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# Knowledge, awareness, practice and preventive measures regarding swine flu among community people: a cross sectional study from Pokhara, Nepal

Dayanand G[1], Rana MM[2]

*Correspondence to:*

dppjdpk@yahoo.com

[1]***Ms. Gnanakshi. Dayanand.*** M.Sc, Lecturer & Head of the Department of Community Health Nursing, Manipal College of Medical Sciences (Nursing Programme), Phulbari, Pokhara, Nepal.

[2]***Mrs. Man Maya Rana***, M.Sc., Lecturer (Nursing Programme), Manipal College of Medical sciences, Phulbari,, Pokhara, Nepal



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## Abstract

### Background

Swine flu is an acute respiratory disease, which is caused by a strain of the influenza type A virus known as H1N1, officially referred as novel A /H1N1. There is no doubt that this deadly disease causing a massive havoc, different places in the world and has created fear in the society. The aim of this study was to determine the knowledge, awareness practice toward the pandemic H1N1 and their predictor factors, preventive measures among the community people of selected slum areas at Pokhara.

### Methods

This cross-sectional study was done in between 08-03-2015 to 16-04-2015. A total number of 424 participants' were participated in this study. Descriptive statistics was used and associations between different study variables were tested by chi square test by using SPSS 16.

### Results

Majority of respondents had heard about Swine flu from mass media (64.65%) followed by family/relatives (25.7%). A relatively less proportion (23.1%) knew about the cause of swine flu. Half of the participants were aware about major sign and symptoms like fever, cough, sneezing and running nose of swine flu. 60.6% of the subjects did not know about diagnostic tests.

### Conclusion

Low level of awareness and practice was observed in this study. These findings can offer pragmatic contributions to policy makers and academic community with regard to formulating good strategies and measures to ensure effective messages about ways to handle potential influenza spread in the community context will be processed effectively by the rural communities.

### Key words

Awareness, knowledge, Pokhara, Swine flu, slum

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## Background

The outbreak of H1N1, which is a swine-origin influenza A virus began in the Maxico in March, 2005 and then spreading around the world. Clinical symptoms of this infection are almost similar with seasonal human influenza, so there is a sustained need for sub typing and laboratory confirmation. Human-to-human infection with the H1N1 first investigated in Canada [1 - 3]. Three months later, on June 11, 2009, WHO declared officially the ongoing outbreak of Influenza A to be the first influenza pandemic of the 21st century, which was due to new strain of this virus with a subtype H1N1 [4, 5]. Pigs which were infected with pandemic 2009 H1N1 as an experimental basis, suffered from respiratory disease, but there were no sign and symptoms of systemic disease. So pork from pigs infected with H1N1 influenza would contain this deadly virus [6]. According to WHO, till May 30, 2010, more than 214 countries confirmed cases of pandemic influenza H1N1 with a death toll of 1,8,114 persons [7].

Trevennec *et al*. explained in his review that East and Southeast Asia are the main areas where pig and poultry farming flourished almost all countries. The major health concern is that all these production lines are in a small scale level with low safety and biosecurity measures. There are several emergences of swine influenza in the region, a vast number of confirmations of multiple introductions of North American and avian-like European strains. Several avian-origin strains are isolated from pigs, apart from H1N1 (H5 and H9 subtypes). The matter of concern is that, sero-epidemioligical investigations have been neglected in this region [8].

Nepal, experienced this terrible event, like other countries. Screening was started in Nepal for the febrile travelers with respiratory symptoms, travelled from affected countries for the Pandemic influenza A (H1N1) since April 27, 2009.

The first reported case was in the month of June 2009 and within seven days time (June 29) there was an official declaration about this disease. Community transmission of Pandemic Influenza announced few months later, 15 October onwards.

Gross epidemiological scenario in Nepal showed that mostly young people were affected and the isoloated type of this virus were antigenically and genetically related to the novel A/CALIFORNIA/07/2009-LIKE (H1N1) type [9]. Consequences of this pandemic flu could more dangerous for the nation, if adaptive mutation of the virus would took place, ensuing full human-to-human transmission. As an assessment, fatality numbers are estimated between 15,000 and 130,000 and a vast majority needs clinical care might be faced with a severe shortage of hospital beds [10]. Apart from the loss of human lives, Swine flu also impacted economically in different sectors like farming and tourism, a disastrous situation for millions of Nepalese people involved with these professions [11, 12].

Government of Nepal has established the Avian Influenza Control Project (AICP) and authorized a Joint Health and Agriculture, National Avian Influenza and Influenza Pandemic Preparedness and Response Plan (NAIIPPRP). The mission is to close observation on precautionary behaviors of poultry workers and to improve the knowledge and attitudes about this pandemic [13, 14].

