

ORIGINAL ARTICLE

## SELF-CARE BEHAVIORS TO PREVENT COVID-19 INFECTION AMONG FOOD DELIVERY RIDERS IN THAILAND

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### ABSTRACT

The COVID-19 pandemic plays a key role in people's behavior worldwide, especially, during the measures of locking down and social distancing, the demand for food delivery increased worldwide. To prevent the transmission of COVID-19, the food delivery riders require to have good self-care behaviors during working. Therefore, this research aims to assess the self-care behaviors to prevent COVID-19 among food delivery riders and determine the associations of demographic data of food delivery riders and self-care behaviors to prevent COVID-19. This research employed online cross-sectional research involving 440 food delivery riders in Bangkok from October to November 2020. The findings showed that most food delivery riders had a high level of self-care behaviors to prevent COVID-19 infection ( $M= 4.04$ ,  $SD= 0.63$ ). The factor associated with the self-care behaviors to prevent COVID-19 infection was educational level ( $p < 0.05$ ). This research provides an understanding of the level and factors associated with self-care behaviors to prevent COVID-19 infection among food delivery riders. The healthcare providers, public health sectors, and food delivery companies are recommended to promote self-care behaviors among food delivery riders and necessary to have the effective health communication, health education or intervention to all food delivery riders by concerning about their educational background.

**Keywords:** COVID-19, Food Delivery, Self-Care, Prevention

### INTRODUCTION

The coronavirus 2019 (COVID-19) pandemic, which has been declared as a global emergency by the World Health Organization (WHO), has altered the lifestyles of people.<sup>1</sup> These changes have affected all populations and several businesses across the world<sup>2</sup>, particularly the restaurants and food suppliers, have been forced to temporarily close during the implementation of locking down and social distancing measures to prevent the COVID-19 infection. Thailand is the one of the countries that followed the regulation and recommendation to temporarily close the restaurants and food suppliers.<sup>3</sup> As a result of temporary closing of restaurants and food suppliers, the demands of food delivery services have become more increasing in food consumers and purchases worldwide, including the pandemic was not only alter the food delivery service industries, and also the perception of customers<sup>4</sup> with acceleration of the application of digital platforms in the food delivery service industries significantly.<sup>2</sup>

The Kasikorn Research Center<sup>5</sup> stated that the food

delivery market in Thailand has an exponential growth rate of the development of food delivery application (FDA) in 2020 due to the COVID-19 pandemic, resulting in the increase of 78-84% or 66-68 million THB in additional transactions over the previous year. During the COVID-19 pandemic, the industry accelerated growth by preventing Thais from dining at restaurants to prevent epidemics from spreading<sup>6</sup>. However, food delivery riders have suddenly been thrust into the underlying risky driving behavior and frontlines of the outbreak of COVID-19.

People believe that ordering food from a delivery service is safer than eating at a restaurant because there is less human-to-human contact, which reduces the risk of COVID-19 infection. Moreover, 89% of respondents who utilized online food delivery services utilized applications (e.g., LINEMAN, Food Panda, Grab Food, and Get Food)<sup>6</sup>. On the other hand, food delivery riders are a highly mobile population that provides services to a diverse range of various customer ages and people who are less likely to leave the house for necessities, such as lower-level employees, medical patients, and the elderly related to healthcare providers, food

delivery riders are susceptible to COVID-19 infection at work due to their increased mobility and a large number of people they contact<sup>7-8</sup>. In addition, the food delivery riders may be suspected of contacting and spreading the infection of COVID-19 during their working or delivering food that made them to be involved and active transmitters of the coronavirus 2019 to the consumers.<sup>9</sup> Thus, self-care behaviors are essential for food delivery riders in order to prevent disease and maintain physical and psychological well-being, which are commonly defined as self-care behaviors.<sup>10</sup>

To the best of our knowledge, few studies have been conducted on self-care behaviors among food delivery riders in the COVID-19 situation in Thailand. However, the current study aims to describe the self-care behaviors to prevent COVID-19 among food delivery riders and determine the factors associated with demographic data of food delivery riders and self-care behaviors to prevent COVID-19. Therefore, the findings of this study may guide the development of interventions, and promotion of food delivery riders' self-care behaviors during the COVID-19 pandemic and also the new era of post COVID-19 outbreak.

