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# Readiness of school teachers to accept notifications about causes and preventive measures on food poisoning

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## Abstract:

**INTRODUCTION:** In this era of globalization, urbanization, and rapidly expanding unhygienic food corners across the globe, the incidence of food poisoning is very common nowadays.

**AIM:** The aim of our study was to investigate the perceptions and readiness of schoolteachers to accept notifications on food poisoning as a part of education to the students.

**METHODOLOGY:** A descriptive cross-sectional study was carried out with the help of a validated questionnaire for data collection. Our research involved schoolteachers from both primary and secondary schools in Muar. The questionnaire was pretested among the eligible trainee teachers and yielded an internal consistency reliability coefficient ( $\alpha$  = Cronbach's alpha) of 0.082. This study was conducted from October 29, 2017, to December 14, 2018, in Muar. Our sample size was 259. Ethical consent was obtained from the Institution Ethical Committee.

**RESULTS:** A total of 259 schoolteachers from both primary and secondary schools in Muar were included in this study. In our study, 81.1% of the teachers responded that they can easily educate their students about food poisoning. Most of them (93.1%) were ready to receive notifications on food poisoning in any mode, and about 72% of the teachers preferred WhatsApp as their mode of receiving notification. The least (1.2%) preferred mode of notification was LINE (a social app). Teachers' willingness to disseminate the information regarding food poisoning was also higher (98.5%).

**CONCLUSIONS:** We concluded that majority of the schoolteachers had a good perception and were ready to receive the notifications on food poisoning through WhatsApp as a part of education to the students.

## Keywords:

Food poisoning, notification, readiness, schoolteachers

## Introduction

In this era of globalization, food poisoning is a very debated topic, globally. Food poisoning occurs as a result of consuming food or water which contains poisonous substances such as bacteria, viruses, protozoa, or toxin, and the symptoms begin within 2–6 h which include abdominal pain, diarrhea, nausea, and vomiting. It can occur when our food goes through the journey of "Farm to Fork."<sup>[1-4]</sup>

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In 2015, the World Health Organization published its first estimates of global foodborne disease incidence, mortality, and disease burden in terms of disability-adjusted life years which were caused by 31 agents, namely bacteria, viruses, parasites, and chemicals. It was appraised that 600 million people (almost 1 in 10) got infected and became ill in 2010 due to the consumption of contaminated food containing those 31 agents, which caused 420,000 deaths, thirty percent of under five deaths occurred due to food borne diseases.

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Malaysia is one of the countries that have high cases of foodborne diseases, and it is due to the favorable condition for the growth of harmful microorganisms. The trends of food and waterborne diseases in Malaysia have varied over the past few years. There was an increase of cholera, food poisoning, and hepatitis A incidence from 2009 to 2011. The main reason for foodborne illness in Malaysia is unhygienic food-handling procedures which contribute to 50% of the cases (Ministry of Health [MOH], 2007). There were a total of sixty episodes of food poisoning episodes occurred till date, among which in 47 episodes, schools were involved. Food poisoning incidences at schools have increased drastically from 30 in 2015 to 45 in 2016 (MOH, 2016). Most of these incidences took place in the school canteens and kitchens.<sup>[5,6]</sup>

Hence, it is pertinent that besides the health sector, we must involve the education sector to address this challenging issue. It is quite natural that we should make aware to the school students about preventive measures about food poisoning. Teachers can play an essential role in helping students to learn about it.

As teachers are the role model for the students, so it becomes very easy to educate them about the preventive measures of food poisoning, in a simple way. There are many approaches we can follow to educate our teachers and students about the food poisoning. We can empower the teachers by sharing information about food poisoning through web 2.0 technologies. We can also use mobile phones to disseminate health information to the students, as it is a very useful, convenient, and cost-effective health promotion tool. The main obstacle of any innovation/idea is the rate of adoption, and it is applicable for the schoolteachers also. That's why we conducted this study to gain an insight about the perceptions and readiness of the schoolteachers to accept notifications on food poisoning, as a part of education to the students.<sup>[7]</sup>

Our study objectives were as follows:

1. To determine the level of schoolteachers' readiness to receive notification on causes and preventive measures of food poisoning
2. To determine the preferred mode of receiving notifications about causes and preventive measures of food poisoning by the schoolteachers
3. To determine the level of willingness of the schoolteachers to disseminate the information received about the causes and preventive measures of food poisoning to the students.

