

Factors affecting food safety consumption during the COVID-19 pandemic among students aged 15-18 years old in Thailand

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Abstract: Background: COVID-19 as an emerging disease, has spread around the globe quickly with many lives being affected. People's lifestyles were inevitably forced to change to prevent the disease. Food safety consumption behavior is one factor to protect themselves from COVID-19.

Objective: To study factors associated with food safety consumption behavior

Methods: An online questionnaire to measure knowledge about food safety consumption during the pandemic of COVID-19.

Result: A total of 309 students participated in this study and they were assessed knowledge about food safety and COVID-19 prevention and food safety consumption practice during COVID-19. The majority of participants were female (n=192, 62.1%). Most participants studied Grade 11 (n=122, 39.5). 29.08% of students whose parents worked as an employee followed by whose parents worked as a business owner (n=84, 27.20%). 77.3% (n=239) of participants ordered food delivery less than 3 times a week. Most participants (n=154, 49.80%) bought foods for themselves 1-2 meals per day. Participants reported a good level of knowledge about food safety and COVID-19 prevention (M=8.24, SD=1.56) as well as a good level of food safety practice during COVID-19 (M=53.01, SD=7.49). Gender (Beta =0.15, p<0.01) and Food safety knowledge (Beta=0.143, p<0.01) predicted food safety consumption behavior among prospects.

Conclusion: Participants had a good knowledge about food safety consumption behavior as well as food safety practice during COVID-19. Gender and Food safety knowledge predicted food safety consumption behavior among prospects.

Keywords: food safety, consumption, COVID-19.

1. INTRODUCTION

Good nutrition is the most important aspect of having great health and quality of life. At the same time, problems surrounding nutrition are considered to be one of Thailand's most important priorities, since it's directly connected to the public's health and it's still an indicator that shows advancement in terms of economics, society and the development of the country's population's public health. With that being said, teenage years are one of the most important parts of one's life since there's growth involved at a rapid rate. Therefore, it's the last chance to support children to grow to their fullest of ability both mentally and physically. But, if you let the youngster undernourished it will affect the later 3 stages of life i.e.

The present, Adulthood and senile year. Which affects directly to the bodys' structure as a result of bad development in the brain which affects intelligence and the ability to learn, including the ability to build immunity against diseases resulting in prolonged or frequent illnesses, which makes you unable to work or perform as normal. This includes the risks of chronic diseases¹.

In the present day, the COVID-19 pandemic plays a big part in the change of behavior in consumers and seemingly there's less people eating outside of their home. By the latest investigation of the company Nielsen 2020 contributor of research papers in consumer behavior about the likelihood of eating outside their home in 6 countries in asia, i.e. Thailand, China, Hongkong, South Korea, Malaysia, and Vietnam. It is found that most claim that after the COVID-19 pandemic they have to eat at their home, but not being able to eat in the comforts of their home doesn't mean that the food will be done by them, but by buying takeaways or online food orders. The reason behind eating only in their home is due to fear of being infected by the Covid 19 virus, and the social distancing policy in public spaces will start to grow on the public as normal due to being used to doing it everyday. However, consumer behavior is still changing all the time following the Covid 19 virus². Covid-19 is an infectious respiratory disease that is a result from the virus SARS-COV-2 first found in december of 2019, Wuhan, China, currently it is still rampant and found to be mutating itself with each variant varied in symptoms.

COVID-19 spreads around mostly from person to person by droplets in the air, mucus or saliva from the infected coughing, sneezing or talking. If you were to stand 1 - 2 metres away from the infected you have chances of being infected yourself only by breathing and enabling the droplets to enter your body by unintentionally touch or come in contact with these droplets on the surface like the table, chair or door knobs and by touching your eyes, noses or the face can get you infected as well. If you use other people's things and handing, or receiving it physically, or any hand to hand contact in general can be quite a risk of getting COVID-19. If you eat on the same table, you are at risk of getting infected by droplets, mucus, saliva whilst talking as well as using utensils on the same food. Symptoms of Covid 19, common symptoms are fever, coughs, build up of snot, sore throat, overall weakness, headaches, diarrhoea, unable to smell or taste, difficulty breathing, or feelings of tight chest may create a more complex and fatal symptoms that is Pneumonia, Pneumonitis and worst case scenario; death³. Techniques on self care and building up of immunity along with following guidelines strictly following the trend of modern age of the Covid 19 pandemic is the following, food consumption. Food that is considered useful contains high amount of proteins and vitamins, helps improve good health, as well as build immunity for the body, and can help with preventing COVID-19 by recommending enough meals that contains all 5 food groups and clean drinking water; at least, 1.5 - 2 liters helps with circulation and cell hydration by focusing on consuming fruits and vegetables because it contains abundant amount of vitamins, minerals, fibers and antioxidants. In addition, many kinds of vegetables are herbs which helps with strengthening the immune system by eating vegetables that are clean, fresh and not contain chemicals with all 5 colors with at least 400 grams or 2 scoop/ladle and must be varied all kinds and colors, constantly circulating between them for each day, with that being said you should avoid food that contains flours, sugars and high fat.

