INT. J. BIOL. BIOTECH., 8 (3): 427-432, 2011.

A STUDY ON PERCEPTION EVALUATION OF PAKISTANI POPULATION AGAINST INFLUENZA A (H1N1)

Amit Khan[1], Zulfiqar Ahmad[1], Kamran Nazir[1], Muhammad Noman Khan[1], Farhat Iqbal[2] and Taseer Ahmed Khan[1]

[1]*Poultry Research Laboratory, Department of Physiology, University of Karachi-Karachi.75270, Pakistan*
[2]*Department of Statistics, University of Balochistan, Quetta. 22060*

ABSTRACT

Swine flu and its respective strains have influenced the world at an alarming level. Pakistan is no exemption. The main purpose of this study was to identify the current knowledge, attitude and behaviour of the Pakistani people towards Influenza A (H1N1) virus. The survey based pilot study was based on a close ended questionnaire containing the information matching to the clear and concise understanding of the respondents. Karachi and its adjoining territories were selected as the main zone for the sample collection. A total of 288 respondents (18-60 years of age) were accessed. The results showed significant ($p< 0.05$) association between the knowledge levels of males and females, attitude and behaviour levels of different literacy groups and difference of attitude between employed, un-employed and self-employed sections of the people. A significant ($p<0.01$) correlation was observed among the knowledge, attitude and behavior scores of the respondents.

Keywords: Influenza virus, H1N1, Survey, Pakistan

INTRODUCTION

Swine flu is a respiratory illness caused by a strain of influenza A virus (H1N1) which had been ranked pandemic 2009 influenza by the WHO (Akram, 2011). In 1963 at Hong Kong, the outbreak of flu virus was considered as Influenza for the first time and was responsible for the death of approximately 10,000 people (Kumar *et al.*, 2011).

Although the origin of influenza A (H1N1) virus remains uncertain, an increase in the incidence of respiratory diseases was noted during March 2009 at the town of La Gloria, in the southeastern state of Veracruz in Mexico. It was probably the first community in which a case of novel influenza A H1N1 virus has been identified (Calore *et al*., 2009). The first case in Pakistan was in June 2009; all the initial cases were reported in travelers returning from the United States. In 2009 alone, more than 600,000 cases and 13,000 deaths were reported across the world, of these there were 1,242 suspected cases of H1N1 reported from Pakistan, with 262 of these being confirmed by laboratories. Of these 30 per cent were from Islamabad, 35 per cent from Punjab (with the majority being in Rawalpindi), 28 per cent Sindh (the majority being reported in Karachi) and 5 per cent from Peshawar (Akram, 2011). Although in 2010, 12 cases of swine flu were reported from Sindh alone of which only 1 died. The total H1N1 infected people in Sindh province this year (2011) is about 24. No death by swine flu is reported up till now in Sindh province (Kumar *et al.*, 2011).

The largest number of H1N1 flu cases have occurred in people of ages 5 – 24. Few cases have been reported in people older than age 64 (Dugdale and Zieve, 2009). The most infected cases reported in Pakistan in 2010 were of women of age of about 65 years (Kumar *et al.*, 2011). The symptoms of swine flu include nausea, fatigue, headache, runny nose with shortness of breath, sore throat, pale nails and lips. In children, nausea is accompanied with seizure like jerking, severe cough with vomiting, loss of appetite and decreased mental activities. Swine flu virus keeps changing its form all the time inside the body. The vaccination for swine flu is active only for one year therefore, there is a need for repeated vaccination. Swine flu virus can be transmitted through coughing, spitting, talking or shouting in loud voice (Kumar *et al.*, 2011). An active monitoring of the pandemic is in progress by World Health Organization (WHO) and agencies like United States Centers for Disease Control and Prevention, the Pan-American Health Organization/(PAHO/WHO), Global Outbreak Alert and Response Network, European Centre for Disease Prevention and Control, and the China Centre for Disease Prevention and Control have been teamed together in order to better understand the outbreak (Sinha, 2009).

For last several years, Pakistan is already facing several disasters including natural disasters such as earthquake, severe flood, dengue fever, bird flu etc and presently, the outbreak of swine flu has caused immense panic among the people.

Since Karachi is the Metropolitan city it may be considered high-risk zone for the spread of influenza virus A among the people of Pakistan. Thus, Karachi and its adjoining territories were chosen to access the swine flu based information, and overall status of the awareness among the population of this metropolitan city.

