African Journal for Physical, Health Education, Recreation and Dance (AJPHERD) Supplement 1:2 (June), 2014, pp. 413-423.

Knowledge of *nursing* students regarding swine influenza A at the University of Limpopo, South Africa

P.M. MAMOGOBO AND M.E. LEKHULENI

Department of Nursing Science, University of Limpopo, Private Bag X1106, Sovenga, 0727, South Africa. E-mail: Pamela.mamogobo@ul.ac.za

Abstract

The study describes the knowledge of nursing students with regard to swine influenza A at the University of Limpopo. A qualitative descriptive and contextual design was used to describe the knowledge of nursing students regarding the swine influenza A at the University of Limpopo, South Africa. The population comprised all third year nursing students at the University of Limpopo's School of Health Sciences. Purposive sampling was used to select participants from amongst third level nursing students. Semi-structured interviews with a guide and an audiotape were used to collect data until saturation was reached. Data were analysed qualitatively using open coding method. The study revealed three major themes with sub-themes regarding knowledge, perceptions about influenza A (H1N1) virus and precautionary measures to prevent the spread of the virus. It is recommended that strategies to improve knowledge of nursing students with regard to swine influenza A (H1N1) should be developed.

Keywords*: Swine influenza A (H1N1), nursing students.*

How to cite this article:
Mamogobo, P.M. & Lekhuleni, M.E. (2014). Knowledge of *nursing* students regarding swine influenza A at the University of Limpopo, South Africa. *African Journal for Physical, Health Education, Recreation and Dance,* June (Supplement 1:2), 413-423.

Introduction

In 2009 swine influenza A (H1N1) infection contributed to the increased morbidity and mortality in many countries. The World Health Organization (WHO) (2009) indicated that a new strain of human influenza A (H1N1) appeared in Mexico in 2009 with an unusual increase in mortality and morbidity. The unusual increased incidence of influenza A (H1N1) virus, motivated the government of Mexico to initiate a surveillance of all flu-like illnesses admitted and reported in health services. Out of the 854 incidences, 59 were fatalities and 18 cases were confirmed as positive influenza A (H1N1) virus through laboratory investigations (WHO, 2009). The majority of influenza A (H1N1) cases comprised of young healthy individuals (WHO, 2005). Subsequent to Mexico, Malaysia also confirmed its first case of influenza A (H1N1) on 15 May 2009. In response to increasing local transmission, Malaysia moved from containment to mitigation stage on July 9, 2009. Since then, the influenza A (H1N1) pandemic has grown exponentially (Sam & AbuBakar, 2009). A surveillance study conducted in England on influenza (H1N1) found that 36 % of

all cases of influenza A (H1N1) virus were people who reported good health prior to infection (Donaldson et al., 2009).

Diagnosis and confirmation of influenza A (H1N1) was done by the World Health Organisation (WHO, 2009) which declared influenza A (H1N1) a pandemic and a public health emergency in the same year. WHO subsequently developed guidelines to assist and suggest ways in which member countries could develop pandemic preparedness in a form of stock-piling anti-viral vaccines and mass immunisation to curb and control the uncertainties of H1N1 infection (WHO, 2009). One group at higher risk of contracting H1N1 infection during epidemics include nurses and medical students, who may lack empirical knowledge regarding the mode of spread, precautionary measures and management of specific rare and newer epidemic diseases (Rudisill, Costa-Font & Mossialos, 2012).

Tebruegge et al.'s (2010), study revealed that people's health behaviour and lack of knowledge on influenza A (H1N1) virus contribute to the spread of the epidemic. Wong and Sam's (2010) study in Malaysia indicate that the use of media and public hearings in communicating H1N1 infection transmission, prevention and precautionary measures that are important in the control and prevention of H1N1 had positive impact in controlling the infection. The study by Wong and Sam (2010) recommended that accurate information should be considered during influenza A (H1N1) epidemic.

Rahman et al. (2013) indicated that immunisation against influenza A (H1N1) is an important intervention to reduce morbidity and mortality related to influenza A (H1N1) infection. Some nurses were not immunised against the virus in spite of the availability of the vaccine and others were not immunised against influenza A (H1N1) in spite of the knowledge on health values of immunisation and complications of influenza A (H1N1). A larger proportion of nurses indicated uncertainties on evolution of influenza A (H1N1) virus, fear of side – effects related vaccine and doubts on efficacy of the influenza A (H1N1) vaccine. There was an increased absenteeism amongst nurses during the influenza A (H1N1) pandemic (Rahman et al., 2013). Some nurses indicated that fear of contracting infection and infecting their children and spouses contributed to absenteeism. Health care workers which include nurses are front-liners in the exposure to influenza A (H1N1) and other infections. Uptake of immunisation amongst nurses should therefore, be increased through training and health education.

