Muthoka et al. Int J Respir Pulm Med 2015, 2:3
ISSN: 2378-3516

International Journal of
Respiratory and Pulmonary Medicine

Research Article : Open Access

A Study to Determine the Level of Knowledge, Attitudes and Practices on the Cause, Treatment, Prevention and Control of ILI Infections

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Abstract

Background: ILI infections are infections of the human respiratory tract. They are caused by various viruses including corona viruses, adeno-viruses, influenza virus types A, B and C, among others (CDC- US, 2005). When these infections are circulating within the community, patients with ILI infections who have both cough and fever within 48 hours of symptom onset are likely to have influenza(A or B) infections [1]. In Kenya, these infections cause significant morbidity leading to a lot of lost time of productive work and school absenteeism for children. Knowledge, Attitudes and Practices on the cause, treatment, prevention and control of ILI infections can help in the early diagnosis, appropriate management and preventions of these infections.

Objective: To determine the level of knowledge, attitudes and practices on the cause, treatment, prevention and control of ILI infections among secondary school students and staff in Nairobi West Districts in Kenya

Methods: This was a cross-sectional descriptive study with a mix of qualitative and quantitative methodologies to facilitate an understanding of the level of knowledge, Attitudes and Practices on the cause, treatment, prevention and control of ILI infections in secondary schools in one of the districts in the capital city of Kenya, Nairobi west district.

Results: On the knowledge of ILI infections, of the 343 respondents interviewed, only 75 (21.9%) of the respondents knew viruses to be the correct cause of ILI infections. The remaining 268 (78.1%) respondents did not know the correct cause of ILI infections and some of them even had a mixture of causes. The knowledge on the correct cause of ILI infections among these students increased as we went to a higher form. Among the frequently mentioned misconceptions on the cause of ILI infections included cold weather, dusty places and crowded places. Most of the principals interviewed did not know the correct cause of ILI infections and had misconceptions that they are caused by cold weather.

A majority of the respondents, 307(89.5%) were aware that there had been cases of pandemic influenza (A/H1N1 2009) in Kenya. Nearly half of the respondents, 161(46.9%) reported to have at one time missed class due to an ILI infection. Slightly more than a third of the respondents, 126 (36.4%) were aware that a seasonal influenza vaccine was available in Kenya. About two-thirds of the respondents, 227(66.2%) did not know the correct combination of signs and symptoms of ILI infections. Cough 270 (79%), runny nose 266 (78%) and fever 246 (72%) were the top most frequently mentioned signs and symptoms of ILI infections. The others were sore throat 185 (54%) and shortness of breath 115 (34%).

On the attitudes on ILI infections, the majority of the respondents, 275(81.2%), felt that ILI infections were an important public health problem in Kenya. Reasons why respondents thought ILI infections were an important public health problem in Kenya included, 235(85%) saying it may affect our economy in various ways, 138(50%) felt it makes students fail to go school or class, 131(47.0%) said it makes people very sick. Most of the respondents 312 (91%) felt that the general public needed to be given information on how to protect themselves and others from ILI infections. The other frequently identified aspects of ILI infections that respondents felt need to be availed to the public were, signs and symptoms 271 (79 %) and how to prepare for possible ILI infections or influenza outbreaks 231 (67%). The preferred channels for receiving ILI infections varied but the most commonly identified ones were radio 276 (81%), television 259 (76%), newspapers217 (63%) and through class teachers 213 (62%).

On the practices on ILI infections, of the 343 respondents, over half of them (57.4%), had good management practice for ILI infections. Slightly less than two-thirds of the respondents, 214 (62.4%) in this study did not know the correct control practices of ILI infections. The application of the correct practices was best among the form two respondents, 37 (44%). Among the 137 girl respondents, 83(60.6%) had good management practices as compared to 114 (55.3%) of the boy respondents. The application of the correct ILI infections management practices decreased as the level of education increased from 72.5% in the form ones to 49.4% in the form fours. The majority of the respondents, 197(57.4%) would visit a health care provider, 167(48.7%) would buy drugs from the shop, and 123(35.9%) would use local remedies to manage ILI infections.

Conclusion: A majority of the respondents did not know that viruses cause ILI infections. There is need to correct this knowledge gap if we expect the public to put in place the correct preventive and

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Citation: Muthoka PM, Ongore D, Kinoti M (2015) A Study to Determine the Level of Knowledge, Attitudes and Practices on the Cause, Treatment, Prevention and Control of ILI Infections. Int J Respir Pulm Med 2:026

Received: July 27, 2015: **Accepted:** September 03, 2015: **Published:** September 07, 2015

control practices for ILI infections . Almost half of the students or their relatives had missed class, work or church due to ILI infections. This shows that these infections are an important public health problem in Kenya and all efforts should be made to put in place the correct knowledge on the cause, transmission, management, prevention and control measures of ILI infections.

The majority of the respondents who felt these were important public health problems in Kenya had good management practices (visited health care provider). Hence this may mean if we can change the attitude of our people to take up the public health impact of ILI infections seriously, then they will undertake good ILI infections management and control practices. Most of the respondents felt that the general public needed to be given information on how to protect themselves and others from these infections. The other aspects of ILI infections information identified for the public included signs and symptoms of ILI infections and how to prepare for possible ILI infections outbreaks. The electronic media were preferred channels for receiving ILI infections information; hence this should be utilized in the event of transmitting ILI infections information.

A majority of the respondents did not know the correct prevention and control practices for ILI infections. There is need to correct this for the public to put in place the correct preventive and control practices for these infections. Almost half of the respondents had good management practices for ILI infections. There is need to built on this base to ensure the correct management practices for ILI infections are practiced.

