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Riders' Food Safety Knowledge and Practices: Do they Comply

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Abstract

The food service industry has evolved recently to cope with global changes and demands. Food riders have been recruited to keep the food business significant in an area with food safety concerns in mind. Although food riders don't need to take food safety and hygiene courses, undoubtedly it is their responsibility to prevent foodborne disease outbreaks. Therefore, this study was initiated to identify food safety knowledge, attitudes and practices (KAP) among 84 food riders in Shah Alam using a quantitative correlational study (Pearson Correlation Coefficient) while the mediating effect was investigated using the Hayes PROCESS. The results showed that the attitude of the food rider mediates the relationship between knowledge and practice of food safety. Research findings from 84 respondents, consisting of men (82.1%), and women (17.9%). Their ages ranged from 18 to 27 years (64.3%). In addition, 70 people (83.3%) of them have higher education, at the diploma, master, and PhD levels. There is a fact that 98.8% of them have less than three years of working experience as food riders. The results revealed that there is a significant relationship between all attributes tested ($p<0.05$) as well as it is proven that attitudes partially mediate the relationship between knowledge and practices. This study may help in developing food safety education intervention programs for food riders in improving their food safety knowledge, attitude and practice.

Keywords: Food Riders, Knowledge, Attitude, Practice, Food Safety.

Introduction

Food has become an important basic necessity to sustain life. Due to the fast pace of living, most people are taking advantage of enjoying their favorite food in their favorite place which is at home. Infact the busy daily schedule has forced them to look into the most convenient way yo get food which includes making a food purchase online whereby the food will be

delivered directly by food riders. This online food delivery trend has become more popular, particularly during the COVID-19 pandemic and this approach remain significant even during current endemic era (Giudice et al., 2020). This demand in directly has increased the need for food riders' service, and surprisingly many people tend to ought this opportunity and become food rider (Chang & Meyerhoefer, 2020, Dannerberg et al., 2020). This opportunity also not only benefits the food delivery riders but also giving advantages to the restaurant to sustain during this critical pandemic and endemic era.

The demand for food rider service is initiated with the increased rate of unemployment recently. According to data from Statistics Malaysia, the unemployment rate in Malaysia increased to 1.3% when compared to the same period last year and it stood at 4.6% in September 2020 (Malaysia-unemployment rate, 2020). According to Foodpanda Malaysia's head of logistics, Shubham Sara, the number of Food Panda food riders and the ones that applies for has increased by 7.5% and 37%, respectively (Chung, 2020). Even though the food riders don't need to attend any food safety training however, food safety issues among food riders cannot be compromised (Yuchen, 2020). Foodborne illness due to contaminated food may occur if food riders neglect the proper food handling practices while delivering the food to the customer (Pigatto et al., 2017). So, in order to reduce cross-contamination and protect the customer from getting a foodborne illness, the food delivery riders should have knowledge, attitude, and practice towards food safety (Martins et al., 2012).

Literature Review

Online Foodservice

Online food delivery is one way of ordering and delivering food from numerous restaurants through websites or apps. This service is now very popular in the e-commerce space all around the world. According to Sjahroeddin (2018), due to the massive growth of this online service, lifestyles and also the society has changed. These changes become more massive when the pandemic appears, especially in term of the recruitment of food riders.

Food Safety

Food safety and hygiene are defined as the various conditions and practices that preserve the food quality to prevent contamination and foodborne diseases (Luu et al., 2017). According to Rebouças et al (2017), food safety has been an important source for food serving due to the high numbers of food being served daily and the possibility of contamination should be a high standard of hygiene principles are not observed. In line with this (Demirci et al., 2016). Soon and Wallace (2016) argued that proper food hygiene practices are required to ensure food safety the right way and to create consumer trust. This statement also has been supported by a study where the authors stated that food safety is important in any sector, including the consumer, health, food industry, and also the economy of the country (Ozay & Ozyildirim, 2017). In other studies, it is also stated that everyone involved in the food serving operations is responsible to ensure that food safety and hygiene (Griffith et al., 2017).

Food Safety Knowledge

As mentioned by Triandis et al (1984), an attitude has been defined as a person's action in social situations that are caused by an idea influenced by emotions. In line with that, Kaliyaperumal et al (2008) also mentioned that attitude refers to the preconceived ideas that the customer had as well as their feeling about it. These definitions have proven that an idea

or knowledge was needed to shape the attitude. It is supported by Kwol et al (2020) in their study where knowledge positively influences the attitude of the food handlers.

