

Risk Perception of Seasonal and Swine Influenza Among University College Students: Does Study Direction Influence Attitudes?

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Abstract: In 2009, Norway faced the global challenge of the influenza pandemic. Risk communication is an important tool within healthy promoting work. In this study the main aim was to explore reflections of students on the risk assessment of season flu and the swine flu in 2009 according to field of study. A cross-sectional questionnaire survey based on 505 students is presented. 42.4% were health subject students, and 57.6% were non-health subject related students. The majority of the students were 20-24 years old. Most of the respondents were not concerned at being infected with the swine flu, and did underestimate the death toll of the common flu. Students were more concerned about the swine flu than the regular season flu. By logistic regression, the odds ratio for taking the swine flu vaccine was greater among students who were concerned (O.R. = 2.5). During the swine flu pandemic, student trust towards the health authorities was low. Among the students, 74% stated they would consider advice from the health authorities, 37% from their parents and 20% from mass media. Stating risk of getting the common flu was at the medium or great risk level for far less non-health students than for health students, 38.2% versus 55.6%, $P = 0.001$. The perceived infection risk was likewise higher in the health student group, 52.4% versus 36.2%, $P = 0.001$. The respondents had little faith in general public vaccination as well as being critical concerning side effects of vaccination. The results from the study indicated that the students would rather follow advice about their personal hygiene than advice to take the swine flu-vaccine.

Key words: Swine flu, seasonal flu, pandemic influenza and risk perception.

1. Introduction

Norway faced a global challenge when the WHO (world health organization) declared a pandemic, better known as the swine flu, in 2009. WHO was concerned with the upcoming influenza pandemic, because infections were associated with influenza virus from an animal. There was a rapid demographic spread of the virus and the incidence was high among younger people (World Health Organization, 2010). There was great uncertainty about the severity when the pandemic was declared, as documented in a Norwegian study [1].

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Following the declaration from WHO, the regular pandemic plan of Norway was implemented. According to the running agreement of the plan from 2008 vaccine purchase started, in this case for NOK 650 million (\$101 million), it was rapidly implemented [2].

A short time after the pandemic appeared, it became clear that it was less severe than initially assumed [1]. 29 deaths from influenza A (H1N1) were reported until December 31, 2009. The estimated number of affected persons in the Norwegian population was 900,000, giving a mortality of 0.0003%. The number calculated for the whole population was 0.6 per 100,000 inhabitants. Incidentally the mortality from influenza A (H1N1) in Norway was higher than in most Western European countries, including Sweden and Denmark [3].

When a global pandemic occurs, the quality and speed of communication from health authorities to the public audience is important. WHO describes risk communication as an essential factor to handle a pandemic influenza outbreak (World Health Organization, 2008). Trust in the responsible authority for the risk communication is essential for a successful communication [4]. In addition to the objective risk communication, it is important to consider the level of knowledge and perception of risk, protection and exposure in the population [5].

45% (2.2 million) of the Norwegian population got the vaccine against the swine flu, compared to 10% in Denmark [6]. There were 29 deaths in Norway with a population of 4.8 million compared to 33 in Denmark with a population of 5.5 million. Relatively few young people took the swine flu vaccine. Confidence in the authorities was relatively high in the general population, but the trust did fall under the swine flu period. Media information indicated that a majority of the population underscored that the authorities exaggerated the risk of becoming infected by swine flu. People who had confidence in the authorities were more willing to follow the advice from them.

The main aim of the present study was to explore reflections of students on the risk assessment of seasonal flu and the swine flu in 2009. Student trust in the health authorities after a massive media campaign would also be of interest. Presumed different closeness to medical science among students at a university college could value the two different influenza types being relevant in 2009 to 2011 differently.

2. Material and Methods

The respondents ($n = 505$) represented 57.6% (291) students from non-health related departments, and 42.4% (214) from health related departments at the University College, Table 1. There were 259 (51.3%) men and 246 women.

The study was a cross-sectional survey. A questionnaire with closed answers was developed for

the study. The accuracy of the questions was tested out in a pilot, $n = 6$. Some questions were improved after pilot study response.

