

An Evaluation of Information Dissemination During the Severe Acute Respiratory Syndrome (SARS) Outbreak Among Selected Rural Communities in Kuala Kangsar

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Summary

To assess the level of knowledge, attitude and practice (KAP) on SARS and its preventive measures among the rural population of Kuala Kangsar district. This KAP study was also done to identify the expectation and preference of rural population upon obtaining health information. This is a cross-sectional study of 201 households from four villages in Kuala Kangsar. Face-to-face interview was done regarding knowledge, attitude and practice on SARS and its preventive measures. Statistical analyses were performed with SPSS (Version 10.0). A scoring system was used to assess the level of knowledge, attitude and practice towards SARS. Ninety one percent of the study population was aware of SARS. Majority of them have good attitude towards SARS based on the formulated scoring system. Television was found to be the first hand information about SARS and most preferred source of information by the rural population. Knowledge and attitude of respondents concerning SARS were good. Television was found to be the preference among the rural population in obtaining health information.

Key Words: Severe Acute Respiratory Syndrome (SARS); KAP study; Kuala Kangsar district; Source of information

Introduction

Severe acute respiratory syndrome (SARS) was first identified as a new infection by Dr Carlo Urbani, a World Health Organization (WHO) physician, after examining a 48 year-old businessman who travelled to Guangdong province of Southern China through Hong Kong and then to Hanoi. The global spread of SARS started in Hong Kong on 21st February 2003. Soon

after that, the disease had spread to other countries such as Taiwan, Thailand, Mongolia, Russia, Australia, Italy, Romania, United States of America, and United Kingdom. As of 25th June 2003, 8460 people had been infected with SARS; with 808 deaths worldwide. In Malaysia, there were 2 deaths and 5 suspected cases^{1,2}.

A new Coronavirus is most likely the cause of SARS. This virus is the common cause for mild to moderate

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upper-respiratory illness in humans and is associated with respiratory, gastrointestinal, liver and neurological diseases in animals^{3,4}. Though Coronavirus is probably the primary agent behind SARS, other pathogens like the *Human Metapneumovirus* (HMPV) was also found in some patients who are infected by the SARS virus^{5,6}.

The incubation period of SARS is usually 2-7 days but may be as long as 10 days^{7,8}. The illness generally begins with a prodromal symptom of fever (>38°C), which is often high, associated with chills, rigors, headaches and body aches. A cough sets in after 2 to 7 days^{9,10}.

Health officials have taken into measure quarantining those who have symptoms of SARS and those who have been exposed to these infected people. Malaysia has advised its citizens to avoid traveling to SARS-affected countries. If required to be in close contact with them, it is advised to practice good personal hygiene. Crowded areas must also be avoided, otherwise a protective mask must be used and need to be changed daily.

Treatment regimens include a variety of antibiotics to presumptively treat known bacterial agents of atypical pneumonia. In several locations, therapies also include antiviral agents such as oseltamivir or ribavirin. Steroid is also given orally or intravenously to patients in combination with ribavirin and other antimicrobials. At present, the most efficacious treatment regime, if any, is still unknown. Besides, there is also no specific vaccination^{9,11,12}.

The government is putting a lot of effort to educate the public in both urban and rural areas regarding SARS. This effort includes giving out pamphlets, messages through mass media, talks and discussion, and information through the internet. The government also took special steps such as quarantining suspected and probable cases as well as those who had close contact with them. Health authorities had spent millions of *Ringgit Malaysia* in placing thermal scanners at the airport and the immigration checkpoint to monitor SARS signs and symptoms of the visitors.

However, to date, no KAP study on SARS has been conducted on communities in the rural setting. Therefore it is important to conduct a KAP study concerning SARS on a rural community because there is an epidemic of SARS involving more than 30 countries.