Knowledge, attitude and practice of people regarding swine flu are crucial to control and prevent the outbreak of this disease also protect from illness. Several initiatives and health campaigns were conducted in different places of Nepal, to aware common people about the risks and motivating for protective behaviors. Comparing with developed countries, there is scarcity of peer reviewed literatures for this country in this context. So the present research was undertaken to assess the existing awareness and practices of community people regarding swine flu prevention in selected slum areas of Pokhara. It could be also helpful to plan awareness raising program for concerned authority, in developing information, education and communication.

The objectives of the present study were

1) to identify levels of knowledge about swine flu

2) to investigate the factors associated with practicing preventive behaviors, awareness about Swine flu.

## Material and Methods

### Study Period

This study was conducted between 08-03-2015 to 16-04-2015 by using structured questionnaire.

### Study design, participants and the collection of data

This cross-sectional descriptive study was done on 424 community people, to find out the knowledge, awareness and practice on preventive measures of swine flu among community people in selected slum area (Nagin tole) at Pokhara sub-metropolitan. The study population was community people (12 + years). This cross sectional house to house survey was carried out to include all the members of the house hold more than 12 years of age present at the time of the visit. Non probability convenient sampling technique was used.

### Data collection

After obtaining verbal consent, self administered questionnaire was distributed amongst respondents. They were asked to complete it individually. Respondents filled up within 15-20 minutes; and the questionnaire was collected and checked for completeness. Anonymity was ensured by

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asking them not to write their name or any other identification mark in the questionnaire. Collected data were checked, reviewed, organized in a daily basis.

### Questionnaire design

A standard questionnaire was constructed on different factors based on objectives of the study to answer the research questions. After extensive review of literature questionnaire was developed, to measure the research variables. It was divided into three parts.

**Part I** - consisted of information related to socio-demographic variables

**Part II** - questionnaire to assess awareness regarding Swine Flu.

**Part III** - statement related to practice of preventive measures on swine flu.

### Inclusion criteria

All residents in the selected slum area above 12 years and available during data collection time, willing to participate in this study were included.

### Exclusion criteria

Residents with medically diagnosed mental or psychiatric problem (as reported by family member during the study period) and unwillingness to participate were also excluded from the study.

### Ethical committee approval

The permission was taken from ward manager of Pokhara-10. The study was carried out after the approval obtained for community health nursing field postings in 2015 (Jan- April). Verbal informed consent was also obtained from all the subjects prior to data collection by explaining purpose of the study. Research was done according to the declaration of Helsinki (Latest version).

### Outcome variable

Knowledge score, practice score, factors associated with knowledge and awareness like causative factors for swine flu, sign and symptoms, diagnosis, protective measures were set up as outcome variable.

### Explanatory variables

The demographic factors age, religion, education, occupation, source of information, *etc*. were considered as explanatory variables.

### Data management and statistical analysis

The collected data was analyzed by the Statistical Package for Social Sciences (SPSS) version 16. Descriptive statistics was used in this study. The chi square test was done to find out association between different variables. $p \leq 0.05$ was considered as statistically significant.

## Results

**Table 1 - Sociodemographic status, education, and source of information n(%)**

| | |
|---|---|
| **Gender** | |
| **Male** | 153(36.1) |
| **Female** | 271(63.9) |
| **Age (years)** | |
| 10-20 | 83(19.6) |
| 21-40 | 186(43.9) |
| 41-65 | 117(27.6) |
| >65 | 38(9.0) |
| **Religion** | |
| Hindu | 280(66.0) |
| Buddhist | 127(30.0) |
| Other (Christian/ Muslim) | 17(4.0) |
| **Literacy** | |
| Literate | 288(67.9) |
| Illiterate | 136(32.1) |
| **Educational level ( n=290)** | |
| Primary | 45(15.5) |
| Secondary | 167(57.6) |
| higher secondary | 54(18.6) |
| Bachelor or above | 24(8.3) |
| **Occupation, and Source of information** | |
| Occupational Status | 70 (16.5) |
| Business | 62(14.6) |
| Services | 43(10.1) |
| Agriculture/Labour | 156(36.8) |
| House wife | 93(21.9) |
| **Source of Information** | |
| Mass media (Radio, TV) | 274(64.6) |
| Family/relatives | 109(25.7) |
| Health personal/ school teacher/ Social leader | 56(13.2) |
| **Friends** | 47(11.1) |

Table 1 explains that most of the respondents (63.9%) were female. 43.9% participants were in age group 21-40yrs. 66% of respondents were Hindu. Majority of them were literate and educated up to secondary level. The highest percentages of them were house wife. 64.65% of respondents had heard about Swine flu from mass media followed by family/relatives (25.7%), health person/school teacher/social leader (13.2%) and friends (11.1%).

