EATING OUTSIDE HOME DURING PANDEMIC: PERSPECTIVE BASED ON HEALTH BELIEF MODEL AND FUTURE IMPLICATIONS

Qonita Rachmah[1,2*], Dominikus Raditya Atmaka[1,2], Triska Susila Nindya[1,2], Hario Megatsari[2,3], Norfezah Md Nor[4]

[1]Department of Nutrition, Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia
[2]Center for Health and Nutrition Education, Counseling and Empowerment, Surabaya, Indonesia
[3]Division of Health Promotion and Behavioral Science, Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia
[4]Department of Food Service Management, Universiti Teknologi Mara, Malaysia
Email: qonita.rachmah@fkm.unair.ac.id

ABSTRACT

The COVID-19 pandemic has led to a significant decline in eating outside the home (EOH). This study aimed to compare eating habits before and after the pandemic using the Health Belief Model (HBM) to explore the implications of EOH and its potential long-term effects. A quantitative cross-sectional design was employed, involving 401 young adults aged 18–25 years living in Indonesia, selected through accidental sampling. Data on the participants' general characteristics, EOH frequency, and health beliefs were collected online using SurveyMonkey. Descriptive statistics were used to summarize each variable, and binary logistic regression was conducted to identify the predictors of EOH behavior and frequency. The majority of the respondents were female, unmarried, and held a diploma or undergraduate degree. Nearly 40% reported weight gain during the pandemic, although the frequency of EOH significantly declined ($p < 0.000$). The frequency of EOH was significantly associated with self-efficacy in eating at home, perceived severity, perceived benefits, and perceived barriers ($p < 0.05$). In conclusion, understanding the underlying factors contributing to reduced EOH is crucial. Enhancing self-efficacy, emphasizing the benefits of home eating, and addressing perceived risks and barriers may help promote healthier eating behaviors among young adults.

Keywords*: behaviour, eating out, of home, health belief model, obesity, pandemic*

INTRODUCTION

Over the past decade, the food industry has expanded rapidly, paralleling the rising trend of eating out of home (EOH), particularly in urban communities. EOH is influenced by internal motivations, social factors, and convenience of readily available food options (Walker-Clarke et al., 2022). Several studies have reported that EOH is significantly associated with lower diet quality, as indicated by higher intakes of energy, total fat, saturated fat, sugar, and sodium, and lower intakes of fruits and vegetables (Gesteiro et al., 2022; 2016; Llanaj et al., 2018; Taher et al., 2018). It is also linked to a lower intake of essential micronutrients, such as vitamin C, calcium, and iron.

Excess energy intake from EOH contributes to obesity. A national survey in Brazil involving 56,178 respondents revealed that 40.3% regularly ate outside the home, with EOH being significantly associated with overweight and obesity. A previous study found that a higher frequency of EOH was associated with a higher BMI after adjusting for age, education, income, marital status, race, smoking, and physical activity in both female and male groups (Seguin et al., 2016).

In their 20s, young adults begin making independent food choices as they take on responsibilities, such as studying or working away from home (Brown, 2016). This stage is critical for establishing lifelong dietary habits (Adriani et al., 2012). According to the Health Belief Model (HBM), health-related behaviors are influenced by individuals' beliefs about their vulnerability to health problems (perceived susceptibility and threat), benefits of action, perceived barriers, and self-efficacy— confidence in their ability to take action (Contento, 2011; Green et al., 2020).

The COVID-19 pandemic has significantly altered daily routines, especially with the implementation of work-from-home and remote learning policies in Indonesia (Yono et al., 2021). As

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a result, eating outside the home (EOH) decreases, contributing to reduced food intake and potentially lowering the risk of a positive energy balance (Popkin et al., 2005). This study aimed to compare EOH habits before and after the pandemic, examine them through the HBM lens, and explore potential implications for future eating behaviors.

METHODS

This cross-sectional study involved young adults aged 18–25 years residing in Surabaya, Indonesia's second largest city. The minimum sample size of 194 was calculated using the two-proportion formula of Lameshow et al. (1997), with 95% confidence and 80% power. Considering a potential dropout rate of 20 %, 234 participants were recruited using accidental sampling based on the inclusion and exclusion criteria. The eligible participants were aged 18–25 years, had adequate literacy, and were not pregnant. Individuals with physician-diagnosed conditions requiring special diets (e.g., diabetes, hepatitis, chronic kidney disease, and autoimmune disorders) were excluded. Informed consent was obtained digitally, and the participants could withdraw at any time without penalty. The data were collected online using SurveyMonkey.

