

Awareness regarding H1N1 (swine flu) among urban and rural adolescent population

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ABSTRACT


Background: H1N1 has become a major public health problem affecting young adults leading to morbidity and mortality, despite control measures has been there for more than 5 years. **Objectives:** To assess the level of awareness among adolescents of urban slum and rural area toward H1N1. **Materials and Methods:** Community based cross-sectional study was conducted among adolescents in the age group of 13-19 years for 3 months in the urban slum and rural area, field practice areas of community medicine attached to a tertiary care hospital using predesigned and pretested pro forma. **Results:** Knowledge regarding H1N1 among 400 adolescents was assessed. Out of which, 95.86% were aware that H1N1 is transmitted by coughing. 27% of them opined that smokers are at maximum risk of developing the disease and 63.5% told that fever will be the most common symptom and 24.5% opined that it can be diagnosed by throat and nasal samples. 65.72% opined that H1N1 can be prevented by wearing mask and 24.21% by following coughing etiquettes. 77.5% told that H1N1 is curable disease and 86.5% of them opined that they will take the patient to allopathic doctor for the treatment. However, a majority of them (79%) told that H1N1 patients should be confine to their house during the period of illness followed by 18% told that they should also be on dietary restrictions. **Conclusion:** Knowledge about acquiring and transmitting H1N1 was found to be adequate but it was accompanied with some misconceptions, it is thus imperative to dispel the myths and wrong notions about H1N1 from minds and replace it with correct knowledge. To achieve this, there is need to educate the adolescents, family members and community as a whole.

KEY WORDS: Adolescent; Awareness; Environment; Prevention; Slums

INTRODUCTION

Influenza is an old disease caused by influenza virus strains A, B and C. Of these, influenza type A predominantly has a potential to cause pandemic. By nature influenza viruses are unstable, unpredictable and have the unique capability of changing their antigenic characteristics by

mutation.^[1,2] Influenza (Flu) pandemics are caused by new influenza viruses that have recently adapted to humans and resemble major natural disasters both in terms of recurrence and magnitude.^[3] The influenza virus pandemic of 1918 claimed more than 20 million lives and resolving the origin of this virulent virus has been a major focus of virological research for more than 60 years. Antigenic and seroarcheological studies since the 1930s have indicated that the early human and classical swine influenza A H1N1 viruses were very similar.^[4] The most recent one was the infection of human being by novel influenza A H1N1 virus that caused pandemic of swine flu (SF) in the world. The first case of current pandemic of SF was reported in Mexico on 18th March 2009, which had spread rapidly throughout the world within short period and the first confirmed case

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of SF in India was on 16th May 2009, who was the traveler from USA at Hyderabad airport since then cases were on rise tremendously.^[3] The 2009 flu pandemic was global outbreak of a new strain of H1N1 influenza virus, often referred to colloquially as “SF,” which contains combination of genes from swine, avian (bird) and human influenza viruses.^[5] The scientists called this as “quadruple reassortant” virus and hence this new (novel) virus is christened “influenza A (H1N1) virus.”^[6] Emergence of this pandemic had posed new challenges to the public health systems and communities all over the world. Global actions by international agencies and highly vigilant media generated tremendous fear resulting into unprecedented response to the new pandemic by the majority of the nations.^[7]

The World Health Organization (WHO) raised the pandemic level from 5 to 6 in June 2009, the highest level after the documentation of human to human transmission of the virus in at least three countries in two of the six world regions defined by the WHO but perceptions of the severity and ramifications of acquiring the disease varied by population and country.^[6,8] Thus pandemic of the human influenza virus has caused extensive morbidity and mortality around the world.^[9] This latest pandemic also had unique characteristics, unlike seasonal influenza, it has a preference to infect young people particularly under 25 years of age and nearly 2% of all infections progress to severe illness resulting in life-threatening pneumonia. Most cases of fatalities are seen between 30 and 50 years of age, while seasonal influenza kills older people.^[10] Novel strains of influenza, H5N1 in recent years and now H1N1 swine influenza, have made pandemic planning a priority for health authorities, since the behavior of new mutations are unpredictable and may result in millions of death.^[2]

Community awareness in general and young generation, in particular, is of vital importance in combating H1N1 and awareness about the disease, its diagnosis and treatment among public will help in controlling the spread of the disease. Therefore, to have clear understanding of factors contributing to development of H1N1 is necessary. Thus, this study was undertaken to evaluate the extent of awareness among adolescents living in urban slum and rural area toward H1N1 and to create future awareness of such type of infectious diseases by providing them health education.

