in the proper medication administration procedures. With proper in-service education, AP can offer flexibility and efficiency in the delivery of healthcare to pediatric patients (Shelley & Cohen, 2009). In any area where Registered nurses are in short supply, appropriate delegation is a viable solution for non-skilled and supervised skilled tasks. However, it is vital to carefully consider the current pediatric practice environment and the skill level of the AP. In Botswana where nurses are faced with heavy workloads, understanding how to safely delegate responsibilities to an AP can offer efficiency in the delivery of healthcare.

Summary

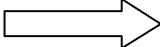
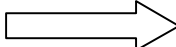

It is imperative that nurse educators and nurse administrators find ways to educate nursing students and practicing professional nurses about nurse

delegation decision-making strategies. Delegation Decision-Making models provide the framework for education nurses about delegation strategies. Standards of nurse practice written by nursing specialty organizations and health care agency position (job) descriptions provide guidance for practicing Registered nurses making sound delegation decisions to deliver safe patient care.

Table 1. Reasons Nurse's Cite for Difficult with Delegation

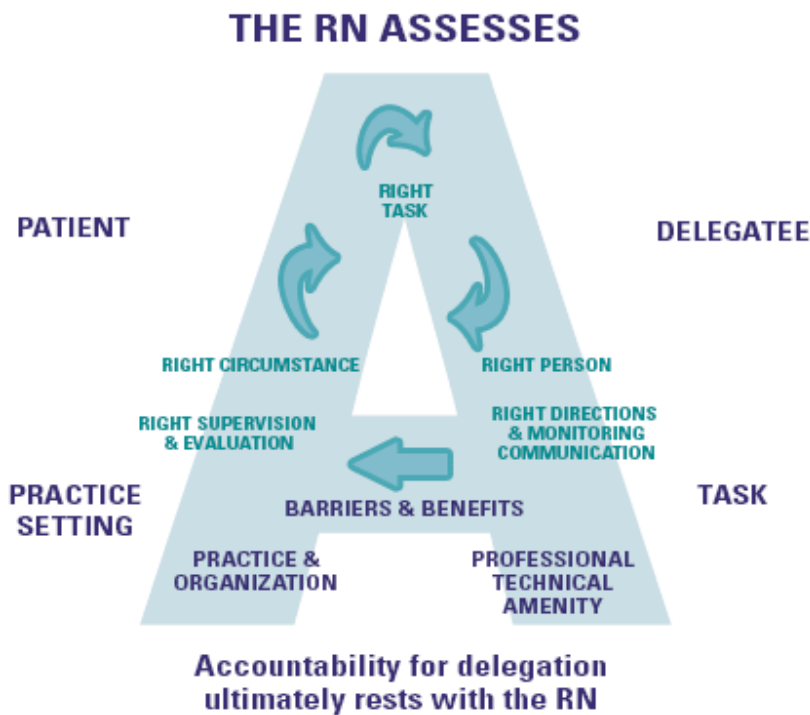
- Resentment from co-workers
- Unrealistic clinical assignments in nursing school; i.e. only being assigned one (1) patient
- Conce Registered nurses with fairness
- Inadequate staff-development and continuing education sessions for practicing Registered nurses
- High numbers of AP and low numbers of licensed nurses
- "There is no one to delegate to.
- "Fear of being "disliked" by co-workers
- Lack of delegation knowledge/parameters in practice acts
- Fear of being sued if a delegation error is made
- "I would rather do the work myself.
- "Organization (hospital, long term care facility) does not provide management sessions

Figure 1. Delegation Systems Schematic

Input 	Throughput 	Output 
Staff Development /In-Service Sessions on Nurse Delegation Decision-Making in Practice	Application of Knowledge Gained in the Clinical Practice Setting	Enhanced Nurse Delegation Decision-Making Knowledge/Skills in Day-to-Day Nurse Practice

Developed by author Lynn Parsons.

Figure 2. American Nurse’s Association Delegation Model



Retrieved from

<http://www.safestaffingsaveslives.org/WhatIsSafeStaffing/SafeStaffingPrinciples/PrinciplesforDelegation.html.aspx>

Figure 3. Delegation Decision-Making Model

Patient Situation

Identify Required Tasks

- ordered by the MD
- ordered by the RN
- mandated by agency policy



Identify Patient Problems

- biological
- psychosocial and spiritual

Evaluate patient response to problems or
“sense of coherence”

- * manageability
- * knowledge (comprehension)
- * motivation (meaningfulness)



Evaluate Most Appropriate Staff Member

- education
- job description
- hospital (agency) policy
- licensing legislation
- demonstrated competency



Make a Delegation Decision

Conger, M.M. (1993). Delegation decision-making. *Journal of Nursing Staff Development*, 9 (3), 131-135. Reprinted with permission from Lippincott, Williams, and Wilkins.

References

American Nurses Association (ANA) (2005). Safe staffing saves lives: ANA principles for delegation. Retrieved from <http://www.safestaffingsaveslives.org/WhatIsSafeStaffing/SafeStaffingPrinciples/>

Anthony, M., & Vidal, K. (2010). Mindful communication: A novel approach to improving delegation and increasing patient safety. *The Online Journal of Issues in Nursing*, 15(2). Retrieved from http://www.medscape.com/viewarticle/730443_

Bierman, J & Muller, M. (1994). Legal limitations in the practice of the primary health care nurse. *Curationis*, 17(2), 29-34.

Bittner, N. P. & Gravlin, G. (March 2009). Critical thinking, delegation, and missed care in nursing practice. *The Journal of Nursing Administration*, 39(3), 142-146.

Buchwach, D. (June,2011). From the staff development bookshelf: Helping new graduate nurses learn to delegate. *Staff Development Weekly*.

Bystedt, M. (2011). Delegation within municipal health care. *Journal of Nursing Management*, 19(4) 534-541.

Conger, M. M. (1993). Delegation decision-making. *Journal of Nursing Staff Development*, 9(3), 131-135.

Conger, M. M. (1994). The nursing assessment grid: Tool for delegation decision. *Journal of Continuing Education in Nursing*, 25(1), 21-27.

Cipriano, P. (2010). Overview and summary: Delegation dilemmas: standards and skills for practice. *The Online Journal of Issues in Nursing*, 15(2). doi:10.3912/OJIN.Vol15No02ManOS

- Eaton, J. (2009). Delegation: a powerful tool in the right hands. *Learning Disability Practice*, 12(8), 30-31.
- Heschel, R. T., Crowley, A. A., & Cohen, S. S. (2005). State policies regarding nursing delegation and medication administration in child care settings: A case study. *Policy, Politics, & Nursing Practice* 6(2), 86-98. DOI: 10.1177/1527154405275884
- Hudspeth, R. (2007). Understanding delegation is a critical competency for nurses in the new millennium. *Nursing Administration Quarterly*, 31(2), 183-184.
- Klienman, C. S., & Saccomano, S. J. (2006). Registered Nurse and unlicensed assistive personnel: An uneasy alliance. *Journal of Continuing Education in Nursing*, 37(4), 162-170.
- McInnis, L. A., & Parsons, L. C. (2009). Thoughtful nursing practice: Reflections on nurse delegation decision making. *Nursing Clinics of North America*, 44, 461-470.
- National Council of State Boards of Nursing (NCSBN) (2006). NCSBN and ANA issue joint statement on nursing delegation. Retrieved from <http://www.ncsbn.org/1056.htm>
- Nursing and Midwifery Council (2007). Accountability. NMC, London. Retrieved from <http://www.nmc-uk.org/aFrameDisplay.aspx?DocumentID=4018>
- Paediatric Nursing. (May, 2008). Delegation of procedures. *Paediatric Nursing*, 20(4), 25.
- Parsons, L. C. (1997). Nurse Delegation Decision Making: Evaluation of a teaching strategy. *Journal of Nursing Administration*, 27(2), 47-52.
- Parsons, L. C. (1998). Delegation skills and nurse job satisfaction. *Nursing Economics*, 16(1), 18-26.
- Parsons, L. C. (1999). Building RN confidence for delegation decision-making skills in practice. *Journal for Nurses in Staff Development*, 15(6), 263-269.
- Potter, P., Deshields, T., & Kuhrik, M. (2010). Delegation practices between Registered Nurse and nursing assistive personnel. *Journal of Nursing Management*, 18, 157-165.
- Royal College of Nursing. (2006). Managing children with health care needs: Delegation of clinical procedures, training and accountability issues. Retrieved from www.rcn.org.uk/data/assets/pdf_file/0020/145640/Clinical_proceduresfinal08.pdf
- Shelley, H. & Coyne, R. (2009). Employing healthcare assistants in paediatric oncology units. *Paediatric Nursing* 21(9), 32-34.
- South African Nursing Council. (2005). South African Nursing Council's Nursing Act No. 33 of 2005. Retrieved from <http://www.sanc.co.za/publications.htm>
- Standing, T. & Anthony, M. (2008). Delegation: what it means to acute care nurse. *Applied Nursing Research*, 21, 8-14.
- Wilson, D. (2011). The Botswana "I am Proud to be a Nurse" campaign. *The Tennessee Nurse*. December 2010, January, February 2011, 8.
- Satterthwaite, P., Larmer, P., Norton, R., Robinson, E. (1999). Risk factors for injuries and other health problems sustained in a marathon. *British Journal of Sports Medicine*, 33: 22-26.
- Schwellnus, M.P., Stubbs, G. (2006). Does running shoe prescription alter the risk of developing a running injury? *International Sport Medicine Journal*, Vol.7, No 2, p138-153.
- Smith, A., Scott, S., Wiese, D. (1990). The psychological effects of sports injuries: Coping. *Sports Medicine*, 9(6):352-369.
- Souza, R.B., Powers, C.M. (2009). Differences in hip kinematics, muscle strength, and muscle activation between subjects with and without patellofemoral pain. *Journal of Orthopaedics and Sports Physical Therapy*, 39(1): 12-19.
- Taunton, J.E., Ryan, M.B., Clement, D.B., McKenzie, D.C., Lloyd-Smith, D.R., Zumbo, B.D. (2002). A retrospective case-control analysis of 2002 running injuries. *British Journal of Sports Medicine*, 36.2: p95(7).
- Taunton, J.E., Ryan, M.B., Clement, D.B. (2003). A prospective study of running injuries: the Vancouver Sun Run "In Training" clinics. *British Journal of Sports Medicine*, 37: 239-244.
- Tessutti, V., Trombini-Souza F., Ribeiro, A.P., Nunes, A.L., Neves Saco, I.D. (2008) In shoe plantar pressure distribution during running on natural grass and asphalt in recreational runners. *Journal of Science and Medicine in Sport*, 13: 151-155
- Thacker, S.B., Gilchrist, J., Stroup, D.F., Kimsey Jr, C.D. (2004). The Impact of Stretching on Sports Injury Risk: A Systematic Review of the Literature. *Medicine and Science in Sports and Exercise*, Vol. 36, No. 3, pp. 371-378.
- Van Gent, R.N., Siem, D., van Middelkoop, M., van OS, A.G., Bierma-Zeinstra, S.M.A., Koes, B.W. (2007). Incidence and determinants of lower extremity running injuries in long distance runners: a systematic review. *British Journal of Sports Medicine*, 41: 469-480.
- Van Mechelen W. (1995) Can running injuries be effectively prevented? *Sports Medicine*, 19(3): 161-165
- Walter, S.D., Hart, L.E., McIntosh, J.M. (1989). The Ontario cohort study of running-related injuries. *Arch International Medicine*, 149: 2561-2564.
- Warburton, D.E.R., Nicol, C.W., Breding, S.S.D. (2006) Health

- benefits of physical activity : the evidence. CMAJ, 174(6) ; 801-9
- Wen, D.Y., Puffer, J.C., Schmalzried, T.P. (1998). Injuries in runners: A prospective study of alignment. Clinical Journal of Sport Medicine, 8: 187-194.
- Wexler, R. (1995). Lower extremity injuries in runners: helping athletic patients return to form. Postgraduate Medicine, 98.n4: p185(6).
- Willems, T., Clerq, D., Delbaere, K., et al. (2006). A prospective study of gait related for exercise related lower leg pain. Gait Posture, 23: 91-98.
- Yeung, E.W., Yeung, S.S. (2001). A systematic review of interventions to prevent lower limb soft tissue running injuries. British Journal of Sports Medicine, 35.6: p383(7).

Assessment of Risk to Indoor Air Pollutants among Computer and Photocopier Business Operators in Tertiary Institutions in Zaria, Nigeria

Stanley, Andrew .M; Joshua, Istifanus A¹; Andrew, S.S² and Dania, A.A

Department of Building, Ahmadu Bello University, Zaria, Nigeria

¹University Health Service, Ahmadu Bello University, Zaria, Nigeria

²Department of Sociology, Ahmadu Bello University, Zaria, Nigeria

Corresponding Address:

Dr Stanley Andrew M
Department of Building,
Ahmadu Bello University,
Samaru Kaduna State, Nigeria
E-mail: stanleywond@yahoo.com

Abstract

Background

Exposure to indoor gaseous pollutants is an issue of serious public health importance in Nigeria.

Method

The study was a descriptive cross sectional survey carried out between February and March, 2012 to assess the awareness of risk to indoor air pollutants among computer and photocopier business operators in tertiary institutions in Zaria, Nigeria. Data was collected using semi-structured questionnaires and analyzed using SPSS version 16.0.

Results

Majority (56%) of the respondents were within the age range of 21 -30 years, about half (51%) were male, 75% single, and 75% had tertiary education. About 93% of the business operators had generators with capacity of 2 - 9 KVA (34%) and majority (33%) of the generators run for 6 – 10 hrs per day. The distance between the generators and the shops was 5 metres in 47% of the cases, the ceiling height and area of the windows were below standard. A good percentage (99%) of the operators were aware of hazards associated with use of generators such as feeling of choking (37%) and dizziness (29%). Measures of controlling the hazards included changing the location of the generators (49%) and direction of the exhaust (40%).