Food Safety Practices

According to Kaliyaperumal (2004), the practice has been referred to as the process or the ways that the food delivery riders establish their knowledge and attitude through their act. The spread of pathogens through food is always related or contributed by the food handlers (Pichler et al., 2014). Since food handlers themselves have been the key source of contamination, proper personal hygiene, as well as sanitary handling at work, have become a very necessary part of every food safety prevention program (Gomes-Neves et al., 2007). Therefore, food delivery riders are also expected to prevent the contamination of food by bacteria by ensuring that the food hygiene and sanitation levels are followed to a high degree (Lambrechts et al., 2014).

Methodology

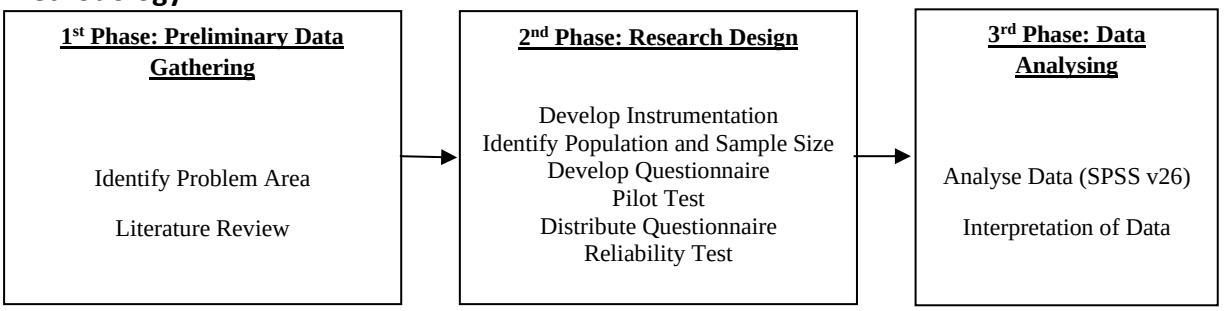

Figure 1: Data collection method

This study was a quantitative survey through a correlational study. Shah Alam has been the main focus area in order to achieve the targeted amount of 84 respondents, FoodPanda riders. Yet, snowball sampling has been applied in order to cater for them. A questionnaire has been constructed and used as a platform for collecting the data by distributing it online to the riders. Also, SPSS v26 software has also been used to analyse the relationship between variables (Pearson Correlation Coefficient) while the mediating effect was investigated using Hayes' PROCESS (Figure 1).