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| Table 2 – Knowledge about different relevant aspects, sign, symptoms and diagnosis of Swine flu n(%) | |
|---|---|
| **Meaning of swine flu** | |
| Correctly mentioned | 248(58.5) |
| Incorrectly mentioned | 176(41.50) |
| Swine flu is communicable | 393(92.7) |
| Swine flu is non communicable | 31(7.3) |
| **Causes of swine flu** | |
| Virus | 98(23.1) |
| Influenza type A | 26(6.1) |
| High risk group | |
| Children | 97(22.9) |
| Elderly | 75(17.7) |
| Do not know | 393(92.7) |
| **Mode of transmission** | |
| Through coughing and sneezing | 266(62.7) |
| Contact with swine flu infected person | 153(36.1) |
| Working with infected pigs | 360(84.9) |
| Spread through air | 358(84.4) |
| **Sign and symptoms** | |
| Fever and cough | 316(74.5) |
| Sore throat | 89(21.0) |
| Sneezing and running nose | 212(50.0) |
| Headache | 158(37.3) |
| Muscle and joint pain | 45(10.6) |
| Diarrhoea and vomiting | 105(24.8) |
| Do not know | 41(9.7) |
| **Diagnosis** | |
| Urine test | 20(4.7) |
| Blood test | 92(21.7) |
| Nasopharyngeal swab test | 55(13.0) |
| Do not know | 257(60.6) |

Table 2 shows that most (58.5%) of the participants correctly mentioned meaning of swine flu and aware about it as a communicable disease. However only a relatively less of them (23.1%) knew cause of swine flu. More than 80% of respondents stated swine flu can spread through air and working with infected pigs. Regarding sign and symptoms, around half of the respondents knew fever, cough, sneezing and running nose are major sign and symptoms of swine flu. 60.60% of respondents did not know about diagnostic test of swine flu.

Table 3 expedites majority (85.1%) of people preferred medical aids would be better if sign and symptom are present. However a vast majority (93%) unaware about medicine to treat Swine flu. Covering mouth and nose while sneezing and coughing is the key method to prevent swine flu for 72.2%. About half of the population did not know about appropriate distance and duration of isolation for swine flu infected person. However 52.8% of respondents told taking rest and staying at home can prevent spread of swine flu.

| Table 3 – Respondent's knowledge on treatment, management and preventive measures n(%) | |
|---|---|
| **If symptom are present** | |
| Treat the case with home remedies | 10(2.4) |
| Seek medical aid | 361(85.1) |
| Visit the spiritual healer | 4(0.9) |
| Overlook the symptoms | 18(4.2) |
| Do not know | 31(7.3) |
| **Treatment** | |
| Paracetamol | 18(4.2) |
| Tami flu | 11(2.6) |
| Do not know | 395(93.2) |
| **Method of Prevention** | |
| Cover mouth and nose while coughing and sneezing | 306(72.2) |
| Frequent hand washing with soap and water | 88(20.8) |
| Avoid crowded place | 129(30.4) |
| Avoid close contact with sick people | 151(35.6) |
| Do not know | 58(13.7) |
| **Among pig farmers** | |
| Wearing gloves and mask | 301(71.0) |
| Vaccination | 88(20.8) |
| Do not know | 112(26.4) |
| Distance from infected person | |
| 1 meter | 155(36.6) |
| 7 meters | 35(8.3) |
| 10 meters | 26(6.1) |
| Do not know | 208(49.1) |
| **Isolated for** | |
| 10 days | 25(5.9) |
| as long as symptomatic | 188(44.3) |
| Do not know | 211(49.8) |
| **Prevention from spread if symptom are present** | |
| Take rest and stay at home | 224(52.8) |
| Eat balance diet | 48(11.3) |
| Drink plenty of fluid | 42(9.9) |
| Do not know | 110(25.9) |

Table 4 shows that 65.3% of people practiced turn face from other when coughing and sneezing. The equal percentage practiced hand washing with soap only after using toilet. 49.8% used face mask when having fever, cough or runny nose only. A vast majority (87.7%) prefer to go to doctor if experiences any symptoms of the disease. >50% avoided contact with infected people and put handkerchief on nose and mouth. Only 41.5% avoided touching and shaking hands. 48.6% avoided going to crowded places. Similarly, on self health care, 51.4% practiced drinking plenty of water followed by 32.5% hand washing frequently than before, 26.7% seek for additional information regarding swine flu and 26.2% consumed more nutritional diet than before.