Conclusion

The recommendations included the need for improvement in the national electric power supply by the federal government, connecting the shops to central power supply (generator) by the schools authorities, uniform construction of standard shops and continuous public enlightenment of the public on hazards associated with generator use and preventive measures, among others.

Key words: Indoor air pollutants, Generators, Business centres, Tertiary institutions, Nigeria

Introduction

People's health depends on the continuous balance of inspiration and expiration, the delicate exchange of gases between people and earth's atmosphere and study showed that every man, woman and child exchanges between 10,000 & 70,000 litres of air every 24 hours, just to sustain life (EPA, 2006). This shows how important the physical and chemical properties of indoor air quality. Indoor air quality (IAQ)

refers to the air quality within and around buildings and structures, especially as it relates to the health and comfort of building occupants. IAQ can be affected by gases, particulates, microbial contaminants or any mass or energy stressor that can induce adverse health conditions. Exposure to indoor gaseous pollutants has been an issue of serious concern in most developing countries (Nigeria inclusive), attributing to man's docile

attitudes, poverty and insufficient energy supply. Despite the substantial quantities of pollutants emitted during generator operation into the indoor and outdoor environment, users are unconcerned about the effects (Dingle and Lalla, 2002; Stanley, 2011). The combustion of fossil fuel (diesel, petroleum, kerosene, coal and natural gas) especially petroleum in portable electric power generators for electric power supply in Nigeria has been influenced by the erratic nature of power supply from the national grid. The Power Holding Company of Nigeria (PHCN) is solely responsible for the generation and distribution of electricity which is usually inadequate and erratic (Akande and Owoyemi, 2008). This makes the use of power generators by households, computer and photocopier operators a very common phenomenon in Nigeria, including tertiary institutions. The country's peak electricity demand is 30,000MW, but at present the maximum generation is 3,000MW with losses of 30 – 35% during transmission (Hall, 2006; Stanley, 2008). This has influenced the use of over 60 million electric power generators in the country (Ideriah et al., 2007). The use of generators has unwanted effects both on the environment and humans.

Indoor air quality affects the well being of building occupants who spent 80-90 % of their time indoors. Exposure to indoor air pollutants above certain limits is associated with several health implications. Indoor air pollution is the 8th most important risk factor and responsible for 2.7% of the global burden of disease (WHO, 2005). Ventilation has various positive impacts on health and productivity of building occupants (Seppanen & Fish, 2004; Bell et al., 2009).

Study showed that indoor air pollution is one of the most serious environmental threats to human health, yet no agency can regulate it (Gavigan, 2009). Globally, more than 1 million people die yearly from chronic obstructive respiratory disease (COPD) that develop due to exposure to such indoor air pollution (WHO, 2005).

It is important to carry out this study in order to assess the socio-demographic characteristics and risk awareness, among others of persons operating computer and photocopier businesses in tertiary institutions in Zaria, Nigeria. The information

generated will help in the mounting of an appropriate health education programmes in the institutions for the business operators, management of the schools, staff and students who patronage such businesses.

The effects of indoor air pollutants range from short-term effects such as eye and throat irritation to long term effects as respiratory disease and cancer. Exposure to high levels of some pollutants, such as carbon monoxide, can even result in immediate death. Also, some indoor pollutants can magnify the effects of other indoor pollutants.

Poor air quality has been limited to be both short and long term health problems and the following conditions can be caused or exacerbated by poor indoor air quality- asthma, allergies and other respiratory problems, headaches, eyes and skin irritation, sore throat, colds, memory loss, dizziness, fatigue and depression among others (Brundaje et al., 1988; USEPA, 2009).

Majority of the students in Nigerian tertiary institutions are poor. Their programmes and accommodations are either financed by families or the students work for money during short breaks and holidays for the fees. There are no opportunities to access scholarship as obtainable in most developed countries. These coupled with the economic situation in the country have made it difficult for the students to afford the necessary educational aids (computer inclusive) for their use. This problem has encouraged the patronage of computer and photocopying business operators around the campuses. The students are charged for the services of typesetting, printing, photocopying, internet access, among others.

Because of unreliable power supply in the country, the use of electric generators by computer and photocopier operators for business is very common especially in the tertiary institutions in Nigeria in order to meet the needs of the staff and students in particular. Very few studies have assessed the risk to indoor air pollutants among computer and photocopier business operators in tertiary institutions in Nigeria.

This study was carried out to assess the risk to indoor air pollutants among computer and photocopier business operators in tertiary

institutions in Zaria, Nigeria, with a view to enlightening the public on the hazards and possible control measures.

MATERIALS AND METHODS

Study Area

Zaria is situated in the centre of Northern Nigeria; located on plateau at a height of 2,200 feet (652.5 metres) above sea level. It is positioned between Latitude 11°03'N and 7°42'E (Mortimore, 1970).

Zaria metropolis comprises of two local government areas (LGAs); Zaria City and Sabon Gari. These local government areas consist of six districts each. Zaria city consists of Zaria, Tudun Wada, Gyelesu, Tukur Tukur, Wuciciri and Dutsen Abba; while Sabon Gari consists of Sabon Gari, Hanwa, Muciya, Samaru, Basawa and Bomo.

Zaria is a very large heterogeneous city with a population of about 1,490,000 people and located in Kaduna State. It is second in size to Kaduna, the state capital. It possesses a tropical continental climate with a pronounced dry season, lasting up to seven months (October to May). The dry season which is usually cold is experienced between November and February.

Study Design

A descriptive cross sectional type study was carried out in 3 tertiary institutions located in Zaria, Nigeria between February and March, 2012. The selected schools were Ahmadu Bello University, Zaria (main and Kongo campuses), Federal College of Education, Zaria and Nuhu Bamali Polytechnic, Zaria. The list of all approved computer and photocopier business premises were obtained from the schools market management committees. A list of the attendants in each of the premises was obtained to form the sampling frame and two were randomly selected using simple balloting from each premise where there were more than two attendants, thus giving 100 respondents. The sampling frame was made up of 120 attendants.

Permission was obtained from the owners of the business premises and informed consent obtained from the operators before the data collection instruments were applied.

Data collection Tools

Data was collected with the use of an interviewer-administered questionnaire which had 4 sections. Section A contained socio-demographic characteristics and section B contained questions on generator possession and operational characteristics. Section C had building related issues and section D contained questions on awareness of hazards as well as safety and preventive measures. The investigators were trained to reduce inter-observer errors and the data collection tool was pretested at Kaduna State University, Kaduna, Nigeria and necessary adjustment made.

Data Analysis

The data collected were entered into the computer and analysed using Statistical Package for Social Sciences using version 16.0 (Chicago Illinois) software. Discrete variables were presented with the use of tables.

RESULTS

Majority (56%) of the respondents were within the age bracket of 21 -30 years, about half (51%) were male, 75% single and 75% had tertiary education (Table 1).

About 93% of the business operators had generators, 96% of the total generator uses petrol as fuel. 34% of the generators have capacity of 2-9 KVA and majority (33%) run for 6 – 10 hrs per day and daily quantity of fuel use was 2.1 – 4.0 litres (36%). The distance between the generators and the shops was 5 metres in 47% of the cases (Table 2).

About 79% of the shops were built with mud. The ceiling height and area of the windows were below standard and 95% of the shops had fans (Table 3).

A good percentage (99%) of the operators were aware of hazards associated with the use of generators such as feeling of choking (38%) and dizziness (28%). 43% of the respondents complained of smoke in their shops and measures of controlling the hazards included changing the location of the generators (49%) and exhaust of the generator (40%) (Table 4).

Table 1.Socio-Demographic characteristics of the respondents(N= 75)

Variables	Frequency	Percentage
Age in years		
20	18	24.0
21-30	42	56.0
30	15	20.0
Sex		
Male	38	50.7
Female	37	49.3
Marital status		
Married	19	25.3
Single	56	74.7
Educational level attained		
Primary	1	1.3
Secondary	18	24.0
Tertiary	56	74.7

Table 2.Generator possession and characteristics

Variable	Frequency	Percentage
Generator possession & use(N=75)		
Yes	70	93.3
No	5	6.7
Type of generator		
Petrol	67	95.7
Diesel	3	4.3
Capacity of generator (KVA)		
0.9	5	7.1
1.0-1.9	6	8.6
2.0-2.9	12	17.1
5.0-9.0	12	17.1
10.0-19.0	7	10.0
20.0	1	1.4
No idea	27	38.6
Generator daily hours in operation		
5	42	60.0
6-10	23	32.8
11-15	2	2.8
16	3	4.3

Daily quantity of fuel used(litres)		
0-2	5	7.1
2.1-4.0	25	35.7
4.1-6.0	21	30.0
6.1-8.0	7	10.0
>8.0	10	14.3
No idea	2	2.9
Daily amount spent on fuel (N)		
0-150	1	1.4
151-300	6	8.6
301-450	21	30.0
451-600	25	35.7
>600	15	21.4
No idea	2	2.9
Distance away from shop (metre)		
5.0	33	47.1
5.2-10.0	19	27.1
10.1-15.0	10	14.3
>15.0	5	7.1
No idea	3	4.3

Table 3. General characteristics of the shops

Variable	Frequency	Percentage
Material used for shop construction (N=70)		
Timber	9	12.9
Metal	5	7.1
Cement Block	56	80.0
Height of shop ceiling from the floor in metre (N=70)		
2)	8	11.4
2.1-2.9	39	55.7
3	14	20.0
No idea	9	12.9
Provision of window (s) in the shop (N=70)		
Yes	35	50.0
No	35	50.0
Surface area of the window for ventilation (m²) (N=70)		
1	22	31.4
1.1-1.44	32	45.7
1.45	8	11.4
No idea	8	11.4

Possessing ventilating system in the shop (N=70)		
Yes	62	88.6
No	8	11.4
Type of ventilating systems in use (N=62)		
Fan	59	95.2
Air conditioner	3	4.8

Table 4. Awareness of Hazards associated with generator use and related issues (N=70)

Variable	Frequency	Percentage
Awareness of hazards		
Yes	69	98.6
No	1	1.4
Types of hazards aware of		
Dizziness	20	28.6
Feeling of Choking	26	37.1
Impaired vision	12	17.1
Death	8	11.4
Others	4	5.7
Complaint of smoke in the shop		
Yes	30	42.9
No	40	57.1
Action taken		
Change generator exhaust direction	28	40.0
Stop generator use	3	4.3
Change generator location	34	48.6
Did nothing	4	5.7
Others	1	1.4

DISCUSSION

The age distribution of the respondents showed that majority are within the productive age range of 21-30 years and 2/3 had tertiary education. This could be as a result of high level of unemployment in the country. Also because male and female equally engaged in the business of computing and photocopying in the studied institutions, that buttressed the fact that, both sexes are affected by the high unemployment issue in the country. Majority being single may not be too far from the aforementioned factor of unemployment. Lack of jobs could discourage most young people

marrying. Majority of the operators of these businesses had tertiary education showed that underemployment is also a problem in Nigeria.

Over 90% of the business operators have generators which uses petrol. This is necessary due to the erratic power supply in Zaria and the country at large. The immediate reason why most operators preferred generators that use petrol could be due to the high cost of diesel in the country. Also in 93% of cases, the generators are usually in use for 5- 10hrs daily which in most cases coincides with the hours of lack of electricity from the national grid and hours of

business. Daily quantities of petrol used by the majority of the respondents (66%) were 2.1 – 6.0 litres per day which amounts to N300 – N600 daily (\$2- 4) spent daily by 74% of the respondents. These findings also showed that the use of solar energy for power generation is not common despite the abundance of sun in Zaria.

Another important variable measured was distance of the generator from the shop. This is important in relation to gaseous emission from the generator that may have a harmful effect on the health of the operators and their customers. Close to half (47%) had the distance 5 metres which is far below standard. A distance of 17.7 metres for small generator is what is required for safety purposes (Stanley, 2011). Closely related to this, are materials used for the construction of the shops, height of the ceiling from the floor, provision of windows in the shop and its size, provision of ventilating system in the shop and the type (Table 3).

In almost 4/5 of the shops cement blocks were used to construct the shops, and height of the ceiling was 2.1 – 2.9 metres in slightly more in 50% of cases, and 50% of the shops have windows but what matters were the sizes of the windows and their positions. The area of the window for ventilation was 1.1- 1.44 m² in close to half of the shop (46%) which is adequate. About 89% have ventilating system of which 95% were fans. This is understandable in view of the hot weather usually in Zaria except during harmattan, November to January). The use of ventilation among others to dilute contaminants is the primary methods for improving indoor air quality in most buildings (Bako-Biro et al., 2004). Also, ventilation reduces the prevalence of air borne infectious diseases and thus the number of sick leave days. 11 Almost 99% of the operators were aware of hazards associated with generator use, the highest being choking sensation (37%), followed by feeling of dizziness (28.6%) (Table 4). None of them mentioned noise pollution and other environmental degradation as issues. Almost 4/5 of the respondents said they were aware of ways of reducing generator indoor pollution by changing the location of the generator and the position of the generator exhaust. These are usually difficult to carry out because of the constant change in the direction of flow of wind and usually when there are many customers waiting these may be difficult to carry out. The information on

awareness on hazards associated with the use of generators will serve as a baseline and will be used in the mounting of an appropriate health education for the respondents and the general public.

CONCLUSION

The study showed that most of the operators are highly educated in the studied institutions and generator use is very common because of epileptic power supply. Most of the shops are deficient in terms of the building standards.

In view of that, the following recommendations are made:

1. Shops to be given out for business to operators should be constructed for uniformity and to meet standards by estate department of the respective schools.
2. Encouragement of the provision of central electric power generating plant by the schools authorities for use by business centres.
3. Continuous public enlightenment and education of the general public and operators of computers and photocopying machines on hazards associated with the use of generators and how to reduce that by the relevant stakeholders.
4. There is a need to improve the national electric power supply.
5. This is a need to explore the use of solar energy which is environmentally friendly to power the machines by the business operators among others.