During the pandemic, food safety consumption behavior has played a vital role to keep disinfection. Therefore this research focuses on study factors associated with food safety consumption behavior among students aged 15-18 years old because this group had been affected to study online and many of them use food delivery service.

Objective of the study

1. To study factors associated with food safety consumption behavior

Instrument

Participants

This is a cross sectional survey research. The survey was developed into a google form and was distributed to people 15-18 years old who could access the internet via social media groups, during May-June 2022. They were invited to participate in this study.

Tools

The tools used in this research is a quantitative survey, the researcher has followed the instructions of a standard quantitative research study by using a survey in which the target group has been identified and the results have been gathered in the following details. 1) study the background information Food safety, foodborne disease, unsafe food, COVID-19 and food safety consumption behavior during the pandemic. 2) construct the description of the survey based on the conceptual framework and the purpose of the research which includes 3 sections.

First section was demographic characteristics of participants which include their gender, class, parents' occupation, household income, number of times ordering food delivery per week, and number of times buying meals for self each day.

Second section was a questionnaire to assess food safety knowledge and understanding. The questions included general concepts about food safety, food safety during the COVID-19 pandemic, COVID-19 prevention when buying foods. There were 15 questions of 4 multiple choices each. There was only one correct answer. Each correct answer was added together for a total score. The score ranges from 1-15. The range of score from 12-15 (80%-100%) indicated a good level of Food safety and COVID-19 Prevention related Knowledge, 9-11 (60%-79%) indicated a moderate level of Food safety and COVID-19 Prevention related Knowledge and below 9 (<60%) indicated a lower level of of Food safety and COVID-19 Prevention related Knowledge.

Third section consisted of Food Safety Consumption Practice during COVID-19 questions, there were 12 questions. Type of question was a rating from 1-5 (Likert scale) where 5 indicated highest level of practice and 1 indicated lowest level of practice. The scores of this section ranged from 12-60. The Answer score from each question was summed into a total score. Score obtained from 48 to 60 (80%-100%) was to be interpreted as a high level of Food Safety Consumption Practice during COVID-19, 36-48 (60%-79%) to be interpreted as a moderated level of Food Safety Consumption Practice during COVID-19 and below 36 (<60%) was to be interpreted as a low level of Food Safety Consumption Practice during COVID-19.

Ethical consideration

Researchers respect the rights of participants. We kindly asked for permission to collect information from the sample groups that are willing to cooperate in the survey with voluntariness, by explaining the purpose of this study as known before in the survey form. We indicated that all information will be kept confidential and to be used for only the study's purposes. Sample groups have rights to not answer the survey or have the ability to leave the study whenever they want to.

2. RESULTS

This study comprised a total of 309 high school students. The characteristics of the participants, their knowledge on food safety and COVID-19 prevention as well as their food consumption practice during the pandemic were presented in Table 1. The participants mostly consisted of females (n=192, 37.9%). Students consisted mostly of 11th grade (n=122, 39.5%), followed by 12th grade (n=98, 31.7%) and 10th grade (n=89, 28.8%). Most parents of the students consisted mostly of employees (n=92, 29.8%) and business owners (n=84, 27.2%), followed by freelancer (n=55, 17.4%) and other occupations (n=41, 13.3%), and the least jobs found in the surveys were health science profession (n=23, 7.4%) and teachers (n=14, 4.5%), all in respective order of most to least. Most found incomes were 40,001-80,000 Baht per month (n=99, 32%), which was almost the same to the second most frequent incomes (n=98, 31.7%), which was followed by 80,001-150,000 Baht per month (n=57, 18.4%), with the last two on the opposite of the spectrum, with the least income (n=35, 11.3%) and the most income (n=20, 6.5%), respectively. On to the statistics of people who ordered delivery food per week, most ordered less than three times a week (n=239, 77.3%), which was followed by three to six times a week (n=55, 17.8%) and more than six times per week (n=15, 4.9%). Most people bought one to two meals a day (n=154, 49.8%), second to that was parents provided meals (n=100, 32.4%), and last but not least ordered more than two meals per day (n=55, 17.8%).