Students filled out the anonymous questionnaire during lectures and the results were collected immediately afterwards. The questionnaire contained items about exposure, concerns, precautions and general trust toward the health authorities during the swine flu. The students were enrolled in the following areas: The health student group comprised students of nursing, occupational therapy, physiotherapy and social work. The non-health student group was recruited among students of economy and administration, engineering and computer science.

Statistics: The SPSS package version 18 for the Mac was used in calculations. Differences were analysed using pairwise comparisons and logistic regression. No approval of study ethics was needed.

3. Results

The risk perception of common flu according to type of study is given in Table 2. Stating risk of getting the common flu was at the medium or great risk level for far less non-health students than for health students, 38.2% versus 55.6%, $P = 0.001$. The perceived infection risk was likewise higher in the health student group, 52.4% versus 36.2%, $P = 0.001$.

The respondents were asked to what degree they feared the swine flu epidemic in 2009. More than half the men did not fear the swine flu whereas a third of women did not. 21.8% of women and 9.8% of men were worried, the difference was significant at the 0.001-level. Health-related students were more worried than non-health students. Being in a risk group for the swine flu did increase perceived worry, $P < 0.001$.

There was a significant correlation between choosing to get vaccinated against the swine flu and degree of worry for seasonal flu, O.R. = 2.5 (CI 1.17-5.37). Being in a risk group increased the probability of vaccination against the swine flu. There was a significant association between believing that general vaccination

Table 1 Age groups of students responding to a questionnaire on attitude towards the swine flu pandemic according to type of study.

Age group	20-24 years (% , n)	25-30 years (% , n)	> 31 years (% , n)
Non health related studies	63.9 (184)#	29.9 (86)	6.3 (18)
Health related studies	69.6 (149)	19.2 (41)	11.2 (24)
Total*	66.3 (333)	25.3 (127)	8.4 (42)

#: Chi-square = 5.9 without Yates correction between student groups significant at 0.02; *: 3 unanswered.

Table 2 Risk perception of common flu according to type of study.

	Study (n)	Do not know (% , n)	No risk (% , n)	Small (% , n)	Medium (% , n)	Great risk (% , n)
Risk of common flue	NH (291)	0.7 (2)	10.3 (30)	50.9 (148)	29.6 (86)	8.6 (25)
	H (214)	1.9 (4)	7.5 (16)	35.0 (75)	43.0 (92)	12.6 (27)*
Perceived infection risk	NH (290)	4.1 (12)	12.4 (36)	47.2 (137)	27.2 (79)	9.0 (26)
	H (214)	1.9 (4)	5.6 (12)	40.2 (86)	42.1 (90)	10.3 (22)*

*: $P = 0.001$ with Pearson chi square test; NH: Non-health studies, H: Health related studies.

would reduce the risk of infection and accordingly getting vaccinated against the swine flu. However, being infected by the swine flu, but not having any confirmation from your general practitioner, reduced the propensity of taking the swine flu vaccine, O.R. = 0.09 (CI 0.01-0.68).

Influence from advice from health authorities depended on whether the respondents stated separately a trust in health authorities. Health students were statistically more influenced by the health authorities.

Students indicating worry for the swine flu increased their level of personal hygiene, the health students more than non-health students. The non-health students were more prone to do nothing to reduce their felt risk of catching the common flu.

Factors influencing vaccination and whether the students contemplated preventive measures are depicted in Table 3. The non-health students indicated that the time consumption to get vaccinated would reduce propensity for vaccination, whereas more health students feared side effects of vaccination. Considering the common flu more non-health students would take no preventive measures, whereas health students would to a greater degree improve personal hygiene.

The students were asked to estimate the yearly death toll of the common flu, Table 4. The majority of the students underestimated the death toll, the non-health

students more so. A third of the non-health students indicated less than 10 deaths whereas a fifth of the health students indicated so. The registered death toll from the common flu each year is far above 100 in Norway.