Results and Discussion

Demographic Analysis

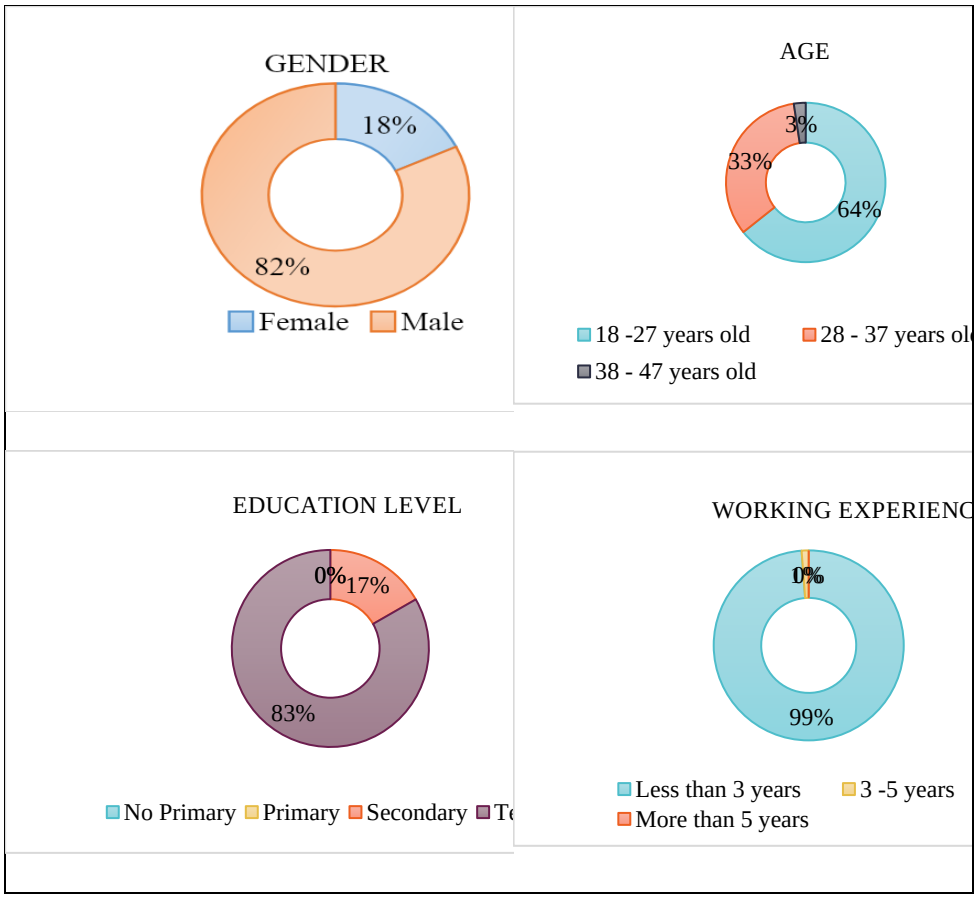

Figure 2: Demographic profile of respondents involve

Figure 2 is the data that has been collected from the Food Panda rider in Shah Alam with a total of 84 respondents. The majority of the food rider involved were male, making up 82.1% of the respondents, while 17.9% of the respondents were female. In addition, 64.3% of them were in the range of 18 to 27 years old. Of the total of 84 respondents, 70 (83.3%) them were having tertiary education as their foundation whereas tertiary education represent diploma, degree, masters and PhD. Lastly, it may be concluded that the majority of the respondents are new in this industry where 83 respondents, which represented 98.8% were having less than 3 years of working experience as food riders.

Knowledge of Food Riders on Food Safety

Food safety knowledge is important for anyone handling food in preventing the foodborne illness outbreak. So, it is important for the food rider to have adequate knowledge of food safety to reduce the potential of the foodborne illness outbreak happening during delivery food. Table 1 shows the Food Safety Knowledge mean score obtained. Overall the mean score for each of the item are ranging from M= 4.02 (SD= 0.676) until M= 4.99 (SD= 0.109) which indicate the strong level of food safety knowledge among food riders.

Table 1
Mean Score for Knowledge of Food Riders on Food Safety

Code	Knowledge items	N	Mean	Std
K1	The most important rule in food safety is that the food riders must wash their hands often.	84	4.67	0.49
K2	After washing their hands, the food riders should avoid touching their hair.	84	4.50	0.55
K3	Foodborne illnesses are diseases that are carried or transmitted to people by food.	84	4.73	0.49
K4	The most important factors to control the growth of bacteria are temperature and time.	84	4.94	0.23
K5	Cross contamination is the transfer of harmful substances or micro-organisms to food from food or from a non-food contact surface, such as equipment, utensils, or hands.	84	4.49	0.63
K6	Healthy food riders might carry foodborne pathogens (bacteria that cause foodborne disease).	84	4.32	0.74
K7	Food poisoning is caused only by pathogenic microbes (bacteria that cause foodborne disease).	84	4.02	0.67
K8	Contacting ready to eat food with bare hand cause food contamination with food poisoning pathogen.	84	4.38	0.55
K9	Insect such as cockroaches and flies can transmit foodborne pathogens.	84	4.99	0.10
K10	Food poisoning could cause severe diseases that end in hospitalization and sometimes can cause death.	84	4.89	0.31
K11	Poor level individual hygiene of food riders can cause foodborne infection to customer.	84	4.71	0.48

The result shows that of all, food riders strongly know and agree that insects such as cockroaches and flies can transmit foodborne pathogens when the mean score in the highest (4.99±0.11) as well as they also know that Food poisoning could cause severe diseases that end in hospitalization and sometimes can cause death (4.89±0.31). On the other hand, the item "Food poisoning is caused only by pathogenic microbes (bacteria that cause foodborne illness)" was marked with a lowered mean score of 4.02 (SD = 0.676). The mean score appeared has explained that food riders agreed that only pathogenic bacteria cause food poisoning. This explained that the food rider thinks that there are also different ways that the food can lead to food poisoning such as chemical contamination. Overall, all the figures normally tell that all the respondents have adequate knowledge of food safety in order to prevent any outbreak from happening.

Attitude of Food Riders on Food Safety

Attitude is also one of the important elements in preventing food poisoning from happening. This is because attitude is one of the elements that will be seen by the consumer and can be measured by only looking at it. If a bad attitude has been implemented in delivering the food, a foodborne outbreak might appear. Therefore, the second section in the questionnaire, which is the attitude, is now contemplated. This variable has been justified in this section where the researcher would like to explore how far the knowledge help in shaping the attitude of the food rider in delivering the food. The findings are presented in Table 2 below.