## METHOD

### Design and participants

This cross-sectional descriptive study was conducted by online survey to assess the self-care behaviors to prevent COVID-19 among food delivery riders and determine the associations of demographic data of food delivery riders and self-care behaviors to prevent COVID-19. The sample of this research was food delivery riders in Bangkok Metropolitan, Thailand, who were >18 years or older and were able to understand Thai and willing to be enrolled in this research. Participants who had a communication barrier (e.g., being deaf or having a mental deficit) were excluded from this study.

The sample size of this research was calculated by using the G\*Power software<sup>11</sup> from the effect size of previous research was 0.30<sup>12</sup>, with a 0.05 alpha level and 0.80 power. To compensate the missing data, the researchers had increased the sample size by approximately 30%. Therefore, the total sample size of this research was concluded at 440. The convenience sampling technique was applied to recruit the sample.

### Research Instruments

The survey questionnaire had four sections in this study: (1) Universal self-care requisites; (2) Development of self-care requisites; (3) Health deviation self-care requisites; and (4) Socio-demographic data for food delivery riders (e.g., sex, age, education, type of jobs, duration of jobs,

and frequency of food delivery). All online self-reported questionnaires were developed to assess the self-care behaviors to prevent COVID-19 infection by applying the concept of Orem's Self-care Theory<sup>13</sup> that, which is composed of three main types of self-care; universal self-care requisites (14-items); development self-care requisites (10-items); and health deviation self-care requisites (4-items). Self-care behaviors questionnaires consisted of 28-items with a 5-point scale from 1 = "I do not agree at all" to 5 = "I completely agree." The total score ranged from 28 to 140, with higher scores indicating higher self-care behavior.

All research instruments were validated by three experts in the fields of public health and nursing by determining the Index of Item Objective Congruence (IOC). The content validity of the universal self-care requisites, the development of self-care requisites, and the health deviation self-care requisites questionnaires were 0.84, 1.00, and 1.00, respectively. In terms of the reliability of instruments was performed by using Cronbach's alpha coefficient method. The Cronbach's alpha coefficient of the universal self-care requisites, the development of self-care requisites, and the health deviation self-care requisites questionnaires were 0.86, 0.85, and 0.84, respectively.

### Data collection

The data collection was online self-reporting using a Google Form distributed through social media, e.g., Facebook, Line Application, from October to November 2020.

### Data analysis

The data of this research were analyzed by using Statistical Package for the Social Sciences or SPSS version 21 (SPSS, IL, USA). The descriptive statistics, i.e., frequency and percentage were used to analyze the demographic data (sex, age, education, type of jobs, duration of jobs, and frequency of food delivery), whereas the mean and standard deviation were used to analyze the self-care behaviors, while the association between demographic data and self-care behaviors were analyzed by using Chi-squared and Fisher's exact test at the setting of significance level at  $p < 0.05$ .

## RESULTS

### Demographic data of the samples

Of the food delivery riders who were willing to participate in this study, 83.0% were male, and 17.0% were female. 45.5% of food delivery riders were 26-34 years old (SD= 0.63), and 56.4% were working in food delivery riders as a full-time job. Other demographic characteristics of the sample are presented in Table 1

Table 1: Demographic data of the samples

Demographic Characteristics		Frequency (n = 440)	Percent (%)
Sex	Male	365	83.0
	Female	75	17.0
Age (Year)	18-25	140	31.8
	26 -34	200	45.5
	≥ 35	100	22.7
Education levels	Junior High School or lower	53	12.0
	Senior High School	162	36.8
	Vocational diploma	138	31.4
	Bachelor's Degree	87	19.8
Job type	Fulltime	248	56.4
	Parttime	192	43.6
Duration of job (months)	< 3	50	11.4
	3 - 6	77	17.5
	6 - 12	139	31.6
	> 12	174	39.5
Frequency of food delivery (time/day)	< 10	50	11.4
	10 - 20	283	64.3
	> 21 - 30	107	24.3

