

Factors Associated with High Fat, Salt, And Sugar Food Selection on Online Food Delivery Service Among Students of SMAN (State High School) 47 Jakarta, Indonesia, in 2022

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Abstract

In the use of Online Food Delivery Service (OFDS), an online service applying a smartphone to make it easier for users to get food quickly, it was found that the foods selected tend to be unhealthy and may increase the risk of being overweight. The aim of this study was to determine predominant and other factors that differ in food selection in OFDS among students at SMAN (State High School) 47 Jakarta in 2022. This study applied a cross-sectional study design with 112 subjects. Data were taken through a questionnaire and analyzed by using an X²- test and multiple logistic regression. This study shows that 58.9% of students chose foods categorized as high in fat, salt, and sugar (HFSS) with fried chicken as the food type chosen the most. Bivariate results show that gender, reward sensitivity, OFDS frequency, and reduction in price, are all significantly different in the selection of foods ordered through OFDS. A multiple logistic regression analysis shows OFDS frequency as a predominant factor (OR=6,89). This study suggests that the school may collaborate with public health centers district health offices or colleges in nutritional sciences on providing nutrition education. This study also suggests that the government must apply high taxes on HFSS foods.

Keywords: Online Food Delivery, adolescent, High Fat Sugar, and Salt Foods (HFSS)

Abstrak

Dalam penggunaan Online Food Delivery Service (OFDS), layanan online yang menerapkan smartphone untuk memudahkan pengguna mendapatkan makanan dengan cepat, ditemukan bahwa makanan yang dipilih cenderung tidak sehat dan dapat meningkatkan risiko kegemukan. Penelitian ini bertujuan untuk mengetahui faktor dominan dan faktor lain yang membedakan pemilihan makanan OFDS pada siswa SMAN 47 Jakarta tahun 2022. Penelitian ini menggunakan desain studi potong lintang dengan 112 subjek. Data diambil melalui kuesioner dan dianalisis menggunakan uji X²- dan regresi logistik berganda. Berdasarkan hasil analisis univariat, diketahui sebanyak 58,9% siswa memilih makanan tinggi Gula Garam Lemak (GGL) untuk dikonsumsi melalui layanan OFD dengan pilihan makanan jenis terbanyak adalah fried chicken. Hasil bivariat menunjukkan bahwa jenis kelamin, sensitivitas penghargaan, frekuensi OFDS, dan penurunan harga, semuanya berbeda secara signifikan pada pemilihan makanan yang dipesan melalui OFDS. Analisis regresi logistik berganda menunjukkan frekuensi OFDS sebagai faktor dominan (OR=6,89). Penelitian ini menyarankan agar pihak sekolah dapat bekerjasama dengan puskesmas atau perguruan tinggi di bidang ilmu gizi dalam memberikan pendidikan gizi. Penelitian ini juga menyarankan bahwa pemerintah harus menerapkan pajak yang tinggi pada makanan tinggi GGL.

Kata kunci: Online Food Delivery, remaja, Makanan tinggi GGL

Introduction

The selection of food types in food purchases at OFD, food consumption leads to high-calories, high fat, carbohydrate, and sodium foods but low in fiber such as fast food causes an imbalance in nutritional intake and is a risk factor for overweight and obesity (1,2).

The selection of foods, in other words, access to food has become easier since an online food delivery application or Online Food Delivery (OFD) exists and is used as access to buy food. The OFD service application provides various conveniences in getting the desired food or drinks from a variety of restaurant choices only through a smartphone without the need to come directly to the restaurant (3). From the We Are Social survey, the use of OFD services in Indonesia is found to be the highest, where as many as 74.4% of internet users have used the OFD service application and are expected to grow by 11.5% annually (4,5).

The percentage of types of food ordered through OFD in Indonesia, 64% is fast food and 30% is Bubble Tea (4). Based on another survey conducted by JAKPAT, the types of food most favored by Indonesian people ordered through OFD services are fast food by 60-70%, followed by local Indonesian culinary 50-60%, then the purchase of snacks or snacks by 20 -30%, western or foreign cuisines by 20-30%, and finally flavored drinks by >20% (6).