Abbreviations

AI: Avian Influenza, AOP: Annual operation plan, AED: American Education Department, CDC: Centers for Disease Control and prevention, DDSR: Division of Disease Surveillanmce and Response, FAO: Food and Agricultural Association, FGD: Focus Group Discussion, HCW: Health Care Worker, HPAI: Highly pathogenic avian influenza, IEIP: International Emerging Infections Program, ILI: Influenza Like Illness, KAP: Knowledge, Attitude and Practice, KEMRI: Kenya Medical Research Institute, KII: Key Informant Interview, LPAI: Lowly Pathogenic Avian Influenza, MMWR: Morbidity and Mortality Weekly Report-USA, MoH: Ministry of Health, MoLD: Ministry of Livestock Development, MoMS: Ministry of Medical Services, MoPHS: Ministry of Public Health and Sanitation, SAI: Suspected Avian Influenza, SARI: Severe Acute Respiratory Illness, SSI: Semi-Structured Interview, UN: United Nations, UNICEF: United Nation Children's Fund, URIs: Upper Respiratory Infections, W.H.O: World Health Organisation

Introduction

ILI infections are infections of the human respiratory tract. They are caused by various viruses including corona viruses, adeno-viruses, influenza virus types A, B and C, among others (CDC- US, 2005). When ILI infections are circulating within the community, patients with these infections who have both cough and fever within 48 hours of symptom onset are likely to have influenza A or B infections [1]. They are transmitted from one person to another as droplet infections or contact with contaminated hands, surfaces and equipment.This study looked at how the level of knowledge on the cause, treatment, prevention and control of ILI infections among secondary school students and staff in Nairobi West Districts in Kenya

A study undertaken for one of the ILI infections -avian influenza, showed that despite being given information, respondents had no detailed understanding of avian influenza, had a great perceived risk of experiencing avian influenza, and had a low compliance with precautionary behaviors. These observations raise concerns about a clear need to find the optimal way of correcting these deficiencies by developing and implementing public health policy regarding priorities for tailored educational and promotion strategies and in particular more attention should be given on using preventive approaches in these population [2].

While the burden of ILI infections has traditionally been thought to be negligible in Africa, global concerns surrounding influenza A(H5N1) and pandemic preparedness have now provided the resources and surveillance systems to better understand the epidemiology of ILI infections in Africa [3]. Surveillance reports from the Cote d' Ivoire, Democratic Republic of Congo, Gabon, Gambia, Kenya, Madagascar, and Senegal all indicate that influenza viral infections circulate annually in Africa, causing regular epidemics [4].

The main stay of ILI infections prevention and control relies on basic personal hygiene and proper cough etiquette, but vaccination using a recommended ILI infections vaccine, e.g. the seasonal influenza vaccine is the best protection against contracting seasonal influenza (the flu). Although routine vaccination is a major tool in the primary prevention of ILI infections caused by influenza viruses [5,6], a significant proportion of the population remains reluctant to receive the vaccines [7].

Research on the level of knowledge, attitudes and practices on the cause, treatment, prevention and control of ILI infections among either, secondary school students & staff or in the general population in Kenya has not been done. Understanding the level of knowledge, attitudes and practices on the cause, treatment, prevention and control of these infections among secondary school students and staff in Nairobi West Districts in Kenya is therefore important for guiding ILI infections health education and prevention & control policies in Kenya.

Materials and Methods

Ethical clearance

The research was non invasive. Research approval was sought from the government of Kenya through the Ministry of Higher Education, Kenyatta National Hospital and the University of Nairobi ethical committees. In addition to getting a letter from the Ministry of education to interview students, an assent form was administered to the school principals, as the guardians of the students for students less than 18 years and an informed consent form administered to students 18 years and above. Respondents were assured of confidentiality as serial numbers and not names were used to mask their identity.

Study site and population

The research was undertaken in Nairobi province. Nairobi province is the seat of the capital city of Kenya. Nairobi city had (by 2010) an estimated population of about 2.5 million people at night and 4 million people during the day. The difference in day and night populations of the city was due to people moving from the larger Nairobi metropolitan to come and work in the city during the day. The city houses the biggest airport in east Africa-Jomo Kenyatta International Airport and has a huge population of people from all over the world who work in the many United Nation bodies in Kenya. Kenya being a country of diverse ethnic composition, the city is cosmopolitan in nature with most ethnic communities being represented. At the time of the study, the province had three administrative districts, namely Nairobi West, Nairobi East and Nairobi North.

The study was undertaken in Nairobi province, partly due to its diverse ethnic composition which was assumed it may give a diverse

Figure 1: Laboratory confirmed cases of new influenza A/H1N1 2009, outbreak in Kenya by province; Source: DDSR-MoPHS- Kenya, 2010

view on the subject matter and also because it happened to have reported the highest burden of the influenza A/H1N1 2009 pandemic in the year 2009 as shown in the figure 1.

The study populations were students in the secondary schools in the study area. The study focused on schools and not the entire community because during the 2009 influenza pandemic, most reported cases of influenza A/H1N1 2009 were reported from schools, was easy to reach the respondents, schools have diverse ethnic composition which favors diverse views/experiences on the subject matter and are also closed communities and in the event of ILI infections outbreak here, the ease of transmission to the well ones is faster.

Key Informant Interviews were undertaken with senior officials of the Ministry of Public Health and Sanitation, CDC-Kenya, Principals/deputies of visited schools and District education officers in the study area.

Data collection and statistical analysis

The data collection tools included designed closed-ended questionnaire and key informant interview guides. They were pre-tested in Nairobi west secondary schools which were not taking part in the study while the KII tool was pre-tested with senior officers in the Ministry of Public Health and Sanitation, principals of secondary schools and Centers for Disease Control-US in Kenya. Research assistants (Interviewers) were recruited from employees of the Ministry of Public Health and Sanitation. They were trained before the data collection. A Survey Questionnaire with close-ended questions was administered to the students by the research assistants, under the close supervision of the principal investigator. The questionnaire forms were re-created "on line" and entered into data-compatible mobile phones. The research assistants used these to collect the data and upload the filled in forms back to the Epi-surveyor website.

A structured questionnaire was developed and programmed onto a smart-phone for data collection using the Epi-Surveyor software. Data was exported to MS Access for data cleaning and analyzed using Stata 9.0 (Stata Corp, College Station, Texas) and Epi Info 3.2.2.

The attributes explored on the level of knowledge on ILI infections included, knowledge on the cause of ILI infections whether the students or a relative had suffered from ILI infections, signs and symptoms of ILI infections, availability of seasonal influenza vaccine and knowledge on the pandemic influenza A/H1N1 2009.