There have been numerous efforts by Malaysian health authorities to educate the public about SARS via campaigns, the mass media, health visits and forums. It is necessary therefore to assess the level of knowledge, attitude and practice among the rural inhabitants of these villages so that baseline information will exist on which to base further educational program and also to monitor and evaluate these programs.

Materials and Methods

This is a cross-sectional survey of 201 households in 4 villages in Kuala Kangsar. The study was carried out between 9th and 12th of June 2003.

This study involved 4 villages in Mukim Sayong and Mukim Kota Lama Kanan of Kuala Kangsar district of the state of Perak, namely: - Kampung Padang Changkat, Kampung Kepala Bendang, Kampung Keledang and Kampung Enggor.

The study population was 1199 which is the total population of the 4 villages with total households numbering up to 359. A minimum sample of 50 households from each village was selected by simple random sampling method to represent each village. However, as for Kampung Kepala Bendang, only 47 households were managed to be sampled. Eventually, a total of 201 households were surveyed in this study.

The data was collected by a face-to-face interview using close-ended as well as open-ended questions on knowledge, attitude, and practice of SARS preventive measures. Heads of household or adult representatives were targeted, because they are the most knowledgeable and have influence in the decision-making for the family.

The questionnaire was divided into four sections; the first section concerning knowledge comprised of 12 questions, the second concerning attitude comprised of 7 questions, the third concerning practice comprised of 2 questions, and the fourth concerning the sources that provide information about SARS comprised 4 questions. Bahasa Melayu was used as the medium of interview since it is the national language and commonly used amongst the respondents. A pilot study was conducted with patient from the outpatient department at Hospital Tuanku Ampuan Rahimah Klang to test the responses to the developed questions.

Data was entered and analyzed using Statistical Package for Social Sciences (SPSS for Windows version 10.0). A scoring system was used to assess the level of knowledge, attitude and practice. Each appropriate answer was given a point. The points for each section were calculated and assessed as 'high score' or 'low score' based on an arbitrary cut-off point. An arbitrary cut-off point was made using the median score for knowledge, attitude, and practice. To look into relationships between these variables, cross-tabulations were done between practice and knowledge, knowledge and attitude, and attitude and practice.

Results

The response rate of this study was 100%. All the important characteristics of these respondents are given in **Table I**. Out of 201 respondents, 91% of the respondents have heard about SARS.

Knowledge on SARS

When asked about where they first heard about SARS, 90.2% of the respondents said that they obtained the information from television. Only 3.2% of them knew about SARS from newspapers. Meanwhile, the remaining respondents heard about SARS from health staff, friends and family members, each contributing 2.2%.

The majority of the respondents (90.7 %) believed that SARS is contagious. Many of them believed that the aetiological agent of SARS is a virus (21.7%), bacteria (1.2%), and worm (0.6%). Meanwhile 57.2% did not know the aetiological agent. 19.3% of the respondents gave other answers for the aetiological agent of SARS. On the other hand, 1.6% of the respondents believed that SARS is not contagious and 7.7% of them admitted that they did not know whether SARS is contagious or not.

Most of the respondents knew that SARS could be transmitted through air (62.8%). 3.3% of them believed that SARS could be transmitted through food/drinks, 2.7% by touch, 0.6% by mosquito bites and another 1.6% by other methods. However, 29.0% of the respondents admitted that they did not know the method in which SARS can be transmitted.

Most of the rural population (91.3%) believed that travelers have higher risk of contracting SARS. Another 90.2% believed that those who have contact with patient having SARS are also at risk. However, there

was even a high proportion of the population (60.7%) who thought that children are at risk of contracting SARS.

Among the 201 respondents, 84.7% believed that SARS can be prevented and 3.3% believed that SARS was not preventable. The rest of the respondents (12.0%) did not know whether SARS is preventable or otherwise.