This study was conducted in the adolescent age group because adolescents tend to choose unhealthy foods, such as high consumption of fast food and sugary drinks, as well as a sedentary lifestyle which has an impact on adolescents who are at higher risk of nutritional problems (7). Previous research conducted in China found that there is a significant relationship

between the choice of food type and the frequency of OFD with the consumption of high-risk foods through OFD. The study found an increase in the frequency of use of OFD on eating preferences for high-risk foods ($p < 0.001$). The frequency of OFD is often usually related to the reason for using OFD to order food, namely less free time (8).

In Indonesia, the diet in adolescents is included in the group of poor eating patterns with a prevalence of age 13-18 years of 34.3% consuming HFSS (High Fat-Sugar-Salt) food (9). In this study, the selected factors include gender, perceived nutritional content, taste perception, price perception, interest in promotion through advertising or social media, peer influence, appreciation sensitivity, and discounts or promos that are said to have a relationship with the choice of food.

Methods

This research is a quantitative research using a cross-sectional research design. This research was conducted at SMAN 47 Jakarta which is in the South Jakarta area. The studies were carried out from February to June 2022.

The sample size was calculated using the Lemeshow two proportions and it was found that the minimum number of samples to be studied was 110 respondents. The type of sampling used is quota sampling (10). The study was conducted on 112 subjects from students of SMAN 47 Jakarta.

The dependent variable is the selection of food ordered on OFD services, and the independent variables are gender, perception of the importance of nutritional content and health, taste, price, sensitivity of reward, the influence of advertising and social media, peer influence, OFD frequency, and discount.

The data were collected by filling out an online questionnaire through a

Google form and then processed and analyzed using SPSS version 22. Food selection data on the OFD service was obtained from filling out the Food Frequency Questionnaire (FFQ) which is categorized based on food that has been separated based on High in Fat, Salt, and Sugar (HFSS) food and not.

Results

Based on the univariate results, 58.9% of foods selected and ordered through OFDS were categorized into HFSS foods. Meanwhile, fried chicken, one of the HFSS foods, was ordered by respondents the most (77%).

Table 1 is a recapitulation of the respondents' distribution based on the variables studied. The bivariate analysis results in Table 2 show that gender (p-value 0.037; OR 2.47), the sensitivity of reward (p-value 0.048; OR 2.33), order frequency of OFDS (p-value 0.001; OR 6.82), and effect of discount (p-value 0.029; OR 2.58), have significant differences on the selection of foods among students of SMAN 47 Jakarta.

The multivariate results show OFDS variable has the strongest significant difference in the selection of foods. The greater the OR value of the variable, the greater the difference between the variable on the dependent variable. Therefore, the frequency of OFDS is considered as a predominant factor in food selection through OFD services among students of SMAN 47 Jakarta with a significant p-value of 0.0001 and has the largest OR of 6.89.

Discussion

In this study, it was found that the level of consumption of foods with a high type of Fat, Sugar, and Salt (FSS), that as many as 58.9% of students entered the category of HFSS food consumption, with the most ordered food

being fried chicken. In the previous study, the diet of adolescents in Indonesia, including those in the poor diet group, was characterized by the prevalence of adolescents in Indonesia aged 13-18 years by 34.3% who consumed excess FSS (Fat-Sugar-Salt) (9).

This study in line with previous studies, it was found that the proportion of respondents who ordered high-risk foods (high FSS content) through OFD services was greater than non-risk foods (not high FSS), which was 60.5% (11). Based on the most frequently ordered food through OFD, the results of the most frequently ordered food is fried chicken, which is in line with the results of the JAKPAT survey (2017) regarding the most frequently ordered food through OFD as the type of fast food (60-70%) (6).