## Methodology

This study was conducted starting from October 29, 2017, to December 14, 2018, in Muar, Johor state of Malaysia. A descriptive cross-sectional study was employed

among schools targeting teachers who were teaching in Muar district. The data were collected by distributing questionnaire to the teachers regarding perceptions, awareness, and readiness. The sample size was calculated with an assumption that 50% of the populations were willing to accept notifications on food poisoning as a part of education to the students in order to have a larger sample size because no previously related literature were available. Therefore, with 5% absolute precision and 90% confidence level, the minimum sample size was calculated using Epi Info 7, CDC, Atlanta, USA, and the targeted population was 255 individuals. It was expected to find 300 teachers in six schools for the study. Eligible schools were selected by simple random sampling. All permanent teachers (experienced >1 year) who were willing to participate were included in the study. The teachers who were in the probation period (<1 year) were excluded from the study.

Content validity was used to ensure that the measure was actually measuring what it is intended to measure (i.e., the content) and no other variables. Using a panel of "experts" familiar with the content, the validity was assessed. The experts examined the items and decided what that specific item is intended to measure. The panel of experts suggested to remove two questions and also to rephrase a few questions from the original questionnaire, and the suggestions were taken. The new questionnaire was then prepared for the actual survey. The content validity index was calculated. Out the four chosen experts, two rated all the questions as relevant and the other two rated the questions as somehow relevant and relevant.

Face validity refers to the extent to which a test is subjectively viewed as covering the concept it purports to measure. The researchers can easily assess face validity. It is an essential component in enlisting motivation of researchers. The easiest method to determine the face validity is by the pilot test that was done earlier. A total of twenty participants were chosen for pilot testing who met the inclusion criteria of our study. completed the preliminary survey and gave individual feedback about the content, wording and clarity, and the estimated timing to complete it. After the pilot test, the survey was revised based on the participants' reviews.

After obtaining verbal consent, the survey was held using a questionnaire. The survey consisted of questions regarding the sociodemographic status, knowledge about food poisoning, the willingness of the participants to disseminate the information to their students, mode of receiving notifications, and type of media favored.

The data were entered in Microsoft Excel and analyzed using Statistical Package for the Social Sciences SPSS version 20, IBM, Chicago, USA. All the

categorical data were presented as percentages. The associations were summarized in terms of odds ratio with 90% confidence level.

A set of questionnaires comprising three components which include readiness, preferred mode of receiving notifications, and willingness as well as social demographic data was constructed and distributed to the sample population at the selected schools.

It was translated from English to Malay language and then was validated by a Malay teacher because most of the sample population were Malay. A pretest of the questionnaire was done among the eligible trainee teachers and yielded an internal consistency reliability coefficient ( $\alpha$  = Cronbach's alpha) of 0.082 which showed that all the questions in the questionnaire were reliable.

This questionnaire consisted of four sections, namely A, B, C, and D. Each section mainly describes three components which are the readiness, preferred mode of receiving notifications, and willingness of primary and secondary school teachers to accept notification on food poisoning as a part of education to the school students in Muar.

The study was approved by the Medical Research Ethics Committee and Asia Metropolitan University. The National Malaysia Research Register registration was carried out. Written informed consent was obtained from individual participants as well.

### Results

The details of sociodemographic characteristics are shown in Table 1. Our result concluded that a total of 164 (63.3%) of 259 teachers had experienced food poisoning cases previously.

Most of our teachers (66%) agreed that a school student should know about the causes and preventive measures of food poisoning. About the teachers' responsibility to educate the students on causes and preventive measures of food poisoning, the agreement between the teachers varied between 24.7% and 56.4%, from agree to strongly agree. Only 2.7% of the teachers opined that a school student should not know about food poisoning. Regarding the frequency of using the Internet, most of the teachers (84.2%) responded that they often use the Internet. Regarding teachers' effort to search information on food poisoning, most of the teachers (72.6%) had searched information on food poisoning.

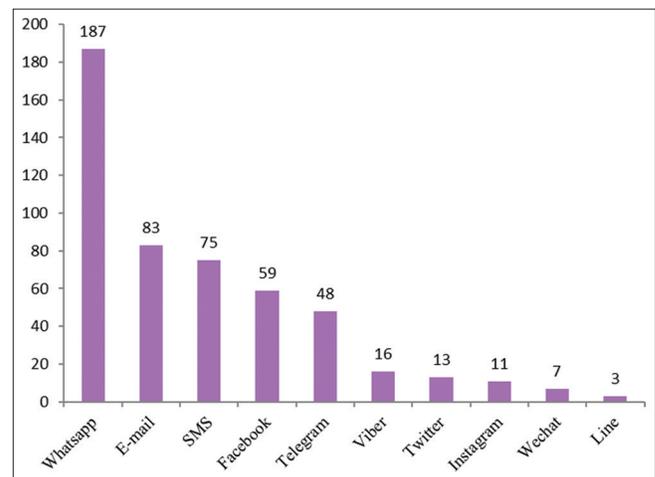
Regarding the type of notifications preferred by teachers, most of the teachers (187) had chosen WhatsApp [Figure 1]. Regarding the type of electronic devices

preferred by teachers, most of the respondents (58%) preferred smartphones over tablet/iPad (7%) and computer/laptop (35%). The details are given in Figures 2 and 3.