MATERIALS AND METHODS

A community based cross-sectional study was conducted among adolescents in the age group of 13-19 years living in urban slum and rural area, which are the field practice areas of community medicine attached to a tertiary care hospital and adolescents were considered as most exposed group of population, present in overcrowded places and more chances of getting exposed to such infectious diseases.

Inclusion and Exclusion Criteria

Adolescents in the age group of 13-19 years willing to participate on a voluntary basis and those who told that they have not heard anything about H1N1 and without consent were excluded.

The sample size was estimated using the formula $n = 4pq/L^2$. The awareness level of H1N1, “p” among adolescents was considered as 50%. “L,” which is the permissible error in the estimate of p was set at 10%. Using the above-mentioned statistical formula which considers 95% confidence limits, the sample size was estimated to be 400.

Prestudy Survey

Before the study, a pilot study was conducted in both urban and rural areas involving 30 adolescents in 13-19 years age group over a period of 1 month to assess the feasibility of predesigned proforma. The tested proforma was then utilized in this study after satisfactory reformations were made in it.

Present Study

After the prestudy survey, this study was conducted for 3 months. House-to-house survey was done in both urban slum and rural area using convenient and systematic random sampling (every 5th house considered). Data were collected by interviewing adolescents in the age group of 13-19 years (only one adolescent was selected from each house - considered to be as representative of the family) using the tested pro forma after signing a written consent form on voluntary basis along with the consent of the parents and confidentiality was assured before the data collection was initiated.

Relevant information was recorded in the predesigned and pretested pro forma covering knowledge regarding modes of transmission, environmental factors, and availability of health-care facilities were noted. At the end of the interview, health education was delivered by providing important information related to H1N1. Descriptive statistics was applied, and data were analyzed using simple proportions and percentages.

RESULTS

In our study group, most of the adolescents 279 (69.75%) acquired knowledge about H1N1 through television programs and 102 (25.5%) from daily newspaper articles. It was also observed that 54 (13.5%) adolescents obtained information about H1N1 during their school and college hours may be because of awareness and health education programs imparted in the school by their teachers and health-care providers. Regarding modes of transmission, 301 (95.86%) adolescents responded by saying that, it is transmitted by coughing or sneezing, respectively,

followed by 13 (4.14%) shaking hands and 33 (10.51%) told sharing things will spread the disease. Overall rural adolescents had heard more about the disease but lacked the knowledge regarding the modes of transmission with some misconceptions compared to urban adolescents. The details regarding various information regarding H1N1 has been highlighted in Table 1.

When enquired about the people who are at risk, 108 (27%) adolescents told smokers and 104 (26%) told that people suffering with respiratory illness are at maximum risk. When asked about the symptoms, 254 (63.5%) were aware of fever, 246 (61.5%) of cough, and 23 (5.75%) of diarrhea during the infection. About 98 (24.5%) adolescents knew that the disease can be diagnosed by throat and nasal swabs followed by some misconceptions that it can be also diagnosed by urine and stool examination. Adolescents from urban population had better knowledge in terms of high-risk group, regarding symptoms and regarding the investigations required for confirmation of the disease. Knowledge regarding people at risk, symptoms, and diagnosis regarding H1N1 has been discussed in Table 2.

Of 400 adolescents, 267 (66.75%) told that environmental factors also play a major role in spreading the disease. Of which, 184 (68.91%) opined that poor sanitation is the major cause of spread of disease, followed by 105 (39.32%) told that lack of personal hygiene also favors the spread of disease. Knowledge regarding environmental factors is explained in Table 3.

Table 1: Knowledge regarding information on H1N1

Source of information*	Urban (n=200)	Rural (n=200)	Total (n=400)
	n (%)	n (%)	n (%)
TV/radio	126 (63.00)	153 (76.50)	279 (69.75)
Newspaper	39 (19.50)	63 (31.50)	102 (25.50)
Academic	21 (10.50)	33 (16.50)	54 (13.50)
Pamphlets	03 (1.50)	00 (0.0)	03 (0.75)
Family/friends	61 (30.50)	27 (13.50)	88 (22.00)
Mode of transmission	Urban (n=200)	Rural (n=200)	Total (n=400)
Yes	163 (81.50)	151 (75.50)	314 (78.50)
No	19 (9.50)	23 (11.50)	42 (10.50)
Don't know	18 (9.00)	26 (13.00)	44 (11.00)
Mode of transmission*	Urban (n=163)	Rural (n=151)	Total (n=314)
Coughing/sneezing	158 (96.93)	143 (94.70)	301 (95.86)
Shaking hands	05 (3.07)	08 (5.30)	13 (4.14)
Kissing	00 (0.0)	03 (1.99)	03 (0.96)
Sharing things	00 (0.0)	33 (21.85)	33 (10.51)