Variables were assessed using a structured, self-developed questionnaire based on the Health Belief Model (HBM) and were pre-tested for clarity. Key HBM constructs include self-efficacy, social and environmental cues to action, perceived susceptibility, severity, benefits, and barriers.

Self-efficacy to eat at home was measured with 10 items assessing confidence in various scenarios (e.g., during the pandemic, low income, lack of food at home) rated on a 6-point Likert scale (0–5). **Social cues to action** were assessed using three items related to the influence of family, friends, colleagues, and public figures. **Environmental cues to action** were measured using four items: media influence, food accessibility, price, and promotional offers. **Perceived susceptibility and severity** were evaluated using seven parallel items addressing potential health risks (e.g., COVID-19, obesity, and diabetes) and their seriousness if EOH habits continued. **Perceived benefits** of EOH were captured through ten items covering practicality, affordability, convenience, enjoyment, and social appeal. **Perceived barriers** included seven items addressing concerns, such as COVID-19 exposure, food quality, cost, and crowding.

The mean scores were calculated for each HBM variable. Descriptive statistics were used to summarize variables, and binary logistic regression was conducted to assess the predictors of EOH frequency during the COVID-19 pandemic, adjusting for age and sex. Analyses were performed using IBM SPSS Statistics for Windows version 26 (IBM).

This study complied with the Declaration of Helsinki and was approved by the Ethics Committee of the Faculty of Nursing, Universitas Airlangga, Indonesia (no: 2115-KEPK). Digital informed consent was obtained from all participants.

RESULTS AND DISCUSSIONS

In total, 401 participants were included in this study. Table 1 presents the respondents' characteristics including age, sex, marital status, education, residence, employment status, and weight change during the pandemic. The average age was 21.87 years, with nearly 80% identifying as female. Sixty-five percent were unemployed university students who lived with their parents. Notably, 40% of the participants reported weight gain during the COVID-19 pandemic. This finding aligns with Bhutani et al. (2021), who observed similar weight increases during lockdown attributed to elevated stress, increased consumption of ultra-processed foods, and reduced craving control.

The frequency of EOH significantly decreased during the pandemic compared with the pre-pandemic period (3.97 vs. 8.15 times/month; $p < 0.000$). Mobility restrictions and public health measures are likely to have influenced this decline. The most cited reasons for reduced EOH during the pandemic included fear of contracting COVID-19, reduced income, lockdown policies, preference for online food delivery, lack of social invitations, and restaurant closures (Table 2). Similar trends have been reported in Canada (Polsky & Garriguet, 2021).

Table 1. Characteristic of respondents

Characteristic	n (%)
Age (years, mean ± SD)	21.87 ± 2.7
Sex	
Female	310 (77.3)
Male	91 (22.7)
Marital status	
Single	380 (94.8)
Married	21 (5.2)
Educational background	
Junior high school graduate	4 (1.0)
Senior high school graduate	192 (47.9)
Diploma/University graduate	205 (51.1)
Residential area	
Own home	25 (6.2)
Parent's home	280 (69.8)
Boarding house	75 (18.7)
Friend's home	21 (5.2)
Working status	
Government employee	5 (1.2)
Private employee	82 (20.4)
Entrepreneur	12 (3.0)
Freelance	41 (10.2)
Not working	261 (65.1)
Weight changes during COVID-19 pandemic	
Increase	155 (38.7)
Decrease	53 (13.2)
Did not change	193 (48.1)

Table 2. Eating out-of-home behaviour

Variable	Frequency/month (mean ± SD)	P
Eating outside the home before the pandemic	8.15 ± 7.9	0.000
Eating outside the home during the pandemic	3.97 ± 5.4	
Changes in eating outside the home during the pandemic	-4.18 ± 7.0	-
Reason for not eating outside the home during the pandemic (n, %)		
1. Many restaurants are closed	1. 85 (2.12)	-
2. Income decreased	2. 160 (39.9)	
3. Afraid of getting COVID-19	3. 236 (58.9)	
4. Did not ask anyone to eat outside the home	4. 77 (19.2)	
5. Because of lockdown	5. 129 (32.2)	
6. There is an alternative to ordering online	6. 93 (23.2)	

Interestingly, despite reduced EOH, more young adults reported weight gain. This aligns with the findings of Ammar et al. (2020), who observed a shift toward unhealthy eating behaviors during the pandemic, such as increased snacking, irregular meal patterns, and higher consumption of low-quality foods. Moreover, the tendency to purchase and stock up on long-shelf-life items, such as ultra-processed, energy-dense foods, combined with limited physical activity during the pandemic, also challenges weight gain increase (Bhutani and Cooper, 2020). These changes suggest that weight gain was influenced not only by EOH, but also by overall dietary quality and quantity during the pandemic.