Table 1: Participant characteristics, Knowledge about food safety and COVID-19 prevention and food consumption behavior during COVID-19

Variable	N (%)	Food safety and COVID-19 Prevention related Knowledge	Food Safety Consumption Practice during COVID-19	Risk Perception of Contracting COVID-19
		M (SD)	M (SD)	M (SD)
		(1-10)	(5-60)	
Gender				
Male	117 (37.9)	8.27 (1.52)	52.02 (8.98)	2.40 (1.10)
Female	192 (62.1)	8.22 (1.59)	53.61 (6.37)	2.67 (0.92)
Class				
Grade 10	89 (28.8)	8.34 (1.59)	53.90 (6.87)	2.42 (0.88)
Grade 11	122 (39.5)	8.19 (1.78)	53.29 (7.46)	2.53 (0.95)
Grade 12	98 (31.7)	8.22 (1.22)	51.85 (7.98)	2.77 (1.13)

Parent Occupation				
Health Science	23 (7.40)	7.96 (2.14)	51.39 (6.18)	2.43 (0.73)
Employee	92 (29.80)	8.41 (1.28)	52.20 (7.89)	2.78 (1.06)
Teacher	14 (4.50)	8.50 (1.79)	57.86 (5.13)	2.29 (0.91)
Business Owner	84 (27.20)	8.20 (1.63)	53.45 (7.58)	2.54 (0.92)
Freelance	55 (17.40)	8.09 (1.65)	54.20 (6.84)	2.53 (1.10)
Others	41 (13.30)	8.22 (1.47)	51.56 (7.94)	2.41 (0.97)
Household Income per month				
<20,000	35 (11.30)	7.91 (1.72)	53.34 (6.98)	2.49 (1.09)
20,000-40,000	98 (31.70)	8.31 (1.59)	55.31 (6.31)	2.38 (0.99)
40,001-80,000	99 (32.00)	8.16 (1.60)	52.43 (7.91)	2.73 (1.03)
80,001-150,000	57 (18.40)	8.32 (1.53)	51.35 (8.23)	2.72 (0.92)
> 150,000	20 (6.50)	8.70 (0.92)	48.7 (6.38)	2.50 (0.76)
Order food delivery per week				
< 3 times	239 (77.30)	8.26 (1.55)	53.03 (7.61)	2.56 (1.01)
3-6 times	55 (17.80)	8.13 (1.69)	52.87 (6.57)	2.58 (0.88)
>6 times	15 (4.90)	8.47 (1.19)	53.20 (9.17)	2.73 (1.16)
Buy food for self per day				
1-2 meals	154 (49.80)	8.34 (1.61)	53.94 (7.08)	2.62 (1.00)
>2 meals	55 (17.80)	7.89 (1.74)	53.13 (8.65)	2.42 (1.03)
None, parent provided for me	100 (32.40)	8.28 (1.36)	51.51 (7.26)	2.58 (0.97)
Total	309 (100)	8.24 (1.56)	53.01 (7.49)	2.57 (1.00)

From multi regression analysis, the results showed that the gender and knowledge about food safety and COVID-19 prevention had a statistically significant effect on the food consumption practice adopted. Therefore, gender (Beta=0.155, $p<0.01$) and knowledge (Beta=0.143, $P<0.01$) about food safety and COVID-19 prevention predicted the adoption of food safety consumption practice during COVID-19. (Table 2)

Table 2: Multi Regression Analysis predicting Food Safety Consumption Practice during the COVID-19 pandemic

Variable	B	S. E.	Beta	t	Sig.	95% Confidence Interval for B	
						Lower	Upper
Gender	2.398	0.862	0.155	2.782	0.006	0.702	4.094
Age	0.901	1.21	0.062	0.744	0.457	-1.481	3.282
Class	-0.981	0.802	-0.102	-1.223	0.222	-2.559	0.597
Parent Occupation	-0.153	0.269	-0.032	-0.568	0.571	-0.683	0.377
Household Income	-1.421	0.413	-0.205	-3.444	0.001	-2.232	-0.609
Order food delivery per week	0.891	0.793	0.065	1.123	0.262	-0.67	2.451
Buy food for self per day	-1.141	0.461	-0.136	-2.472	0.014	-2.049	-0.233
Risk Perception of Contracting COVID-19	-1.43	0.414	-0.19	-3.45	0.001	-2.245	-0.614
Food safety and COVID-19 Prevention related Knowledge	0.686	0.259	0.143	2.655	0.008	0.178	1.195

