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Health Behavior Prediction Model Based on Health Literacy among Mothers with Obesity Children

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Abstract

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INTRODUCTION: Mothers have an important role in childhood obesity. The role of the mother is influenced by self-care, self-efficacy, child health status, and health information obtained by mothers who form health literacy in the prevention of obesity in children.

AIM: The aim of this study was to determine the health behavior prediction model based on health literacy among mothers with obesity children.

METHODS: This study used a cross-sectional study design. The study sample was all mothers who had school children aged 7–15 years in Jakarta Province, Indonesia, in 2018, with a sample of 301 people. The sampling technique used proportional random sampling. Data were collected by health literacy questionnaire, self-care, self-efficacy, health status, health information, and maternal health behavior in the prevention of childhood obesity that has been validated. Data were analyzed using the structural equation model using Stata version 14.2 (Stata Corporation) software.

RESULTS: The results of this study found that determinant variables associated with obese children's behavior prevention in mothers were health literacy, self-care, self-efficacy, health status, and health information ($p < 0.05$). The model of maternal health behavior to prevent childhood obesity based on health literacy, health information, and health status explained 40% of maternal health behavior variances. In addition, health information, self-care, self-efficacy, and health status associated with health literacy described 34%.

CONCLUSION: This study confirmed maternal health behavior based on health literacy to prevent childhood obesity. These results will help health professionals promoting effective childhood obesity prevention among mothers.

Introduction

Data from Indonesia, Jakarta Province, as the state capital of Indonesia, have the highest prevalence of overweight and obesity in toddlers aged 5–12 years, an estimated 30.1% [1]. This occurs in pre-school children aged 3–5 years who have a risk of obesity and even continue aged 5–15 years [2].

Childhood obesity is related to the role of health literacy in parents [3]. The increasing prevalence of obesity in children occurs due to the low parent's ability to obtain, manage, and understand basic health information and services needed for proper health for their children to avoid obesity [4]. Children living in urban areas are more at risk than children who live in villages because children who live in urban areas more exposure to fast foods than children living in rural areas [5]. In addition, exposure to urban children's health information better in access than children living in rural areas [6].

Obesity in children has a high risk of becoming obese in adults and has the potential for various causes of

morbidity and death, including cardiovascular disease and diabetes mellitus. In addition, obesity in children can also reduce the level of intelligence due to children's activity and creativity decreased and tend to be lazy [7], [8].

Mothers have an important role in childhood obesity. This is due to the mother more accompanying children at home. The role of the mother can be seen from several aspects, such as the role of the mother in the choice of food while the child is at home and preparing the child's breakfast and lunch to school. Mothers can also provide health education about nutrition and become a role model in healthy nutrition behavior. The role of the mother is influenced by self-care, self-efficacy, child health status, and health information obtained by mothers who form health literacy in the prevention of obesity in children [7], [8].

This research is necessary to be conducted because obesity in children is strongly related to the role of health literacy among mothers. Mother with good health literacy can reducing the risk of obesity and give more attention and increasing health behavior for preventing childhood obesity.

Materials and Methods

Study design and research sample

This study used a cross-sectional study design. The study sample was all mothers who had school children aged 7–15 years in Jakarta Province, Indonesia, in 2018 with a sample of 301 people. The sampling technique used proportional random sampling. This sampling technique was carried out in various elementary schools throughout Jakarta; sampling focused on elementary schools in East Jakarta and South Jakarta as a representation of the lower-middle class and upper-middle class for data collection based on the economic status of the family.

Operational definitions

The variables of this study included independent variables: Health status, self-care, and self-efficacy; moderate variables are health literacy; and a dependent variable is health behavior in the prevention of childhood obesity.

Research procedure

Data were taken by distributing questionnaires to mothers who met the requirements of being respondents, and direct body mass index (BMI) measurements were taken of the respondent's children. BMI measurements used mechanical scales of the SMIC body that measured weight and height simultaneously with an accuracy of 0.1 kg and 0.1 cm. Data were collected by health literacy questionnaire, self-care, self-efficacy, health status, health information, and maternal health behavior in the prevention of childhood obesity that has been validated.