The Centre for Disease Control (2009) guidelines indicate that correct empirical knowledge on influenza (H1N1) virus is critical for care clinicians including nurses. Inadequate knowledge and misconceptions on influenza A (H1N1) amongst nurses would result in the risk of spreading the diseases in epidemic and

increase in health risks. Implementation of appropriate education programme will improve compliance to infection control measures, and willingness to work in a pandemic and that would contribute to better control on prevention and spread of influenza A.

Mytton, O' Moore**,** Sparkes**,** Raxi and Abid (2013), emphasized that knowledge has a significant influence on the attitudes and practices in pandemic. Nurses' efforts in the prevention and control of influenza A (H1N1) infection should include educating the general population to improve health practices. Jiang**,** Yuan**,** Chuanyun and Qian **(**2009), outlined that nurses who participated in the study demonstrated adequate knowledge about influenza A (H1N1) pandemic with some gaps and confusions in some areas indicating a need for continuing ongoing education to update knowledge about the epidemic. Jiang et al. (2009) suggest that the use innovative mixed communication and teaching strategies should be utilised before and during pandemics such as that of influenza A (H1N1). Higher education institutions should promote positive health behaviour among university students compatible with the international guidelines. It is thus imperative to undertake a study amongst University of Limpopo nursing students that would determine knowledge and perception of nursing students regarding influenza A (H1N1) in order to identify misconception and knowledge gaps that may compromise student nurses ability to provide care to patients during epidemics which include influenza A (H1N1).

Methodology

Research design

A qualitative, descriptive, and contextual research design was used in order to describe the nursing students' knowledge regarding swine influenza A (H1N1). Qualitative research enables in-depth understanding about the knowledge of nursing students regarding influenza A (H1N1) virus. The descriptive and contextual research design was used to allow the participants to provide sufficient information regarding the phenomenon studied.

Population and sampling

The population included all students at the University of Limpopo School of Health Science and Department of Nursing Science. The target population was 52 third year nursing students. Purposive sampling was used to select third-year nursing students. Data saturation was reached after interviewing 15 participants. *Semi-structured interviews were conducted using a guide and a voice-recorder. Probing questions were asked based on the responses of the participants.*

Data analysis

Data analysis was done using Tesch's open coding method as described in Creswell (2009). Trustworthiness was ensured through credibility, conformability and transferability. Credibility was used to ensure that data were from the participants by capturing interview sessions with a voice recorder and written field notes. Conformability was ensured by the use of an independent coder who is considered an expert in qualitative research. Transferability was ensured through a complete description of the research methodology.

Ethical considerations

Ethical clearance was obtained from the University of Limpopo's Medunsa Research and Ethics Committee (MREC). Permission to conduct the study was obtained from the residence managers. The participants voluntarily agreed to participate in the study and signed a consent form (Brink, 2006). Privacy was ensured by interviewing the participants in their rooms. Confidentiality was ensured through the use of codes during interviews.

Results

Three themes and nine sub-themes were generated from the data and these are presented in Table 1.

Table 1: Themes and sub - them**es**

Themes	**Sub-Themes**
1. Knowledge about influenza A (H1N1)	1.1 Origin of influenza A (H1N1)
	1.2 Signs and symptoms of influenza A (H1N1)
	1.3 Mode of spread of influenza (H1N1)
	1.4 Insufficient knowledge regarding influenza A (H1N1)
2 Perceptions about influenza A (H1N1)	2.1 Influenza A (H1N1) as a killer virus
3 Precautionary measures to prevent spread influenza A (H1N1) virus	3.1 Dissemination of information about the influenza A (H1N1) virus
	3.2 Knowledge of influenza (H1N1) as measure to assist infected people
	3.3 Education to the community
	3.4 Reporting cases of influenza A (H1N1)

Theme 1: Knowledge about influenza A (H1N1)

The findings revealed that most of the nursing students have knowledge regarding the origin, signs and symptoms and mode of spread of influenza A (H1N1). However, some students demonstrated limited knowledge about the influenza A (H1N1) virus.