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**Table – 4 Respondents' Practices on Preventive Measures of Swine Flu n(%)**

| | |
|---|---|
| **When coughing and sneezing** | |
| Covered mouth and nose with tissue or handkerchief | 240(56.6) |
| Throw away the used tissue into the bin | 202(47.6) |
| Turn face from other | 277(65.3) |
| **Washing hand** | |
| Before touching eye and nose | 98(23.1) |
| After covering nose when sneezing | 186(43.9) |
| After toilet | 327(77.1) |
| Using soap | 314(74.1) |
| **Face mask usage** | |
| Never use | 123(29.0) |
| Wear face mask when having fever, cough or runny nose | 211(49.8) |
| Wear face mask at crowded areas | 185(43.6) |
| Changed new face mask after using once | 160(37.7) |
| **Protection if contact with infected person** | |
| Avoid contact with infected person | 243(57.3) |
| Avoid touching and shaking hands | 176(41.5) |
| Put handkerchief on nose and mouth | 246(58.0) |
| Go to doctor if experience any symptoms of the disease | 372(87.7) |
| **Social distancing** | |
| Avoid going to crowded place | 206(48.6) |
| Practice social distance | 193(45.5) |
| **Self health care** | |
| Wash hand frequently than before | 138(32.5) |
| Seek for additional information regarding swine flu | 113(26.7) |
| Consume more nutritional diet than before | 111(26.2) |
| Drink plenty of water | 218(51.4) |

**Table – 5 Participants knowledge on preventive measures of Swine flu n(%)**

| | |
|---|---|
| Inadequate | 230(54.2) |
| Adequate | 194(45.8) |
| Mean± SD | 11.66±5.17 |
| **Practice Level on Preventive Measures of swine flu** | |
| Inadequate Practice | 225 (53.1) |
| Adequate practice | 199(46.9) |
| Mean±SD | 10.23±2.81 |

Table 5 describes that more than half of the people had inadequate knowledge and 53.1% had Inadequate practice regarding this disease.

Table 6 reveals the association between selected socio-demographic variables and knowledge. It shows significant association between knowledge of respondents, educational and occupational status, but no significant association between age and gender.

Table 7 reveals the association between selected socio-demographic variables and practices. There is significant association between practices of respondents & their educational, occupational status and age.

**Table - 6 Association between respondents' Knowledge on Swine Flu and Selected socio-demographic characteristics**

| Variables | knowledge | | p value |
|---|---|---|---|
| | Inadequate | Adequate | |
| **Age** | | | |
| 10-20 | 42 | 41 | 0.057[x] |
| 21-40 | 92 | 94 | |
| 41-65 | 69 | 48 | |
| above 65 | 27 | 11 | |
| **Gender** | | | |
| Male | 78 | 75 | 0.311[x] |
| Female | 152 | 119 | |
| **Educational Status** | | | |
| Literate | 135 | 153 | .000[†] |
| Illiterate | 95 | 41 | |
| **Occupation** | | | |
| Business | 36 | 34 | .001[†] |
| Services | 21 | 41 | |
| Agriculture | 7 | 4 | |
| Labour | 22 | 10 | |
| Housewife | 100 | 56 | |
| Students | 44 | 49 | |

[x]P>0.05 statistically not significant
[†]P<0.01 statistically significant

**Table – 7 Association between educational status, age, occupation and practices (n)**

| Variables | Inadequate practices | Adequate practices | p value |
|---|---|---|---|
| **Educational status** | | | |
| Literate | 134 | 154 | 0.000[†] |
| Illiterate | 91 | 45 | |
| **Age** | | | |
| 10-20 | 32 | 51 | 0.004[†] |
| 21-40 | 98 | 88 | |
| 41-65 | 68 | 49 | |
| above 65 | 27 | 11 | |
| **Occupation** | | | |
| Business | 37 | 33 | 0.015* |
| Services | 27 | 35 | |
| Agriculture | 6 | 5 | |
| Labour | 14 | 18 | |
| House wife | 100 | 56 | |
| Student | 41 | 52 | |

[†]P<0.01 statistically significant
*P<0.05 statistically significant

## Discussion

Influenza A viruses are responsible for the recurrent outbreaks at any parts of the world, and a serious threat to the human health and the global economy. Swine influenza virus infections in humans have been reported in United States, Canada, Europe and Asia [15]. An important strategy to combat with the situation is to encourage the public to adopt precautionary behaviors. Correct knowledge of the epidemic will be helpful for them for behavioral modification. A vast number of researchers have examined

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the various levels of KAP about infectious disease outbreaks, such as SARS, avian influenza [16 - 18].