The attitudes on ILI infections explored include, whether they felt ILI infections were an important public health problem in Kenya and why or why not, the kind of ILI infections information they would like to be given to them and to the public and the communication channels this information should be passed through.

The attributes explored on the practices on ILI infections included, practices employed in the management, prevention and control of ILI infections among respondents, socio-demographic characteristics in relation to the correct prevention and control practices of ILI infections, relationship between correct knowledge on the cause of ILI infections and correct prevention and control practice of these infections and the relationship between ILI infections as an important public health problem and its management practices.

Data on these attributes were initially collected as multiple response questions but were later re-coded for analysis.

The data was presented in tables, pie charts and bar charts for ease of appreciating the relationships between variables. Univariate analysis was done using proportions for categorical variables and means were used for continuous variables to describe the socio-demographic characteristics and level of knowledge, the attitudes and practices on ILI infections. Chi square (Pearson) and corresponding p-values for single response variables and Rao Scott corrected chi square and its corresponding p-value for multiple response questions were used. Findings were considered statistically significant if the p-value was less than 0.05.

Table 1: Age and Sex distribution of respondents

Characteristic (N = 343)	n	%
Age		
10-14 years	34	9.9
15-19 years	305	88.9
20-24 years	3	0.87
Mean(SD)	16.3(1.4)	
Median	16	
Range	12-20	
Sex		
Boys	206	60.1
Girls	137	39.9

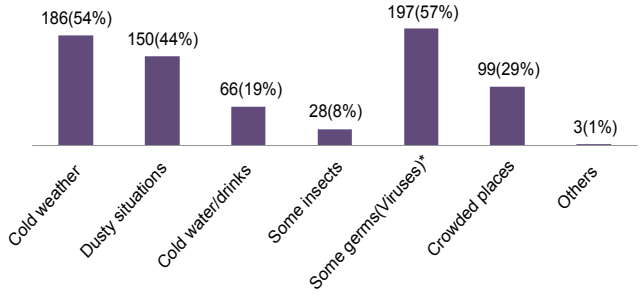

Figure 2: Causes of ILI infections as mentioned by respondents

Results

Socio-demographics characteristics of respondents

Of all the respondents, 60.1% were boys and 39.9% were girls. The mean age of the respondents was 16 years (*SD*=1.4) with a range of 12 to 20 years. Most of the respondents were in the 15-19 year age-group (89%).The socio-demographic characteristics of respondents are presented in table 1.

Knowledge on the cause of ILI infections

The respondents were asked about what causes ILI infections. Only 75 (21.9%) of the respondents knew viruses to be the correct cause of ILI infections. The remaining 268 (78.1%) respondents did not know the cause of these infections or had a mixture of causes (Figure 2). From this study it was found that ILI infections are not taught as health topics in the school health program. According to CDC-US during the key informant interview, the Kenyan public does not understand what ILI infections are, especially influenza as a disease. This phenomenon they attributed to the fact that ILI infection outbreaks rarely make headlines in Kenya and clinicians in Kenya are not so much aware of ILI infections, so little attention is given to them.

Relationships between Socio-demographic variables and knowledge on the cause of ILI infections

The socio-demographic variables considered included sex and class. Among the two sexes, 32 (23%) and 43(20.9%) of the female and male respondents, respectively, knew the cause of influenza like illnesses. The difference was not statistically significant (p = 0.59). The knowledge on the correct cause of ILI infections increased as we went to a higher class. However, the difference was not statistically significant (p = 0.055).

Among the frequently mentioned misconceptions on the cause of ILI infections included cold weather (54%), dusty places (44%) and crowded places (29%) (Figure 2). Most of the principals interviewed did not know the correct cause of these infections and had misconceptions that it's caused by cold weather.

Knowledge on seasonal and pandemic influenza (A/H1N1 2009) in Kenya

A majority of the respondents, 307(89.5%) were aware that there

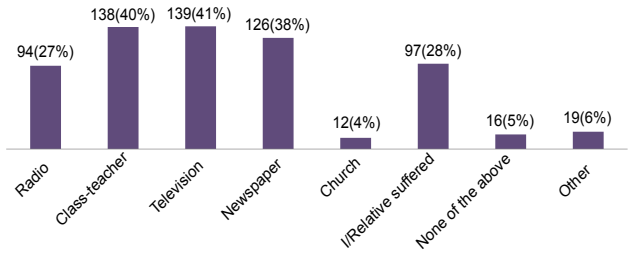

Figure 3: Sources of information on ILI infections as mentioned by respondents

had been cases of pandemic influenza (A/H1N1 2009) in Kenya. However the difference was not statistically significant, p = 0.6. Nearly half of the respondents, 161(46.9%) reported to have at one time or another missed class due to an ILI infection, however the difference between those who missed class and those who did not was not statistically significant (p = 0.213).

Slightly more than a third of the respondents, 126 (36.4%) were aware that a seasonal influenza vaccine was available in Kenya. The difference between those who knew about the vaccine and those who did not was not statistically significant (p = 0.55).About two-thirds of the respondents, 227(66.2%) did not know the correct combination of signs and symptoms of ILI infections. Cough 270 (79%), runny nose 266 (78%) and fever 246 (72%) were the top most frequently mentioned signs and symptoms of these infections. The other signs and symptoms mentioned were sore throat 185 (54%) and shortness of breath 115 (34%). The difference between those who knew the correct combination of signs and symptoms of ILI infections and those who did not was not statistically significant, p = 0.7909 (Rao Scott corrected chi-squared, F- statistic = 0.4269).

Sources of ILI infections information among respondents

Sources of information on symptoms and signs of ILI infections varied. The most frequently mentioned sources of information were the television 139 (41%), class teacher 138 (40%), newspaper 126 (38%), respondents/relatives who had earlier suffered from ILI infection, 97 (28%) and from the radio, 94 (27%). On correcting for multiple responses (Rao Scott corrected chi square), the differences observed between the various categories were not statistically significant (p = 0.4165) (Figure 3).