ACKNOWLEDGEMENTS

The authors of this study wish to thank the Management of the institutions where the research was carried and the respondents for the role they played to make the research a success.

References

- Akande, T.M. and Owoyemi, J.O. (2008): Awareness and Attitude to Social and Health Hazards from Generator Use in Ayigba, Nigeria. *Medwell Journal. Research Journal of Medical Sciences*. Vol. 2. No. 4. Pp. 185 – 189.
- Bako-Biro Z, Warqocki P, Weschler CJ, Fanger PO (2004). Effects of pollution from personal computers on perceived air quality, SBS symptoms and productivity in offices, *Indoor Air*, 14(3): 178-87.
- Bell ML, Ebisu K, Peng RD, Dominici F (2009). Adverse effects of

- particulate air pollution: modification by air conditioning. *Epidemiology*, 20 (5): 682-6
- California Environmental Protection Agency (EPA)(2006). Reducing Indoor Air Pollution: Indoor air Pollution-a serious public health problem www.arb.ca.gov/research/indoor/rediap.htm(assessed on 10 August, 2012).
- Dingle, P.and Lalla, F.(2002) Indoor air health risk perceptions in Australia, *Indoor Built. Environ.*, 11, 275–284.
- Gavigan C (2009). Shocking facts about the air in your home. <http://www.blogs.webmd.com/health-ehome/2009/07/3> (assessed on 10 August, 2012).
- Hall, D. (2006): Water and Electricity in Nigeria. <http://www.world-psi.org>. (accessed on 20th September, 2008).
- Ideriah, T.J.K., Herbert, S.O. and Ideriah, B.J. (2007). Assessment of Indoor Air Quality in a Chemical Fertilizer Company, Onne, Nigeria. *Research Journal of Applied Sciences* Vol. 2, No. 3. Pp. 310–213.
- Manufacturing Association of Nigeria (MAN, 2009). Manufacturers Need 2,000MW of Electricity to Stay Afloat. *Business Day*, Tuesday, 21st July, 2009.
- Mortimore, M.J.(1970). Zaria and its region. *Annals of the Association of American Geographers*, 60: 73-80.
- Seppanen, OA and Fisk, WJ (2004). Summary of human responses to ventilation, *Indoor Air*, 14 suppl 7: 102-18.
- Stanley, A.M. (2011): Environmental Sustainability of Fossil Fuel Generators for Electric Power Supply to Buildings in Kaduna Metropolis. Unpublished Ph.D. Dissertation, Department of Building, Ahmadu Bello University, Zaria – Nigeria.
- Stanley, I. (2008): Nigeria's Electricity Crisis, Renewable Energy and the Opportunities. [Online] Available at www.en.towerofbabel.com/blog/2008/06/26/nigerias-electricity-crisis-renewable-energy-th.(Assessed on 18th August, 2008).
- WHO (2005). Indoor air pollution and health, Fact sheet no. 292, World Health Organization. <http://www.who.int/mediacentre/factsheets/fs292/en/index.html> (accessed on June 23, 2010).

ASSESSMENT OF THE ROLE OF SPORTS IN FIGHTING HIV/AIDS in BUGULUMBYA SUB-COUNTY, KAMULI UGANDA

Isabirye Charles (**BSc Sports Science**)
Nankwanga Annet (**PhD**)

Corresponding Author:

Dr Nankwanga Annet
Makerere University
Department of Biochemistry and Sports Science
Lincoln Flats Block B6
P.O.Box 7062
Kampala
Uganda
Email: nankwangaa@gmail.com

Abstract

Introduction: Although sports has been widely used and believed to help in HIV/AIDS prevention to date its impact in fighting HIV/AIDS has not been thoroughly investigated. Because sports tend to conjoin many people of all walks of life either as participants or as spectators, the use of the power of sports in tackling the HIV/AIDS pandemic may be worthy studying hence this study. The study aimed at assessing the role of sports in fighting HIV/AIDS among the youth of Bugulumbya sub-county in Kamuli District.

Methods: The researcher employed a Descriptive cross-sectional study design that used both qualitative and quantitative methods of data collection. The methods included; questionnaires, interviews, observations as well as documentary analysis. The researcher used a purposive sampling technique to meet part of the population like the head-teachers and teachers whereas stratified random sampling was employed to select the students. Convenience sampling was used to select the parents of the students depending on their accessibility and availability. Part of the data collected was analyzed using content analysis while the quantitative data was analyzed using descriptive statistics. The analyzed results were presented in form of tables, pie-charts, graphs and narratives.

Results: The results of the study indicate that majority of the youth who participated in various sports activities in their various schools had something to learn from the sports events where HIV/AIDS messages are conveyed to masses. This helped them to make informed decisions after participating in the above sports events hence leading to an overall positive behavioral change. They all recommended the strategy of using the power of sport in tackling HIV/AIDS among the youth as being an effective tool in fighting HIV/AIDS and as well as being a learning experience with fun. Most teachers, parents and head-teachers contended the strategy of using the power of sport to tackle the HIV/AIDS pandemic as being effective in creating awareness among the youth and reinforcing what the youth had already known about the HIV/AIDS scourge.

Key Words: Sports, HIV/AIDS, Prevention, Uganda, Bugulumbya sub-county

Background

HIV/AIDS is still a major challenge in the world today. Over 33.4 million people are affected with HIV/AIDS globally (Government of Uganda (G.O.U), 2010; Wabwire-Mangen et al., 2009). In Uganda HIV/AIDS kills every year many people and also reduces the life expectancy of people. Owing to this fact, many children have become orphans and helpless. Secondly the youth have started being infected by HIV/AIDS and as a consequence the mortality of the

youth has increased too (Alpha Youth Uganda, 2012). Currently out of a population of 34.6 million in the country, 1.2 million (7.3%) are living with HIV and AIDS. Those living with AIDS are not only affected by the disease but also discriminated at all levels of the society. Though in the beginning of the late 1980s, the Government of Uganda, Non-government organizations (NGOs) and the International Community launched an aggressive public health response to AIDS, the problem is still not yet

resolved (UYDEL, 2012). There is need to continue with preventive strategies among the various population groups especially the youth who are the most at risk.

Literature indicates that AIDS is still a challenge among the youth and adolescents (UNICEF, 2012). According to UNICEF (2012) each day 6,000 adolescents are infected with HIV yet many have no access to accurate information, life skills or even health services. In Uganda, the youth in the age group of 15-19 years had a prevalence rate of 2% on average for both sexes (Uganda Aids Commission, 2012). The UNAIDS World AIDS Day Report of 2011 urges that declines in new HIV infections across the world have been spurred by changes in behavior among young people. Access to prevention services has empowered individuals and communities to act in earnest against the disease. In countries with generalized epidemics, a combination of behavior change, including reductions in sexual partners, increases in condom use and delayed age of first sex have reduced new infection (incidence) in several countries (UNAIDS World AIDS Day Report of 2011). The situation in Uganda is not yet known hence the need for further research to be conducted. Therefore strategies targeting prevention should be continued and geared towards change of behavior, attitude and increased access to information.

Sports can be used as a tool for preventing HIV spread (UNICEF, 2012). Evidence from different countries such as Zambia, Uganda and Kenya reveal that sports can play a great deal in HIV prevention (Lindsey & Banda, 2011; UNICEF, 2012; UYDEL, 2012). One of the key objectives of the Uganda Ministry of Education and Sports five year HIV/AIDS prevention strategic plan 2011-2015 is to increase the use of sports and other co-curricular activities in HIV prevention. This will help to increase the use of condoms and other preventive measures. According to Uganda Youth Development Link (UYDEL) (2012) and Ruth et al., (2008) participating in sports activities either as an athlete or spectator, where HIV/AIDS messages are conveyed to the masses is a way of creating HIV/AIDS awareness to the public. Although some youth may not be participating in sports activities, they can still make valid and objective judgment on the phenomenon and its impact on the youth depending on whichever source of information they have heard from. The same applies to the parents and teachers as well who may also inform the youth about HIV/AIDS

(Alpha Youth Uganda, 2012). This success will stem from participating in sports events where HIV prevention messages are conveyed.

Although sport has been used as a strategy of fighting HIV/AIDS in Uganda since 1993, its significance as a tool used to fight HIV/AIDS among the youth has not yet been adequately studied. This study assessed the role of sports in HIV/AIDS prevention particularly in areas of Bugulumbya, one of the sub Counties where HIV/AIDS messages have been employed during sport activities in the different schools within the sub county for a period of about three years now. This paper presents the findings on one of the objectives that was carried out to explore the role of sports in fighting HIV/AIDS among the youth.

Methodology

The study was carried out at Bugulumbya sub-county, one of the political divisions in Kamuli District. The sub-county has about 30 primary schools, 8 secondary schools, 5 parishes and 67 LC1 villages in which both school going youth and various youth out of school are organized in different sports activities. However in some of the sport activities, HIV prevention programs have been incorporated into them to sensitize the youth on HIV/AIDS prevention, transmission and treatment in order to raise awareness of HIV/AIDS among the youth within the sub- county (Adapted from the Map of Kamuli District 2002, Macmillan Publishers).

The objectives of the study were to find out the level of involvement of the selected schools in sports, presence of programs on HIV prevention during school, their sport events and finally to explore the people's views and opinions regarding the role of sports in HIV and AIDS prevention in the selected study areas. This was a descriptive cross-sectional study that used both qualitative and quantitative approaches. The target populations were secondary school students, teachers, head-teachers and parents in selected schools in Bugulumbya. A purposive sampling technique was used to select part of the sample such as head-teachers, teachers and parents whereas stratified random sampling was employed to select students from four randomly selected schools (Kasambira High School, Kamuli community college Kasambira, Bugulumbya secondary school and Bright standard Secondary

school). Therefore a total sample of 80 (eighty) respondents were selected for the study. This included 60 secondary school students from the four secondary schools (i.e. 30 females and 30 males) and in each school 15 students were selected using stratified random sampling from 3 strata of S.1, S.2, and S.3 classes, each stratum consisted of 5 randomly selected students), then eight purposively selected teachers (i.e. two from each school), and 4 head-teachers from the four schools. And finally 8 parents of some of the selected students were conveniently selected to participate in the study depending on their accessibility, availability and willingness. The data collection methods included; Observation, Interviews, questionnaires and documentary review. The researcher first sought permission from the Department of Biochemistry and Sports Science of Makerere University and also from the school authorities of the selected schools so as to be allowed to carry out the survey. This was followed by selecting the participants for the study. A detailed explanation on the objective of the study was given and thereafter questionnaires were administered to the selected students; and the games and sports teachers. This was followed by interviews with school head-teachers and then the parents of the students respectively. The interviews were conducted basically on a one-to-one basis for both the parents and head-teachers. Each interview session on average lasted between 1 and 1½ hours in a safe and conducive environment such as under a tree, in a quiet office or classroom that was free from any external distractions. Interviews were tape recorded and also noted in a notebook.

In order to supplement on the primary data observations were concurrently employed so as to enable the researcher observe compliance with the PIASCY guidelines that's to say to see if PIASCY assembly messages were displayed for the students to read and know more about HIV/AIDS prevention, transmission and treatment. Notes on such observations were recorded in a notebook. Finally document review on the policies about HIV/AIDS and sports, the National AIDS Strategic Framework 2006-2010, UNAIDS report 2010, HIV/AIDS journals and related research reports were reviewed and the information obtained was used to augment the data collected.

During the research process, ethical principles were

taken care of. This included according respect, privacy and anonymity to the participants. In addition all participants were fully informed verbally of the purpose of the research and of the nature of their participation, which was entirely voluntary and were free to withdraw whenever they wished to do so. Prior to commencing with data collection, all participants were requested to give their verbal consent to be part of the research and they were assured that the information given would be treated with utmost confidentiality.

Data analysis

Data was analyzed using both qualitative and quantitative methods of data analysis. An initial round of a qualitative analysis helped to identify data that related to the study objectives and the content acquired through observation, interviews and questionnaires as well as from the document review. Subsequent analysis of data under each of these objectives/themes was largely inductive or rather narrative using content analysis while quantitative data was analyzed using basic descriptive statistics. The data was presented in form of percentage and frequency tables, pie charts and bar graphs.

Results

Demographic findings

The participants of the study included 31 (51.67%) females and 29 (48.33%) males. The female students were slightly more than the male students indicating that there were more females than males in almost all the schools visited. Regarding age bracket, 34(56.67%) of the participants were of the age bracket 16-18 years who were the majority, followed by 23 (38.33%) of age bracket 13-15 years and 2 (3.34%) were of age bracket 19-20 years while 1(16.6%) of the participants didn't indicate the age as requested. This choice was believed to give all the necessary information that was required about the students' age group for the study.

Schools involvement in sports

Four (4) head-teachers were interviewed to find out whether their schools got involved in sports and they all admitted that their youth (students) take part in sports competitions scheduled per term with the exception of third term that is reserved for summative examinations for O and A level finalists (S.4 and S.6 students). When the youth were asked whether they participated in the sports competitions

either as players or spectators, their responses showed that 27(45%) students participated in sports as players, 22(36.67%) as spectators while 11(18.33%) did not participate at all. Those who participated in sports were asked to state the reasons why they participated in sports and at least five reasons were given for participating in the sports activities as follows; 1) The schools had suitably qualified Sports and Games teachers and coaches, 2) Schools funded their sports activities and trips to

competitions, 3) Some schools had adequate sports facilities, 4) Availability of adequate sports equipment in some schools, and 5) Encouragement from peers and sports role models.