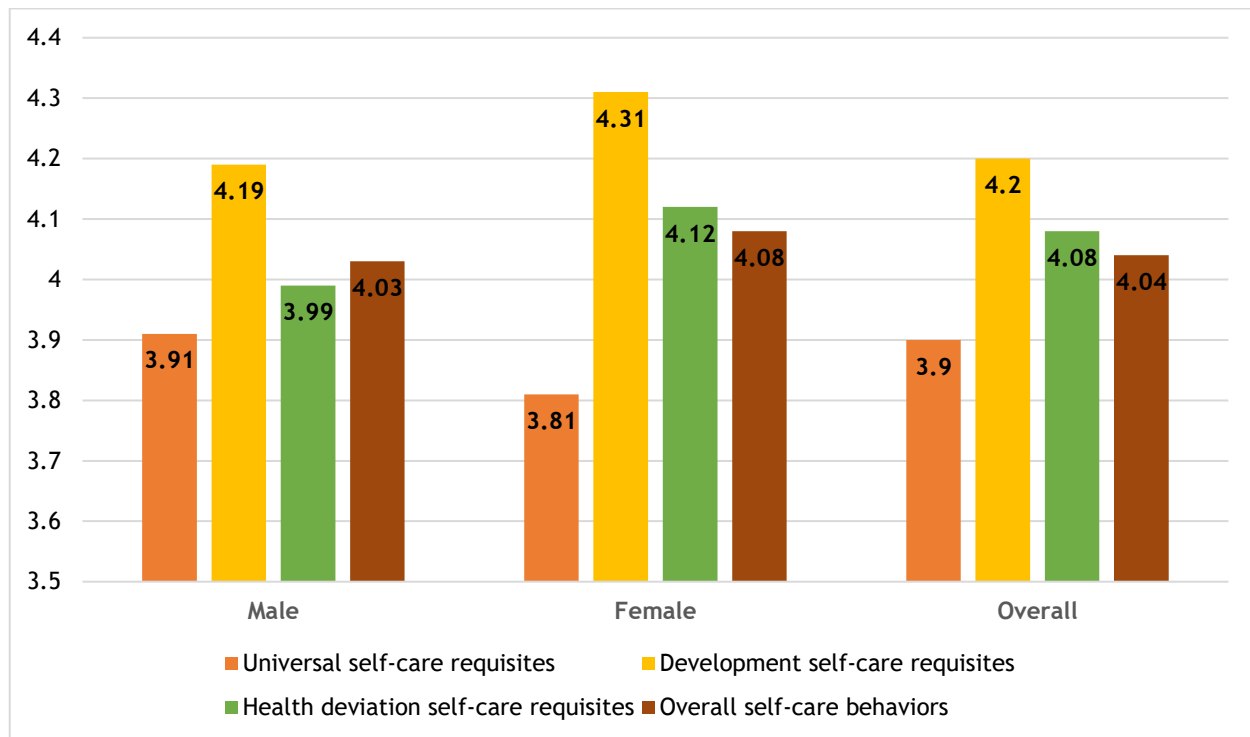


Figure 1 Distribution of Self-care Behaviors among Food Delivery Riders

The comparison of demographic characteristics and self-care behaviors to prevent COVID-19 infection.

**Self-care behaviors to prevent COVID-19 infection**

Regarding self-care behaviors to prevent COVID-19 infection, the food delivery riders had overall self-

care behaviors to prevent COVID-19 infection at a high level (M= 4.04, SD= 0.63) by having a high level in both males (M= 4.03, SD= 0.63) and females (M= 4.08, SD= 0.91). Most of the participants have a high level in development self-care requisites (M= 4.20, SD= 0.67), health deviation self-care requisites (M=

4.08, SD= 0.91), and universal self-care requisites (M= 3.99, SD= 0.67), as shown in Figure 1. Associations between demographic characteristics and self-care behaviors to prevent COVID-19 infection were determined using Chi-squared and Fisher’s exact analyses. It was found that only educational level had statistically significant

relationships with self-care behaviors to prevent COVID-19 infection ( $p$ -value < 0.020). However, other demographic characteristics such as sex, age, job type, duration of the job, and frequency of food delivery had no significant relationships with self-care behaviors to prevent COVID-19 infection among food delivery riders, as shown in Table 2.