Relationship between correct knowledge on the cause of ILI infections and their correct prevention and control practice

On comparing the respondents who knew the correct cause of ILI infections with the correct prevention and control practices, most of the respondents who knew the cause of ILI infections did not practice the correct prevention and control practices 126 (64.0%), and among the respondents who did not know the cause of ILI infections, 58(39.7%) practiced the correct prevention and control practices of these infections. The difference between those who knew the cause of ILI infections and applied correct prevention and control practices and those who did not know their cause and applied the correct prevention and control practices for ILI infections was not statistically significant, (p = 0.4854).

Relationship between knowledge on the cause of ILI infections and its management practices

In this section, the study considered those who knew the correct cause of ILI infections only, against those who did not and their ILI infections management practices.

Among those who knew the correct cause of ILI infections only, against those who didn't know, and their ILI infections management practices; 42(56%) of those who knew the correct cause of ILI infections visited the health care provider while 33 (44%) of them used other ILI infections management practices. Respondents who mentioned that they received current information on ILI infections from their class teachers had significantly better management practices for ILI infections compared to those who did not, (p < 0.05). Similarly, the respondents who received information on ILI infections through media sources had better management practices for ILI infections compared to those who did not (p < 0.05).

Table 2: Knowledge on the cause of ILI infections in relation to the correct management practice of these infections

Attribute	Correct management practices for ILI infections				
Correct cause of ILI infections (only)	Total	Yes; n, (%)	No; n, (%)	Chi-square	P-value
Yes	75	42(56)	33(44)		
No	268	155(57.8)	113(72.9)		
				0.0808	**0.7762**
Total	**343**	**197(57.4)**	**146(42.6)**		

Table 3: Socio-demographic characteristics in relation to ILI as an importance public health problem in Kenya

Attribute	ILI infections as important public health problems in Kenya				
	Total	Yes; n, (%)	No; n, (%)	Chi-square	P-value
Sex					
Girls	137	114(83.2)	23(16.8)		
Boys	204	163(79.9)	41(20.1)		
Total	341	277(81.2)	64(18.8)	0.5889	0.44
Form/Class					
Form 1	69	60(87.0)	9(13.0)		
Form 2	83	69(83.1)	14(16.9)		
Form 3	106	81(76.4)	25(23.6)		
Form 4	83	67(80.7)	16(19.3)	3.3071	0.35
Total	341	277(81.2)	64(18.8)		

Overall, irrespective of whether one knew or did not know the correct cause of ILI infections, over half 197(57.4%) of the respondents practiced the correct ILI infections management practice, but the difference between those who knew and those who did not know the correct cause of these infections and their management practices was not statistically significant, p = 0.7762 (Table 2).

Interpretation of research hypothesis 1

"There is no relationship between the Knowledge on the cause of ILI infections with the management Practices of these infections".

As table 2 shows, there was no statistically significant relationship between correct knowldge of the cause of ILI infections and its management practices, (p = 0.7762). We are therefore not able to reject the null hypothesis that "There is no relationship between the Knowledge on the cause of ILI infections with their management Practices"

Attitudes on ILI infections as an important public health problem in Kenya

Respondents were asked if they felt/thought ILI infections were an important public health problem in Kenya. The majority of the respondents, 275(81.2%), felt that ILI infections was an important public health problem in Kenya. But according to the Principals of Schools, ILI infections were not an important public health problem in Kenya, as with or without any attention/treatment, it will resolve. CDC-US felt that not enough was being done about ILI infections (influenza) in Kenya as the medical training institutions in the country put very little emphasize on ILI infections in their curriculum.

Socio-demographic characteristics in relation to ILI infection as an important public health problem in Kenya

Among the sexes, the proportion of girls who felt that ILI infection was an important public health problem in Kenya was higher than the proportion of boys (83.2% versus 79.9%). However, the difference was not statistically significant (p = 0.44). The lower classes rated ILI infections as important public health problems in Kenya, higher than the higher classes. However the difference was not statistically significant, p = 0.35 (Table 3).

Reasons why respondents thought ILI infections were important public health problem in Kenya

This was a multiple response question where the respondents gave various reasons with the majority, 235(85%) saying it may affect our economy in various ways, 138(50%) felt it makes students fail to go to school or class, 131(47.0%) said it makes people very sick (Figure 4).

On ILI infections as important public health problems in Kenya, a senior officer from the Ministry of Public Health and Sanitation rated these infections as highly important as compared to the other common morbidity problems (i.e. malaria, pneumonia, diarrheal and skin diseases) in Kenya. The officer observed that ILI infections should be given more attention by the health care system in Kenya in its diagnosis and care because it causes the loss of many hours of work and effective learning for students and it has the potential of causing severe disease in some groups e.g. diabetics, asthmatics, elderly etc.

CDC-US felt that ILI infections were being given the attention they deserved in the health care system in Kenya because the government had given more focus on ILI infections in the last 4-years (2006-2009) through setting up a multi-sectoral national influenza task force to deal with influenza matters, it set up sentinel influenza surveillance across the country, it identified and set-up influenza focal points to deal with viral influenza issues at the Ministries of health and livestock development (MOPHS & MOLD).

Reasons why respondents thought ILI infections were not important public health problems in Kenya

The respondents who felt/thought that ILI infections were not important public health problems in Kenya were 64(19%). The reasons they gave for this included the feeling that ILI infections do not kill (44%) ILI infections did not prevent students from going to school 39%, among other reasons. On applying Rao Scott corrected chi square, there was no statistically significant difference between the various reasons given ($0.90<p<0.95$).

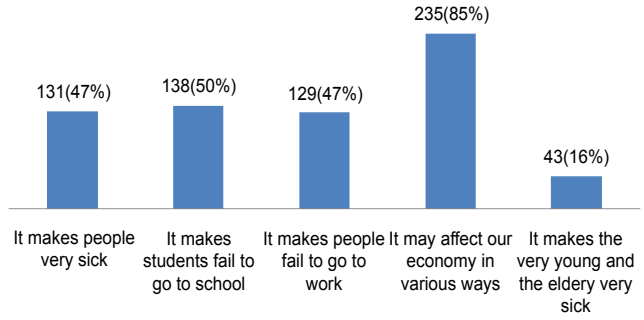

Figure 4: Reasons why respondents felt ILI was an important public health problem in Kenya

ILI infections information that respondents felt should be given to the general public in Kenya

Most of the respondents 312 (91%) felt that the general public needed to be given information on how to protect themselves and others from ILI infections (Figure 5). The other frequently identified aspects of ILI infections that respondents felt need to be availed to the public were, signs and symptoms 271 (79%) and how to prepare for possible ILI infection outbreaks 231 (67%). On applying the Rao Scott corrected chi square, the difference between the categories was not statistically significant, $p = 0.448$.