On the other hand, those who did not participate in any sports activity were further asked to mention the reasons why they did not participate and they gave the following reasons as summarized in table 1:

Table 1: Reasons for non-participation in sports activities

S/NO	Reason given	Frequency
1.	Disability	2
2.	Cannot balance between books (studies) and games (sports activities).	4
3.	Lack of interest in sports activities	6
4.	Health complications like feeling headache, too much thirst, etc. after playing sports.	3
5.	Lack of incentives and support from teachers to train them.	1
6.	Parents' discouragement at home.	4
7.	Peer influence.	3
8.	Lack of or inadequate sports facilities and equipment at schools.	1
9.	Sports and games are meant for boys only apart from Netball.	4
10.	Sports are reserved for those who are dense in classroom.	1
11.	Teachers' discouragement as sports waste a lot of time meant for books.	2
12.	Schools' failure to fund sports activities like trips.	1

The table shows the various reasons that were given by students for not participating in sports activity. Some of the students were discouraged from participating in sports by their disability; others were denied the opportunity by their parents while some lacked interest in sports.

Presence of HIV/AIDS prevention program during sports events

A question was posed to those who participated in sports whether there were people who used to talk about HIV/AIDS during sports events and at least 88.33% of the total number of respondents interacted with responded affirmatively. This means that majority of the students had been exposed to HIV/AIDS talks where sports is used as a tool to fight HIV/AIDS. Other activities that were involved in the prevention program included Voluntary Counseling and Testing (VCT) prior or after the sport event and

distribution of leaflets that had information on HIV and AIDS prevention to enable them read more on HIV prevention. Observations in the school environments also revealed that there were HIV/AIDS prevention messages that were displayed on the notice boards in all the schools visited.

Students' views and opinions on the role of sports in fighting HIV/AIDS among the youth

Students were asked whether sports competitions/activities where people talk about HIV/AIDS are good. Majority (95%) of the students agreed that this was good while only 5% did not agree.

Reasons given by the students who said sports competitions where HIV/AIDS messages are conveyed to masses are good are as indicated in Box 1.

Box 1: Reasons why sports messages on HIV/AIDS are good:

- ♦ They are educative.
- ♦ They teach people how to care for the HIV/AIDS victims.
- ♦ They teach people on how to prevent mother to child transmission.
- ♦ They help a person to abstain from sex.
- ♦ They help students to continue with their studies.
- ♦ They help us to avoid getting HIV/AIDS.
- ♦ People are told to use a condom if they cannot abstain from sex.
- ♦ They teach students about methods of preventing HIV/AIDS.
- ♦ They make people happy.
- ♦ They help people to carry out HIV/AIDS testing.
- ♦ They help people (sexual partners) to be faithful to one another.
- ♦ They help students to avoid sexually transmitted diseases (STDs).
- ♦ They help to create more HIV/AIDS awareness among the youth and the general public.
- ♦ They teach students to behave well (hence positive behavioral change).
- ♦ They teach students (youth) to avoid early marriages.
- ♦ Counseling and guidance services are given to students.
- ♦ They help a person with HIV/AIDS to be physically fit.
- ♦ They teach people about the dangers of HIV/AIDS.
- ♦ They make people happy and reduce stigma.
- ♦ They help in the development of the country by fighting against the natural hazard that's HIV/AIDS.
- ♦ They help the youth to know their HIV/AIDS status through testing (VCT).

However the minority who did not agree that competitions or sports events where messages on HIV/AIDS prevention are conveyed to the masses are good gave the following reasons for their incongruous; they can lead people to get diseases, boys and girls can learn bad manners and that they waste a lot of time.

Comparing the reasons advanced by both categories of respondents, it is a clear indication that sports activities where messages about HIV and AIDS are conveyed to the masses have done a great job in informing the youth more about HIV and AIDS, and reinforcing what they had already known about on the same phenomenon.

Teachers' views about sports and HIV/AIDS prevention campaigns

When the Games and sports teachers were asked whether they thought the use of sports is an effective strategy in teaching about HIV/AIDS in schools and sports communities during sports events, six of the seven respondents (85.71%) agreed that it was an effective strategy in teaching the youth about HIV and AIDS while only one did not agree. Those who

said the above strategy is effective in teaching about HIV/AIDS prevention in schools or sports communities during sports events enumerated the following reasons:

- a) It has a powerful social influence among the youth
- b) Sports help to keep the students busy
- c) Sports help learners refresh their minds
- d) Makes students responsible for their own lives
- e) Help students use their time profitably
- f) Creates awareness about HIV/AIDS change
- g) There is a positive moral behavior among sports men and women
- h) Many people can easily acquire the knowledge/message
- i) The youth need this message of guidance
- j) The local people equally require this message about HIV/AIDS prevention
- k) It is a way forward for the (HIV/AIDS) victims to positively live with AIDS
- l) Leads to improved moral behavior
- m) It may help in improving health mind

However the only one teacher who felt the strategy

was not effective in the teaching about HIV/AIDS had this to say *“the approach could best be improved in future by using people who are infected... This is because there is a belief that those who are infected can pass the message better since there is an emotional attachment to it”*(respondent 7).

HIV/AIDS prevention methods usually mentioned at sports events

The students were asked which methods of preventing HIV/AIDS were commonly mentioned at sports events and their responses included 1) Abstinence, 2) Be faithful, and 3) Condom use) as summarized in figure 1:

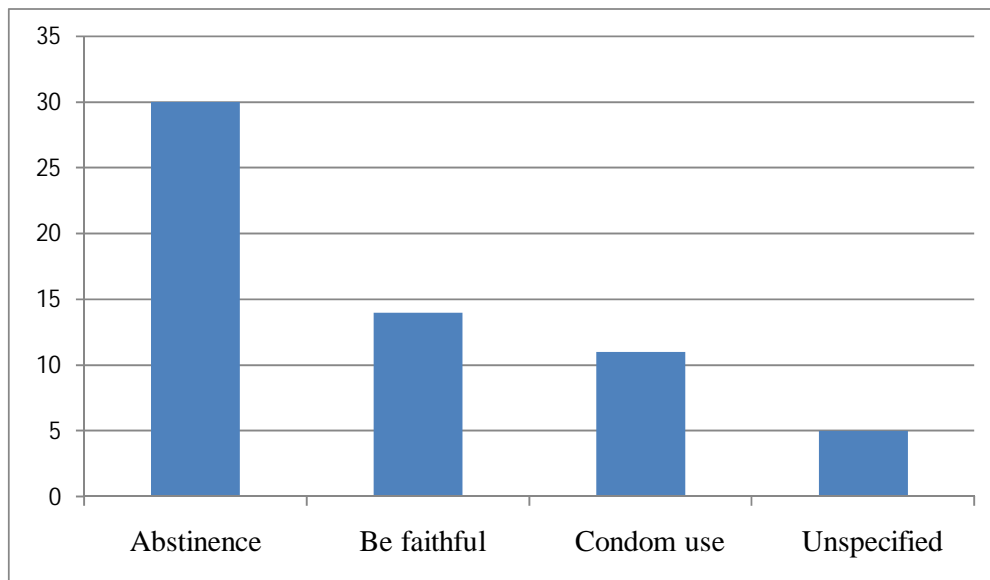


Figure 1: HIV/AIDS prevention methods commonly mentioned at sports events

Figure 1 reveals that majority (50%) of the students indicated Abstinence, 23.33% be faithful while

18.33% said Condom use was most emphasized during the sports events.

Lessons learnt and decisions made after participating in sports where HIV/AIDS messages are conveyed

Students were asked to indicate whether they learnt anything good from such events. Majority of them (88%) learnt something good from the sports events where HIV/AIDS messages are conveyed to the

masses while only 9% reported not to have learnt anything from such messages. This is an indication that the use of sport in fighting against HIV/AIDS has created more awareness among the youth. The students were further asked to mention which key messages they had learnt from such experiences and the responses are as reported in Box 2:

Box 2: Key issues learnt from HIV/AIDS messages that are delivered at Sports events

- ♦ They are educative
- ♦ They teach people how to care for the HIV/AIDS victims
- ♦ They teach people on how to prevent mother to child transmission
- ♦ They help a person to abstain from sex
- ♦ They help students to continue with their studies
- ♦ They help us to avoid getting HIV/AIDS
- ♦ People are told to use a condom if they cannot abstain from sex
- ♦ They teach students about methods of preventing HIV/AIDS
- ♦ They make people happy
- ♦ They help people to carry out HIV/AIDS testing
- ♦ They help people (sexual partners) to be faithful to one another
- ♦ They help students to avoid sexually transmitted diseases (STDs)
- ♦ They help to create more HIV/AIDS awareness among the youth and the general public
- ♦ They teach students to behave well (hence positive behavioral change)
- ♦ They teach students (youth) to avoid early marriages
- ♦ Counseling and guidance services are given to students
- ♦ They help a person with HIV/AIDS to be physically fit
- ♦ They teach people about the dangers of HIV/AIDS
- ♦ They make people happy and reduce stigma
- ♦ They help in the development of the country by fighting against the natural hazard that's HIV/AIDS
- ♦ They help the youth to know their HIV/AIDS status through testing (VCT).

When asked what decisions they could make after watching or participating in sports and HIV/AIDS prevention campaigns, the students mentioned the following positive decisions; 1) The young ones to abstain from sex till marriage, 2) Not to play sex without a condom, 3) To have only one sexual partner and be faithful to him or her, 4) To dislike polygamous marriage (in future), 5) To fear and avoid adult women from luring me into playing sex with them, 6) To go for blood test for HIV, and 7) To revise and concentrate on my books. The other decisions included 8) To avoid bad peer groups, 9) To remain (stay) at school up to the highest level, 10) To use

and enjoy sports as a method of spending leisure, 11) To be trustworthy, 12) To work with health workers to help HIV/AIDS victims, 13) To work with peer educators to educate people about preventing HIV/AIDS, 14) To avoid sharing sharp instruments with others, and 15) To be actively involved in sports.

NGOs/Individuals involvement in the sport and HIV/AIDS prevention campaigns

Teachers were interviewed on whether they had seen any NGOs getting involved in HIV campaigns during sport events. Five (5) out of the seven teachers interacted with accepted that they had ever

seen some NGOs which labor to talk to the students about HIV/AIDS during sports events. With the exception of one head-teacher, three head teachers also acknowledged having seen some people talk to the youth about HIV/AIDS during sports events. One of the head-teachers reported that some youth group from Busoga Diocese once came and talked to the students during the inter-house sports competitions. Another head-teacher said some Whites (European/American people) have their NGOs (whose name he could not readily establish) which counsel and test youth for HIV/AIDS especially before sports competitions they (the NGOs) organize during holidays. The third head-teacher said they always invite health workers to counsel their youth whenever they are going out of school for sports competition/activities.

Head-teachers' and teachers views about sports and HIV/AIDS prevention

All the head-teachers and teachers asserted that the use of the power of sports in confronting HIV/AIDS is one of the tools that have led to an increased HIV/AIDS awareness and positive behavioral change among many of the youth. One head teacher further emphasized during the interview that;

Sport is a powerful tool that can easily be used to conjoin people of all walks of life in a short period of time and draw their attention". With the eagerness of watching a particular sports competition about to take place, the highly attentive masses can easily be addressed on matters concerning HIV/AIDS hence easy grasping of the conveyed message (respondent 4).

The head-teachers also affirmed that even those who dodge attending community organized meetings or workshops, places of worship (churches or mosques) or health/HIV-AIDS workshops organized by Health workers and Community Development Officers (CDO), can easily be reached by use of sports events if they are regularly organized within their vicinities. In this way sports events where HIV/AIDS messages are conveyed to the masses have helped a great deal in fighting against HIV/AIDS among the youth because they are easily mobilized since most of them if not all enjoy playing or watching sports events. All

respondents recommended the use of sports in fighting HIV/AIDS among the youth as one of the most effective strategies to confront the HIV/AIDS pandemic and create more public awareness as well as positive behavioral change among the population.

Parents' views on sport and HIV/AIDS prevention strategy

Parents who watched the sports events where HIV/AIDS messages are conveyed to the masses were asked whether they learnt something from such events. Their responses indicated that majority of the parents (66.67%) learnt something from sports events where HIV/AIDS messages are conveyed to the masses as compared with the 33.33% who claimed to have learnt nothing. The parents who said they had learnt something from watching the sports events where HIV/AIDS messages are conveyed to the masses were then asked to mention what they had actually learnt and their responses are summarized below:

- a) Children can change their behaviors after counseling during sports
- b) Children can learn more about HIV/AIDS
- c) The commonest method of HIV transmission is through unprotected sexual intercourse
- d) Teachers tend to love their students when they go out of school for sports activities so these students are informed about HIV transmission in order not to make wrong love decisions
- e) HIV/AIDS kills and there is still no cure even when there are some ARVs on free offer or sale
- f) Other adults (sugar daddies and mummies) fall into love with young girls and boys

These parents were further asked to indicate whether their children told them about the same, the results obtained revealed that majority of the children (75%) told their parents about the sports events where HIV/AIDS messages are conveyed to the masses while 25% of the parents were not told about the same by their children. Parents were further requested to state what their children said they learnt from the sports events. Their responses are summarized in table 2.

Table 2 Parents' responses on what children learnt from the sports events where HIV/AIDS messages are conveyed

Response given by parents	%
1. Methods of preventing HIV/AIDS	41
2. AIDS is a killer disease	31
3. Modes of HIV transmission	26
4. Other relevant information children learnt	2
Total	100

The table above shows that the most key message that was conveyed to the masses was the methods of preventing HIV/AIDS transmission (41%).

The parents were further asked if the sports events where HIV/AIDS messages are conveyed to people helped their children in any way and their responses indicated that 62.5% of the children were helped by the sports events where HIV/AIDS messages are

conveyed to the masses while 12.5% seem not to have been helped as claimed by their parents.

When asked to state how the sports events where HIV/AIDS messages are conveyed to people helped their children, those parents (the 5) who thought such events had helped their children responded as in the table 3.