METHODOLOGY

This survey based pilot study was conducted in the Metropolitan city of Karachi and its adjoining territories. The format of the questionnaire used was adopted and modified from the study conducted by Kamate *et al*. (2010). The responses were obtained using the pre-tested self-filled questionnaire which contained the following information; demographic features, personal risk perception and knowledge about influenza A (H1NI) and change in behaviour with respect to Influenza A (H1N1) outbreak.

A close-ended questionnaire was used with tick box options. The study area was divided into six sub areas for sample collection. 288 subjects were randomly chosen from Universities, research institutions, hospitals, offices, shops and residences in eah sub-area.

The age was divided into five groups for convenience purpose; Gender options were differentially incorporated and educational status was again divided into five groups; While working status was divided into three groups: employed, unemployed and self-employed.

Statistical analysis

Statistical analysis was performed using students t test along with one-way ANOVA ($p<0.05$) on the data set obtained in response to the questionnaire. A score of 1 was assigned to each positive answer while 0 for negative. All questions except for question No. 7 (source of information about influenza A (H1N1)), were the answer "Don't know" was given a score of 0 while rest of the options were scored according to the range from 1 to 5. A correlation between knowledge, attitude and behaviour was established using Karl Pearson's correlation test.

RESULTS

Initially, 350 people were contacted for the survey, out of which only 288 agreed to participate, the core reason being communication difficulties. The demographic outline of the respondents is highlighted in Table 1.

Knowledge response

Out of a total of 288 respondents, 84.7% (244) had heard about swine flu. On the contrary, only 38.9% (112) knew about the H1N1 virus. The maximum number of respondents i.e., 46.9% (135) obtained information related to Influenza A (H1N1) from television, while the minimum number of respondents i.e., 8.7% (25) obtained information from radio. This is because of the fact that 75% of the households in urban Pakistan now have access to TV viewing (Gallup, 2000). However, only 36.8% (106) knew that swine flu is caused by H1N1 virus whereas, 21.5% (62) thought that there was some relation between "swine flu" and "H1N1" virus and 41.7% (120) thought that there was no relation between "swine flu" and "H1N1" virus. As far as the causes of Swine Flu was concerned, 36.8% (106) believed that Influenza A (H1N1) was caused by pigs and 34% (98) of the total respondents are aware about the Influenza A (H1N1) situation in Pakistan. Only 20.1% (58) were self-confident that they had enough information about Influenza A (H1N1).

Table 1. Demographic features of the participants (n = 288).

Features		Frequency	Percent
Gender	Male	172	59.7
	Female	116	40.3
Age Group (years)	18-29	181	62.8
	30-39	51	17.7
	40-49	41	14.2
	50-59	12	4.2
	≥ 60	3	1.0
Educational status	Illiterate	18	6.2
	Primary education	33	11.5
	High School	71	24.7
	Graduation	112	38.9
	Post-graduation	54	18.8
Employment status	Employed	97	33.7
	Unemployed	140	48.6
	Self-employed	51	17.7

Females had significantly more knowledge about H1N1 than males at $p < 0.05$ (Table 2). The results also showed that respondents in the age groups between 18 to 29 years, 50 to 59 years and less than 60 years differed non-significantly in knowledge response from respondents in the age groups between 30 to 39 years and 40 to 49 years at $p < 0.05$ (Table 3). When educational levels were compared, respondents in all literacy levels differed non-significantly in knowledge response at $p < 0.05$ (Table 4). When employment status was considered, those who were employed, unemployed and self-employed differed non-significantly in knowledge response (Table 5).

Attitude response

Out of total 288 respondents, 8.7% (25) had the opinion that Influenza A (H1N1) would not affect their health; 19.4% (56) had the feeling that their health would somewhat be affected by Influenza A (H1N1); 33.3% (96) believed that they would be seriously affected and 37.5% (108) had no idea regarding the effect of Influenza A (H1N1) on their health.

Some 75.3% (217) responded that Government health care authorities are not well prepared in handling the risk of Influenza pandemic. There had been only slight difference in responses to perceived efficacy of various preventive methods. Around 32.3% (93) of the respondents believing it to be less efficient; Maximum respondents i.e., 34.7% (100) believed it to be moderately efficient and 33% (95) of the respondents were of the opinion that preventive methods are highly efficient.