Table 2
Mean Score for Attitude of Food Riders on Food Safety

Code	Item	N	Mean	Std
A1	I think sanitation is an important part of my job.	84	4.42	0.56
A2	I think that it is the responsibility of all food riders to ensure that food is safe to serve.	84	4.70	0.53
A3	I think that managers should educate food riders on personal hygiene and sanitation regularly	84	4.58	0.52
A4	I am willing to attend a food safety training course	84	4.21	0.49
A5	I believe the food safety knowledge would make me more confident about my work	84	4.31	0.51
A6	I believe that good employee hygiene can prevent foodborne illness.	84	4.39	0.51
A7	I am willing to change my food handling behaviors when I know they are incorrect.	84	4.44	0.52
A8	I am willing to obtain more food safety knowledge	84	4.36	0.48
A9	It is more important to have safe food rather than tasty food.	84	4.37	0.59
A10	I think that not only cooks should receive food safety training	84	4.61	0.49
A11	I select a place to eat based on its reputation for good sanitation and cleanliness	84	4.87	0.33
A12	I believe that food safety knowledge not only benefits my work but also my personal life	84	4.71	0.45

The range of the mean is between M = 4.87 (SD = 0.339) and M = 4.21 (SD = 0.493) which showing that most of the respondents agreed with the items in this group. From the mean score data, it can be said that majority of the respondents said that they normally select a place to eat based on its reputation for good sanitation and cleanliness (M = 4.87, SD = 0.339). According to Camargo et al., (2017), good sanitation and cleanliness will help to reduce the chance of the foodborne outbreak to happen yet preventing any serious injuries such as death can be prevented.

The response for "I am willing to attend a food safety training course" has the lowest mean score which is M = 4.21(SD = 0.493). That explains why not all the respondents are willing to attend the course in order to improve their knowledge of food safety. However, looking at all the results, the researcher assumed that the food rider attitude is only based on their common sense, own preferences and existing knowledge but not all of them are willing to add more knowledge about food safety.

Practices of Food Riders on Food Safety

It is critical to practise appropriate personal hygiene in order to reduce cross-contamination between food handlers and customers. This is critical in ensuring that safe food is produced and delivered to customers. Therefore, the third variable that is measured in this study is practice. This category included 14 elements that were evaluated related to the action or practices that have been applied by the food rider while performing their job as a food delivery person. The result has been tabulated in Table 3 below.

Table 3
Mean Score for Practices of Food Riders on Food Safety

Code	Item	N	Mean	Std.
P1	I wash my hands and change into a new pair of gloves after touching anything that may contaminate my hands, when I serve food	84	4.68	0.47
P2	I wear a hair restraint (cap or helmet) when I work in foodservice	84	4.98	0.15
P3	I am not drinking or eating food, while I am serving the food to the customers	84	4.51	0.57
P4	I wear a clean uniform, when I am delivering the food to the customer	84	4.96	0.19
P5	I use gloves or utensils to handle food that is ready -to-eat	84	4.44	0.49
P6	I wash my hands with soap and water before working with food	84	4.69	0.46
P7	I will not be working when I have common colds	84	4.24	0.57
P8	I will not be letting my fingernails to grow longer.	84	4.64	0.48
P9	I wear full equipped Personal Protective Equipment when on duty	84	4.19	0.70
P10	I am not being working when I have diarrhea symptoms	84	4.90	0.36
P11	I will stop doing my work for a while when have lesions on the hands	84	4.63	0.53
P12	I use a tissue when I am coughing or sneezing	84	4.39	0.49
P13	I am not smoking while working	84	4.61	0.62
P14	I am not rubbing my hands on my face and more while working	84	4.40	0.69

Based on the table above, the highest response (M = 4.98, SD = 0.15) plotted by the respondent in the food riders' practices section is to wear a hair resistance such as cap or helmet when they were working in foodservice. This mean score that been recorded by this study has proven the previous study that the staff who has to maintain safety practices such as wearing a uniform, apron, cap and suitable covered shoes will help to reduce the cross-contamination that can lead to foodborne illness (Milazzo et al., 2017).