Sub-Theme 1.1: Origin of influenza A (H1N1)

The findings of this study reveal that, nursing students have knowledge about the origin of influenza A (H1N1) virus. Some study participants indicated that the virus originated from animals, though there is confusion about the specific animal origin associated with swine flu. This was reflected by the comments from participant who said *"This virus originated from animals but I'm not sure whether pigs or birds."*

Sub-Theme 1.2: Signs and symptoms of influenza A (H1N1)

The participants indicated that a person who is infected by this virus may be recognized by coughing, fever, fatigue, headache, and lack of energy. This view was expressed by a participant who commented by saying **"***According to the information that I have is that a person who is infected with this virus may present with fever, fatigue, headache, coughing and lack of energy.***"**

Sub-Theme 1.3: Mode of spread of influenza A (H1N1)

The study findings revealed that H1N1 virus spread when an infected person cough and does not cover his/her mouth. Infected respiratory tract, spread through droplet infection. Failure to wash hands transmits H1N1 infection in shaking hands with infected persons. This was supported by the participant who shared and said "*This H1N1 virus spread by means of droplets infection especially when the person coughs without covering his or her mouth and the virus gets its way to the person.*"

Sub-Theme 1.4: Insufficient knowledge regarding influenza A (H1N1)

During data collection some of the participants were found to have insufficient knowledge regarding influenza A (H1N1) as they could not differentiate its symptoms from those of ordinary flu. This view was expressed by one participant who said: *"To* me *H1N1 is an ordinary normal flu that is infectious. I do not know where the virus originates.***"**

Theme 2: Perceptions about influenza A (H1N1)

The participants's perceptions about influenza A (H1N1) was that it claimed several lives and perceived it as a killer virus.

Sub-Theme 2.1: Influenza A (H1N1) as a killer virus

Influenza A (H1N1) virus has claimed several lives around the world but less than 50 cases have been reported in South Africa. In Limpopo province only one

case of this virus was reported. This finding was confirmed by one participant who said: *"The virus has claimed several lives around the world and only one case has been reported in Limpopo"*.

Theme 3: Precautionary measures to prevent spread of the virus

Some students were found to have insufficient knowledge on precautionary measures to prevent the transmission of influenza A (H1N1) infection. One participant said: *"H1N1 is a rare virus and it would take some time to reach us in this university as it is more common in people who travel overseas like going to China. The issue of eating pig and birds meat is another issue, I am not sure"*. Another participant said: *"I was given a vaccine as my mother has* a *medical aid fund. Since then I don't really have flu frequently and if I have one is not that bad"*.

Sub-Theme 3.1: Dissemination of information about influenza A (H1N1) virus

The study revealed that information on the influenza A (H1N1) virus was obtained mostly through media and also included in the module communicable diseases at the 2nd level of learning.

One of the participants confirmed this when he said: *"H1N1 is an infectious kind of a flu which was found in 2009 that came from pigs (swine) and spread to humans and it was very contagious in such a way that people mostly in Europe and Asia had masks on to prevent the spread. Last year when we were doing communicable diseases the lecturer included the pandemic as part of our scope in community nursing module so, that's how I have the knowledge that I have about this condition."*

Sub-Theme 3.2: Knowledge of influenza A (H1N1) as measure to assist infected people

The results revealed that participants had inadequate information on measures to assist people who are infected with influenza A (H1N1). This was indicated by the participants through the information which they shared with the researchers which indicate insufficient knowledge in caring for people with influenza A (H1N1) infection. One participant said: *"People should be taught about the mode of spread of the disease, we can also advice people about the signs and symptom so they can go for early treatment"*. Another participant added by saying: *"I make sure that when I go to cold environment I wear warm clothes."*

Sub-Theme 3.3: Education to the community

The study revealed that the participants have adequate information regarding the health education that should be given to the community, yet the part mostly emphasized was both personal and environmental hygiene. This view was supported by one of the participants who gave the following information with regard to the importance of education:

"In order to avoid infection by this virus I would urge people to understand what H1N1 is and also they should practice hygiene and if ever there's a sick person at home they must open windows to allow for ventilation or they should take the patient to hospital for further treatment. On hygiene we should cover our mouth when coughing and when from the toilet we should wash our hands immediately even before we eat we should make sure that our hands are clean and also when sneezing, the tissue papers should thrown in a rubbish bin were no one will reach it and when we cough we should not spit on the ground."