Tables 3–8 present the scores for each construct of the Health Belief Model. Among the various self-efficacy factors, decreased income was the strongest motivator for eating at home (mean = 4.4 ± 0.7), followed by pandemic-related concerns (4.1 ± 0.8), end-of-month budgeting, and awareness of unhealthy food outside the home. The factors with the least influence included early month spending, dislike of home-cooked food, food promotions, social invitations, and lack of food availability at home.

Regarding cues to action, environmental cues had a greater influence on EOH behavior during the pandemic than social cues (mean = 3.7 ± 0.5 vs. 3.2 ± 0.5). The most influential environmental factor was easy access to ready-to-eat food, whereas peer influence was the strongest social driver of eating outside the home.

Young adults reported higher perceived severity than susceptibility regarding eating outside the home during the COVID-19 pandemic (3.4 ± 0.7 vs. 2.9 ± 0.7). The most cited perceived susceptibility was the risk of contracting COVID-19 or experiencing foodborne illness (Table 5), whereas the highest perceived severity was the potential for worsened health due to obesity (Table 6).

Regarding perceived benefits, respondents viewed eating outside as convenient (3.9 ± 0.8), practical during busy or low-motivation periods (3.8 ± 0.9), and appealing because of a wider variety of menu options (3.7 ± 0.8). In contrast,

Table 3. Self-efficacy with eating at home during the COVID-19 pandemic

Self-efficacy to eat at home	Mean ± SD
During the covid-19 pandemic	4.1 ± 0.8
When income decreases	4.4 ± 0.7
At the beginning of the month	3.6 ± 0.8
At the end of the month	3.9 ± 0.8
When there's no food available at home	2.7 ± 0.9
When I know that food outside the home is not healthy	3.9 ± 0.9
When I wouldn't say I like food at home	3.5 ± 0.9
When there is a food promo outside the home	3.4 ± 0.9
Even though food at home is boring	3.4 ± 0.9
Even though someone asked me to eat out	2.8 ± 0.8
Mean self-efficacy to eat at home	**3.6 ± 0.5**

Table 4. Cues to the action of eating outside the home during the COVID-19 pandemic

Social cues to action	Mean ± SD
My family (parents, brother, sister) encourage/influence me to eat outside home	2.4 ± 1.1
My friends encourage/influence me to eat outside of the home	3.4 ± 1.1
Influencers (artists, celebrities, food vloggers) encourage/influence me to eat outside of home	3.1 ± 1.1
Mean social cues to action	**3.2 ± 0.5**
Environment cues to action	**Mean ± SD**
Advertising (social media, print, electronic) encourages/influences me to eat outside the home	3.4 ± 0.9
I easily get cooked food in the area where I live	3.8 ± 0.7
Food in the area where I live is cheap and affordable	3.7 ± 0.8
Many shops or restaurants offer big discounts	3.4 ± 0.8
Mean environment cues to action	**3.7 ± 0.5**

Table 5. Perceived susceptibility to eating outside the home during the COVID-19 pandemic

Perceived Susceptibility	Mean ± SD
I find it easier to get COVID-19 if I eat outside home	3.6 ± 1.1
I find it easier to be overweight/obese if I eat outside of the home	3.2 ± 1.1
I find it easier to get diabetes if I eat outside of the home	3.2 ± 1.1
I find it easier to have high blood pressure if I eat outside of the home	3.1 ± 1.1
I find it easier to have heart disease if I eat outside of the home	3.0 ± 1.1
I find it easier to have high cholesterol if I eat outside of the home	3.4 ± 1.1
I find it easier to have diarrhea/food poisoning if I eat outside of the home	3.5 ± 1.0
Mean perceived susceptibility	**2.9 ± 0.7**

Table 6. Perceived severity of eating outside home during the COVID-19 pandemic

Perceived Severity	Mean ± SD
I'm worried that eating outside the home can get me infected with COVID-19	3.8 ± 0.9
I'm worried that I will become obese from eating outside of the home	3.2 ± 1.1
I'm worried that I will have diabetes, heart disease, and stroke because of eating outside of the home	3.2 ± 1.0
I'd worried about being shunned by friends when I become obese because I often eat outside of home	2.8 ± 1.1
I'm worried that the opposite sex won't like it if I become obese because of eating outside of home	3.0 ± 1.2
I'm worried that obesity will worsen my health condition	4.2 ± 0.9
I'm worried about having food poisoning when eating outside the home, which isn't necessarily safe	3.8 ± 0.9
Mean perceived severity	3.4 ± 0.7

the most prominent perceived barriers included financial cost (4.3 ± 0.8), risk of COVID-19 (4.0 ± 0.9), and long queues (3.9 ± 0.7). Overall, the mean score for perceived barriers (3.8 ± 0.4) was higher than that for perceived benefits (3.3 ± 0.5), suggesting that deterrents outweighed motivations for EOH during the pandemic.