The bivariate results were found between the gender relationship and the selection of food types via OFD in students of SMAN 47 Jakarta in 2022, the proportion of students with female who consumed high FSS foods through OFD services (67.1%) was more than the proportion of male students (45.2%) with a p-value of 0.037 showing a p-value of 0.037 showed the relationship between gender and high FSS food selection in OFD services. This research is in line with a study by Maulida, in which adolescent boys prefer foods with better nutritional content and health ($p < 0.05$). This is because gender is linked to the motif of food choices, there are motives with health benefits, where health benefits are more important for male students than female students when choosing food (12). According to Missagia et al., men are more concerned with general health, whereas women tend to be more concerned with foods that have a beneficial effect on physical appearance or the influence on body

weight (13).

In the analysis of the importance of nutritional content, bivariate results were found that there was no significant relationship between the importance of nutritional content and foods high in FSS ($p\text{-value} > 0.05$). In a previous study, most of the adolescents did not pay attention to health problems in food selection, but only paid attention to the weight loss factors (14).

The result of the importance of taste was found that bivariate results did not have a significant relationship between the importance of taste and foods high in FSS ($p\text{-value} > 0.05$). This study is in line with previous research because the sense of taste and smell related to the texture of the liking and the characteristic scent are considered to be the influence of emotions, where it only occurs temporarily or momentarily (12,15).

The result of the price importance analysis was found that bivariate results did not have a significant relationship between the importance of prices and high food FSS ($p\text{-value} > 0.05$). In this study, there was no relationship between prices and high food selection FSS was likely due to similar socio-demographic conditions.

There is a significant relationship was found between the sensitivity of reward motivation and high FSS foods ($p\text{-value} = 0.048$; OR: 2.33). This research is in line with the previous study which showed that individuals who are higher in Sensitivity of Reward (SR) have a greater risk of being overweight because they feel a very large desire for food because of the activation of these desires that come from the brain's response and are encouraged to realize the desire for food as a reward (16). In other studies conducted in adults, greater sensitivity and impulsive levels to food gifts were associated with food

purchases that were high in FSS and related to obesity (17).

The results of the relationship between the influence of peers with the selection of high FSS foods in OFD services showed that there was no significant relationship between the influence of peers and the consumption of high FSS foods in OFD services ($p\text{-value} > 0.05$). The results of this study on the influence of peers are in line with previous studies, that showed that the biggest factor influencing the selection of adolescent food types was the role of mothers, due to the mother's habit of preparing food at home. In addition, adolescents begin to have an independent capacity to carry out self-regulation in socio-emotional situations and make adolescents able to resist the influence of peers (18,19).

The results of the relationship between the influence of advertising and media with the selection of high FSS food on OFD services showed that there was no significant relationship between the influence of advertising and media with high FSS food consumption on OFD services ($p\text{-value} > 0.05$). Nowadays, adolescents form a self-understanding of the content and meaning of the media and actively decide how to use it. Younger teens respond more to the presence of positive reactions to advertising, such as attractiveness to the look, and the temptation to try, but are hindered by the health perception of high-sugar products. The younger group has the ability to recognize the commercial intent and persuasive marketing is not very developed (20).

The results of the bivariate statistical test showed a significant difference in OFDS frequency in the food selection. This study in line with previous studies conducted in China, it is stated an increase in the frequency of use of OFD

against eating preferences for high-risk foods ($p < 0.001$) (8). The high frequency of OFDS is often related to the reason for using OFDS to order food in less time. This reason encourages them to choose fast food restaurants that provide mostly foods containing high amounts of fat, cholesterol, saturated fat, sugar, and sodium.

The results showed there was a significant difference in discounts on the selection of foods on OFDS. Discount offers made by many fast-food restaurants increase people's desire to buy food. It was found that of the many promotions studied, as many as 70% of food promotions were categorized as unhealthy. The discounts and saving packages offer to make consumers, especially teenagers, become more interested in selecting fast foods. Previous research by Abdelhamied

showed that most adolescents increase their consumption of fast food up to 3 times per week if there is an attractive promotion in fast food restaurants (21).