Sub-Theme 3.4: Reporting cases influenza A (H1N1)

All participants indicated that in Limpopo they have never seen or head of any reports about cases of the influenza (H1N1) virus. They only heard of cases in other provinces through media. This was confirmed by one of the participants who said: *"No, around Polokwane I never saw or heard of any cases I've been to the local clinics but I don't remember. The only thing I remember it was seeing many cases of H1N1 on television which were roughly somewhere around 6000-7000 reported cases in 2009."*

Discussion

The findings of this study revealed that influenza A (H1N1) virus originates from animals. Sun et al. (2009) indicate that the alimentary system of pigs is able to harbour different types of viruses at once, mutate, combine and create newer strain viruses like H1N1. Human beings can transmit influenza A (H1N1) to pigs in situations where there is poor sanitation (Brown, 2000). With regard to signs and symptoms of influenza A (H1N1) infection these are similar to the symptoms of regular human flu and include fever, cough, sore throat, body aches, headache, chills and fatigue. Some people have reported diarrhoea and vomiting associated with influenza (H1N1) virus. In the past, pneumonia and deaths have been reported following influenza A (H1N1) infection (Moorthy et al., 2009).

Influenza A (H1N1) virus is spread mainly from one person to another through coughing, sneezing or talking to people with influenza. Sometimes people may

become infected by touching their mouths after contact with a surface or object that has the virus (Moorthy et al., 2009; DOH, 2009).

The participants in this study showed insufficient knowledge regarding influenza A (H1N1) virus. A study conducted by Rudisill, Costa-Font and Mossialos (2012) supports these findings that health workers did not adequately apply precautionary measures and also did not perceive the influenza A (H1N1) pandemic as a serious infection in terms of the World Health organisation and relevant public health authorities (Rudisill, Costa-Font & Mossialos, 2012). Lau, Yeung, Choi , Cheng, Tsui and Griffiths's (2009) study found that although health workers and some of the community members knew that influenza A (H1N1) is preventable and that vaccination confers immunity to the virus, but they failed to access immunisation as they had doubts about the efficacy of the vaccine .

Precautionary measures that include immunisation of vulnerable groups is important in reducing the influenza A (H1N1) infection (WHO, 2009). The Department of Health South Africa (2009) advised that learners and students in universities who develop flu-like symptom should not come to school until the symptoms have subsided or completely disappeared. Lau et al.'s (2009) study found that 51 % of the participants knew about the efficacy of H1N1 vaccine but only 45 % were immunised. The efficacy of the H1N1 vaccine, the reduced cost of vaccine to improve access during anticipated outbreaks and level of knowledge on negative health outcomes of H1N1 virus amongst health workers and ordinary citizens did not provide readiness to take precautionary measures in the form of vaccine. .

WHO (2005) also indicate that it important for public health authorities to provide education to the public about influenza A (H1N1) to demystify misconception and faulty beliefs on the spread and cause of the infection. Faulty beliefs and knowledge about influenza A (H1N1) and communicable disease amongst communities should be correctly updated and upgraded as it is critical in curbing the spread of infection during the pandemics. According to Rahman et al. (2013), health care workers which include nurses are front-liners in exposure of influenza A (H1N1) and other infections.

In the past years before 2009 influenza pandemic incidence was found more among the elderly. In 2009 the incidence of influenza A (H1N1) was found predominantly in young adults and children including pregnant women. Mytton et al. (2013) indicated that the epidemic fatalities comprised of the elderly and that the age groups who thought they were not vulnerable to the virus ignored the importance of vaccination which increased mortality.

Limitations

The study was limited to one university and one campus, therefore the result may not be generalized to other Universities in other Provinces.

Recommendations

Based on the findings of the study, the following recommendations are made:

- There is need to strengthen knowledge, perception, teaching and learning on influenza A (H1N1) pandemic including the precautionary measures that individual, health services and nurses should take in order to control, prevent, control and respond appropriately in managing flu clients with possible signs and symptoms that indicate possible swine flu.
- Teaching and learning of nursing students during epidemiology module in University of Limpopo should continue to strengthened knowledge and skill on care of individuals, communities during epidemics including precautionary measures and prevention of nosocomial infection in public health setting.
- The nursing students should be exposed to working with communities in preparation for anticipated epidemics and during epidemics to prepare them optimally to work better and to understand community dynamics in epidemics.
- Print media that is available in public institutions on influenza A (H1N1) prevention be readily made available to university health centres to execute awareness about the H1N1virus.
- The lecture halls and the students'residences should have appropriate ventilation system to provide additional protection and reduce possible transmission of influenza A (H1N1) virus during epidemics.
- Vaccination should be provided for staff and students within the university to improve herd immunity against the anticipated flu strand on yearly basis.
- Vulnerable students like pregnant individuals and those with chronic health conditions should be advised on their vulnerability to influenza A (H1N1) and encouraged to vaccinate every year.