Practice of SARS Control

A large proportion of the respondents knew about the preventive measures of SARS; with 99.4% believed that by not visiting SARS countries can exclude them from contracting SARS. However, not all respondents who knew about these preventive measures practice them. One good example is that only 64.5% avoided crowded places where in fact 90% of them knew that this measure can reduce the risk of contracting SARS. (Table II)

Attitude Towards SARS

Most of the respondents (88.5%) felt that SARS is a serious disease while only 4.4% believed that SARS is not serious. On the other hand, 1.6% was not sure whether SARS is a serious disease or not. Meanwhile, 5.5% did not know whether SARS was serious or otherwise. The majority of the respondents (89.6%) are worried that they or their family members might be affected by SARS. Only 7.7% were not worried about SARS.

If the respondents believed that they or their family members have developed SARS, 96.7% claimed that they would seek immediate proper medical treatment. 2.7% claimed that they would take antipyretics first, while only 0.6% of them said that they would opt for traditional medicine.

Most of the respondents got their information from television and majority of them, 98.3%, trusted the information gained from that source. Meanwhile, if the information was gained from pamphlets, medical staff or the Internet, 100% of the respondents who got information from these respective sources trusted them. Although apparently, it can be seen that most of the respondents who gained information about SARS through television (92.7%) have high score for their knowledge about SARS, there is no statistically significant association between the source of knowledge about SARS from television and their level of knowledge about SARS. (Table III)

Majority, 84.2% of the respondents were satisfied with the amount of information they had received so far. 9.8% were not satisfied with the amount received while 6.0% of them were unsure.

Regarding the question whether SARS has had an effect on their daily lives, 60.1% respondents said their lives had not been affected by SARS, while 36.6% of the respondents admitted that SARS has had an effect on their daily lives. Of those who claimed that SARS had affected their daily lives, 71.6% said that SARS had affected them emotionally, 64.2% said it had affected them socially meanwhile only 23.9% said that SARS had affected them economically.

In addition to that, 64.2% of the respondents believed that the best method of receiving information regarding SARS was through television. Meanwhile, 21.4% believed that receiving information from medical staff would be the best method. On the other hand, 5.0% think that the best method would be from newspapers, 3.0% from radio, 1.0% from friends and only 0.5% from pamphlets. On the other hand, 4.0% believed that other different sources would be the best method such as talks.

Among the respondents, 66.7% were satisfied with the information provided by the Ministry of Health (MOH) regarding SARS. On the other hand, 23.4% were not satisfied meanwhile 10.0% were not sure on this matter.

A scoring system was used to categorize respondents into high score and low score in terms of their level of knowledge, attitude, and practice. All showed statistically significant associations between these variables of knowledge, attitude and practice scores. (Table IV, V and VI)

Table VII shows the association between knowledge and the socio-demographic characteristic of the study population. There was no significant association between the level of knowledge regarding SARS and gender. For the level of education, a pattern was seen whereby the higher the education level, the better their knowledge about SARS. Data also has shown no significant association between attitude towards SARS and gender, level of education and occupational class. Surprisingly, the proportion of high scores increases as the age group gets younger. From the cross-tabulation between practice scores on SARS preventive measures with socio-demographic characteristics, it had shown no significant association as well.

Table I: Socio-demographic characteristics of the respondents in Kuala Kangsar, June 2003 (N = 201)

Socio-demographic characteristics		Percentage (%)
Age	35 and below	13.4
	36-55	45.3
	56 and above	41.3
Race	Malay	98
	Chinese	0.5
	Indian	1.5
Gender	Male	39.8
	Female	60.2
Educational level	No formal education	6.5
	Primary	54.7
	Secondary	36.3
	Tertiary	2.5

Table II: Knowledge and practice of the preventive measures against SARS among the respondents in selected villages of Kuala Kangsar, June 2003

Knowledge	Preventive measures (%)	Practice (%)
Avoid crowded places	90	64.5
Avoid SARS patient	94.2	74.6
Wear mask	89	8.7
Personal hygiene	92.9	86.1
Avoid visiting SARS affected countries	99.4	76