Table 3 Parents' responses on the different ways the sports events where HIV/AIDS messages are conveyed helped their children

The different ways the children were helped	Frequency	%age
1. Children's behavior changed positively	2	40
2. Children learnt more about HIV/AIDS	1	20
3. Children developed more fear for HIV/AIDS	1	20
4. Children learnt how to protect themselves against HIV/AIDS	1	20
TOTAL	5	100

The above table indicates that the sports events where HIV/AIDS messages are conveyed to the masses majorly contributed towards the positive behavioral change among the youth to a tune of 40%, while learning more about HIV/AIDS, developing fear for HIV/AIDS and learning how to protect themselves against HIV/AIDS. Only one parent said the sports events where HIV/AIDS messages are conveyed to people did not help the children in any way. This parent was asked to point out the negative effects the messages could have caused to the children and the responses were as follows:

- a) They waste children's time that would otherwise be spent on books.
- b) Teachers get chances to make sexual/love relationships with the girls they teach.

c) Children developed bad habits after participating in sessions where they talk about sex.

d) Children could come back home very late and exhausted hence not helping in domestic work.

DISCUSSIONS

From the research findings, majority of the youth (81.67%) participated in the sports events where HIV/AIDS messages are conveyed to people. As far as the respondents' views about the role of sports activities in fighting HIV/AIDS among young people is concerned, the strategy of using sport as a tool to confront the HIV/AIDS scourge, has full support of the students as they claimed to have learnt important messages about HIV/AIDS, made important personal decisions and changed their ways of behavior. This is in agreement with Hobman,

(2005)'s findings where he stated that "88% of the participants believe that sport has helped them in a positive way, contributing to feeling healthier, developing social confidence and making new friends". A similar suggestion was made by Alpha youth Uganda (2012).

The youth claimed to have learnt many important things after participating in the sport and HIV/AIDS prevention campaigns leading them to make a number of positive decisions geared towards a positive behavioral change. Notable important decisions made included to abstain from sex, delaying sex (till marriage), have only one sexual partner and being faithful to him/her as well as using a condom when playing sex. It is possible that such positive decisions made by the youth as aforementioned above could be among the key factors that could have led to a reduction in HIV/AIDS among young people in other countries as per the UNAIDS World AIDS Day Report of 2011. HIV/AIDS is usually believed to be a taboo subject and the creation of secure and relaxed places to discuss HIV/AIDS through sport and games allows young people to learn about what steps they can take to protect themselves from this disease and to avoid risky behaviour. In a study conducted by Mercy Corps on two of their programmes on sport and HIV prevention in Liberia and south Sudan, it was revealed that HIV/AIDS knowledge and protective attitude levels of the participants were higher after being involved in sports programmes (International Platform on Sport and Development, 2013; Grassroot Soccer 2013).

The majority of the teachers also supported the use of the power of sport in fighting against HIV/AIDS among the youth giving a number of reasons and suggestions on how it could be improved in future such as using the people who are infected in voicing the messages themselves as this could carry the message better during the sport event. They further acknowledged that the use of sport in fighting against HIV/AIDS is a very effective method of conveying HIV prevention messages to the youth. According to UNICEF (2012) sport is regarded all over the world as an important and effective instrument with which to counter the spread of HIV/AIDS. Sport can reach groups of people who are at great risk of becoming infected with HIV, such as young people. According to International Platform on

Sport and development (2013) experience demonstrates that programs which aim to show how infection spreads, along with its causes and symptoms are also effective when physical activities and games are used to communicate these ideas. It is also a known fact that a message has more effect if it is related to the interests and daily experiences of target groups. Therefore information is less threatening when it is placed in the context of sport, in part because of the trust involved. This undoubtedly compounds the findings of this study as the use of sport in the fight against HIV/AIDS is an effective tool to combat HIV/AIDS. Other programs such as tuberculosis and malaria have also used similar approaches successfully to raise awareness about prevention from these diseases. Even the Go Sisters' Project in Zambia provides support on factual information pertaining to sexual and reproductive health through sports opportunities just like the Thailand Migrant Sportworks project which focuses on using sports as an educational tool to teach children about infectious disease prevention (International Platform on Sports and development, 2013).

Just as the teachers did rate the strategy of using sport as a tool to confront the HIV/AIDS pandemic as being one of the most effective strategies that can be used to reach people of all walks of life, the School Head-teachers also rated it as being an adequate method and one of the factors that has contributed to the positive behavioral change among the youth. This is in a way in conformity with the project findings of GrassRoot Soccer, (2013) where they urged that although not a cure, sport can play an innovative and creative role in reaching out to populations. This is possible because sports bring together various categories of people in large numbers, the youth being the majority yet the most at risk group.

However, during the study there are students who were found not to participate in sports events because of reasons such as disability, parents' discouragement, peer influence and negative attitude with an assumption that sports is meant for only boys and not for girls. This type of thinking is wrong, because apart from missing out such important messages on HIV prevention, there are other biological and physical benefits that come with participation in sports. These include; improvement in physical fitness, controls obesity, social assimilation, development in motor skills, teaches

self discipline, stress reduction, improved academic performance and also leads to active, fit and healthy lifestyle outside school (Datko, 2011; National Association for Sport and Physical Education, 2009). A study carried out in America found out that 41.1% of children in schools did not participate in physical education. This leads to increase in obesity and sedentary crisis (PHIT American Foundation, 2011). Surprisingly teachers and some parents were found to discourage some students from participating in sports events with the view that it wastes a lot of time and draws the students' attention from books. This is unbelievable because teachers unlike some parents are expected to know the benefits that come with sports and physical education. They should actually be among the people who should be encouraging learners to get involved in sports.

In Uganda Physical education used to be one of the teaching subjects that were taught at primary level and teachers used to learn it during their training too, but unfortunately it was scrapped off from the education curriculum for reasons unknown to the researcher. This affected the learning process in the country greatly, considering the benefits it has on a growing child. Having no physical education or sports is bad for our children's health and brain function thus affecting academic performance. A study carried out in California and Texas on 3 million children in schools found a strong correlation between higher fitness scores and higher academic scores (PHIT American Foundation, 2011) which further emphasizes on how academic performance could be affected by not participating in sports or physical education. However, recently this issue was revisited by the Ministry of Education and Sports in Uganda, a policy on sports was developed and it is now being recognized by various schools progressively at all levels of education programs i.e. primary, tertiary to university levels.

Apart from a few parents who did not agree, majority of parents admitted that their children benefited from the strategy of using sport as a tool for tackling HIV and AIDS in a number of ways and in particular bringing about a positive behavioral change among their children after having learnt something from the same experiences. Although some of them did not attend sports events where HIV and AIDS messages are conveyed to the masses, they could still make valid judgments about the strategy. This is in

collaboration with Bosman (2008) who point out that sport can be used as a tool for creating awareness, improving knowledge and changing attitudes to HIV affected people.

Conclusion

In view of the findings of this study and with due considerations of the findings of other studies conducted on a similar phenomena, the strategy of fighting HIV/AIDS through sports among the youth seem to have impacted on the youth in the study area positively. This is evidenced by the youth's own personal revelations and the positive decisions made after participating in physical activities where HIV/AIDS messages are conveyed to the masses. Their parents, teachers and head-teachers also affirmed the strategy of using sport to fight HIV/AIDS has been beneficial to the youth in a number of ways ranging from increased awareness about HIV/AIDS to positive behavioral change and as some teachers pointed out in the study "sports is a powerful social influence among the youth".

The objection to the effectiveness of the strategy and the few fears among the minority respondents as regards to the students' morals and conduct must also be put into consideration perhaps to form a basis for future investigation into the issues raised however few they are.

Admittedly, the study findings have demonstrated that in spite of the fewest identifiable factors that appear to negate sports' contribution towards the success story in the reduction in the HIV/AIDS prevalence among the youth, the use of the power of sport in confronting the HIV/AIDS scourge is one of those powerful strategies in fighting against HIV/AIDS among the youth as put forward by majority of the respondents and other previous researchers. However, despite the positive role played by sport in fighting against HIV/AIDS by creating public awareness among masses and bringing about positive behavioral change among the youth, it has received little recognition from both the development and research community.

Therefore, the strategy requires an urgent attention from all stakeholders in this country if more success is to be achieved. However, despite the positive findings of the study, the experiences may be quite new in most parts of Uganda and possibly non-

existent in some other parts.

Recommendations

From the findings of the study, the following recommendations are therefore given to help to improve the strategy of HIV/AIDS prevention through sports:

- The strategy of using sports as a tool in HIV and AIDS prevention should be embraced in other parts of the country because it has been identified by this study and other previous studies as a powerful tool that could be used successfully since it brings together large masses of people during sport events.
- Students who do not participate in sports should be encouraged to do so because there are a lot of benefits that come with sports including acquiring knowledge such as preventive strategies for HIV/AIDS.
- Parents and teachers should encourage their children/ students to participate in sports as this is rewarding both physically and mentally.
- The government of Uganda should encourage, empower and support community based organizations and non government organizations to take up this noble cause since it has proved to be a very fruitful strategy in combating HIV.

References

Alpha Youth Uganda (2012), Campaign of Education for the prevention of HIV/AIDS and other Diseases. Accessed on 22 December 2012 at <http://www.ayug.org/education.html>.

Bosmans. M. (2008),The potentials of sport as a tool for a right-based approach to HIV/AIDS; Ghent University, International center for Reproductive Health.

Datko, A. (2011). What are the benefits of Physical education in School?

G.O.U (2010),UNGASS Progress Report-Uganda of 2010.

GrassRoot Soccer (2013), Educate, Inspire, Mobilise. Stop the Spread of HIV. (Projects). Accessed on 3rd July 2013 at <http://www.grassrootsoccer.org/research-development/rd-projects/>.

Hobman, P. (2005),Tackling AIDS through sports: Consultation paper, Department of International Development (DfID) and UK sport, London, United Kingdom.

International Platform on Sports and development (2013), Tackling HIV/AIDS and Other Communicable Diseases through Sports.

Lindsey I, Banda D (2011). Sports and the Fight against HIV/AIDS in Zambia: A partnership Approach?

Ministry of Education and Sports (2013).THE ORGANISATION STRUCTURE IN THE COORDINATION OF HIV/AIDS IN THE EDUCATION SECTOR. Accessed on 11 January, 2013 at <http://www.education.go.ug/departments/hiv aids-unit.html>.

National Association for Sports and Physical Education (2009), Reducing School Physical Education Programs is Counter-Productive to Students Health and Learning and to our Nation's Economic Health. Accessed on 3rd July 2013 at www.aahperd.org/naspe.

PHIT American Foundation (2011). Benefits of Physical Education in Schools. Accessed on 3rd July 2013 at www.phitamerica.org.

Ruth et al, (2008), Partnerships involving sports-for-development NGOs and the fight against HIV/AIDS Research in Lusaka, Zambia, in 2007, York St John University.

UNAIDS (2008),Global report on HIV/AIDS 2008.

UNAIDS World AIDS Day Report (2011).

Uganda Aids Commission (2012),Global AIDS Response Progress Report-Uganda: Jan, 2010-Dec 2012.

Uganda Youth Development Link (UYDEL) (2012), HIV/AIDS Prevention, Care and Support. Accessed on 6th December 2012 at www.uydel.org.

UNICEF (2012). Fight HIV/AIDS. Accessed on 29th November 2012 at <http://www.unicef.org/football/aids/index.html>.

Wabwire-Mangen, et al. (2009), Uganda HIV modes of transmission and prevention Response Analysis: Final Report.

PREVALENCE AND AETIOLOGICAL PROFILES OF FACIAL NERVE PARALYSIS: A FIVE-YEAR REVIEW OF TERTIARY HEALTH INSTITUTIONS IN KANO STATE, NORTHWESTERN NIGERIA

Caleb Ademola Gbiri PhD
Farida Garba Sumaila BPT
Jibrin Sammani Usman BPT

*Department of Physiotherapy, College of Medicine, University of Lagos, Idi-Araba, Lagos, Nigeria

**Department of Physiotherapy, Faculty of Medicine, Bayero University, Kano, Nigeria.

Correspondence

CA Gbiri
Department of Physiotherapy,
College of Medicine,
University of Lagos,
Idi-Araba, Lagos, Nigeria
Cgbiri@unilag.edu.ng

ABSTRACT

Aims: To determine the prevalence and aetiological profiles of facial paralysis in Kano, Nigeria.

Methods: This study involved three tertiary and health institutions in Kano, Nigeria between January 2006 and December 2010. Out of 11145 patients' records, 1003 cases had indication of facial nerve paralysis but 936 met the inclusion criteria. Data were extracted using research pro-forma. Data was analyzed using z-test for proportional significance, and Chi square test at 0.05 significant levels.

Results: Prevalence rate of facial paralysis was 9.1% and mostly common (48.1%) between age of 20-38 years with males (52.8%) and the married (71.2%) more affected. Left side of the face was involved more frequently (53.0%) than the right side (46.4%) and bilateral (0.6%). Lower motor neuron lesion type (74.1%) was more common. Most common co-morbidity associated with facial paralysis was infections, closely followed by diabetes mellitus and pre-eclampsia. Highest incidence was in the year 2010, and the least was in 2006. z-values showed that minor difference in the prevalence exist between male and female. There was an association between each of age, occupation, co-morbidities and place of residence and the aetiologic factors. However, the strength of relationships was weak and the degree of association is very weak as determined using Cramer V and Lambda.

Conclusion: Prevalence of facial paralysis is relatively high in this region. It is affected by urban dwelling, being a full-housewife and co-morbidity. Lower motor neuron type and sudden onset were predominant. This calls for greater awareness for preventive measures.

Keywords: *Facial nerve, paralysis, prevalence, aetiology, northwestern Nigeria*

Introduction

Facial paralysis is the most frequently occurring cranial nerve disorder/dysfunction (Anderson, 1991; Owolabi et al, 2010). It is a disease which is both cosmetically distressing and functionally disabling, leading sometimes to social disadvantages including marginalization and stigmatization (Napoli & Panagos, 2005; Stottler & Pancioli, 2006; Cha et al, 2008).