Conclusion

Nursing students have daunting knowledge and skills necessary for prevention and care of patients with H1N1. Some study participants confirmed that H1N1 was included in epidemiology module but they however demonstrated gaps of knowledge of H1N1. Nursing student lacked perception of the severity of H1N1 and did not take the yearly immunisation as mandatory and important intervention to prevent and curb H1N1 infection. The study highlights that teaching of epidemics which include influenza A (H1N1) infections is not

enough to improve perception, knowledge and skills for nurses. Practical application of knowledge in a form of health promotion campaign public health preparation for the pandemic is needed to internalise and improved the desired knowledge and skill for nursing student in University of Limpopo.

References

Brink, H. (2006). *Fundamental of Research Methodology for Health Care Professionals* (2nd ed.). Cape Town: Juta.

Brown, I,H. (2000). The epidemiology and evolution of influenza virus in pigs. *Veterinary Microbiology***,** 74, 29-46.

Center for disease control (2009). *Swine flu guidance for clinicians and public health professionals.* 2009. Accessed from http://www. cdc.gov/ swineflu/ guidance.

Creswell, J.W. (2009). *Research Design. Qualitative & Quantitave and Mixed Methods Approaches*. London: Sage Publishers.

Department of Health South Africa (2009). *Statement issued by the Department of Health on H1N1 influenza.* Accessed from www.doh.gov.za on 13 August 2013.

Donaldson, L.J., Ruttler, P.D., Ellis, B.M., Greaves, F.E., Mytton, O.T., Pebody, R.G. & Yardley, I.E. (2009). Mortality from pandemic A/H1N1 2009 influenza in England, public health surveillance study. *British Medical J*ournal, 339,2213.

Jiang, A**.,** Yuan, B**.,** Chuanyun, M. & Qian, P**. (**2009). Knowledge and perception of university students toward pandemic influenza A: A cross sectional study from Turkey. *BioPortfolio,* 17(5), 15-19.

Lau, J.T.F., Yeung, N.C.Y., Choi, K.C., Cheng, M.Y.M Tsui., H.Y. & Griffiths, S. (2009). Acceptability of AH1N1 vaccination during pandemic phase of influenza AH1N1 in Hong Kong: population based cross sectional survey. *British Medical Journal,* 339, Published on line doi 10.1136/bmj.b4164.

Moorthy,M.,Samuel,P.,Peter,J.V,Vijayakumar,S.,Verghese,V.P,Agarwal,I.,Moses,P.D,EbernerzeR,K.,Abrahanm,O.C.,Thomas,K.,Mathwes,P.,Mishra,A.C.,Lal,R & Mullyll,J. (2012). Estimation of the burden of pandemic (H1N1) 2009 in developing countries: Experience from tertiary care centre in South India. *Public Library of Science,* DOI10.1371/journal.pone.0041507.

Mytton, O.T., O'Moore, E.M., Sparkes, T. & Abid, M. (2013). Knowledge, attitudes and beliefs of health workers towards influenza vaccination. *Occupational Medicine.* Doi.1093/occmed/kgt 002. Accessed 19/05/2014

Rahman, A.G.E. D. A., Mulehim, A, R. A. A., Almuhadib, N.S. & Humam, A.A. (2013). Knowledge and risk perception among health care workers regarding infection control measures during swine flu epidemic in Al Ahsa governorate in Eastern Province , KSA. *Asian Journal of Medical Research,* 2 (1), 10-14.

Sam, I.C. & AbuBakar, S. (2009). Pandemic Influenza A (H1N1) in Malaysia the next phase. *Medical Journal of Malaysia***,** 64,105–107.

Sun, I., Zhang, G., Shu, Y., Chen, X., Zhu, Y.. Yang, I., Ma, G., Kitamura, Y. & Liu, W. (2009). Genetic correlation between H3N2 and swine influenza viruses. *Journal of Clinical Virology*, 44(2), 141-144.

Tebruegge, J., Pantazidou, G., Connell, K, Bryant, O., Donath, N. & Curtis, P. (2010). Perception, attitudes and knowledge regarding the 2009 swine-origin influenza A (H1N1) virus pandemic among health-care workers in Australia. *Journal of Paediatric Child Health*, 46(11), 673 published on line doi: 10.1111 1440-1754.

Wong, L. P & Sam, I.C. (2010). Knowledge and attitudes in regard to pandemic influenza A (H1N1) in multi-ethnic community of Malaysia. *International Society of Behavioural Medicine*. Published online DOI: 10.1007/s12529 – 010 – 9114 – 9.

World Health Organization (2005). *Responding to Avian Influenza Pandemic Threat: Recommended Strategic Actions*. Geneva: WHO.

World Health Oranization (2009). *World Now at the Start of 2009 Influenza Pandemic: Statement to the Press by WHO Director General, Dr Margret Chan 11 June 2009*. Geneva: WHO.