In the meantime, the lease item that has been agreed by the respondents is they wear fully equipped Personal Protective Equipment when on duty (M = 4.19, SD = 0.70). From the result of the mean score, not many food riders agreed about the attire that they wear This is because, according to Food Panda Malaysia's head of logistics, Shubham Sara, they are giving flexibility in choosing additional clothes such as jackets to wear while performing their job as the food delivery man. This step will produce different kind of attire which may not be categorised as Personal Protective Equipment. Yet, from the overall mean score, the researcher predicted that all the food riders applied the best practices while delivering the food to the customer since the mean score are ranging between M = 4.98 (SD = 0.15) and M = 4.19 (SD = 0.70)

Relationship between Knowledge and Attitude

The Pearson product-moment correlation coefficient was used to examine the relationship between food safety knowledge and food safety attitude among the food rider. Preliminary tests were carried out to ensure that the assumptions of normality, linearity, and homoscedasticity were not violated.

Table 4
Correlations among the Variable

		K	A	P
KNOWLEDGE (K)	Pearson Correlation	1	.763**	.725**
	Sig. (2-tailed)		.000	.000
	N	84	84	84
ATTITUDE (A)	Pearson Correlation	.763**	1	.714**
	Sig. (2-tailed)	.000		.000
	N	84	84	84
PRACTICES (P)	Pearson Correlation	.725**	.714**	1
	Sig. (2-tailed)	.000	.000	
	N	84	84	84

Based on the table above, according to the Cohen (1998) guidelines, the result determined that knowledge, attitude, and practices are showing towards strong correlation where the correlation value were exceed 0.7 but less than 0.8 ($n = 84$, $p<0.05$). In another word, the analysis has indicated that all of these variables have a strong significant relationship.

In detail, the results has indicates that there is a significant relationship between food safety knowledge and food safety attitude among the food rider. Not only that, the large correlation that has been recorded also has strengthened the result that has been given by the previous study. In De Andrade et al (2019) study, the authors also stated that knowledge has a positive strong relationship toward the food safety attitude of the food handlers by also getting result of a large correlation with $r = 0.812$. Even though the study was a little bit different in terms of the target market, the result from the previous study has supported the current research study done by the researcher by providing the same result in proving the relationship between food safety knowledge and food safety attitude. Therefore, the first hypothesis has been supported.

Regards to the relationship between food safety knowledge and practice, the results show that there is a significant relationship ($r = 0.725$)between food safety knowledge and food safety practices among the food rider. De Andrade et al (2019) study also reported that knowledge also affects food safety practices. By giving the correlation value, $r = 0.793$, they have proven that both of these variables have a positive strong relationship with each other.

Another study by Gkana and Nychas (2018) also has to explain this relationship by using another method of analysis which is linear regression that come out with the result that indicate the food safety practices is influenced by the food safety knowledge. Therefore, from all the analysis the relationship between knowledge and practices were been proven.

Meanwhile, the analysis results also indicate that there is a significant relationship between food safety attitude and food safety practices (r =0.714) among food riders. According to Lestantyo et al (2017), the impact of food safety procedures generates the beta coefficient value (β = 0.408, P0.000), indicating that food safety practises are influenced by food safety attitude. Not only that, De Andrade et al (2019) also stated a positive relationship between attitude and practices by reporting the correlation (r=0.773, p<0.05). Although the reported result was aligned, in the current study, the correlation value recorded is a little bit lower than those that has been reported by (De Andrade et al., 2019).

Mediation Effect of Attitude towards Knowledge and Practices

Figure 3 below shows the mediating effect of attitude in affecting the relationship between food safety knowledge and practice. The result obtained revealed that the effect was significant, and the indirect effect also remained significant. Approximately 58.26% of the predictors' variance in food safety attitude was accounted for (R^2 = .5826). Thus, it was concluded that food safety attitude mediates the relationship between food safety knowledge and food safety practices.