A non-significant difference was observed between females and males when compared with the attitude score (Table 2). Respondents in the age groups between 18 to 29 years, 50 to 59 years and less than 60 years differed non-significantly in attitude response from respondents in the age groups between 30 to 39 years and 40 to 49 years at $p < 0.05$ (Table 3). Comparing literacy level, respondents in all literacy levels differed significantly from each other in attitude response at $p < 0.05$ (Table 4). However, it was accessed that self-employed respondents had significantly more positive attitudes than those who were employed and unemployed at $p < 0.05$ (Least Significant Difference = 1) (Table 5).

Table 2. Association of gender with knowledge, attitude and behaviour using Students *t* test.

	Gender	Mean	SD	Significance
Knowledge	**Male**	6.28	1.41	P<0.035*
	Female	6.70	1.75	*T<-2.126*
Attitude	**Male**	3.14	1.07	P<0.121
	Female	3.34	1.14	*T<1.556*
Behaviour	**Male**	6.83	2.38	P<0.291
	Female	6.51	2.76	*T<1.058*

* Significant difference at 5% level.

Table 3. Association of age with knowledge, attitude and behaviour using one-way ANOVA

	Age Group (years)	Mean	SD	Significance
Knowledge	18-29	6.3812	1.61020	P<0.787
	30-39	6.5490	1.48746	F=0.429
	40-49	6.5610	1.37929	
	50-59	6.8333	1.94625	
	≥ 60	6.0000	1.00000	
Attitude	18-29	3.2762	1.07545	P<0.581
	30-39	3.0588	1.02785	F=0.717
	40-49	3.0976	1.26105	
	50-59	3.5000	1.24316	
	≥ 60	3.3333	1.15470	
Behaviour	18-29	6.5304	2.63426	P<0.319
	30-39	7.2745	2.25458	F=1.816
	40-49	6.6098	2.47869	
	50-59	6.7500	2.49089	
	≥ 60	8.3333	1.52753	

Table 4. Association of education with knowledge, attitude and behaviour using one-way ANOVA

	Education	Mean	SD	P value
Knowledge	Illiterate	6.4444	1.19913	P<0.609
	Primary education	6.3030	1.31065	F=0.676
	High School	6.3662	1.58781	
	Graduation	6.4018	1.48582	
	Post-graduation	6.7593	1.30064	
Attitude	Illiterate	3.6667	1.08465	P<0.018*
	Primary education	2.9697	1.21153	F=3.027
	High School	3.3099	0.87164	
	Graduation	3.0357	1.09814	
	Post-graduation	3.5000	1.22474	
Behaviour	Illiterate	6.7222	2.63027	P<0.0001*
	Primary education	6.1212	2.52187	F=5.907
	High School	5.6761	2.71385	
	Graduation	7.1161	2.21276	
	Post-graduation	7.5370	2.49311	

Table 5. Association of working status with knowledge, attitude and behaviour using one-way ANOVA

	Working Status	Mean	SD	Significance
Knowledge	Employed	6.7423	1.40148	P<0.063
	Unemployed	6.2571	1.65938	F=2.7916
	Self-Employed	6.4314	1.52650	
Attitude	Employed	3.1134	1.03959	P<0.042*
	Unemployed	3.1714	1.15018	F=3.2056
	Self-Employed	3.5686	1.02479	
Behaviour	Employed	6.8660	2.29415	P<0.737
	Unemployed	6.6143	2.63781	F=0.3055
	Self-Employed	6.6275	2.74198	

Table 6. Karl Pearson's Correlation test between knowledge, attitude and behaviour

Relationship between	Karl Pearson's coefficient of correlation
Knowledge and Attitude	+ 0.197**
Behaviour and Knowledge	+ 0.136*
Attitude and Behaviour	+ 0.136*

* Correlation is significant at 5% level; ** Correlation is significant at 1% level

Behavioural response

In Behavioural section, out of total 288 respondents, 63.9% (184) had cancelled or postponed any of the social event; 64.2% (185) had reduced the number of rides on public transportation; 58% (167) had taken time off work; 66% (190) had reduced the amount of time going to different shops; 65.3% (188) had refrain from sending their children to school. However, more than half of the respondents i.e., 77.4% (223) avoided crowded places; more than half of the respondents i.e., 85.4% (246) increased amount of cleaning or disinfecting things that they might touch and more than half of the respondents i.e., 89.2% (257) washed their hands with soap and water more often than usual.