Regarding the teachers' willingness to disseminate the information received to the students, 255 (98.5%) respondents were willing to disseminate the information, whereas only 4 (1.5%) respondents were not willing to disseminate the information. Last but not least, regarding the teachers' willingness to receive notification on food poisoning, 241 (93.1%) respondents were willing to receive the notification, whereas 18 (6.9%) respondents were not willing to receive any kind of notification on food poisoning.

**Table 1: Section A: Sociodemographic**

Variables	Frequency (%)
Age group	
20-29	56 (21.6)
30-39	88 (34)
40-49	72 (27.8)
50 and above	43 (16.6)
Total	259 (100)
Gender	
Male	86 (33.2)
Female	173 (66.8)
Total	259 (100)
Ethnicity	
Malay	200 (77.2)
Indian	28 (10.8)
Chinese	27 (10.4)
Others	4 (1.5)
Total	259 (100)
Teachers' experience on food poisoning	
Yes	164 (63.3)
No	95 (36.7)
Total	259 (100)



**Figure 1:** Preferred mode, type, and form of receiving notifications about causes and preventive measures about food poisoning

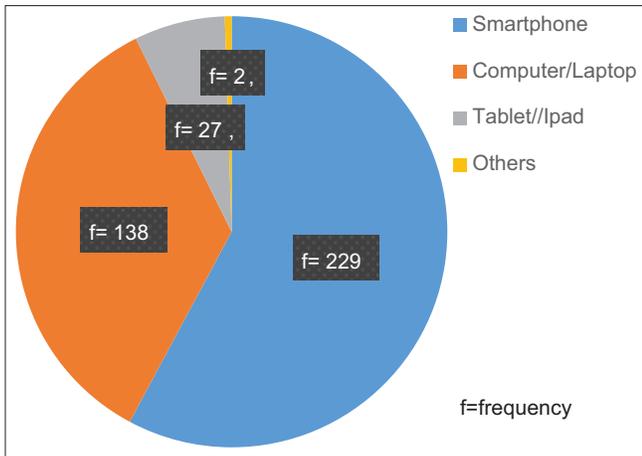


Figure 2: Preferred type of electronic devices for the teachers to receive notifications regarding food poisoning

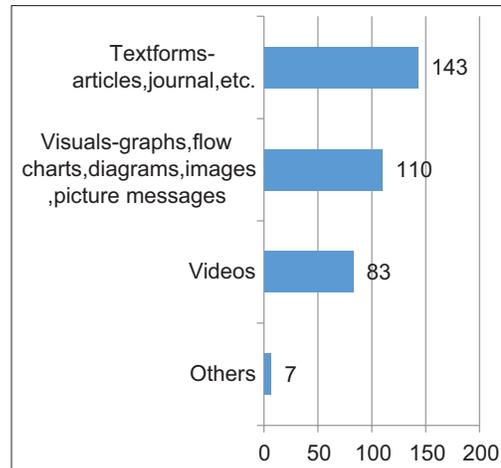


Figure 3: Preferred form of information regarding food poisoning to be received by the teachers

## Discussion

In the current study, majority of the teachers strongly agreed on the importance of a school student to know about the causes and preventive measures of food poisoning. In our study, more than half of the respondents strongly agreed that teachers should be responsible to educate their students on food poisoning. A similar study was conducted in various countries, aiming to investigate the preferred method for learning and teaching by teachers for students. Moreover, direct communication of teaching method was preferred by half of the respondents. However, it was found in our study that a negligible amount of respondents were strongly disagreed about the teachers' responsibility to educate the students about food poisoning. According to Catalina Lopez-Quintero *et al.*, a research investigating on the likeliness of schoolchildren to practice handwashing, a similar finding was observed.<sup>[8]</sup>