Preferred channels for passing ILI infections information to the general public in Kenya

The preferred channels for receiving ILI infection information varied but the most commonly identified ones were radio 276 (81%), television 259 (76%), newspapers217 (63%) and through class teachers 213(62%). Using The Rao Scott corrected chi square, the difference between the preferred channels was not statistically significant, ($p = 0.525$) (Figure 6)

Attitudes on ILI infections and their management practices

In this section, the study considered those who felt/thought ILI infections were important public health problems, against those who did not and their ILI infections management practices

Relationship between ILI infections as important public health problems and their management practices

Of the respondents who identified ILI infections as important public health problems in Kenya, slightly less than two-thirds 169(61.0%) had good management practices (visited health care provider), against 108(39%) who did not visit the health care provider. The difference between these two groups was statistically significant ($p < 0.05$), (Table 4).

Interpretation of research hypothesis 2

"There is no relationship between the Attitudes on the cause,

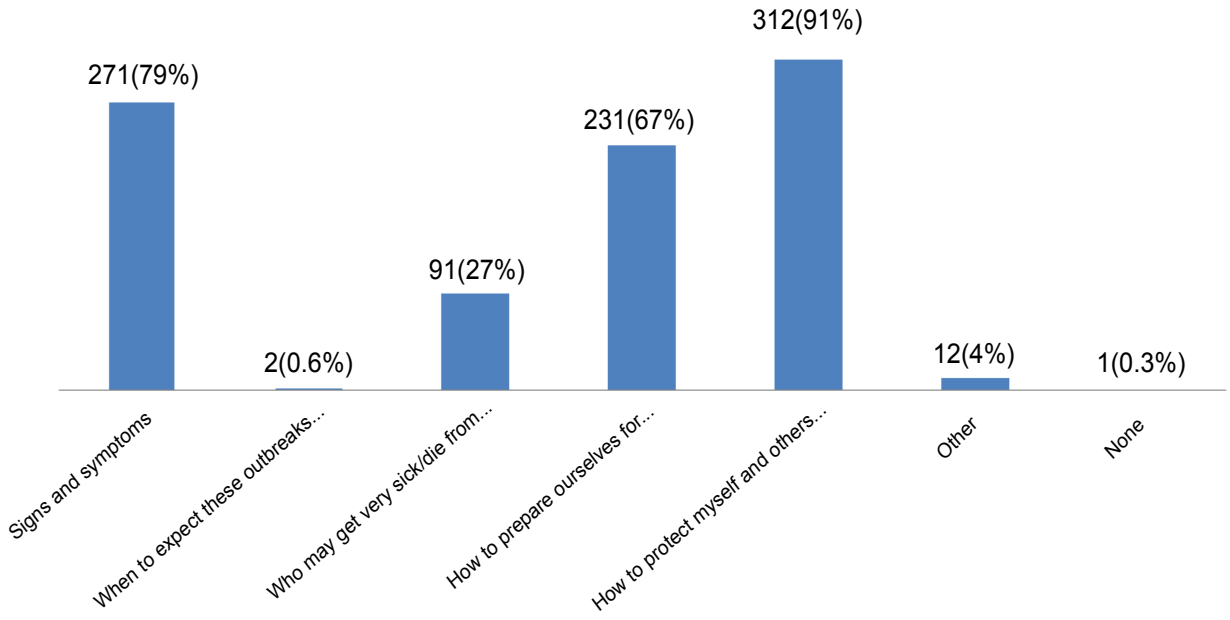

Figure 5: Information that respondents felt should be given to the general public on ILI infections

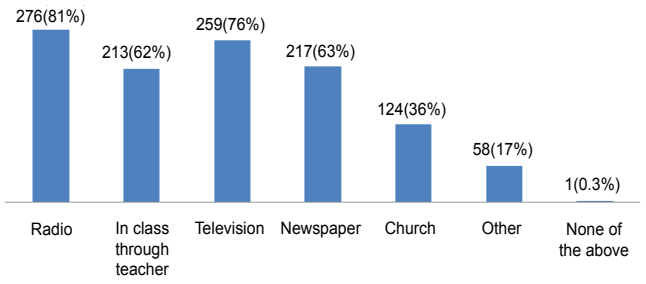

Figure 6: Preferred channels for receiving ILI infections information

Table 4: ILI infections as important public health problems in relation to correct management practices

Attribute	Correct management practices for ILI infections(Visit health care provider) {N = 341}				
ILI infections as important public health problems in Kenya	Total	Yes; n, (%)	No; n, (%)	Chi-square	P-value
Yes	277	169(61.0)	108(39.0)		
No	64	27(42.2)	37(57.8)	7.5367	0.00605*
Total	341	196(57.5)	145(42.5)		

*Statistically significant

Table 5: Socio-demographic characteristics in relation to the correct prevention and control practices of ILI infections

Attribute	Correct ILI infections prevention and control practice (2 or more correct practices)				
	Total	Yes; n, (%)	No; n, (%)	Chi-square	P-value
Sex					
Girls	137	70(51.1)	67(48.9)		
Boys	206	59(28.6)	147(71.4)		
Total	**343**	**129(37.6)**	**214(62.4)**	**17.6795**	**0.000027***
Form/Class					
Form 1	69	28(40.6)	41(59.4)		
Form 2	84	37(44.0)	47(56.0)		
Form 3	107	37(34.6)	70(65.4)		
Form 4	83	27(32.5)	56(67.5)		
Total	**343**	**129(37.6)**	**214(62.4)**	**3.0745**	**0.38**

* Significant findings

transmission, prevention & control of ILI infections with their management Practices".

The statistics presented in table 3 show there is a statistically significant relationship between attitudes and management practices for ILI infections, ($p < 0.05$). We therefore reject the null hypothesis that "There is no relationship between the Attitudes on the cause, transmission, prevention & control of ILI infections with their management Practices".