**Table 2: Association Between Demographic Data and Self-care Behaviors**

Demographic Characteristics		N (%)	Self-care behaviors		Chi-Square	df	p-value
			Poor n (%)	Good n (%)			
Sex	Male	365 (83.0)	10 (2.3)	354 (80.6)	0.509	1	0.476 <sup>a</sup>
	Female	75 (17.0)					
Age (Year)	18-25	140 (31.8)	3 (0.7)	136 (31.0)	1.806	2	0.405 <sup>b</sup>
	26 -34	200 (45.5)	7 (1.6)	193 (44.0)			
	> 35	100 (22.7)	1 (0.2)	99 (22.6)			
Education levels	Junior High School or lower	53 (12.0)	3 (0.7)	50 (11.4)	11.718	3	0.020 <sup>b</sup>
	Senior High School	162 (36.8)	0 (0.0)	161 (36.7)			
	Vocational diploma	138 (31.4)	3 (0.7)	135 (30.8)			
	Bachelor's Degree	87 (19.8)	5 (1.1)	82 (18.7)			
Job type	Fulltime	248 (56.4)	7 (1.6)	240 (54.7)	0.249	1	0.618 <sup>b</sup>
	Parttime	192 (43.6)	4 (0.9)	188 (42.8)			
Duration of job (months)	< 3	50 (11.4)	1 (0.2)	49 (11.2)	2.751	3	0.432 <sup>b</sup>
	3 - 6	77 (17.5)	0 (0.0)	77 (17.5)			
	6 - 12	139 (31.6)	4 (0.9)	134 (30.5)			
	> 12	174 (39.5)	6 (1.4)	168 (38.2)			
Frequency of food delivery (time/day)	< 10	50 (11.4)	1 (0.2)	49 (11.2)	4.052	2	0.256 <sup>b</sup>
	10 - 20	283 (63.4)	10 (2.3)	272 (62.0)			
	> 21 - 30	107 (24.3)	0 (0.0)	107 (24.3)			

Notes: <sup>a</sup> Chi-squared test; <sup>b</sup>Fisher’s exact test; significance level  $p < 0.05$

**DISCUSSION**

The findings of this study showed that the food delivery riders had overall self-care behaviors to prevent COVID-19 infection at a high level. In the aftermath of the infectious disease crisis, everyone is awakened to prepare for emerging diseases and try to find ways to protect themselves <sup>14</sup>. The most important strategies for combating the COVID-19 transmission necessitate self-care behaviors, which should be approached from physical and psychological standpoints <sup>15-16</sup>. They necessitate behavior modification or implementation in people who appear to have immediate reinforcing mechanisms. In addition, food delivery riders may be updating self-care health information about COVID-19 to prevent the spread of the virus during their work. In the Thai culture, it is important for them to work and maintain a healthy lifestyle because when they returned from work and had to take care of their family and loved ones.

The results of this study showed that educational level had statistically significant relationships with self-care behaviors to prevent COVID-19 infection. To explain the findings, it can be stated that during

this time, people pay attention to the COVID-19 pandemic, and in the meantime, people with higher levels of education engage in more self-care behaviors than those with lower literacy levels. The results were congruent with a previous cross-sectional study conducted during the severe acute respiratory syndrome (SARS) outbreak in Hong Kong; they found that being more educated and having higher risk perceptions were linked to self-care behaviors and a greater chance of adopting precautionary measures <sup>17</sup>. Our findings are also similar to previous studies that were conducted on non-communicable diseases during the COVID-19 pandemic, which indicated that educational level had a statistically significant relationship with self-care behaviors and efficient management of the disease in people with diabetes <sup>18</sup>, hemodialysis <sup>19</sup>, and chronic heart failure <sup>20</sup>. Thus, education play in the behavioral intention of self-care behaviors to prevent COVID-19 infection in food delivery riders.