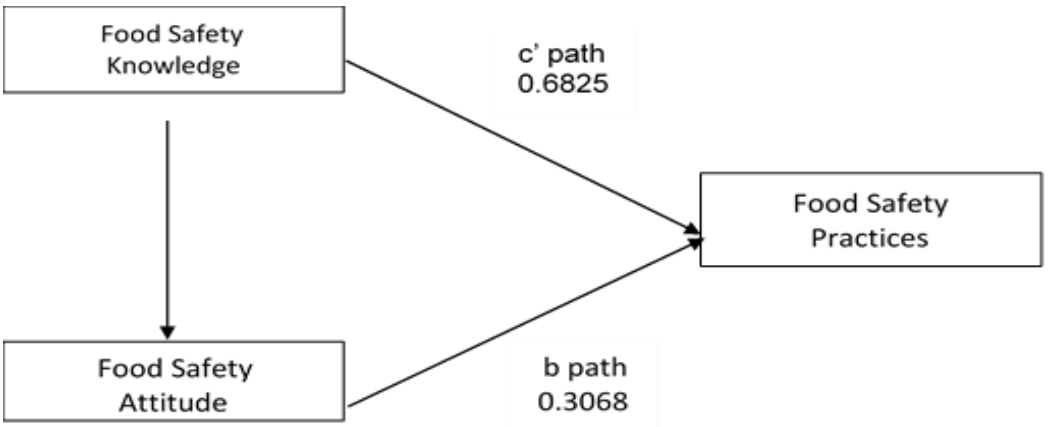

Figure 3: The coefficient result of direct effect for food safety attitude toward food safety knowledge and food safety practices

First, a path was statistically significant with a p-value less than 0.001. It shows that the coefficient value (a path slope) was 1.5103. This coefficient value means, for every 1 unit increase in food safety knowledge, the food safety attitude score increased by 1.5103. Second, the b path is also statistically significant with a p-value less than 0.001. It shows that the coefficient value (b path slope) was 0.3068. This coefficient value means, for every 1 unit increase in food safety attitude, the food safety practices score increased by 0.3068 The result shows the indirect effect (0.6825) was significant with a 95% confidence interval, which did not include zero; that was to say, the effect was significantly greater than zero at a<0.01. As such, the first step in the mediation model, the regression of food safety knowledge with the food safety practices, ignoring the mediator, was significant, b=1.1458, t=9.5390, p <0.001. The next step showed that the regression of food safety knowledge with the mediator, food safety attitude, was also significant, b=1.5103, t=10.6983, p <0.001. The mediation process stated that the food safety attitude (mediator), controlling for the food safety knowledge and food safety practices, was significant, b=0.3068, t= 3.4787, p <0.001. Finally, the analysis

revealed the controlling for the food safety attitude (M), food safety knowledge was a significant predictor of the food safety practices, b = 0.6825, t= 3.9115, p <0.001.

According to the results, it was shown that the direct effect was significant, and the indirect effect also remained significant. Approximately 58.26% of the predictors' variance in food safety attitude was accounted for (R^2 = .5826). Thus, it was concluded that food safety attitude mediates the relationship between food safety knowledge and food safety practices.

Another previous study conducted by Baser et al (2017); Kwol et al (2017) also reported the same result as the researcher's current study. Both of the previous studies also point out that attitude has a mediating effect on the relationship between knowledge and practices. The percentage of the predictor's variance in food safety attitude in their studies was above 50% which proved the same result reported by the current study. However, there is also one previous study that does not have the same result as the others. The study has reported that attitude has a partial mediating influence on the relationships and outcomes between food safety knowledge and also food safety practices (Taha et al., 2020).

Within all of the results from a different study, it is proven that attitude mediates the relationship between food safety knowledge and food safety practices. Studies conducted by Baser et al (2017); Kwol et al (2020) also reported the same result as the researcher's current study. Both of the previous studies also point out that attitude has a mediating effect on the relationship between knowledge and practices. The percentage of the predictor's variance in food safety attitude in their studies was above 50% which proved the same result reported by the current study. However, there is also one previous study that does not have the same result as the others. The study has reported that attitude has a partial mediating influence on the relationships and outcomes between food safety knowledge and also food safety practices (Taha et all., 2020).

Conclusion

Shah Alam Community in Selangor is undergoing a lifestyle change to enjoy their favorite foods using online food apps and being delivered by food delivery riders during the Covid-19 pandemic. Online food shopping services are one of the media chosen by consumers to get food, and still comply with the procedures set by the government. There is a finding that people take this opportunity not only as restaurant entrepreneurs, and consumers, but also take job opportunities as delivery riders.

The important issue that is considered by all stakeholders, namely food safety, becoming something that must be mastered by the riders when delivering food to customers in order to avoid cross-contamination and protect the customers from foodborne diseases. The researchers also evaluated The level of knowledge, attitudes, and practices (KAP) of food delivery drivers in Shah Alam. The range of the descriptive mean score has explained that the level of knowledge, attitude and practices of the food riders were in a good level in performing their job as a food delivery person, as well as being responsible in preventing foodborne illness outbreaks. Moreover, it is being proven that food safety practices contributed by food safety knowledge as well as practices as depicted by the strong relationship between each. In addition, the good or bad food safety attitude affects the relationship between knowledge

and practice. The results obtained can be used as a basis for the development of possible food safety training modules for food riders.

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