Table III: Relationship between source of knowledge on SARS from television (TV) and level of knowledge among the respondents in selected villages of Kuala Kangsar, June 2003

Knowledge		TV as main source of information		Total	p-value
		Yes	No		
Knowledge	Low score	63 (86.3%)	10 (13.7%)	73	0.428
	High score	102 (92.7%)	8 (7.3%)	110	

Table IV: Association between knowledge about SARS and practice of SARS preventive measures among the respondents in selected villages of Kuala Kangsar, June 2003

Practice		Knowledge		p-value
		Low score	High score	
Practice	Low score	43 (56.6%)	33 (43.4%)	<0.01
	High score	30 (28.0%)	77 (72.0%)	

Table V: Association between knowledge of SARS and their attitude towards SARS among the respondents in selected villages of Kuala Kangsar, June 2003

Attitude		Knowledge		p-value
		Low score	High score	
Attitude	Low score	32 (57.1%)	24 (42.9%)	0.002
	High score	41 (32.3%)	86 (67.7%)	

Table VI: Association between attitude towards SARS and their practice of SARS preventive measures among the respondents in selected villages of Kuala Kangsar, June 2003

Practice		Attitude		p-value
		Low score	High score	
Practice	Low score	32 (42.1%)	44 (57.9%)	0.006
	High score	24 (22.4%)	83 (77.6%)	

Table VII: Relationships between knowledge, attitude and practice of SARS preventive measures and the socio-demographic characteristics among the respondents in selected villages of Kuala Kangsar, June 2003

Socio-demographic characteristics		p-value		
		Knowledge	Attitude	Practice
Sex	Male	0.879	0.626	0.503
	Female			
Age group	≤ 35 years old	<0.01	0.002	0.106
	36-55 years old			
	≥ 56 years old			
Level of education	Primary education and lower	<0.01	0.104	0.174
	Secondary education and higher			
Occupational class	Professional and lesser professional	0.231	0.826	0.812
	Skilled and semi-skilled manual			
	Unskilled manual			

Discussion

In this survey, most of the respondents were females, i.e. 60.2%, because the survey was conducted during the day time, when most of the head of household, who is usually the man, were out at work.

The study revealed that over 90% of the respondents had heard of Severe Acute Respiratory Syndrome (SARS). Mass media especially television played an important role as the main source of information for the rural population in Kuala Kangsar and it could be due to the fact that most of these households had a television set^{4,13}. Most of them watched the television after work and usually the news bulletin is a must. The least source of information was by the internet because most households did not have a computer.

Majority of the respondents knew that SARS is a contagious disease. However, only 22% could name 'virus' as the aetiological agent. Most of the respondents believed that the main mode of transmission of SARS was through air, where it was considered to be the same as direct contact. The primary way that SARS appeared to spread was by close person-to-person contact^{4, 14, 15, 16}.

At present, scientists had not found the specific treatment for SARS and the mortality rates varies between countries^{17, 18}. However, majority of the respondents believed that there is a treatment for SARS as there were patients who were discharged after appropriate supportive treatment.

Many of the respondents thought that traveling as well as contact with patients having SARS could increase the risk of contracting SARS. This is probably due to the educational message in the mass media discouraging people from visiting SARS-affected countries and the importance of quarantining suspected patients. Many of the respondents were also in the opinion that the elderly and the children had higher risk of contracting SARS. They felt that the children and the elderly were more vulnerable in general and thus more at risk of SARS as well.

Majority of the respondents agreed that SARS is a serious disease. This could be the result of strong emphasis from the mass media regarding the death of SARS-infected patient, the daily update on SARS during the outbreak, and the dramatic measures taken by the Ministry of Health in containing this disease. Since SARS could lead to death, majority of the respondents were worried that they or their family members might be infected with SARS¹⁹. Nevertheless, the drastic measures taken by the government had an impact and directly affected those whose incomes solely depend on tourism, for example, the traditional craft maker.