Facial paralysis affects the seventh cranial nerve (facial nerve) producing unilateral or bilateral weakness or total paralysis of the facial muscles on the affected side (Stottler & Pancioli, 2006). The muscles affected are determined by the type of lesion; infra nuclear lesion affect all the muscles of facial expression while supra nuclear lesion causes weakness of lower two-third part of the facial muscles on the opposite side of the lesion (Grose et

al, 2002). The paralysis may include all the muscles and modalities affected by the facial nerve like mimetic facial movement, taste, cutaneous sensation, hearing ability, salivation and drooping on the affected half (Grose *et al*, 2002; Axellsson *et al*, 2003; Alberton & Zed, 2006).

Facial paralysis is associated with many underlying causes such as Bell's palsy (idiopathic), stroke, trauma (head injury, surgical or birth trauma), infections (sarcoidosis, brucellus, HIV, meningitis and hypertension), cancers, diabetes mellitus and other central nervous system disorders (Elliot, 2006). The leading causes of facial paralysis depend on environmental factors (Chukwuezi & Nwosu, 2009). Previous studies have been conducted in various parts of Nigeria and other parts of the world with variation in their findings (Danilides *et al*, 2001; Kasse, 2003; Chukwuezi & Nwosu, 2009). This variations can attributed to likely environmental variation in the study locations. Despite the existence of many studies, there is however dearth of literature covering the northern part of Nigeria. The northern part of Nigeria is peculiar in its location, weather, culture and environmental status. Therefore, findings from the existing studies cannot be generalized as there are differing social and environmental characteristics between areas.

Due to the environmental location of Kano and being the mostly populated state in Nigeria (National Population Commission, 2006), it may be speculated that facial nerve palsy will have peculiar aetiological factors which may be different from other parts of the world. The state has also been associated with high occurrence of road traffic accidents (Karofi, 2007) and the highest prevalence of stroke in Nigeria (Owolabi *et al*, 2010) which is prominent causes of facial nerve palsy. In addition,

this area has been shown to exhibit excessively harsh weather and prolong heat conditions during throughout the year but most especially in winter (Eldorado Weather,, 2013) which results in facial infection and inflammatory reactions that can predispose to facial nerve palsy. Therefore, it will be important to investigate the aetiology and prevalence of facial nerve palsy in this area with peculiar geographical and cultural characteristics. Hence, this study determined the aetiological profiles and prevalence of facial nerve paralysis in Kano, Nigeria.

METHODS

The Approval for the protocol of this study was sought and obtained from the ethics committee of Aminu Kano Teaching Hospital, Kano, Nigeria. The permission of the authorities of each of the involved hospitals and their heads of record departments were also obtained. This study was carried out in the three main tertiary health institutions in Kano metropolis, northwestern Nigeria. All hospital files of patients diagnosed with facial palsy between 1st January 2006 – 31st December 2010 were retrieved. A case of facial nerve palsy was defined as a presentation of facial paralysis of an upper or lower motor characteristics of a defined or undefined etiology. Valid cases were ascertained and considered eligible if the following were clearly defined or implied in case files, they include: gender, age, address, marital status, ethnicity, side affected, diagnosis/impression, nature of impairment, type of lesion, onset of the disease, year of onset of the disease, occupation. However, the absence of undefined co-morbidity does not disqualify a case. Out of the 11145 patients' records in these three hospitals within the study period, a total of 1003 cases had indication or diagnosis of facial nerve paralysis but 936 met the inclusion criteria for this study. Hence, 936 cases were used for this study.

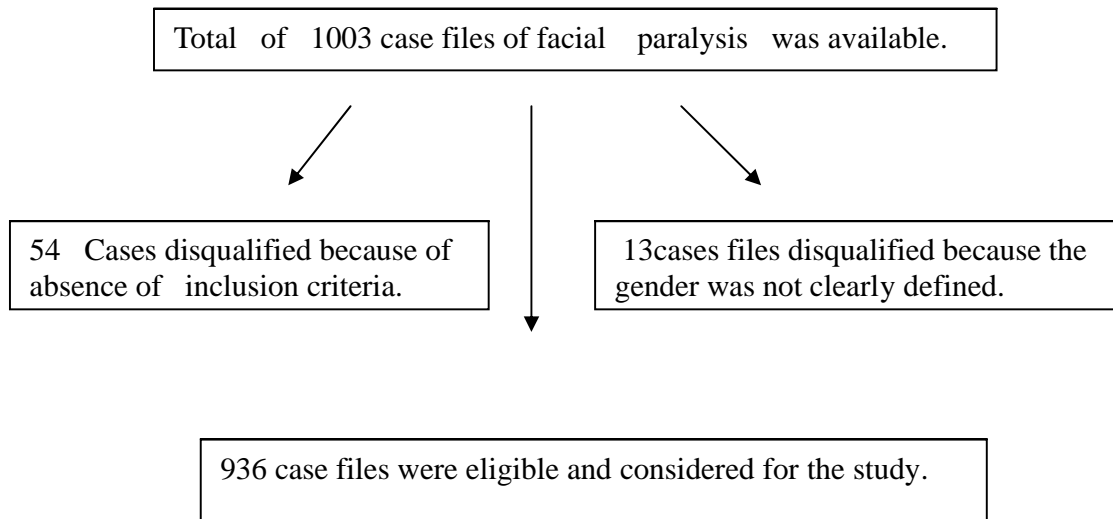


Figure 1: Case ascertainment chart

Data collection involved the use of research proforma to extract the information on socio-demographic and health profile characteristics of the participants from the hospital records. The hospital files of patients diagnosed with facial paralysis were pooled to serve as a source of secondary information, from which all information needed was extracted. The following information was recorded from the patient's case files: the Socio demographic and health profile characteristics of the patients, including age, sex, address, marital status, ethnicity, side affected (right or left), cause/diagnosis, nature of impairment/type of lesion, onset of the disease, year of onset, occupation and associated co-morbidities.

Data Analysis

Socio-demographic and health-profile characteristics of the patients were presented using descriptive statistics of simple frequencies, percentages, and distribution tables. Z-test for proportional significance, and Chi square test were used for predicting the significant difference between one variable and another, all statistical tests were carried out using Statistical package for social science (SPSS) Version 15 on window software, at 0.05 probability levels.

RESULT

Facial palsy is common between the ages of 20-38

years and accounted for (48.1%) of the cases (Table 1). Males were the most exposed, constituting 52.8% of those affected within the period under review. The Hausa ethnic group was involved above other tribes accounting for 93.3% of the cases. Married persons were equally found to be most exposed which accounted for 71.2% of the cases (Table 1). Among the most exposed categories, in terms of occupations were Civil servants (20.6%) and students (20.2%) (Table 1). Housewives were the most commonly affected by Bell's palsy with 19.0% of the cases recorded amongst them (Table 1). The majority (89.4%) of the participants resided in urban areas while 10.6% resided in the rural areas.

The causes of the facial paralysis included Bell's palsy, followed by stroke and trauma as reflected in Table 2. The left side of the face was involved more frequently (53.6%) than the right side (46.4). Lower motor neuron lesions accounted for (74.1%) and was thus higher than upper motor neuron lesion cases which accounted for (25.9%) of the cases (Table 2). Majority 94.0% had sudden onset while in 6.0%, the onset was insidious (Table 2). The most common co morbidity associated with facial paralysis was found to be infections, closely followed by diabetes mellitus and pregnancy/pre-eclampsia (Table 2). The highest number of incidents were recorded in the year 2010 whereas, the least number was recorded in the year 2007 (Figure 1). Facial

palsy due to stroke occurred commonly in housewives with (8.4%), trauma as a cause of facial palsy occurred most commonly among civil servants with (2.5%). Bell's palsy was slightly more in males (35.0%) than housewives (32.6%). Facial palsy due to trauma (4.9%) was more in males; however, housewives were slightly more affected by facial palsy due to stroke and infections and accounted for 11.8% and 0.4% of the cases respectively. Male accounted for (52.8%) of the cases while housewives accounted for (47.2%), only minor difference exist between the gender.

The z-value (-0.5348) showed that there was no significant difference in the prevalence of facial paralysis between male (52.8%) and female (47.2%) though there is higher value in the males. The result revealed that gender (with males having higher value) influenced the aetiologic factors of facial paralysis ($p=0.000$). However the strength of association or influence between gender and aetiologic factors of facial paralysis was weak as determined using Cramer's V and Lambda respectively. House-wives had a significantly higher occurrence of facial nerve paralysis. Though there was an association between the two but the relationship index was found to be reflecting a weak strength of relationship as determined using Cramer's V. While the degree of association between the aetiologic factors of facial paralysis" and occupation was very weak degree of association as determined using Lambda. There was an association between the co-morbidities and the aetiologic factors of facial palsy. However, the strength of relationship is weak and the degree of association is very weak as determined using Cramer V and Lambda respectively

DISCUSSION

This study described the aetiological factors and prevalence of facial palsy in Kano over a five year period. The findings of this study revealed that the prevalence of facial palsy in this sub-region (9.1%) is relatively higher compared to those previously reported in other sub-regions in Nigeria and other parts of the world (Doner & Kuthuhan, 2000; Grose *et al*, 2002; Morris *et al*, 2002; Shmorgun *et al*, 2002; Alberton & Zed, 2006; Chukwuezi & Nwosu, 2007) who had earlier reported prevalence rates of less than one percent among their study populations. The high prevalence in this study can be attributed to high

road traffic accident, higher prevalence of stroke as well as the harsh weather in this region. This is much of public health concern and calls for serious action considering the fact that this study could not account for the cases in the primary and secondary health institutions in the state and those that would not report to the hospital for care. The primary and secondary health institutions are likely to record higher prevalence as they are the closes to the people and the likely most patronized. Therefore, effort should be geared towards understanding the actual causes and strategies designed towards its prevention.

The fact that the peak prevalence occur in the age group of 20-38 years may due to activities during this age range. At this age range, people are more engaged in different activities and are likely to be exposed to more environmental hazards including road traffic accidents and infections. The current finding agrees with that of Amusa *et al* (2006) in a city, southwestern Nigeria which yielded similar result. The fact that the married persons were more affected even when they are either young or old calls for research to find the association or causes in order to stem it down. The study revealed that Hausa ethnic group were involved above other tribes, although this is not surprising since the location of the study was based in Kano (the base of Hausa ethnic group in Nigeria). Therefore, ethnic association on prevalence of facial paralysis could not be inferred from this study.

The fact that gradual increase in the incidences of facial palsy exist over the five years period most especially between 2007 and 2008 could be attributed to possible increase in knowledge and improved appropriate health-seeking behaviours. The highest number of cases/referrals was recorded in the year 2010, and lowest in 2006, this increase in the number of cases seen each year may not be unconnected with increase awareness of where and when to seek help in ill situation of such medical conditions as efforts have been geared towards health awareness through different media not only in Kano but throughout Nigeria. Such awareness may have necessitated the upward rise in the prevalence rate as the patients were formally documented and managed in the hospital, when their health status is compromised.

The findings that only minor differences exist between the sexes suggest that there is no gender variation in the occurrence of facial paralysis. This finding disagrees with those of Odebode & Ologe and Chukwuezi & Nwosu (2007) that gender variation exist but there is no consensus in the direction of their variances.

In this study, Facial palsy was found to be higher in house-wives followed by civil servants. It could be, because house-wives report to hospitals more, or probably they were more sensitive to their facial cosmetics than men. In addition, it is also possible that house-wives were more prone to factors causing stroke and other infections. This pattern actually is of great concern as the practice in this region restricts most of the activities of full house-wives indoors. This shows they may not have been exposed to those hazardous activities in the outdoor. Therefore, investigation should be conducted on their activities that may have predisposed them into such high prevalence. The fact that the disease was found to be low in farmers and those residing in rural areas compared to urbanites, could be attributed to decreased awareness among rural dwellers as well as unlikely early report to hospitals. This is because health institutions especially the tertiary ones are mostly located in the urban centres. Poverty level and accessibility could also have contributed to the unlikely report of the rural dwellers. This can also be attributed to the fact that the urban dwellers are likely to have better awareness due to access to information medias which may impact positively on their knowledge and health seeking behaviours. It is also understood that less educated people are more concentrated in the rural areas than the urban centre. This can also be a factor to their health seeking pattern of behaviours. The problems in the rural areas may have been compounded with inadequate healthcare centers, while in urban areas there may be more increase awareness of the disease and it's reportage to hospitals which could be due to the level of education and availability of hospitals to access health care, and awareness of where to receive help. Among the most exposed categories, in terms of occupations were Civil servants and students. This might be unconnected to their level of education and awareness of where and when to seek help in case of ill health.

The result of this study showed that Bell's palsy was

ranked as the highest cause of facial palsy. This may be due to the fact that a diagnosis of Bell's palsy is always made for facial nerve paralysis of lower motor neuron type with no clear-cut aetiology. Therefore, investigation should be conducted to ascertain other possible causes of acute facial nerve paralysis. However, this observation is still in line with those of previous findings 5,6,21-23 who concluded that Bell's palsy is the most common form of facial nerve paralysis (Napoli & Panagos, 2005; Stottler & Pancioli, 2006; Cha *et al*, 2008).

Stroke being the second leading cause of facial palsy may have accounted for the high prevalence of facial paralysis as this region. Previous study has shown that this region has the highest incidence of stroke in Nigeria (Owolabi *et al*, 2010). Also, the high prevalence of facial paralysis can be link to trauma. It has been reported that Kano is faced with increase occurrence/prevalence of road traffic accident which ranked as one of the highest in Nigeria (Karofi, 2007). This may have accounted for the reason why trauma especially from road traffic accident was the third leading causes of facial paralysis in this study. This corroborates the findings of Cha *et al* (2008) that trauma from road traffic accident constituted a reasonable cause of facial palsy, it is also agrees with the findings of Odebode and Ologe (2006) which found that facial nerve is the most frequently injured cranial nerve due trauma.