3. DISCUSSION

A total of 309 students participated in this study and they were assessed knowledge about food safety and COVID-19 prevention and food safety consumption practice during COVID-19. The majority of participants were female ($n=192$, 62.1%). Most participants studied Grade 11 ($n=122$, 39.5). 29.08% of students whose parents worked as an employee followed by whose parents worked as a business owner ($n=84$, 27.20%). 77.3% ($n=239$) of participants ordered food delivery less than 3 times a week. Most participants ($n=154$, 49.80%) bought foods for themselves 1-2 meals per day. Participants reported a good level of knowledge about food safety and COVID-19 prevention ($M=8.24$, $SD=1.56$) as well as a good level of food safety practice during COVID-19 ($M=53.01$, $SD=7.49$). Gender (Beta =0.15, $p<0.01$) and Food safety knowledge (Beta=0.143, $p<0.01$) predicted food safety consumption behavior among prospects.

Male participants (M=8.27, SD=1.52) had a higher level of knowledge than female participants' (M=8.22, SD=1.59) however female participants showed a higher score on food safety consumption practice (M=53.61, SD=6.37) than male participants'. Most participants had a good knowledge of food safety and COVID-19 prevention and food safety practice during COVID-19 could be because they have learned about COVID-19 knowledge and how to prevent for the past 2-3 years when COVID-19 spread everywhere⁴, therefore they have a good knowledge and practice⁵.

Grade 10 students reported the highest of both knowledge about food safety and COVID-19 prevention (M=8.34, SD=1.59) and food safety consumption behavior during COVID-19 (M=53.90, SD=6.87). Grade 10 students were the youngest in this sampling group; young people tend to listen and follow for what they have been instructed than older people. This finding was contrasted with Rinrada Dejsuwannachai's⁶, Thitalee Bunchuay's⁷, Wattana Thamajarusilp's⁸ that assessed COVID-19 related knowledge of high school students (aged 15-18 years old) during April- July 2021 and found that the seniorest class obtain the highest COVID-19 related scores among other classes.

While whose parents work as a teacher had the highest of both knowledge about food safety (M=8.50, SD=1.79) and COVID-19 prevention and food safety consumption practice during COVID-19 (M=57.86, SD=5.13). This may be because of being a parent whose occupation is a teacher, a teacher should have good ways to teach, instructed their kids. Therefore this group of participants showed the highest score of both knowledge and practice regarding food safety and COVID-19 prevention. Regarding monthly household income per month, earning more than 150,000 Baht group showed the highest score of knowledge about food safety and COVID-19 prevention (M=8.70, SD=0.92), this could be because a household which earns more than 150,000 a month has more opportunity to access information and learn about food safety and COVID-19 prevention than other groups. While the group earning between 20,001-40,000 Baht showed the highest score on food safety consumption practice (M=55.31, SD=6.31), followed by group <20,000 Bath, this could be because of the 2 lowest income group needed to be careful on spending money on buying things, including foods. For those who use food delivery service, a group which orders food more than 6 times per week reported the highest on both food safety and COVID-19 prevention knowledge (M=8.47, SD=1.19) and food safety consumption practice during score (M=53.20, SD=9.17). This may be because this group was aware of the risk associated with food delivery hence they kept good practice on food safety during the pandemic, similar reasons could be explained for participants who buy food for themselves 1-2 meals per day had the highest of both food safety (M=8.34, SD=1.61) and COVID-19 prevention knowledge and food safety consumption practice (M=53.94, SD=7.08).

Gender (Beta=0.155, p<0.01) and knowledge (Beta=0.143, P<0.01) about food safety and COVID-19 prevention predicted the adoption of food safety consumption practice during COVID-19. Therefore food safety education campaigns should be provided to participants for better handling of the pandemic.

4. CONCLUSION

A total of 309 students participated in this study and they were assessed knowledge about food safety and COVID-19 prevention and food safety consumption practice during COVID-19. The majority of participants were female (n=192, 62.1%). Most participants studied Grade 11 (n=122, 39.5). 29.08% of students whose parents worked as an employee followed by whose parents worked as a business owner (n=84, 27.20%). 77.3% (n=239) of participants ordered food delivery less than 3 times a week. Most participants (n=154, 49.80%) bought foods for themselves 1-2 meals per day. Participants reported a good level of knowledge about food safety and COVID-19 prevention (M=8.24, SD=1.56) as well as a good level of food safety practice during COVID-19 (M=53.01, SD=7.49). Gender (Beta =0.15, p<0.01) and Food safety knowledge (Beta=0.143, p<0.01) predicted food safety consumption behavior among prospects.

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