*Multiple responses

Of 400 adolescents, 318 (79.5%) opined that it can be prevented, of which 209 (65.72%) said that it can be prevented by wearing mask, 86 (27.04%) by taking prophylactic drugs, 77 (24.21%) by following coughing etiquettes, and 43 (13.52%) also told that by washing of hands can prevent further spread of disease. Knowledge

Table 2: Knowledge regarding information on H1N1*

Risk group	Urban (n=200)	Rural (n=200)	Total (n=400)
	n (%)	n (%)	n (%)
Healthy people	15 (7.50)	43 (21.50)	58 (14.50)
Smokers	83 (41.50)	25 (12.50)	108 (27.00)
Pregnant	27 (13.50)	21 (10.50)	48 (12.00)
Respiratory illness	69 (34.50)	35 (17.50)	104 (26.00)
Alcoholics	17 (8.50)	27 (13.50)	44 (11.00)
Others (IHD, renal)	27 (13.50)	39 (19.50)	66 (16.50)
Symptoms	Urban (n=200)	Rural (n=200)	Total (n=400)
Fever	133 (66.50)	121 (60.50)	254 (63.50)
Cough	125 (62.50)	121 (60.50)	246 (61.50)
Diarrhea	00 (0.0)	23 (11.50)	23 (5.75)
Vomiting	09 (4.50)	31 (15.50)	40 (10.00)
Others (appetite loss, bodyache)	07 (3.50)	27 (13.50)	34 (8.50)
Lab diagnosis	Urban (n=200)	Rural (n=200)	Total (n=400)
Blood examination	159 (79.50)	143 (71.50)	302 (75.50)
Throat and nasal swab/sputum	55 (27.50)	43 (21.50)	98 (24.50)
Stool	03 (1.50)	03 (1.50)	06 (1.50)
Urine	05 (2.50)	21 (10.50)	26 (6.50)

*Multiple responses

Table 3: Knowledge regarding environmental factors on H1N1

Environmental factors	Urban (n=200)	Rural (n=200)	Total (n=400)
	n (%)	n (%)	n (%)
Yes	141 (70.50)	126 (63.00)	267 (66.75)
No	15 (7.50)	27 (13.50)	42 (10.50)
Don't know	44 (22.00)	47 (23.50)	91 (22.75)
Environmental factors*	Urban (n=141)	Rural (n=126)	Total (n=267)
Overcrowding	43 (30.50)	29 (23.01)	72 (26.97)
Poor sanitation	99 (70.21)	85 (67.46)	184 (68.91)
Lack of personal hygiene	31 (21.98)	74 (58.73)	105 (39.32)
Others (breeding of mosquitoes, pollution)	00 (0.0)	03 (2.38)	03 (1.12)

*Multiple responses

regarding prevention toward H1N1 has been discussed in Table 4.

When questioned about their knowledge regarding curability, 310 (77.5%) adolescents told that it can be cured. When somebody among the family members and friends acquires the disease, 346 (86.5%) adolescents told they will consult allopathic doctor and 9 (2.25%) preferred staying at home. When questioned about attitude toward H1N1 patients, 316 (79%) of the adolescents were of the opinion that a person infected with the virus should stay indoors and 72 (18%) opined that they should be put on with dietary restrictions, while 36 (9%) of the participants told that they should be allowed to go out, this implies that some were unaware of the H1N1 consequences. Knowledge regarding health-care aspects on H1N1 has discussed in Table 5.

DISCUSSION

The H1N1 virus transmission in India still remains locally intense and possesses the potential of leading to a second wave of pandemicity. If people are to respond adequately during an outbreak of such a disease, there is need to increase their basic knowledge about the spread of disease, symptoms, modes of prevention, diagnosis and availability of health-care facilities at various hospitals.

Overall awareness considering all the variables regarding H1N1 in our study population was found to be 73.5%, which was lower compared to studies done in UP by Chaudhary^[11] and in Belgaum by Viveki et al.,^[12] where the awareness level was 97.95% and 88.8%, respectively.

In our study, 69.75% adolescents told that television was the most common source of information in creating awareness toward H1N1, which is similar compared to study done in

Belgaum by Viveki et al.,^[12] where 61.7% of study participants opined the same, which may be due to the fact that nowadays the presence of TV in every house has become basic necessity of daily life. When modes of transmission were assessed, we noted that 95.86% of the participants thought that it is transmitted during coughing/sneezing, which is similar to the study done in South Gujarat by Shukla et al.,^[3] where it was found to be 88%.