Table 9 presents the statistical analysis of the behavioral factors influencing the frequency of EOH during the COVID-19 pandemic.

Self-efficacy in eating at home was significantly associated with lower EOH frequency ($p = 0.022$), indicating that individuals with greater confidence in their ability to eat at home were less likely to eat out. Similarly, higher perceived severity and barriers, along with lower perceived benefits of EOH, were linked to reduced EOH behavior. Figure 1 illustrates the influence of Health Belief Model (HBM) constructs on EOH behavior.

While Mahmudiono et al. (2022) found no association between HBM constructs and online food-ordering intentions, this study highlights the

Table 7. Perceived benefit of eating outside home during the COVID-19 pandemic

Perceived benefit	Mean ± SD
It is very practical for those who are too busy and too lazy to cook	3.8 ± 0.9
Easy to do	3.9 ± 0.8
Save more money	2.1 ± 0.9
Out-of-home food offers low prices	2.6 ± 0.8
Save more time	3.4 ± 0.9
Ordering a meal out of the house makes me able to do other things at once	3.6 ± 0.9
Eating out is a fun activity	3.5 ± 0.8
Eating out is more interesting because you can order the menu according to what you want / according to your mood	3.7 ± 0.8
Promos Offered	3.6 ± 0.9
Improve social status	2.5 ± 0.9
Mean perceived benefit	**3.3 ± 0.5**

Table 8. Perceived barriers to eating outside the home during the COVID-19 pandemic

Perceived barriers	Mean ± SD
The risk of contracting COVID-19 becomes greater	4.0 ± 0.9
The shape/size of the food received does not always match the picture/photo offered	3.8 ± 0.8
The taste of the food received is not always as promised/promoted	3.7 ± 0.7
It is often constrained because of the crowded/ queuing problem	3.9 ± 0.7
More financially wasteful	4.3 ± 0.8
The price is quite expensive	3.9 ± 0.9
It is hard not to eat out of the house because it tastes better	2.9 ± 1.0
Mean perceived barriers	**3.8 ± 0.4**

Table 9. Logistic regression analysis of behavior predictors and frequency of eating outside the home during the COVID-19 pandemic

Variables	b*	□**	*P value*	95% CI
Self-efficacy to eat at home	1.8	0.1	0.022[a]	-3.266 - -0.260
Cues to action – social	-0.4	-0.0	0.475	-0.616 – 1.320
Cues to action – environment	-0.8	-0.1	0.257	-0.599 – 2.236
Perceived susceptibility	0.1	0.0	0.977	-9.321 – -8.962
Perceived severity	1.7	0.2	0.040[a]	0.077 – 3.311
Perceived benefit	-0.1	-0.0	0.000[a]	1.255 – 3.470
Perceived barriers	-2.8	-0.2	0.002[a]	1.013 – 4.544

*Unstandardized B; **standardised B: [a]Significant at □ <0.05

importance of self-efficacy and perceived severity in shaping dietary behaviors. Without adequate self-efficacy, perceived severity may only lead to avoidance or defensive coping mechanisms (Boushey et al., 2001). Thus, effective behavioral change requires a strong sense of efficacy and awareness of the health risks associated with frequent EOH.

This study is the first in Indonesia to explore EOH behavior using the HBM framework. The findings suggest that future interventions should focus on enhancing self-efficacy, increasing awareness of the health risks of frequent EOH, and promoting the benefits of eating at home.

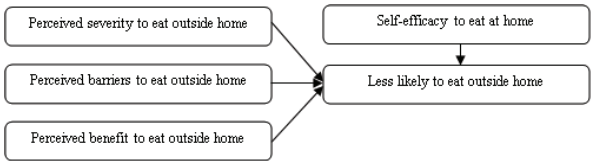

Figure 1. Factors influencing EOH based on HBM construct

CONCLUSION

Eating out of the home (OH) significantly decreased during the pandemic, primarily due to the fear of contracting COVID-19 and reduced income. Self-efficacy in eating at home, along with perceived severity, benefits, and barriers, was significantly correlated with frequency of OH consumption. Although the pandemic has ended, minimizing OH consumption remains important for reducing health risks such as obesity. Understanding the factors that lead to the decrease in OH consumption is crucial. Enhancing young adults' self-efficacy, awareness of risks, and perception of barriers while emphasizing the benefits of eating at home could be effective strategies. 4o mini

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