The findings of the study shows a weak association between gender and aetiologic factors of facial palsy, also weak but significant association exist between different occupational groups with the aetiologies of facial palsy. This shows that either gender or type of occupation of an individual does not predispose him/her to the development of facial paralysis. However, the significant association, despite being weak is still a pointer to the need to investigate the relationship between occupational and gender-related activities and the development of facial paralysis.

The most common co-morbidities associated with the diseases were infection, diabetes mellitus, pre-eclampsia, though constituted small percentage. The co-morbidities were also found to be associated with the aetiologic factors, though the association was weak.

CONCLUSION

The prevalence (9.1%) of facial nerve paralysis is relatively higher in Kano, Nigeria than any other regions in Nigeria and other parts of the world. The most common form of facial paralysis is Bell's palsy, and the most commonly affected age group was 20-38 years. The left side of the face was slightly more involved than the right side of the face; lower motor neuron facial paralysis type and sudden onset of facial paralysis were predominant. The common comorbidities associated with facial paralysis included infections, diabetes and pre-eclampsia with the urban dwellers mostly affected. The outcome of this study calls for public health programme especially in Kano, Nigeria to stem down the prevalence of facial nerve paralysis in this region.

References

- Alberton DL, Zed PJ (2006). Bell's palsy: a Review of Treatment Using Antiviral Agents. *Ann Pharmacother Journal*, 40(10), 1838-1842.
- Amusa YB, Akinpelu OV, Alabi GH, Kowolape OH, Klomolape EO, Adebolaa AA, Olateju, SO, Olaogun MOB, Faniran OO. Facial Nerve Palsy: The Experience at a Nigerian Teaching Hospital. *Nigerian Journal of Otorhinolaryngology*, 2006; 3 (2), 72 – 76.
- Axelsson S, Landberg S, Stjernquist S, Desaeen K (2003). An Outcome of Treatment With Acyclovir and Prednisone in Patient with Bell's palsy. *Ann Otolaryngology*, 112, 197-201.
- Cha OI, Hong CK, Park MS, Yeo SG. Comparison of facial nerve paralysis in adults and children. *Yonsei Medical Journal* 2008; 49(5), 725-34.
- Chukwuezi AB, Nwosu JN (2009). Facial Nerve paralysis in Imo State Nigeria. *Asian Journal of Medical Sciences* 2009; 1(2): 239 – 41.
- Danilides D, George P, Christina SN, Aristides B, Haralampos JM, Christos L, Antonious S (2001). Weather condition and Bell's palsy: Five year study and review of literature. *Biomedical Central Journal*, 117.
- Doner F, Kuthuhan S (2000). Familial Idiopathic facial palsy. *Eur Arch otholaryngol*, 257(3), 117-9.
- Eldorado Weather (2013). Africa annual yearly climate averages mean temperatures, precipitation and sunshine hours. ;1218hrs.
- Elliot JM. Physiotherapy treatment of Bell's palsy: A case report" *Newthealand Journal of physiotherapy* 2006; 34(3); 167-71.
- Gilden DH. Clinical practice. Bell's palsy *N. Engl. J med.* 2004; 23,351(13):1323-31.
- Grose C, Bonthius D, Afifi AK (2002). Chicken Pox and the geniculateganglion: Facial Nerve palsy, Ramsay Hunt syndrome and acyclovirtreatment, *predator. Infectious Disease Journal* 21(7): 615- 617.
- Gudrun R, Franz F, Hans-peter H. Peripheral facial palsy. Etiology, Diagnosis, Treatment, *European Neurology*, 1999; 41,3-9.
- Karofi HA (2007). Increase in Road Accident worries Kano Federal Road Safety Corps. Retrieved may 24, 2011 from <http://www.allAfrica.com>
- Kasse M (2003). Clinical data and prognosis in 1521 cases of Bell's palsy. *International Congress Series*, 1240: 641-647.
- Morris AM, Deeks L, Hill MD, Midroni G, Goldstein WC, Mazzaulli T, Dandson R, Squires SG, Marrie T, McGeer A, Low DE (2002). Annualized incidence and spectrum of illness from an outbreak investigation of Bell's palsy. *Neuropidemiology*, 21(5), 255-61.
- Napoli AM, Panagos P. Delayed presentation of traumatic facial nerve (CNVII) paralysis. *Journal Of Emergency Med.*,2005; 29 (4), 421-424.
- National Population Commission (2006). List of Nigerian State by Population, Federal Republic of Nigeria census.
- Odebode TO, Ologe FE. Facial Nerve palsy after head injury, case incidence, causes, clinical profile and outcome. *Journal of Trauma*, 2006; 61(2), 388-91.
- Owolabi LF, Shehu MY, Shehu MN, Fadare J. (2010). Pattern of Neurological admission in the tropics: Experience at Kano Northwestern Nigeria. *Ann Indian Acad' Neurol.* 13(3), 167-170
- Shmorgun D, Chan WS, Ray JG (2002). Facial palsy and Association between Bell's Palsy in Pregnancy and preeclampsia. *International journal of medicine* 6(95),359-362.
- Stottler B, Pancioli AM (2006). Brain and cranial Nerve disorders in Mark, J.A. (ed.). *Rosen's Emergency Medicine: concept and clinical practice*, 6th ed. Philadelphia, PA: Mosby Elsevier, chap 103.

Table 1: Socio-Demographic Characteristics of Ascertained Cases.

Variables	Frequency	Percentage
Age (Years)		
1-19	170	18.2
20-38	450	48.1
39-57	226	24.1
58-76	75	8.0
77-95	15	1.6
Marital status		
Married	666	71.2
Single	205	21.9
Widow	48	5.1
Widower	14	1.5
Divorcee	3	0.3
Ethnicity		
Hausa	873	93.3
Yoruba	18	1.9
Igbo	20	2.1
Others	25	2.7
Occupation		
civil servants	193	20.6
Students	189	20.2
Business	152	16.2
Farmers	14	1.5
Housewives	278	29.7
Others	110	11.8

TABLE 2: Facial Palsy Characteristics/Presentations

Variables	Frequency	Percentage
Aetiologic factor		
Bell's palsy	633	67.6
Cerebrovascular diseases	214	22.9
Trauma	63	6.7
Surgery	21	2.2
Infection(otitis media)	5	0.5
Side of Affectation		
Right	434	46.4
Left	496	53.0
Bilateral	6	0.6
Type of Lesion		
Lower Motor Neuron	694	74.1
Upper Motor Neuron	242	25.9
Onset		
Sudden	880	94.0
Insidious	56	6.0
Co Morbidity		
Diabetes Melitus	8	0.9
Infections	9	1.0
Pre-eclampsia	4	0.4
None	915	97.8

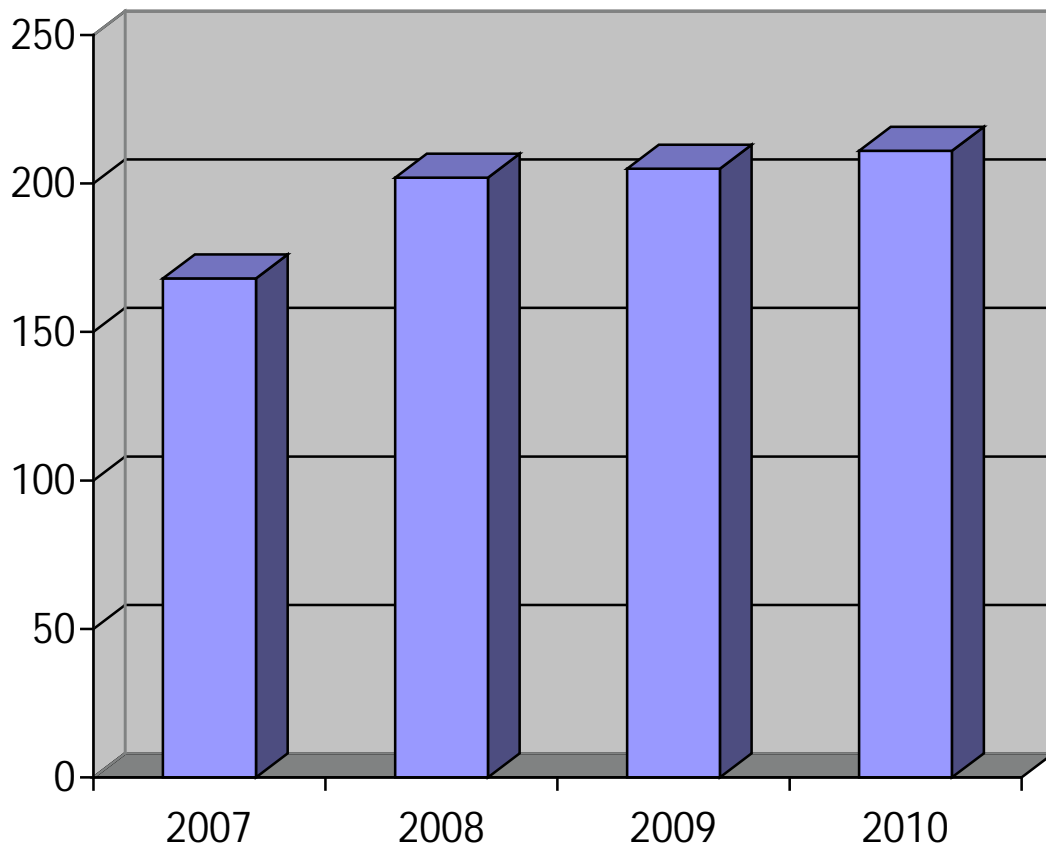


Figure 1: Annual Distribution of Facial Nerve Paralysis in the Participants

SPORT SAFETY POLICIES AND PRACTICES AMONG SOCCER CLUBS IN RWANDA

Assuman Nuhu¹ (MSc Physiotherapy)
Hamilton Pharaoh² (MSc Physiotherapy)

¹Department of Physiotherapy, Faculty of Allied Health Sciences, Kigali Health Institute, Rwanda

²Ukwanda Rural Clinical School, University of Stellenbosch, Faculty of Medicine & Health Sciences Tygerberg

Corresponding Address :

Assuman Nuhu
Department of Physiotherapy,
Faculty of Allied Health Sciences,
Kigali Health Institute, Rwanda
P.O.Box: 3286
E-mail: nuhu.assuman@khi.ac.rw

Abstract

Introduction: Soccer is extremely popular in Rwanda and its participation and interest continues to grow.

Purpose: The aim of this study was to identify a range of safety policies and practices available in top division soccer clubs in Rwanda.

Materials and methods: A cross-sectional, descriptive, quantitative study design was used among 12 male first division soccer teams in Rwanda. Nine (75%) team leaders and eleven (91.7%) medical practitioners completed adapted self administered questionnaires whose validity and reliability were initially established. Instruments were reviewed by an expert in the field and were further piloted. All ethical issues were considered.

Results: This study found that deficiencies in the availability of policies and their practices where clubs put more effort in addressing safety issues at competition than training. Teams were also interested in receiving information and assistance in safety issues.

Conclusion: Clubs should be assisted to develop, implement and monitor a comprehensive sport safety plan paying particular attention to all issues at training and at competition.

KEY WORDS: *Safety policies, Safety practices, Soccer, Rwanda*

INTRODUCTION

Soccer became extremely popular in Rwanda following the start of a youth programme in 2006 which strengthened the participation of young players in the second and third division teams. In addition, Rwandan soccer is now progressing to a semi professional level. Medical practitioners in Rwanda were introduced to the concepts of sports medicine at seminars organized by FIFA (1998), the International Olympic Committee (IOC) (1999) and the Confederation of African Football (CAF) (2000) (Twizere, 2004). Since then, there have been no other initiatives to update the knowledge of team medical practitioners. Therefore, some of them may have little knowledge as regards the occurrence,

management and prevention of injuries. This might lead to team leaders and coaches to underestimate their importance in the team and their contribution to the prevention of injuries. Studies conducted in Australia reported that a number of clubs did not have formal safety policies (Casey, Finch, Mahoney & Townsend, 2004; Donaldson, Forero, Finch & Hill, 2004). The extent to which these findings apply to African clubs is currently unknown. From a public health perspective, the average cost for medical treatment per injury needs preventive measures as Rwandan soccer players might have more difficulties managing their injuries due to minimal resources, thereby making them spend long periods without playing and might end their careers

prematurely. To our knowledge there has been no initiative to assess or introduce any safety policies in Rwanda. However, clubs could have a number of issues that are implemented either formally or informally. Therefore the purpose of this study was to identify a range of safety policies and practices available in top division soccer clubs in Rwanda. The results will be used to develop specific safety policies and regulations for good risk management practices of the identified areas in soccer activities in Rwanda.

MATERIALS AND METHODS

In Rwanda, there are 12 male soccer teams in the top flight division who had been registered for the 2007-2008 season. This study used a cross sectional, descriptive, quantitative design. Twelve team leaders regarded as decision or policy makers and twelve team therapists playing the role in the putting the policies in practice participated in this study. The questionnaire, whose validity and reliability was established (Donaldson, Hill, Finch & Forero, 2003), contained close ended questions which cover the roles and responsibilities of the participants and available sport safety policies and practices. Safety policies were defined as written or unwritten guidelines that the club had; and safety practices were the customs or routines that the club personnel performed. The instrument was adapted to the African situation specifically Rwanda and was sent to experts in the field for review. Additionally, they were reviewed by experienced coaches working as technical advisors in FERWAF to ensure that the content that the questionnaire assessed was valid. Discussions were held with team therapists and team leaders from the second division who participated in the pilot study. The changes which were noted helped to design a more

appropriate instrument that was well understood by the participants. Descriptive statistical analyses were performed using the statistical package for social science (SPSS) version 16.0 and Microsoft Excel. Participation was voluntary. Participants anonymity and confidentiality was assured and participants had the right to withdraw from the study at any time without any impact.