Rural adolescents (21.85%) were aware that sharing things to be one of the mode of transmission as compared to none among urban adolescents. This could be attributed to the efforts put in by health workers at the periphery in spreading the awareness of the disease. Only 4.14% thought it could spread through shaking hands which was much lower compared to studies done in UP by Chaudhary,^[11] where it was found to be 30.5%, respectively.

When symptoms were assessed, the majority of 63.5% adolescents gave priority to fever followed by 61.5% cough/cold, which is similar to a study done in Patiala district by Sumeet,^[13] where it was found to be 68.1% and 51.5%, respectively.

68.91% of adolescents were aware that poor sanitation plays an important role as environmental factor in spreading the disease in the community, the reason may be because they were aware that they are most exposed group at different places, where people do not follow preventive etiquettes and

Table 4: Knowledge regarding prevention on H1N1

Prevention	Urban (n=200)	Rural (n=200)	Total (n=400)
	n (%)	n (%)	n (%)
Yes	161 (80.50)	157 (78.50)	318 (79.50)
No	11 (5.50)	09 (4.50)	20 (5.00)
Don't know	28 (14.00)	34 (17.00)	62 (15.50)
Mode of prevention*	Urban (n=161)	Rural (n=157)	Total (n=318)
	n (%)	n (%)	n (%)
Wearing mask	117 (72.67)	92 (58.60)	209 (65.72)
Coughing etiquettes	12 (7.45)	65 (41.40)	77 (24.21)
Vaccines	04 (2.48)	00 (0.0)	04 (1.26)
Prophylactic Drugs	54 (33.54)	32 (20.38)	86 (27.04)
Washing hands	14 (8.70)	29 (18.47)	43 (13.52)
Avoid overcrowding	09 (5.59)	21 (13.38)	30 (9.43)

*Multiple responses

Table 5: Knowledge regarding health care on H1N1

Curability	Urban (n=200)	Rural (n=200)	Total (n=400)
	n (%)	n (%)	n (%)
Yes	173 (86.50)	137 (68.50)	310 (77.50)
No	19 (9.50)	33 (16.50)	52 (13.00)
Don't know	08 (4.00)	30 (15.00)	38 (9.50)
Health-care providers	Urban (n=200)	Rural (n=200)	Total (n=400)
	n (%)	n (%)	n (%)
Homeopathic	17 (8.50)	11 (5.50)	28 (7.00)
Allopathic	171 (85.50)	175 (87.50)	346 (86.50)
Ayurvedic	09 (4.50)	08 (4.00)	17 (4.25)
Stay at home	03 (1.50)	06 (3.00)	09 (2.25)
Opinion*	Urban (n=200)	Rural (n=200)	Total (n=400)
	n (%)	n (%)	n (%)
Should stay at indoors	165 (82.50)	151 (75.50)	316 (79.00)
Should be allowed to go out	11 (5.50)	25 (12.50)	36 (9.00)
Dietary restrictions	15 (7.50)	57 (28.50)	72 (18.00)
Others (should not marry, breastfeed)	11 (5.50)	17 (8.50)	28 (7.00)

*Multiple responses

smoking is a common scene in overcrowded places in spite strict rules and regulations are present.

In our study, overall 79.5% opined that the disease can be prevented. This was higher compared to study done in Surendranagar city by Nagar et al.^[14] and in Pakistan by Usman et al.,^[15] where it was found to be 56.05% and 40%, this could be attributed to the fact that strong IEC activities taken by health authorities that has led to widespread awareness in our study areas.

Importance given to washing hands as mode of prevention (13.52%) was much less in our study compared to (78.7%) study done in UP by Chaudhary.^[11] Although wearing mask was suggested mode of prevention by many, where as other modes of prevention were very little understood in our study group.

Knowledge regarding curability of disease was better among urban adolescents (86.5%) as compared to rural (68.5%). This could be attributed to use of billboards, posters, pamphlets for propaganda, and easy accessibility to health services.

77.5% adolescents in our study told that H1N1 is curable, which is similar to 70.7% in a study done in UP by Chaudhary.^[11]

96.5% of the urban adolescents were ready to get tested for H1N1 as compared to 82.5% rural adolescents. This could be due to increased anxiety and apprehension among the urban and due to lack of exposure among rural population.

Strength of this study was an attempt to create awareness about H1N1 among adolescents of urban slum and rural area population and to prepare them in future to combat with such type of infectious diseases, so that no panic is created at individual, family, community level and even at the basic level of health care.