Talking about the frequency of using the Internet, majority of the respondents agreed that they often utilized their time using the Internet. At the same time, an article on Internet usage and academic performance by Siraj *et al.* revealed the respondents' time spent for the Internet during weekdays and weekends. Majority of our respondents used the Internet for <6 h on weekdays. Half of the participants confirmed that they used Internet applications for the benefit of their students. Furthermore, teachers' responses to the other items reflected that many teachers agreed that Internet applications secure a vital source of vocabulary, activities, and reading comprehension practice that enhances students' performance.<sup>[9]</sup>

In our study on teachers' effort to search information regarding food poisoning, it is found that majority of

the teachers had searched for any kind of information regarding food poisoning before. This coincides with Ovca *et al.* findings that half of the respondents were personally interested in the food safety topics as in all the other topics like home economics.<sup>[10]</sup> Here, teachers' personal preferences could come from their awareness acquired during their own period of growing up or from their intrinsic motivation as an individual inherent inclination to particular areas of life regardless of the presence of external circumstances according to Richard Ryan and Edward Deci.<sup>[11]</sup>

According to our recent study, it shows that WhatsApp has the highest preference compared to the other type of notifications. This is supported by a worldwide statistic on the type of notifications which states that WhatsApp has a total of 1500 million users globally<sup>[12]</sup> According to another study entitled "Usage of WhatsApp and voice calls (phone call): Preference of polytechnic students in Ghana" which was conducted by Tawiah *et al.*, it stated that WhatsApp has gained familiarity with students. A majority of the students expressed their familiarity with WhatsApp application, and they indicated that they used this application. A majority of the students indicated their willingness to use the application. Moreover, WhatsApp has been successfully used in health and medical education and learning. From the above findings, it is clear that due to high acceptability among students and teachers, it can play a vital role in knowledge sharing among them.<sup>[13]</sup>

In terms of electronic devices, nearly half of the respondents preferred to use smartphones. A similar finding was observed in the study conducted by Lenhart *et al.*<sup>[14]</sup>

Furthermore, text forms such as articles and journals were the preferred form of information by half of

the respondents. For instance, in another journal by Lyndsay Symons, the majority reported that they preferred sending text messages to other communication methods using their mobile phones. Besides, Msungu *et al.* (2012) found that among the 25 staff who mentioned to access Internet services through their phones, one-third of the participants mentioned downloading scholarly materials through their mobile phones.<sup>[15]</sup> Joo and Kim in a community-based anti-obesity program using short message service messaging about diet, exercise, and behavior modification once a week found that after 12 weeks, a significant reduction in weight (1.6 kg,  $P < 0.001$ ), waist circumference (4.3 cm,  $P < 0.001$ ), and body mass index ( $0.6 \text{ kg/m}^2$ ,  $P < 0.001$ ) has been observed.<sup>[16]</sup>

In addition, in the study on willingness to receive notification on food poisoning, most of the respondents were willing to do so. In a study done by Bredbenner *et al.* (2010), revealed that half of the respondents chose “a lot” in a question about willingness to learn about preventing food poisoning. According to a survey done by simple texting (2018), half of the individuals are willing to receive promotional texts. Last but not least, a majority of the teachers also agreed to disseminate the information received to their respective students.<sup>[17]</sup>

Diehl *et al.* concluded in their study that half of the youth wanted to participate in a program regarding food safety topics, which means that they are willing to be taught by teacher on food poisoning.<sup>[18]</sup>

### Study limitations

We have conducted this study in one district only having small sample size. In the future, interventional studies can be conducted with larger sample size so that we can assess the impact of such studies.

### Conclusions

Our study concluded that school teachers had a better perception and they were ready to receive notification on causes and preventive measures of food poisoning as a part of education to the school students. Majority of the school teachers strongly agreed that it is very important for a school student to know about food poisoning, and most of them strongly agreed that they are responsible to educate the students about food poisoning. Most of the teachers used the Internet in their daily life. Not only that, majority of the teachers took some effort to search information regarding food poisoning. Apart from this, more than half of the school teachers preferred smartphones compared to other electronic devices. The most popular mobile app among the teachers was WhatsApp. Nearly all teachers were willing to disseminate the information

to the students as a part of their education about food poisoning.

### Recommendations

In order to prevent the increasing incidence of food poisoning, schools will be an excellent platform to provide comprehensive and sustainable health education regarding causes and preventive measures of food poisoning. Teachers should play a crucial/leading role in educating their students regarding food poisoning by multiple methods (electronic or traditional). In addition to that health awareness program, like “Food Safety Day,” can be celebrated in the schools. This kind of innovative approach will not only educate the students about food poisoning but also the society can be benefitted in the future by averting food poisoning-related deaths.

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### Conflicts of interest

There are no conflicts of interest.

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