Practices employed in the management, prevention and control of ILI infections among respondents

Correct management practice (health seeking behavior) for ILI infections was defined as those who were attended by the health care provider when they had these infections. Over half of all the respondents (57.4%), had good management practice for ILI infections. However the difference between the management practices employed was not statistically significant ($p = 0.195$).

The options for the prevention and control of ILI infections were multiple, and those who mentioned the combination of covering the mouth and nose when coughing or sneezing using tissues or hand kerchief, washing the handkerchief thoroughly after each use, self isolation when infected (staying away from class etc) and always washing hands frequently with soap and clean water were considered as knowing the correct prevention and control practices of ILI infections. Those who mentioned other practices or various combinations of this were considered as not knowing the correct

Table 6: Socio-demographic characteristics in relation to correct ILI infections management practices

Attribute	Correct management practices of ILI infections				
	Total	Yes (n, %)	No (n, %)	Chi-square	P-value
Sex					
Female	137	83(60.6)	54(39.4)		
Male	206	114(55.3)	92(44.7)		
Total	**343**	**197(57.4)**	**146(42.6)**	**0.9256**	**0.34**
Form/Class					
Form 1	69	50(72.5)	19(27.5)		
Form 2	84	47(56.0)	37(44.0)		
Form 3	107	59(55.1)	48(44.9)		
Form 4	83	41(49.4)	42(50.6)		
Total	**343**	**197(57.4)**	**146(42.6)**	**8.8740**	**0.031***

*Statistically significant

prevention and control practices of these infections. Slightly less than two-thirds of the respondents, 214 (62.4%) in this study did not know the correct prevention and control practices of ILI infections.

Socio-demographic characteristics in relation to the correct prevention and control practices of ILI infections

In this study, most of the boys 147 (71.4%) did not know the correct control practices for ILI infections, but the girls were almost equally distributed in the two groups with 70 (51.1%) knowing and 67 (48.9%) not knowing the correct control practices for ILI infections. The difference was statistically significant ($p < 0.05$).The application of the correct practices was best among the form two respondents, 37 (44%). However, this difference was not statistically significant ($p = 0.38$). Overall, the difference between the categories was statistically significant, $p < 0.001$, (Rao Scott corrected chi square) (Table 5).

Socio-demographic characteristics in relation to correct ILI infections management practices

Among the 137 girl respondents, 83(60.6%) had good management practices as compared to 114 (55.3%) of the boy respondents. The difference was not statistically significant ($p = 0.34$).

The application of the correct ILI infections management practices decreased as the level of education increased from 72.5% in the form ones to 49.4% in the form fours. This difference was statistically significant, ($p < 0.05$), (Table 6). Most of the School Principals reportedly send their students to the sanatorium when sick with ILI infections. Most of them did not allow their students with ILI infections some few days off from class for rest and recovery.

Practices employed in the management of ILI infections among respondents

Respondents were asked to say what they normally did when they got ILI infections. The majority, 197(57.4%) would visit a health care provider, 167 (48.7%) would buy drugs from the shop, and 123(35.9%) would use local remedies. As this was a multiple response question, the Rao Scott chi square was applied and the difference between the categories was not statistically significant, ($p = 0.3034$).

Of the 123 respondents who mentioned using local remedies, most of them mentioned using hot lemon or lime (68%), inhaling garlic steam (27%) and using warm water (25%).The difference between these management options was not statistically significant, $P > 0.995$, (Rao Scott corrected chi squared). Of the 167 respondents who said they would buy drugs to manage ILI infections , most of them, (56.3%) would buy flu-cold capsules, piriton or its resemblance (48.5%), cold-cap capsules (45.5%), and antibiotics (29.3%). Using the Rao Scott corrected chi square, the difference between the treatment options was not statistically significant, ($0.995<p<0.975$) (Table 7).

Relationship between correct knowledge on the cause of ILI infections and their correct prevention and control practices

On comparing the respondents who knew the correct cause of ILI

Table 7: Practices employed in the management, prevention and control of ILI infections among respondents

Attribute **(N = 343)**	n	%	Rao Scott chi square (X^2_c).	p-value
Local remedies used/applied to manage ILI infections	123	35.9	0.0012	>0.995
Hot lemon/lime	83	67.5		
Use warm water only	31	25.2		
Mixture of warm water and honey	12	9.8		
Chew local roots/herbs	16	13.0		
Inhale steam of garlic	33	26.8		
Other local mixtures	10	8.1		
Drugs used from the shops to manage influenza like illness	167	48.7	0.117	0.995<p<0.975
Paracetamol/its resemblance	41	24.6		
Aspirin/its resemblance	37	22.2		
Cold-capsules	76	45.5		
Flu-cold capsules	94	56.3		
Piriton/its resemblance	81	48.5		
Antibiotics	49	29.3		

Table 8: Relationship between correct knowledge on the cause of ILI infections and their correct prevention and control practices

Attribute	Correct prevention and control practice of ILI infections (N = 343)				
Cause of ILI infections	Total	Yes; n, (%)	No; n, (%)	Chi-square	P-value
Know	197	71(36.0)	126(64)		
Don't know	146	58(39.7)	88(60.3)		
Total	**343**	**129(37.6)**	**214(62.4)**	**0.4854**	**0.4854**

Table 9: Knowledge on the cause of ILI infections in relation to their correct management practices

Attribute	Correct management practices for ILI infections				
Correct cause of ILI infections (only)	Total	Yes; n, (%)	No; n, (%)	Chi-square	P-value
Yes	75	42(56)	33(44)		
No	268	155(57.8)	113(72.9)		
Total	**343**	**197(57.4)**	**146(42.6)**	**0.0808**	**0.7762**

Table 10: ILI infections as important public health problems in relation to their correct management practices

Attribute	Correct management practices for ILI infections(Visit health care provider) {N = 341}				
ILI infections as important public health problem in Kenya	Total	Yes; n, (%)	No; n, (%)	Chi-square	P-value
Yes	277	169(61.0)	108(39.0)		
No	64	27(42.2)	37(57.8)		
Total	**341**	**196(57.5)**	**145(42.5)**	**7.5367**	**0.00605***

*Statistically significant

infections with the correct prevention and control practices, most of the respondents who knew the cause of ILI infections did not practice the correct prevention and control practices 126 (64.0%), and among the respondents who did not know the cause of ILI infections, 58(39.7%) practiced the correct prevention and control practices for these infections. The difference between those who knew the cause of ILI infections and applied correct prevention and control practices for ILI infections and those who did not know their cause and applied correct prevention and control practices for them was not statistically significant, (p = 0.4854) (Table 8).