4. Discussion

The present questionnaire study revealed differences between non-health-subject students and health-subject students. Students hardly had any idea of the magnitude of the common flu disease in the population, underestimating the morbidity. Answers given in Table 4 suggest that health students might have experienced the effect of the common flu in their periods of practice, but they did not know the magnitude at population level. This may be of importance when public health issues of information to the population are planned [6, 7].

Health subject students indicated a higher degree of worry and exposure. They were more willing to increase personal hygiene measures during both swine flu and seasonal influenza.

On the other hand both study groups were vaccinated against the swine flu to the same extent.

In the Australian study by Leggat, Brown and Aitken, concern for the swine flu was higher among women [5]. The study also showed the young (18-34 years) and the highly educated were less concerned

Table 3 Contemplation of preventive measures against influenza among health students and non-health faculty students in a university college.

	Non health studies (%)	Health related studies (%)	Total (%)	<i>P</i>
Factors influencing vaccination				
CF* price	28.0	24.0	26.3	0.323
CF time expenditure	27.7	9.1	19.8	< 0.000
CF side effects	51.8	63.9	56.9	0.007
SF* side effects	53.1	32.4	45.5	0.044
CF vaccine reduces risk	22.0	17.8	20.2	0.253
Contemplated preventive measures				
CF do nothing	66.2	53.3	60.7	0.002
CF improve personal hygiene	31.7	45.3	37.5	0.002
CF reduce close contact with others	6.6	3.3	5.2	0.069

*: CF = Common flu, SF = Swine flu.

Table 4 Yearly presumed death toll of common flu according to field of study.

	0-10 (%)	11-20 (%)	21-50 (%)	51-100 (%)	> 100 (%)	<i>P</i>
NH* (<i>n</i> = 289)	34.6	24.6	14.5	11.4	14.9	
H (<i>n</i> = 210)	20.0	22.4	25.2	18.1	14.3	< 0.000
Total (<i>n</i> = 499)	28.5	23.6	19.8	14.2	14.6	

*: NH = Non-health studies, H = Health related studies.

compared to older persons and those with less education. It is indicated that young people are more willing to take a risk compared to older people. The respondents, university students, thought that the risk of getting the swine flu was low. They also thought they would manage to resist an influenza pandemic. The respondents found hand washing as the most feasible and acceptable preventive action compared with social distancing and mask use [8, 9].

A Norwegian survey completed in 2006, long before the swine flu pandemic, showed that the respondents would trust the information they got from the health authorities on a potential influenza pandemic [10]. The majority of the respondents reported that they got the information from the health authorities through the mass media. Few reported that they got the information directly from the health authorities. The results showed that the younger people more often reported mistrust to the information from the health authorities. This was not the case in the present study as the media coverage was extensive with the health authority leaders interviewed daily on

TV [6, 11]. In the Kristiansen survey, 80% of the respondents said they would increase their personal hygiene to minimize the risk of getting infected by a potential influenza pandemic. Just 16% said they would not take any special precautions under a potential influenza pandemic. The survey concluded most people considered the influenza pandemic as a threat to public health, but few seemed prepared to take any precautions themselves.

Thus there seems to be a discrepancy between intentions and attitudes, and the knowledge level of the population is inadequate for prevention to succeed. Among students there seems to be a substantial difference according to field of study. Communicating effectively to staff and students about the spread of flu on campus presents a challenge, as chiefs of staff try to choose between inciting unnecessary fear and promoting complacency [11]. This ambivalence was also shown on TV in Norway during the pandemic [12]. Promoting mandatory vaccination of health staff may be a way to counter the reluctance of getting the vaccination yourself [13].

5. Conclusions

Students of health subjects indicated more concern than non-health subject students. Non-health students did not understand the preventive effect of personal hygiene measures. None of the student groups had any knowledge of the magnitude of mortality from the two different influenza types. Health risk education was not at a satisfying level. A discrepancy between intentions and attitudes was observed, and the knowledge level of the population is probably inadequate for prevention to succeed. Massive media focus may distort the knowledge level.

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