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# The Effect of Allowance and Fast-Food Consumption on the Obesity of Adolescents in Badung Regency, Bali

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| Article Info | Abstract |
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| | The obesity is a condition of excessive fat in the body that can have a significant effect on health. The excess consumption of fast food can cause excess fat in the body. The high amount of the allowance makes the adolescents easier to consume the fast food which is reachable. This study aims to analyze the direct and indirect effect of allowance on obesity through consumption of fast food. This research is a quantitative study with a case control study approach. A sample of 100 respondents consisting of 20 case samples and 80 control samples were obtained by using fixed disease sampling technique. Data analysis used chi square test and multivariate analysis. The results obtained were that pocket money had a direct effect on the incidence of obesity (b = 1.4; 95% CI = 0.54 to 2.25; p = 0.001). This allowance has an indirect and significant effect on the incidence of obesity through consumption of fast food (b = 1.3; 95% CI = 0.17 to2.43; p = 0.024). The consumption of fast food has a direct effect on obesity with values (b = 1.55; 95% CI = 0.38 to 2.71; p = 0.009). The conclusion of this study is allowance has a direct and indirect effect on adolescent obesity. The results of this study are expected to become a reference for related parties in improving nutritional problems (obesity), particularly in controlling the allowance and consumption of fast food among adolescents. |

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## INTRODUCTION

Adolescents are 12-18 years old that nutritional problems in adolescents arise due to malnutritional behavior, namely an imbalance between nutritional consumption and the recommended nutritional adequacy (Aini, 2013). Obesity is a condition that occurs due to an imbalance in the number of calories in the body where more calories are consumed and the rest of these calories are stored in body fat. According to the World Health Organization (WHO) (2006) obesity is presented based on the body mass index with age (BMI / U) with a value of 23 - 24.9 being the obesity risk category, 25 - 29.9 being the obesity category I and $\geq$ 30 being the category obesity II.

The obesity and overweight are problems that are quite worrying among adolescents. The increasing prevalence of obesity and overweight has occurred in developed countries. The prevalence of obesity in adolescents in Southeast Asia also shows a fairly high increase. Based on the Global Nutrition Report (2018), Indonesia has an increase in the prevalence of obesity in 1999 by 1.6% to 7.1% in 2015. Basic Health Research Data of the Indonesian Ministry of Health, (2018) shows that nationally the prevalence of obesity of adolescents' $\geq$ 15 years in Indonesia by 31%. The increasing prevalence of obesity among adolescents in Indonesia from 1.4% on 2007 to 7.3% in 2013. Adolescents who are obese, 80% have the opportunity to be obese as adults. The obese adolescents can be diagnosed with mediocre disease conditions, such as diabetes 2 and hypertension and experience a number of serious health problems, such as heart disease, stroke, diabetes, asthma, and several types of cancer (Suryaputra & Nadhiroh, 2012).

The high prevalence of obesity of adolescents is caused by several factors. The determinants of obesity include knowledge, parental education, allowance, and fast food consumption (Ali & Nuryani, 2018). Fast food is a lifestyle in various circles. Consuming high fast food can lead to over nutrition or obesity because of the excess fat content of fast food. The previous research results indicate a relationship between fast food consumption and the incidence of obesity of adolescents (Mahyuni et al., 2017). Consuming a food is influenced by factors of preference and the amount of allowance. The allowance is money given to children to buy snacks in the form of food and drinks while outside the home.

Bali Province is a province that has the fourth highest obesity rate in Indonesia, where the obesity prevalence rate in Bali in 2017 is 12.81%. The highest prevalence of obesity in Bali is in Badung Regency. The data of obesity in Badung Regency in 2017 is 48.84%, which is higher than the average prevalence of obesity in Bali Province (Health Office of Bali Province, 2017).

Badung Regency is the first district with the prevalence of obesity in Bali Province. The results of the school selection report conducted by each health center (*puskesmas)* shows 3 areas of the health center that have obesity prevalence, namely *Puskesmas* Kuta II, Kuta Selatan and *Abs* I from 13 health centers in Badung Regency. Badung Regency is an urban area, where everything can be reached, especially in consuming fast food. The availability of fast food is an option for teenagers who have more allowance.

The results of the preliminary study show that the amount of allowance and consumption of fast food is still high for obesity of adolescents in Badung, Bali. The aim of this study is to analyze the direct and indirect effects of allowance for obesity through fast food consumption of adolescents in Badung Regency, Bali.