Surprisingly, other demographic characteristics of our study (e.g., sex, age, job type, duration of the job, and frequency of food delivery) had no

significant relationships with self-care behaviors to prevent COVID-19 infection among food delivery riders. The possible reason to explain our results is whether food delivery riders have different sex, ages, job types, duration of the job, and frequency of food delivery, they use food delivery mobile applications, and also are able to access social media (e.g., Line, Facebook, Twitter), which were the most common source of information regarding COVID-19 prevention. Consequently, effective communication via easily accessible information resources (e.g., social media platforms)<sup>21-22</sup>, including the frequency of health information delivery, may enhance drivers' knowledge and self-care behaviors of COVID-19 prevention. Conversely, a previous study revealed that age was associated with face masks and sanitizing among food delivery riders in the Philippines during the COVID-19 pandemic.<sup>23</sup> However, previous studies found that gender and age were high-risk factors for critically ill patients with COVID-19. For example, a study in China revealed that the death rate among men (4.7) was significantly higher than that of women (2.8%).<sup>24</sup> It is possible to explain that male lung epithelial cells express IL-6 receptor, the primary cytokine storm, at high levels, indicating that men are more vulnerable to cytokine storms that can worsen COVID-19.<sup>25-26</sup> In terms of age differences, previous studies revealed that age was identified as a risk factor for COVID-19 infections and deaths<sup>27</sup> as well as associated with health-promoting behaviors.<sup>3</sup> However, the processes behind the gender disparities that have been found so far are unclear. Some hypotheses can be made based on the existing understanding of gender differences in respiratory viral infections. Smoking is probably one lifestyle factor that contributes to COVID-19 in men's poor progression and unfavorable results.<sup>28</sup>

For the study's implications, our study is the first study conducted among food delivery riders in Thailand during the COVID-19 pandemic. Our results also indicated that the food delivery riders had overall self-care behaviors significantly during the COVID-19 pandemic. We also found that educational level was associated with self-care behaviors to prevent COVID-19 infection. Therefore, when planning to promote and support food delivery riders' self-care behaviors to improve healthy behaviors. In addition, healthcare professionals and researchers should therefore develop an educational intervention based on the educational background of food delivery riders to improve self-care behaviors in the context of the COVID-19 pandemic in future studies.

The current study has some limitations. First, our cohort was predominately female (83%); future studies should therefore include a more diverse population, including different sexes, cultures, and

settings, in order to better comprehend how COVID-19 affects them. Second, this study examined the relationships between socioeconomic factors and self-care behavior to prevent COVID-19 among food delivery riders with an online survey. Future studies should research the longitudinal or experimental studies, which are warranted to identify food delivery riders' long-term outcomes. Finally, we assessed only socio-demographic characteristics and self-care behavior to prevent COVID-19; it would be more informative if the level of health literacy, self-esteem, self-efficacy, and behavioral intention could be included, which a significant effect on the food delivery riders' level of self-care behaviors, especially during the COVID-19 pandemic.

## CONCLUSION

The findings of this research revealed that Thai food delivery riders have a high level of overall self-care behaviors to prevent COVID-19 infection. The education level of food delivery riders was the influencing factor in the self-care behaviors to prevent COVID-19 infection. On the basis of this research, when the healthcare providers or health policymakers developed the self-care behaviors promotion intervention for food delivery riders, it is necessary to concern about the educational background of food delivery riders. Moreover, the food delivery company should provide either health education or health promotion programs to the food delivery riders in order to enhance their self-care behaviors to prevent COVID-19 infection.

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**Conflict of Interest:** The authors declare no conflicts of interest.

## Informed Consent Statement

Informed consent was obtained from all participants in this study.

## Ethical Considerations

This research was conducted according to the guidelines of the Declaration of Helsinki and approved by the ethical committee of Saint Louis College, Thailand (Code: E.024/2563).

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