Limitation of the study was that only 200 adolescents from each area were selected and one adolescent was selected from each family considering as representative of the family, findings of which may not be generalized to the entire population of the area. Thus for such type of emerging and re-emerging diseases bigger sample population can be considered to get clear picture and to create awareness among bigger population at a nominal cost.

Recommendations

From results of our study, we suggest that equal importance needs to be given to all possible ways of disease transmission and prevention as well as whom to approach in case of an outbreak while giving health education. Disease simulation exercises and role-plays need to be done more often as they have a strong impact and facilitate better understanding.

CONCLUSIONS

Even though the majority of the participants had good knowledge about the disease and mode of transmission of H1N1, but it was accompanied with some misconceptions such as isolation and dietary restrictions. It is thus imperative to dispel the myths and wrong notions about H1N1 from their minds and replace it with correct knowledge. To achieve this, continuous health education should be given to the adolescents, family members, and community so as to develop positive attitude and healthy practices. There is a further need for improvement in understanding of epidemiology, transmission, and methods of prevention by strengthening all channels of communication. There is also need to improve the utilization of free diagnostic and treatment services available at various government hospitals for the betterment of the community.

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REFERENCES

1. Narain JP, Kumar R, Bhatia R. Pandemic (H1N1) 2009: Epidemiological, clinical and prevention aspects. *Natl Med J India*. 2009;22(5):242-7.
2. Akan H, Gurol Y, Izbirak G, Ozdatli S, Yilmaz G, Vitrinel A, et al. Knowledge and attitudes of university students toward pandemic influenza: A cross-sectional study from Turkey. *BMC Public Health*. 2010;10:413.
3. Shukla D, Patel S, Panchal S, Shah N, Sridharan S, Prakash P. Awareness regarding swine flu amongst patients attending swine flu OPD in a tertiary care center in South Gujarat. *Natl J Community Med*. 2010;1(2):103-5.
4. Gorman OT, Bean WJ, Kawaoka Y, Donatelli I, Guo YJ, Webster RG. Evolution of influenza a virus nucleoprotein genes: Implications for the origins of H1N1 human and classical swine viruses. *J Virol*. 1991;65(7):3704-14.
5. Mukherjee S, Yoganand S, Sruthi T, Dutt V, Velanganeswara R. Awareness of swine flu in an urban area of South West Andhra Pradesh. *Int J Pharm Sci Rev Res*. 2010;2(1):11-3.
6. Chudasama RK, Patel UV, Verma PB, Amin CD, Savaria D, Ninama R, et al. Clinico-epidemiological features of the hospitalized patients with 2009 pandemic influenza a (H1N1) virus infection in Saurashtra region, India (September, 2009 to February, 2010). *Lung India*. 2011;28(1):11-6.
7. Mishra AC, Chadha MS, Choudhary ML, Potdar VA. Pandemic influenza (H1N1) 2009 is associated with severe disease in India. *PLoS One*. 2010;5(5):e10540.
8. Wilson SL, Huttlinger K. Pandemic flu knowledge among dormitory housed university students: A need for informal social support and social networking strategies. *Rural Remote Health*. 2010;10(4):1526.
9. Khan SA, Rao PG, Kumar P, Rodrigues G. Frontline defense

- against the next pandemic: Antivirals for avian flu. *Indian J Pharmacol.* 2006;38(6):383-9.
10. Quazi TI. Swine flu. *J Med* 2009;10:38-9.
 11. Chaudhary V, Singh RK, Agrawal A, Agarwal A, Kumar R, Sharma M. Awareness, perception and myths towards swine flu in school children of Bareilly, Uttar Pradesh. *Indian J Public Health.* 2010;54(3):161-4.
 12. Viveki RG, Halappanavar AB, Patil MS, Joshi AV, Gunagi P, Halki SB. Swine flu (H1N1 influenza): Awareness profile of visitors of swine flu screening booths in Belgaum city, Karnataka. *J Indian Med Assoc.* 2012;110(6):358-61.
 13. Sumeet S, Paramjeet K, Gurmeet S. Study to assess the awareness, perception and myths regarding swine flu among educated common public in Patiala District. *Int J Res Dev Health.* 2013;1(2):54-60.
 14. Nagar SS, Mahyavanshi D, Nagar SS, Nagar N, Kartha G. A study of the knowledge, attitude and practice regarding H1N1 among the residents of Surendranagar city. *Int J Med Sci Public Health.* 2013;2(3):636-40.
 15. Usman J, Shah AR, Azhar M, Ali MZ, Bilal M, Khan RU. Awareness of novel H1N1 pandemic influenza among non-medical personnel, medical students and medical professionals. *Pak Armed Forces Med J.* 2010;60(3):12471-5.

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