Knowledge on cause of influenza like illness in relation to its management practices

In this section, the study considered those who knew the correct cause of influenza like illness only, against those who did not and their influenza like illness infections management practices

Relationship between knowledge on the cause of ILI infections and its management practices

Among those who knew against those who didn't know on the correct cause of ILI infections, and the ILI infections management practices, 42(56%) of those who knew the correct cause visited the health care provider while 33 (44%) of them used other management practices. Respondents who mentioned that they received current information on ILI infections from their class teachers had significantly better management practices for these infections compared to those who did not, ($p < 0.05$).

Similarly, the respondents who received information on ILI infections through media sources had better management practices for these infections compared to those who did not, ($p < 0.05$). Overall, irrespective of whether one knew or did not know the correct cause of ILI infections, over half, 197(57.4%) of the respondents undertook the correct ILI infections management practice. The difference was not statistically significant, p = 0.7762 (Table 9).

Interpretation of research hypothesis 3

"There is no relationship between the Knowledge on the cause of ILI infections with their management Practices".

As table 9 shows, there was no statistically significant relationship between correct knowldge of the cause of ILI infections and its management practices,(p = 0.7762).

We therefore are not able to reject the null hypothesis that "There is no relationship between the Knowledge on the cause of ILI infections with their management Practices"

Relationship between ILI infections as important public health problems and their management practices

Of the respondents who identified ILI infections as important public health problems in Kenya, slightly less than two-thirds 169(61.0%) had good management practices (visited health care provider), against 108(39%) who did not visit the health care provider. The difference was statistically significant ($p < 0.05$) (Table 10).

Interpretation of research hypothesis 4

"There is no relationship between the Attitudes on the cause, transmission, prevention & control of ILI infections with their management Practices".

The statistics presented in table 10 show there is a statistically significant relationship between attitudes and management practices for ILI infections, ($p < 0.05$). We therefore reject the null hypothesis that "There is no relationship between the Attitudes on the cause, transmission, prevention & control of ILI infections with their management Practices".

Discussion

The objective of this study was to determine the level of knowledge, attitudes and practices on the cause, treatment, prevention and control of ILI infections.

Most of the respondents interviewed did not know that viruses cause ILI infections and they had a lot of misconceptions on the cause of these. Among the misconceptions being cold weather, dusty situations, crowded places and cold water or drinks.

The key informant interviews with the school principals brought out the same picture as they did not know the correct cause of ILI infections and had misconceptions that they are caused by cold weather. This had similarities to a study conducted on knowledge and misconceptions regarding upper respiratory infections and influenza among urban Hispanic households, where among the possible causes of influenza mentioned by respondents included weather-related conditions. A small proportion reported that they may be caused by evil eye ('mal de ojo', 7.1%) or sudden fright ('susto', 3.3%) [8]. This implies that a lot needs to be done to correct these misconceptions

as it's only through knowing the correct cause of ILI infections (including influenza) and its transmission that effective preventive measures can be put in place.

Nearly half of the respondents reported having at one time or another, missed class due to ILI infections and majority saying these are an important public health problem in Kenya as it may affect our economy in various way, showing that the health and economic impact of ILI infections in Kenya is great. This concurs with two separate study reports by Sanofi Pasteur (2008) and CDC-US (2005), which stated that during influenza outbreaks, the direct cost to patients in terms of cost for consulting the doctor, purchase of medications, hospitalization and treatment and that the indirect cost on the patients including costs due to lost income through absenteeism from work, psychosocial stress and reduced productivity are enormous and have a big toll on the country's economy, respectively (Sanofi Pasteur publication, 2008 & CDC-US, 2005).

Kenya has not been spared this problem and a lot of useful working hours and learning time for students may be lost every year due to ILI infections. It has been documented that the overall economic burden of influenza in the United States alone has been estimated at more than 11 billion dollars annually (Billaud 2007). This concurs well with the findings of a similar study undertaken at the Washington University-USA, which found that total illness episodes, febrile illness episodes, analgesic use, school absenteeism, parental industrial absenteeism, and secondary illness among family members were significantly higher during an influenza season compared with the non-influenza season [9].

In this study, respondents who mentioned that they received current information on ILI infections from their class teachers had significantly better management practices for ILI infections compared to those who did not; this shows the need to include ILI infections education in the school curriculum. This is given more credence by a KAP study on avian influenza in Afghanistan which showed that teachers remain the most trusted source of information for children, together with health personnel. The Afghanistan study went further to emphasize that these networks should be used in order to sensitize children during future IEC campaigns and ensure they are provided with essential prevention messages [10]. Clear communication and provision of updated information also helped improve vigilance and preparedness during the 2009 influenza A/H1N1 pandemic [11].

In this study, knowing the correct cause of ILI infections did not influence the application of good prevention and control practices for these illnesses. Most of the respondents who knew the cause of ILI infections did not practice the correct prevention and control practices. This is contrary to normal expectations whereby correct knowledge leads to better practices. But this may be explained on the basis that there is little information to the students on ILI infections. In a study on knowledge, attitudes and practices towards pandemic influenza in tropical Singapore, it was shown that good knowledge on influenza transmission, management, prevention and control is important to enable individuals to have better attitudes and practices in influenza risk reduction [12].

On attitudes on ILI infections, the majority of the respondents in this study felt that ILI infections was an important public health problem in Kenya. Most of these had good ILI infections management practices (visited health care provider). Hence this may mean if we can change the attitude of our people to take up the public health impact of these infections, then they will undertake good ILI infections management and control practices. But this is not invariably so as shown in a study conducted on "attitudes amongst Australian hospital healthcare workers towards seasonal influenza and vaccination" which showed that although health care workers felt that the influenza vaccine was safe or effective (75%), only 22% had been vaccinated. This implies that attitude alone may not influence the proper practices on influenza prevention [13].