In this study, a multivariate analysis was carried out to see a predominant factor related to the selection of HFSS foods through the OFDS among students of SMAN 47 Jakarta. Having been analyzed and controlled with gender, the sensitivity of reward, and discounts, it was found the frequency of OFDS as a predominant factor in the food selection among SMAN 47 Jakarta students. The frequency of OFDS appeared as the predominant factor in food selection because the frequency of OFDS has to do with the reason related to short order completion time in which performed by fast food restaurants that mostly provide high amounts of fat, cholesterol, saturated fat, sugar, and sodium (8).

Table 1. Respondents Distribution Based on Variables Studied Among Students Classes X and XI of SMAN 47 Jakarta, 2022

Variable	Total (n)	Percentage (%)
Types of Food		
High FSS	66	58,9
Not High FSS	46	41,1
Gender		
Male	42	37,5
Female	70	62,5
The Importance of Nutritional and Health Content		
Important	64	57,1
Unimportant	48	42,9
The Importance of Taste		
Important	61	54,5
Unimportant	51	45,5
The Importance of Price		
Important	58	51,8
Unimportant	54	48,2
Sensitivity of reward		
Motivated	60	53,6
Unmotivated	52	46,4
OFD Usage Frequency		
Frequent (≥ 3 times/week)	30	26,8
Rarely (< 3 times/week)	82	73,2
Peer Influence		
There is a bad influence	45	40,2

Variable	Total (n)	Percentage (%)
No influence	67	59,8
Influence of Advertising and Media		
There is a bad influence	75	67,0
No influence	37	33,0
Effect of Discounts		
Agree	49	43,8
Disagree	63	56,3

Table 2. Differences of independent variables on Types of Foods Selected Among Students Classes X and XI of SMAN 47 Jakarta, 2022

Variable	Types of Food OFD				Total		p- value	OR (95% CI)
	High FSS		Not High FSS					
	n	%	n	%	n	%		
Gender								
Female	47	67,1%	23	32,9%	70	100%	0,037*	2,47 (1,12-5,42)
Male	19	45,2%	23	54,8%	42	100%		
The Importance of Nutritional Content								
Important	30	53,6%	26	46,4%	56	100%	0,337	0,77 (0,35-1,65)
Unimportant	20	62,5%	36	37,5%	56	100%		
The Importance of Taste								
Important	35	57,4%	26	42,6%	61	100%	0,863	0,86 (0,41-1,85)
Unimportant	31	60,8%	20	39,2%	51	100%		
The Importance of Price								
Important	32	55,2%	26	44,8%	58	100%	0,519	0,72 (0,34-1,54)
Unimportant	34	63%	20	37%	54	100%		
Sensitivity of reward								
Motivated	41	68,3%	19	31,7%	60	100%	0,048*	2,33 (1,08-5,03)
Unmotivated	25	48,1%	27	51,9%	52	100%		
Peer influence								
There is an influence	28	62,2%	17	37,8%	45	100%	0,700	1,25 (0,58-2,72)
No influence	38	56,7%	29	43,3%	67	100%		
Influence of Advertising and Media								
There is an influence	43	57,3%	32	42,7%	75	100%	0,776	0,82 (0,36-1,83)
No influence	23	62,2%	14	37,8%	37	100%		
OFD Order Frequency								
Often	26	86,7%	4	13,3%	30	100%	0,001*	6,82 (2,18-21,3)
Infrequently	40	48,8%	42	51,2%	82	100%		
Effects of Discounts								
Agree	35	71,4%	32	50,8%	49	100%	0,029	2,58 (1,16-5,7)
Disagree	31	49,2%	14	28,6%	63	100%		

Conclusion

The study found that most of the students of SMAN 47 Jakarta who applied the OFDS 58.9% were categorized into selecting HFSS foods.

There were significant differences in gender, the sensitivity of reward, OFDS frequency, and discounts on HFSS food selection. Meanwhile, OFDS frequency among others has been proven as a predominant factor in selecting the type of foods.

Future studies should include a more comprehensive set of indicators and other factors to assess food choice or food consumption via OFD, such as analyzing the food trend and the effect of rating or restaurant reviews on OFD services.

It is expected that government must make a national policy by imposing taxes on HFSS foods. In addition, it is suggested that relevant stakeholders provide promotions and a special section for healthy foods.

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