RESULTS

Characteristics of the participants

The response rate of the team leaders was 75% (n=9) while that of the team medical practitioners was 91.7% (n=11). Most of the team leaders had spent an average of 4.89 (SD=4.91) years in the management of a club. On average, they have been involved in soccer 9.78 (SD=6.78) years prior to the study. The president and the treasurer represented 77.8% (n=7) of the team leaders in the clubs assessed in the survey. The majority of team medical practitioners were nurses (63.6%) followed by physiotherapists (18.2%) and finally a medical doctor (9.1%). The medical practitioners were found to have an average of 9.27 (SD=5.75) years of experience in their respective qualifications with 6.91 (SD=4.66) years of experience in soccer.

Table 1 shows the frequency and percentage of team leaders answering "Yes" to a range of questions related to the policies in place at their clubs. At least 50% of the team leaders reported that their clubs had policy on a sport safety and risk management (55.6%), they all (100%) reported having an emergency action policy in the event of severe injury and a code of conduct and/or fair play policy for players. Approximately 90 % said they also had a code of conduct for people attending competition.

Table 1: Safety policies available in teams

Safety policies	Frequency and % of respondents answering Yes	
	N=9	%
A comprehensive policy on sport safety/risk management	5	55.6
An emergency action policy in the event of severe injury	9	100
A pre-participation health screening policy	3	33.3
A policy on alcohol or other drugs	2	22.2
A code of conduct and/or fair play policy for players	9	100
A code of conduct of people attending competition	8	88.9
Presence of formal sport insurance policy	2	22.2
Compulsory insurance at the club	1	11.1
Safety committee	2	22.2
Safety budget	0	0
Review of policies	0	0
General safety condition of the playing grounds	2	18.2
Injury prevention as one of the targets of training or coaching	2	18.2
Encouragement of players to sick for treatment	11	100

Table 2 shows the frequency and percentage of team medical practitioners answering “Yes” or “Always” or “Very often” to a range of questions related to the safety policies and practices in place at their teams. Almost all the strategies are frequently done in

competition rather than in training. Less than 20 % of the team medical practitioners reported that their playing grounds were generally in a safe condition and that injury prevention was one of the targets of training or coaching.

Table 2: safety practices in place implemented by medical practitioners (N=11)

Safety issues	Medical practitioners answering Yes or Always/ Very often	
	Training	Competition
Attendance of medical practitioner	6 (45.5)	11 (100)
Availability of appropriate first aid equipment	8 (72.7)	10 (90.9)
Availability of a telephone in case of emergency	5 (45.5)	10 (90.9)
Access for ambulance or emergency vehicles to the facilities	7 (63.6)	10 (90.9)
Safety of fixtures and fittings within playing fields for players	3 (27.3)	7 (63.6)
Checking of players equipments by someone in authority	0 (0)	10 (90.9)
Availability of drinking water/fluid	6 (54.5)	11 (100)
Encouragement of players to drink more frequently	7 (63.6)	11 (100)
Encouragement of players to warm up	8 (72.7)	3 (27.3)
Encouragement of players to cool down	5 (45.5)	10 (90.9)
Encouragement of players to stretch	5 (45.5)	9 (81.8)
A policy on attendance of medical practitioners	9 (100)	9 (100)
A policy on safety inspection of playing surfaces	2 (22.2)	4 (44.4)
A policy on wearing and use of protective equipments	0	6 (66.7)

DISCUSSION

Safety policies available in the clubs

This study found out that more than half of the teams had a comprehensive policy on sport safety or risk management which is similar to the study conducted by Finch and Hennessy (2000). This was more than the results of the study conducted by Donaldson and Hill (2002). The authors of these studies discussed the reasons why all the teams did not have the policies in place which could be also applicable in the Rwandan teams. These may include lack of information, limited resources, not being required to, or not seeing such plans as necessary or relevant. They further recommended that strategies to overcome these barriers should be developed.

The results of this study indicated that all the teams had an emergency action policy in the event of severe injury. This is good because soccer is not a sport without risks (Donaldson & Hill, 2002). It is a contact sport that has the potential to result in serious injuries to participants, including head injuries and fractures (McGrath & Ozanne-Smith, 1997). This indicates that teams have measures to take care of seriously injured players. However, two thirds of the teams did not have a pre-participation screening policy. Therefore, coaches and team therapists may be at risk of not being informed if a decision or action is required about the welfare of players. In addition, the application of the pre-season examination in Rwandan teams may be difficult because on the one hand the teams do not value the presence and the importance of the medical practitioner; and on the other hand the medical practitioner is not ready sometimes because of lack of resources and necessary equipment.

More than three quarters of the team did not have a policy on participation of players at matches or training while under the influence of alcohol or drugs. This indicates that teams might not know alcohol-related problems and the potential problems associated with allowing players to participate in matches or training while under the influence of alcohol. Apart from health threat of the players, the use of drugs or any other performance enhancing procedure to gain advantage over the others is cheating and is contrary to the spirit of the sport (World Anti-Doping Agency, 2003). We could further suggest that Rwandan soccer teams either do not consider drugs in sport to be an important issue or

that they do not believe that developing and implementing anti-drug policies may be necessary. It is necessary to establish anti-doping policies to protect the health of the players, the spirit of fair play and the values that players find in the pursuit of excellence (Murray, 2010). This requires further investigation and possibly the development of a code or policy that is meaningful and relevant which could be followed by all the teams.

Foul and illegal play like tackles has been identified as contributing factor injuries in soccer (Giza, Fuller, Junge & Dvorak, 2003). A number of fouls like pushing, holding, barging, tripping, striking or intentional kicking are not allowed in soccer therefore causing the player to be penalised (Donaldson & Hill, 2002). Although the results of this study indicated that all the teams had a code of conduct for players and nearly all also reported that they had a similar policy for other people attending matches, we could hypothesise that these policies are not well implemented based on the results of the study conducted among Rwandan soccer players which found out that contact was among the main mechanisms of injuries (Twizere, 2004). This was higher than what have been found in similar studies (Hawkins & Fuller, 1998; Hawkins, Hulse, Wilkinson, Hodson & Gibson, 2001).

According to Donaldson and Hill (2002), insurance is a 'risk transfer' strategy for clubs that comes into play after an injury has occurred. The authors further stated that the Australian Sports Commission availed guidelines for clubs on developing and implementing a sports safety plan and recommend that clubs should regularly review their insurance policies to ensure their adequacy. The results of this study indicated that only 2 out of 9 clubs had an insurance policy but insurance was compulsory in only one team. It may be hypothesized that, additional to the financial constraints associated with ignorance, teams value players who are able to play and not those whom their playing careers have been ended by serious injuries or any other reason.

Two teams had a designated safety committee whereas none had either a regular review of their safety policies or a budget to cover specific safety costs. These findings were worse than the results of the study conducted by Donaldson and Hill (2002). Without a designated safety committee, no one will

be directly responsible for safety and responsibility will be shared between the club administrators, coaches and team managers. People in these positions already have a wide range of responsibilities and they may not be able to give due care and attention to safety issues. Many of the teams may not have the infrastructure required to develop or implement a comprehensive sports safety or risk management plan. Many team leaders may not think that this issue need a specific budget, or a designated person or committee to coordinate and review activity.

The International Federation of Football Association (FIFA) introduced compulsory wearing of shin guards for all soccer matches and training (FIFA, 2008). Although the results of this study indicated that six teams (66.7%) had a designated policy related to wearing protective equipment at matches, none had a similar policy at training. This shows how the teams undermine the usefulness of wearing protective equipment during the training.

The playing surface can influence sports injuries across a range of sports, and participants should not be required to play when there is a risk of injury due to poor playing surface conditions (Ekstrand & Gillquist, 1984; Ekstrand & Nigg, 1989). The results of this study indicated that less than half of the teams had a policy about the inspection of playing surfaces before matches and two teams (22.2%) had similar policies for training. This may explain the findings of Twizere's (2004) study which found out that Rwandan soccer players sustained more injuries in training than in competition. Donaldson and Hill (2002) recommended that clubs could effectively address this issue by appointing a designated person to conduct a safety inspection of the playing surface before matches and training.

Sports safety practices

The results of this study indicated that team medical practitioner adopted the safety practices more frequently during competition than during training. For example shin guards and boots were regularly checked by someone in authority at matches (90%) but this was not done at training (0%). The results of this study concur with the study by Donaldson and Hill (2002). Not putting enough emphasis on the implementation of injuries during training may cause the players not understanding its importance which

subsequently predispose them to injuries.

Clubs may have limited knowledge and experience of injuries occurring during training and therefore consider it less necessary to address safety issues at training. They may find it more difficult to identify qualified people who are willing to attend training because the medical personnel work in hospitals or private clinics, and safety equipment might be less accessible at training due to financial limitation. Alternatively, the activities undertaken at training, such as skill drills and fitness exercises, may not incorporate full body contact or be undertaken with maximum intensity, and therefore not be perceived to pose the same risk of injury as participation in games.

Another consideration is that the governing bodies for soccer require clubs to adopt certain safety practices at matches, and the referee or match commissioner is often readily available to ensure that requirements are met. It is likely that there is no designated person to ensure that safety practices are undertaken at training. In addition, there is no opposing team at training to insist that certain safety practices are adopted. It is therefore less likely that a violation of safety practices occurring at training will be reported to the governing body.

Not all the club stakeholders are aware about the safety policies in place at their Clubs. One of the limitations of this study is that it did not ask whether the policies in place were written. However, it could be hypothesized that even the policies available in teams were not written which could also explain the limited awareness of club stakeholders about the policies in the team. Communication is essential for the successful implementation of any policy, guideline, recommendation or regulation (Donaldson & Hill, 2002). Lack of communication could lead to a number of stakeholders having limited knowledge about the policies in place at their clubs. Therefore, future studies could assess if the policies in place in the clubs are written and the means of communication by the clubs.

The results of this study indicated that all the team leaders reported that their clubs would like access to more safety training programmes as well as assistance to develop a sport safety programme. In addition, the majority of team leaders reported that

the federal sport body and medical professionals should actively support their clubs to implement safety policies and practices. These findings suggest that FERWafa could potentially play an important supportive role in setting standards for sports safety and use medical practitioners in disseminating sports safety information and resources.

CONCLUSION

The result of this study indicates that soccer teams in Rwanda had few safety policies and implemented the limited safety policies they have to some extent to improve safety for their players. However, the clubs addressed safety issues at matches rather than at training. Teams were also interested in receiving information and assistance in safety issues. In conclusion, the implementation of injury prevention strategies and/ or policies is not adequate. Clubs emphasize the implementation of injury prevention strategies at competitive matches and not during training. Clubs should develop, implement and monitor a comprehensive sport safety plan paying particular attention to the development and implementation of policies covering issues that this study has been identified as being poorly addressed. Clubs should ensure that all safety measures are observed and implemented at both training session and during competition. Governing bodies in Rwanda, especially FERWafa should develop and disseminate written sports safety policies and guidelines and supervise clubs in their development, implementation and monitoring.

REFERENCES

Casey, M., Finch, C.F., Mahoney, M. & Townsend, M. (2004). Sport safety policies and practices in two rural Victorian communities. *Journal of Science and Medicine in Sport*, 7(2), 226-231.

Donaldson, A. & Hill, T. (2002). The sport safety policies and practices of

community soccer clubs: on the northern beaches and in the Hornsby-Ryde-Ku-Ring-Gai region of Northern Sydney. Sydney.

Donaldson, A., Forero, R., Finch, C.F. & Hill, T. (2004). A comparison of the sport safety policies and practices of the community sports clubs during training and competition in northern Sydney, Australia. *British Journal of Sports Medicine*, 38, 60-63.

Donaldson, A., Hill, T., Finch, C. & Forero, R. (2003). The development of a tool to audit the safety policies and practices of community sports clubs. *Journal of Science and Medicine in Sport*, 6, 9-16.

Ekstrand, J. & Gillquist, J. (1984). Prevention of sport injuries in football players. *International journal of sports medicine*, 5(suppl.1), 140-144.

Ekstrand, J. & Nigg, B. (1989). Surface related injuries in soccer. *Sports Medicine*, 8, 56-62.

Fédération International de Football Association (FIFA), (2008). FIFA laws of the game. Retrieved November 06, 2008 at 02:51 from <http://www.thefa.com/NR/rdonlyres/095F9568-466D-4D71-ABF5-C1253A1C28FD/151521/FifaLawsOfTheGame0809.pdf>

Finch, C. & Hennessy, M. (2000). The safety practices of sporting clubs/centres in the city of Hume. *Journal of Science & Medicine in Sport*, 3, 9-16.

Giza, E., Fuller, C., Junge, A. & Dvorak, J. (2003). Mechanisms of foot and ankle injuries in soccer. *American Journal of Sports Medicine*, 31, 550-554.

Hawkins, R.D. & Fuller, C.W. (1998). An examination of the frequency and severity of injuries and incidents at three levels of professional football. *British Journal of Sports Medicine*, 32(4), 326-332.

Hawkins, R.D., Hulse, M.A., Wilkinson, C., Hodson, A. & Gibson, M. (2001). The association football medical research programme: an audit of injuries in professional football. *British Journal of Sports Medicine*, 35, 43-47.

McGrath, A.C. & Ozanne-Smith, J. (1997). Heading injuries out of soccer: A review of the literature. Monash University Accident Research Centre – Report No. 125.

Murray, T.H. (2010). Preserving Sporting Values and Ethics: The relationship between anti-doping and sport values and ethics. United Nations Educational, Scientific and Cultural Organisation. 1-9.

Twizere, J. (2004). Epidemiology of soccer injuries in Rwanda: a need for physiotherapy intervention. Unpublished Masters Thesis. University of the Western Cape. Bellville.

World Anti-Doping Agency (2003). World Anti-Doping Code. Montreal: World Anti-Doping Agency