As shown in Table 2 males are non-significantly ($p>0.05$) engaged in varieties of avoidance behaviours than females. According to Table 3, respondents in all the age groups differed non-significantly in behavioural responses at $p < 0.05$ (Least Significant Difference = 0.12). According to Table 4 (education level), all levels of literacy differed from each other significantly in behavioural response at $p < 0.05$ (Least Significant Difference = 1). In relation to working status, it was found that employed respondents differed more non-significantly in behaviour from unemployed and self-employed respondents at $p < 0.05$ (Table 5).

Correlation between knowledge, attitude and behaviour

The knowledge and attitude positively ($p < 0.01$) and attitude and behaviour and knowledge and behaviour related positively significantly $p < 0.05$ (Table 6).

DISCUSSION

In March 2009 (Akram, 2011) and April 2009, a new strain of influenza A (H1N1) virus commonly referred to as swine flu began to spread in most countries around the world for instance, Mexico and turned out to be most severe form (Kamate *et al*., 2010). Since Influenza A (H1N1) has resulted in increased number of cases in Pakistan and the health care authorities has exaggerated the outburst of the pandemic but still the nation is less deliberate regarding the responses. Unfortunately, less than one third of the total respondents had enough information about Influenza A (H1N1) virus and more than half of the respondents had at least heard about Influenza A (H1N1) virus; the main source of information being Television. This is true for the country like Pakistan where Television viewing has become a family affair (Gallup, 2000). These results imply that despite being public deliberation, health care authorities had succeeded in putting on some awareness. These results are consistent with the work of Rubin *et* al., (2009) and Kamate *et al*., (2010).

In knowledge response, statistical analysis revealed that females had significantly more knowledge than males. This may be due to the fact that, women makes up most of the population in Pakistan are more towards the media exposure than males. This is in contrast with the study conducted by Kamate *et al*., (2010) and Leili *et* al., (2008). Moreover, the knowledge response increased non-significantly from the younger respondents towards the older respondents. This is in contrast with the study conducted by Kamate *et* al (Kamate *et al*., 2010). When considering the literacy status, there is no much non-significant difference between the knowledge responses of all the literacy level respondents and this may be mainly due to the fact that the illiterate respondents are as much in a social contact as that of the literates. But it was also accessed that the knowledge response increased non-significantly from the Primary level up to the post-graduation level. These results are in contrast with the work of Kamate *et al*., (2010) and Farid-ul-Hasnain *et al*., (2009). As far as the working status is concerned, the employed respondents had significantly more knowledge then the rest of the working status level respondents, with unemployed respondents significantly having the least knowledge. This may be due to the fact that the employed respondents are in more interaction and socialization with their colleagues and others as compared to the self-employed and unemployed respondents. This is purely consistent with the study conducted by Kamate *et al*., (2010).

In attitude response, statistical analysis revealed that females had non-significantly more positive attitudes than males in the same way as females had significantly more knowledge than males. This finding is in contrast with the study conducted by Ahmed *et al.,* (2009) and Kamate *et al*., (2010). In case of age group, attitudes increased non-significantly with increasing age. This is consistent with the study conducted by Kamate *et al*., (2010). When considering the impact of education on attitude, with the increase in education level the attitude also increased significantly. This result is purely consistent with the work of Kamate *et al*., (2010). As far as working status is concerned, self-employed respondents had significantly more attitude than the employed and unemployed respondents. Since the government and health care authorities had failed to take effective measures towards the Influenza A (H1N1) outbreak therefore most of the people are deemed to believe that the media and the health care authorities are ineffectively exaggerating the pandemic. This is evident from the fact that only one third of the total respondents (24.7%) believed that the government and the health care authorities are well prepared to quickly and effectively respond to the Influenza A (H1N1) pandemic. When self-perceived threats were considered, majority of the respondents were of the opinion that if they were infected with the Influenza A (H1N1) they are very much likely to be seriously effected, with the minority of the respondents of belief that Influenza A (H1N1) will not have any effect on their health. This is in contrast with the study conducted by Seale *et al.,* (2009).

In Behavioural response, contrary to the Knowledge and Attitude, statistical analysis revealed that males had non-significantly more positive behaviour than females and this may be due to the fact that Pakistan has a male dominating pattern; females are constricted to socialization than males. When considering the effect of age, the behavioural response increased non-significantly with the increase in age group. When considering the effect of education, the behavioural response increased significantly with increase in literacy level except High school education in which the behavioural response had been less. This is consistent with the study conducted by Kamate *et al*., (2010). As far as working status is considered, employed respondents showed non-significantly more positive behavioural response then the unemployed and self-employed respondents. Since males hold larger sample size than females therefore, there was a considerable change in all the behavioural responses. Most of the respondents had deliberately cancelled or postponed social event; had reduced the number of rides on public transport; had taken time of work; had reduced the amount of time going into shops; had kept their children out of school; had avoided

crowded places; had increased amount of cleaning of disinfecting things that might be touched and finally had washed their hands with soap and water more often than usual. Thus, the perception of the people regarding the exaggeration of the pandemic by the health care authorities and media cannot be associated with the behavioural changes. This is contradicting the work of Kamate *et al*., (2010).