## METHOD

This research is a quantitative research with a case control study approach. The populations of this study were all adolescents in Badung. The total sample was 100 junior high and high school adolescents who were 12-17 years in Badung, Bali. The independent variables of this study were allowance and consumption of fast food. The dependent variable of this study is the incidence of adolescent obesity. The research instruments used the questionnaire and a food frequency questionnaire.

The sampling technique was fixed disease sampling. The fixed disease sampling technique is a sampling scheme that is carried out by selecting samples based on the subject's disease status, namely diseased (cases) and not diseased (controls)

by factors that are thought to influence the occurrence of a disease. The sample size was calculated using the Hair formula for multivariate analysis research. Univariate analysis and bivariate analysis use the chi square test with $\alpha = 0.05$, meanwhile, multivariate analysis by using path analysis. Path analysis techniques are used to describe and test the relationship between variables in the form of causation. Path analysis allows testing using mediating / intervening / intermediate variables. (Ghozali, 2014).

The statistical test of path analysis with STATA 13.0 was used to test the effect of variables with an ordinal scale.
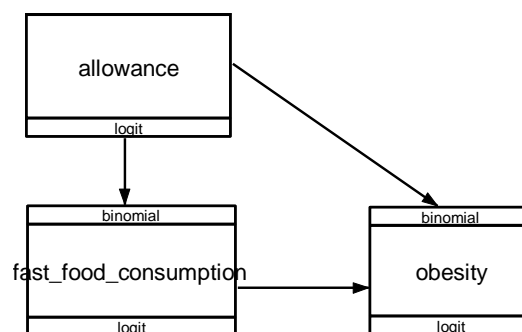


**Figure 1.** Path Alaysis Diagram

**RESULTS AND DISCUSSIONS**

This study was conducted on a population of junior high school *(SMP)* and high school *(SMA)* students who were around 12-17 years old in Badung Regency, Bali, and the total is 100 respondents. The characteristics of the respondent were 42 males (42%) and 58 females (58%). Based on the results of data collection on 100 respondents, the distribution of research variables was obtained according to table 1.

**Table 1.** The Frequency Distribution of Research's Variables of Factors Affectiong in Obesity of Adolescents in Badunf Regency, 2020 (n=100)

| Variables | N | % |
|---|---|---|
| Allowance | | |
| High | 38 | 38 |
| Low | 62 | 62 |
| Fast Food Consuption | | |
| Often | 40 | 40 |
| Rare | 60 | 60 |
| Body Mass Index | | |
| Normal | 80 | 80 |
| Obesity | 20 | 20 |

Table 1 shows the results on the variable allowance of 100 respondents, 38 respondents or (38%) have high pocket money, while the respondents who have low pocket money are 62 respondents or (62%). These results indicate that the amount of allowance and obesity in Badung Regency is in the low category. The variables of fast food consumption from 100 respondents were 40 respondents or (40%) who often consumed fast

food, while 60 respondents or (60%) who rarely consumed fast food.

The obesity variable shows that the number of adolescents who are obese is 20 respondents or 20% and the number of adolescents who are not obese is 80 respondents or 80%. Characteristics of research respondents were seen from the age of adolescents, gender, and parental education.

**Table 2.** The Correlation between Allowance and Fast Food Consumption

| Variables | Fast Food Consumption | | | CI (95%) | | |
|---|---|---|---|---|---|---|
| | Rare (%) | Often (%) | OR | Lower Limit | Upper Limit | p |
| Allowance | | | | | | |
| Low | 23 (60.53) | 15 (39.47) | 4.05 | 1.58 | 10.47 | 0.001 |
| High | 17 (27.42) | 45 (72.58) | | | | |
| Total | 60 (60.00) | 40 (40.00) | | | | |

* Chi-square test

Table 2 presents a bivariate analysis of the correlation between allowance and fast food consumption. The odds ratio (OR) was 4.05 with a p value of 0.001> 0.05; CI (95%) = 1.58 to 10.58. These results indicate that there is an influence 4.05 between the amount of allowance and fast food

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consumption of adolescents in statistically significant. The high allowance has an effect o4.05 on the frequent fast food consumption of adolescents compared to adolescents who have low allowance