Most of the respondents in this study felt that the general public needed to be given information on how to protect themselves and others from ILI infections. The other aspects of ILI infections information identified for the public included signs and symptoms of ILI infections and how to prepare for possible ILI infection outbreaks. This compares quite well with a study conducted in China on "needs on information related to influenza pandemic by the Public", they found that during the time period of relative influenza inactivity, the respondents viewed the basic knowledge of human infection with avian influenza (H5N1) as their top priority, while in the influenza virus-active period, the feasible preventive measures was their top priority [14]. The views from this study will form a basis for developing messages and communication agenda on influenza like illnesses to the respondents (secondary school students).

When we considered ILI infections management practices in this study, of interest was that higher educational status (Superior class in school) in our cohort was a significant negative predictor of the good practice of visiting a health care provider when sick with ILI infections, showing that educational status alone does not determine behaviors. This may be because the younger respondents still had a lot of parental care when it comes to health matters with their parents taking them to the health care provider, as compared to the older ones, and also may be because the older ones didn't get severe ILI infections disease as their immune status is better compared to the younger ones. This finding reflects the facts observed in two previous studies, one on influenza [15] and the other on SARS [16] which also showed that education level did not have any effect on uptake of recommended behavioral patterns.

In the prevention or control ILI infections, the girls had significantly better prevention and control practices for these infections compared to the boys. This may be good as these are the future mothers of the nation and their interactions with the children will teach them the correct practices. But overall, most of the respondents did not know the correct prevention and control practices for ILI infections. Contrary outcome was observed in a KAP study on influenza among Hispanics in Santiago in 2006 & 2009, where the survey showed high awareness of the influenza vaccine and other preventive measures, notably hand hygiene and cough covering [17].

In this study, knowing the correct cause of ILI infections did not influence the application of good prevention and control practices for ILI infections. Most of the respondents who knew the cause of ILI infections did not practice the correct prevention and control practices. This is contrary to normal expectations whereby correct knowledge leads to better practices. But this may be explained on the basis that there is little information to the students on ILI infections. In a study on knowledge, attitudes and practices towards pandemic influenza in tropical Singapore, it was shown that good knowledge on influenza transmission, management, prevention and control is important to enable individuals to have better attitudes and practices in influenza risk reduction [12].

The study found that age, sex, and level of education (as a proxy of socio-economic status) did not predict management practices of ILI infections. This implies socio-economic status is not a good determinant to the practices of these infections prevention and control. In a study conducted to look for the predictors of the uptake of A /H1N1 influenza vaccine in Tokyo, some of the predictors noted included mistrust of information provided by public health or government authorities, which led to low acceptance rate, some believed that A /H1N1 influenza was as mild as seasonal influenza, and its vaccine may be necessary only for people in high risk groups. More than two thirds of the study subjects were anxious about adverse effects and others felt that the vaccine had not been thoroughly tested for efficacy and safety and that A /H1N1 influenza was a relatively mild disease and they urged that it was not worth the risk to get vaccinated [18].

The possible lack of representativeness of a secondary school cohort to the general population is an inherent limitation of this study, especially for the overall age structure. However, it does represent the

behaviors of an important age group of the population for the sake of ILI infections prevention and control, which affects mostly children, those with chronic illnesses and the elderly.

Conclusion

Most of the respondents in this study were in the 15-19 year's age-group. Majority of them did not know that viruses cause ILI infections. This requires to be corrected if we expect the public to put in place the correct preventive and control practices for ILI infections. Almost half of the students or their relatives had missed class, work or church due to ILI infections. This shows that these infections are an important public health problem in Kenya and all efforts should be made to put in place the correct knowledge on the cause, transmission, management, prevention and control measures of ILI infections.

Respondents who mentioned that they received current information on ILI infections from their class teachers had significantly better management practices for ILI infections compared to those who did not. Similarly, the respondents who received information on ILI infections through media sources had better management practices for ILI infections compared to those who did not.

There was a statistically significant relationship between attitudes and management practices for ILI infections, as those who felt that these infectionsare important public health problem, had better management practices for them.

Of interest in this study, higher educational status (Superior class in school) was a significant negative predictor of the correct management practice of ILI infections, showing that educational status alone does not determine behaviors. This clearly shows us that as we target health education on ILI infections, we should target all groups irrespective of their education level or status in society. Respondents who mentioned that they received current information on ILI infections from their class teachers had significantly better management practices for these infections compared to those who did not. Similarly, the respondents who received information on ILI infections through media sources had better management practices for them compared to those who did not.

In this study, the girl respondents had significantly better prevention and control practices for ILI infections compared to the boys. This knowledge should be built on and disseminated to all the respondents. However, it was significantly determined that most of the respondents did not know the correct prevention and control practices of these infections. There was a statistically significant relationship between attitudes and management practices for ILI infections, as those who felt ILI infections were important public health problems, had better management practices for these infections.

Recommendations

Health education

From the study, most of the respondents didn't know the correct cause of ILI infections. Also over half of the respondents reported that they or a family member had suffered from ILI infections in the preceding twelve months.As such, there is need for the Ministry of Health in liaison with the Ministry of Education and the city council of Nairobi, to develop appropriate IEC materials or educational materials on cause, mode of transmission, correct management practices, the appropriate prevention and control methods of ILI infections and efforts made to educate the respondents on the health effects of ILI infections to them and others e.g. the effects to those with chronic infections, on the elderly and the very young. These should be passed over to the students through the school health program and also disseminated through the various media channels, preferably during increased ILI infections activity seasons.

Acknowledgements

My supervisors, Dr. Dismas Ongore and Ms Mary Kinoti for guiding and giving me valuable advise that led to the completion of this work. The Episurveyor team, led by Yusuf Ajack for enabling us to collect data using this program, Gedion Emukule, for giving valuable advice in data analysis, Mr. Lambert Nyabola who gave me "fatherly" encouragement, Charles Njuguna and Zephania Irura for valuable advice in choice of topic, initial proposal development and encouragement all through the process.

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