**Level of knowledge amongst participants**

The findings from the present study indicated that more than half (54.2%) of the respondents had inadequate knowledge based on mean score. This finding was contrast with findings observed in previous studies of Rathi *et al*, where 87% had adequate knowledge [19]. The attitude and knowledge scores were not sufficient alone for improving attitudes and practices. Motivational approach by formulating educational models can be helpful to convert individual's knowledge to correct attitudes and behaviors [20]. As the present study was done in selected areas of slum so it might be a reason of their poor knowledge.

**Practice regarding Swine flu amongst participants**

Similarly in practice, more than half (53.1%) respondents had inadequate practice. This study suggests good knowledge is important to enable individuals to have good practice to protect themselves and others from Influenza A (H1N1). The awareness programme done by ministry of health and population and other national & international non-governmental organization after swine flu outbreak is seen in 2009, and in 2014 [13, 14].

The current study revealed significant association between education, occupation practice and knowledge. These findings were similar with previous studies conducted by Parhizkar in 2012 and Yap *et al* [21, 22]. This could be due to the fact that education improves better perception about this pandemic. There was no significant association between some demographic characteristics (e.g. age, gender) and knowledge level that was similar to other study done among outpatient in tertiary level hospital in India [23].

However respondents in this study had good knowledge to prevent infection and more than 72.2% of them correctly answered on covering mouth and nose while coughing and sneezing to prevent from spreading the infection. Only 56.6% of the participants reported, they use to cover mouth and nose with tissue or handkerchief and this percentage was low compared to the level of knowledge that they had. This result is similar with findings of Farahat *et al*, 2010 [24].

**Washing hand as a preventive measure**

Proper washing of hand is another important practice that one should consider to reduce transmission of infection. Present study found that only 32.5% practiced it frequently. This finding was very low compared to previous studies by Lau *et al*, in Hong Kong (73.7%), and Kumar (98%) in India [25, 26]. A Korean study showed that females washed hands more frequently at the time of the peak pandemic period of A/H1N1 [27]. This variation could be due to the difference in living standards of the study population.

**Role of media and vaccination programme**

Most of the participants reported media as their primary source of information about Swine flu, which is similar to findings of other researcher [28]. This may be due to the news channels, Govt. and NGOs aware people during the disease breakouts.

Vaccination programme is an effective measure to prevent infectious disease, but surprisingly in prevention methods, a relatively less portion (20.8%) of the participants reported that vaccination is required. This may be due to the poor knowledge [29].

## Conclusion

Pandemic outbreak caused by influenza virus and other infectious disease agents still remains the biggest threat to human due to high mortality rate associated with their infections. Awareness and knowledge is highly required for the preventive measure, among the community, is of utmost importance. Our study found out that there is still low level of awareness, practice and preventive measures of pandemic influenza among communities people in Pokhara. Significant gaps also observed between knowledge and practice. Findings of this study offers pragmatic contributions to policy makers and academic community to formulate strategies and measures to ensure effective ways to handle potential influenza spread in the slum areas communities.

## Limitations & future scope of the study

This is a cross-sectional study which was confined in two slum areas. Due to this limitation, this study is not representing the whole nation. Multicenter research is strongly recommended to obtain the clear scenario. Future studies are required with different study design and validation.

## Abbreviations

Avian Influenza Control Project (AICP), National Avian Influenza and Influenza Pandemic Preparedness and Response Plan (NAIIPPRP), World Health Organization (WHO)

## Competing interests

Authors do not have any competing interest.

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## Authors' contribution

Ms. Gnanakshi Dayanand designed the study, constructed the questionnaire, took part in data interpretation, drafting of the manuscript, and revision. Ms. Gnanakshi. Dayanand and Mrs. Man Maya Rana, conducted the research formulated and analyzed the data. All authors took part in critical revision and finally approved the manuscript.

## Authors' information

***Ms. Gnanakshi. Dayanand***. M.Sc., Lecturer, Community Health Nursing, Manipal College of Medical Sciences (Nursing Programme), Phulbari, Pokhara, Nepal.

***Mrs. Man Maya Rana***, M.Sc., Lecturer (Nursing), Manipal College of Medical Sciences (Nursing Programme), Phulbari, Pokhara, Nepal.

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