**Table 3.** The Correlation between Fast Food Consumption and Allowance to Obesity

| Variables | Obesity | | | CI (95%) | | |
|---|---|---|---|---|---|---|
| | Obesity (%) | Non-Obesity (%) | OR | Lower Limit | Upper Limit | P |
| Fast Food Consumption | | | | | | |
| Rare | 15 (37.5) | 25 (62.5) | 6.6 | 1.96 | 25.33 | 0.000 |
| Often | 5 (8.33) | 55 (91.67) | | | | |
| Allowance | | | | | | |
| Low | 14 (36.84) | 24 (63.16) | 5.44 | 1.68 | 19.11 | 0.001 |
| High | 6 (9.68) | 56 (90.32) | | | | |

Table 3presents a bivariate analysis of the correlation between fast food consumption and obesity. The odds ratio (OR) was 6.6 with a p value 0.000> 0.05; CI (95%) = 1.96 to 25.33. These results indicate that there is an effect and it is a significant statistically correlation between fast food consumption and the incidence of obesity of adolescents. The fast food consumption in often has an effect 6.6 times on the incidence obesity in

adolescents compared to adolescents who rarely consume fast food.

The bivariate analysis of the correlation between allowance and obesity in adolescents, obtained an Odds Ratio (OR) value 5.44 with a p value 0.001 <0.05; CI (95%) = 1.68 to 19.11. These results indicate that there is an influence and there is a significant statistically correlation between the amount of allowance and the incidence of obesity in adolescents.

**Table 4.** The Results of Multivariate Analysis of Allowance on Obesity Through Fast Food Consumption of Adolescents in Badung, 2020 (n =100)

| Dependent Variables | Independent Variables | b | CI ( 95%) | | p |
| --- | --- | --- | --- | --- | --- |
| | | | Lower Limit | Upper Limit | |
| Indirect Effect | | | | | |
| Fast Food Consumption | | | | | |
| | ← Allowance | 1.4 | 0.54 | 2.25 | 0.001 |
| Direct Effect | | | | | |
| Obesity | ← Allowance | 1.3 | 0.17 | 2.43 | 0.024 |
| | ← Fast Food Consumption | 1.55 | 0.38 | 2.71 | 0.009 |

The result of multivariate analysis shows that there is an indirect correlation between allowance and obesity to adolescents in Badung Regency through fast food consumption and it is statistically significant. High allowance has the log odds of consuming fast food 1.4 points higher than the low-adolescents. (b = 1.4; CI = 0.54 to 2.25; p = 0.001. The fast food consumption that often has the logodd of obesity is 0.015 points higher than adolescents who rarely consume fast food (b = 1.55; CI = 0.38 to 2.71; p <0.009) The adolescents' fast food consumption in Badung Regency prefer to choose traditional fast food. The high allowance for adolescents has an effect 1.4 times increasing obesity through consumption of fast food, compared to adolescents who have low allowance.

The results of the analysis show that there is a positive and statistically significant correlation between allowance and obesity to adolescents in Badung Regency. The adolescents who are high allowance have a logodd of obesity by 1.3 points higher than adolescents who have low allowance (b = 1.3; CI = 0.17 to 2.43; p = 0.024. These results indicate that high allowance has an effect 1.3 times of the occurrence of obesity in adolescents compared to adolescents who have low allowance. The results of the analysis show that there is a positive influence between fast food consumption on obesity in adolescents in Badung Regency and it is statistically significant. The fast food consumption that is often has a logodd of obesity 0.015 points higher than adolescents who have low allowance (b = 1.55; CI = 0.38 to 2.71; p = 0.009). These results show that fast food consumed often has an effect 1.55 times in increasing the incidence of obesity for adolescents, compared to adolescents who rarely consume fast food. The results of the analysis show that the amount of allowance has a direct effect on the incidence of obesity of adolescents in Badung and there is an indirect effect on obesity through fast food consumption. Teens who have low allowance do not necessary consume fast food rarely.

The results of this study are consistent with research conducted by Imtihani et al (2013) which explains that allowance affects the frequency of fast food consumption, namely the higher the allowance, the higher frequency of fast food consumption. The research conducted by Fitriana et al. (2013) in adolescents who are in State Senior High School 5 Surabaya stated that teenagers use a third of their pocket money every month to buy and consume fast food with an average allowance IDR 5,000.00-IDR 43,000.00.