Using Karl Pearson's Correlation test, all correlation were found significant at $p<0.05$ or $p<0.01$, instead a very weak correlation existed among knowledge, attitude and behavior change. This is in contrast with the study conducted by Kamate *et al*., (2010) and the Knowledge Attitude Behavior (KAB) model (Daly, 2002). Therefore it is strongly recommended to undergo further investigation and core evaluation for the three parameters since, this test covered a large area of cosmopolitan city but with a small sample size.

Conclusion

The purpose of this pilot study was to access the present knowledge, attitude and behaviour of the people of Pakistan towards the outbreak of the Influenza A (H1N1), their perception towards the health care authorities and media in exaggerating the pandemic creating an atmosphere not coinciding with the behavioural traits and the role of the government in overcoming and controlling such pandemics for future aspects.

At the time of conduction of this study, Pakistan was not a new country to be effected by Swine Flu. During the initiation of this study, the mortality and morbidity rate were not high either. This caused the awareness regarding the pandemic to grow fainter with time and thus immediate concern and consideration is required by all the officials to cope with such outbreak for enhanced future acquiescence. Unlike other countries majority of the respondents in this study were of the belief that government authorities are not prepared for such pandemicsSo the major feature of concern is to formulate and initiate such improved and reliable methods that can identify and change the behavioural traits of the people, and at the same time government and media must obligatorily play a vital role in this regard.

Finally, the outcome of our survey based pilot study supports and sanctions the need to clearly, visibly and inevitably provide the authentic information to the people to create proper awareness among them to deal and with any pandemic outbreak of the disease.

REFERENCES

Ahmed, S. I., M. A. Hassali and N. Abdul Aziz (2009). An assessment of the Knowledge, Attitudes, and Risk Perceptions of Pharmacy Students Regarding HIV/AIDS. *Am J Pharm Educ*., 73: 15.

Akram, Y. (2011). The Swine Flu Pandemic, in Blog.dawn.com. *The Dawn media group*.

Calore, E.E., D.E. Uip and N.M. Perez (2011). Pathology of the swine-origin influenza A (H1N1) flu. *Research and Practice*, 207: 86-90.

Daly. (2002). *Text book of Essentials in Dental Public Health*. 1st ed. New York: Oxford University press, Pp 153.

Dugdale, D.C. and D. Zieve (2009). H1N1 flu, American accreditation healthcare commission.

Farid-ul-Hasnain, S., E. Johansson and G. Krantz (2009). What do young adults know about the HIV/AIDS epidemic? Findings from a population based study in Karachi, Pakistan. *BMC Infectious Diseases*, 9: 38.

Kamate, S.K., A. Agarwal, H. Chaudhary, K. Singh, P., Mishra and K. Asawa (2010). Public knowledge, attitude and behavioural changes in an Indian population during the Influenza A (H1N1) outbreak. *The j*ournal of infection in developing countries, 4(1): 7-14.

Kumar, S., S.H.R. Zaidi, A. Majid and R. Khanani (2011). Swine Flu. *Daily Jang Newspaper*. Karachi. Pg. 14.

Leili, S., S. Elham and S. Farkhonde (2008). A population-based survey of HIV/AIDS knowledge and attitudes in general public. *Pak J Med Sci*, 24: 838-844.

Pakistan Gallup, (2000). TV viewing in Pakistan. Gillani foundation, New Media Group.

Rubin, G.J., R. Amlot, L. Page and S Wessely (2009). Public perceptions, anxiety, and behaviour change in relation to the swine flu outbreak: cross sectional telephone survey. *British Medical Journal*, 339: 2651.

Seale, H., M. L. McLaws and A. E. Heywood (2009). The community's attitude towards Swine flu and pandemic influenza. *Medical Journal of Australia*, 191: 267-269.

Sinha, M. (2009). Swine Flu, a review. *Journal of Infection and Public Health*, 2: 157-166.

(*Accepted for publication June 2011*)