As SARS is a new and deadly disease, most of the respondents (96.7%) said they would seek doctor's advice if they or their family members showed any symptoms of SARS. This should be recommended as it is in line with the government's policy in improving the living as well as the health status of the rural population²⁰. The rest would still seek advice from complementary medicine.

Majority of the respondents (98.3%) trusted the information regarding SARS conveyed through the television. Only 34.8% of the respondents gained the information on SARS through medical staff and pamphlets respectively. This probably suggests that the health officials had not placed enough emphasis on educating the rural population on SARS through talks in the villages, compared to educating them on any other diseases. This may be due to inadequate number of health staff even though this is the best method of conveying information to the public.

Although there was no significant association between respondent who learnt about SARS from the television and their knowledge about SARS, television was still the best method of conveying information.

Concerning the satisfaction on the received information, most of the respondents were satisfied with the information they had received. This is because they believed that they had gained enough information on the disease itself, the symptoms of SARS and how to prevent them from contracting SARS. Surprisingly 26.2% of the respondents answered no when questioned on sharing information among family members.

Most of the respondents were satisfied with the information provided by MOH. However, a small percentage (23.4%) was not satisfied with the information given. This percentage of respondent believed that the MOH could assist more such as giving talks to those living in rural areas as most of the health programs were emphasized in urban areas.

There was a significant association between the level of knowledge and practice of SARS preventive measures, between the level of knowledge and attitude towards SARS, and between attitude and practice of SARS preventive measures. This showed that good knowledge affected the attitude and practice on SARS prevention. Therefore it is important that the MOH should put more effort in educating the rural community. Besides, according to Rosenstock's Health Belief Model 1974, people's health beliefs depend on their perception of susceptibility to diseases^{13, 17, 21}. In fact majority of the respondent felt that SARS was a serious disease and a large proportion of them felt that treatment should be sought immediately. Therefore their attitude and practice on SARS had been influenced by their knowledge regarding SARS.

As mentioned earlier, a scoring system was used to assess the level of knowledge, attitude and practice. It was interesting to note that high score for knowledge means that their knowledge regarding SARS is good. However, if the score is low, generally they did have some idea about SARS but inadequate. Similarly this applied with attitude and practice.

From the KAP study conducted, it was found that there was no difference on knowledge of SARS by sex or by occupational classes. But rather, age group and level of education had influenced the level of knowledge about SARS. This showed that both sexes kept up with the latest news on SARS. Those with better level of education were more literate, enabling them to gain more information. From this study, those with higher level of education had higher scores on knowledge compared to those with lower level of education. As for age group, those below the age of 56 years old were more knowledgeable, positive attitude and alert about their surrounding and recent updates on SARS.

However, there was no significant association between practice of SARS preventive measures and socio-demographic characteristics. This was because majority of the respondents were practicing SARS preventive measures irrespective of their socio-demographic characteristics.

Recommendations

Based on the findings of the study, the following measures are recommended. Firstly, the health education programs should be continued and intensified with emphasis on educating the rural community when dealing with a new disease. Besides, the Ministry of Health should promote health issues via television during prime time as most of the respondents agreed that television is the best source of information. In addition to that, health officials should conduct more educational sessions and talks about SARS to improve the rural population's health knowledge. Moreover, research into educational strategies designed to improve the behaviour and practice of effective preventive measures among the villagers is recommended. Therefore, the health personnel should be trained and encourage to participate in interactive education session with the rural population.

Conclusion

In conclusion, the knowledge and attitude of the respondents concerning SARS were good. The knowledge, attitude and practice were also significantly associated. There was a significant association between knowledge and age group; similarly with the level of education. There was a significant association between attitude and age group of the respondents. However, there was no relationship between practice of preventive measures and the socio-demographic variables. Other than that, the preference of the rural population in gaining health information was through television. Therefore the MOH should emphasize on

the usage of television as a mode to educate the public on SARS or any other new disease in the future.

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