The results of previous research also explained that the amount of money spent on buying food outside the home has a significant relationship with the incidence of overnutrition with a value of p = 0.001 (Prabowo et al., 2014). The research conducted by Lidiawati at Banda Aceh City High School obtained an Exp (B) value 0.567. It means that adolescents who are given allowance, are more likely to be 0.567 times more behave food causing obesity than adolescents who are not given allowance with a value of p = 0.002, it means that is related or significant (Lidiawati & Lumongga, 2020). Adolescents who have more allowance tend to have an attitude in choosing fast food and consume it around 4 - 27 times per month (Fitriana et al., 2013). Inappropriate use of allowance can make adolescents toconsume fast food that is appetizing and easy to reach. The lack of youth initiative to bring food to school is one of the factors where adolescents become accustomed to bring allowance to school. The amount of allowance is closely related to the types of snack food consumed selection.

The results of this study indicate that the amount of allowance has a statistically significant direct and indirect effect. Teens that have high allowance can increase the incidence of obesity in adolescents compared to adolescents who have low allowance through fast food consumption. Adolescents' allowance is used to buy unhealthy snacks and high in fat. This research is also supported by research by Zia Roshidah in Surabaya, which found that there is a correlation between allowance and excess nutrition (Rosyidah, 2017). The frequency of fast food consumption of adolescents is influenced by the amount of allowance, where the higher the allowance is the higher the frequency of fast food consumption among adolescents in SMA Negeri 1 Depok Sleman Yogyakarta (Lestari, 2012). The frequency of excessive fast food consumption is the result of encouragement from peers and food advertisements that can attract the attention of children and adolescents so that they are attracted to excessive consumption of fast food. Then the high frequency of fast food consumption can have an impact on comorbidities besides obesity.

The results of this study are also in line with the findings obtained by Rafiony et al., (2015)

there is a significant relationship between fast food consumption and obesity with a value of p = 0.030, OR = 2.03. This concludes that consuming fast food can be 2.03 times more likely to develop obesity than those who rarely consume fast food. The results of research conducted by Made Ratna Dewi in Denpasar showed that the factor most related to obesity in urban areas is the habit of children eating fast food more than 2 times a week (Made Ratna Dewi, 2013). The results of this study are in line with previous studies which show that there is a significant effect between fast food consumption more than 3 times per week (OR = 1,829; 95% CI; 1,337 - 2,502), it is being a risk factor for adolescent obesity. This finding explains that there is a 1.8 times greater risk of adolescents experiencing obesity due to excessive consumption of fast food compared to adolescents who rarely consume fast food (Ali & Nuryani, 2018).

The fast food is a lifestyle. Consuming high levels of fast food can lead to over nutrition or obesity due to the content of fast food. The often and most often category of fast food consumption in adolescents is associated with an increase in body mass index in adolescents (Braithwaite et al., 2014). The results of previous research conducted at SMKN 2 Banjarbaru in 2016 showed a relationship between fast food consumption and the incidence of obesity in adolescents (Mahyuni et al., 2017). The results of previous studies show that there is a significant relationship between the frequency of consumption of fast food in obese children with the allowance given with a value of p = 0.024. These findings also explain that children who have an energy intake of fast food consumption above the average intake of non-obese children have a 2.35 times greater risk of becoming obese than children who have an intake below the average intake of non-obese children (Damapolii et al., 2013).

This study is in line with Prabowo et al., (2014) who analyzed the relationship between the contribution of western fast food's energy to the incidence of obesity. The results showed a relationship between the contributions of western fast food's energy to the incidence of obesity. The more fast food consumption becomes the higher the incidence of adolescent obesity due to the energy and fat content in food. The relationship

between fast food consumption and adolescent obesity at SMP Muhammadiyah 9 Yogyakarta is shown by the results of the research analysis using the Kendall Tau test, which obtained 0.564 with a value of p = 0.01, which means that there is a strong relationship between fast food consumption and obesity in adolescents (Takumansang, 2017). The excessive fast food consumption is supported by the large amount of allowance that reaches out, which can put teenagers at risk for other degenerative diseases apart from obesity.

**CONCLUSION**

The allowance has a direct and indirect effect on the incidence of obesity in adolescents in Badung through fast food consumption. This research is expected to be a reference material for parties involved in overcoming nutritional problems (obesity), especially in the provision of allowance and consumption of fast food by providing children to school with snacks or healthy foods is an alternative in reducing consumption of fast food or unhealthy snacks.

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