Data analysis

The analysis for characteristics of study subjects was performed using mean and standard deviation for numerical variables and categorical variables using frequency and percentage.

Statistical analysis for path coefficients was used confirmatory factor analysis for validation and reliability on the indicators on each of the variables in the model. The value of the path coefficient or inner model shows the level of significance in testing the hypothesis. The score of the path coefficient or inner model is shown by the p-value. $p < 0.05$ was considered statistically significant. Data were analyzed using the structural equation model (SEM) using Stata version 14.2 (Stata Corporation) software.

Results

Table 1 shows that the age of the mother was 38.04 ± 5.28 years, the age of the child was 8.45 ± 1.81 years, the number of the child was 2.34 ± 0.87 people, the weight body was 36.50 ± 11.75 kg, and height was 136.35 ± 10.54 cm and 2.29 ± 2.23 . More than half of the respondents (50.2%) were a housewife and had private homes (58.8%).

Table 1: Characteristics of study subjects

Variables	Mean±SD	f (%)
Mother's age (years)	38.04±5.28	
Child's age (years)	8.45±1.81	
Number of children	2.34±0.87	
Weight (kg)	36.50±11.75	
Height (cm)	136.35±10.54	
Distance from home to school (km)	2.29±2.23	
Mother's job		
Housewife		151 (50.2)
Civil servant		61 (20.3)
Army		22 (7.3)
Police		10 (3.3)
Private servant		30 (10.0)
Entrepreneur		27 (9.0)
Homeownership		
Private		177 (58.8)
Rented house		124 (41.2)

Table 2 seen that the mean intake of energy respondents was 2673.10 ± 624.62 kcal (130.4% attained the required energy), the fat intake of respondents was 96.50 ± 35.88 g (169.6% attained the required fat), and carbohydrate intake of respondents was 333.75 ± 72.45 g (108.7% attained the required carbohydrate).

Table 2: Overview of children nutrient intake

Variables	Mean	Median	SD	Min.	Max
Energy intake	2673.10	2713.40	624.62	1639.90	4009.80
Fat intake	96.50	109.20	35.88	45.40	167.60
Carbohydrate intake	333.75	332.65	72.45	204.70	495.60

The structural model's analysis to determine the health behavior prediction model based on health literacy among mothers with obesity children is shown in Table 3 and Figure 1.

Table 3: Path coefficients based on the final model

Outcome variable	R ²	Predictor variables	Standardized coefficient estimate	p-value
Obese children behavior prevention in mothers	0.40	Health literacy	0.30	0.029
		Health information	0.25	0.030
		Health status	0.20	0.041
Health literacy	0.34	Health information	0.21	0.043
		Self-care	0.22	0.039
		Self-efficacy	0.28	0.024
		Health status	0.23	0.028

Table 3 shows that determinant variables associated with obese children's behavior prevention in mothers were health literacy, self-care, self-efficacy, health status, and health information ($p < 0.05$). The model of maternal health behavior to prevent childhood obesity based on health literacy, health information, and health status explained 40% of maternal health behavior variances. In addition, health information, self-care, self-efficacy, and health status associated with health literacy described 34%.

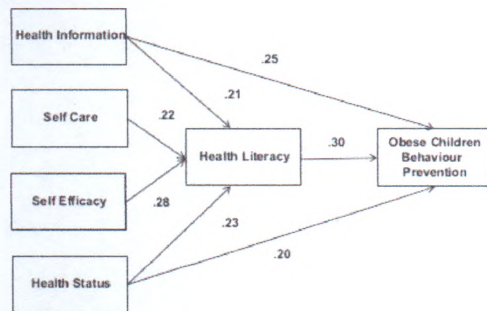


Figure 1: Final path model

Discussion

The results of this study found that determinant variables associated with obese children's behavior prevention in mothers were health literacy, self-care, self-efficacy, health status, and health information ($p < 0.05$). The model of maternal health behavior to prevent childhood obesity based on health literacy, health information, and health status explained 40% of maternal health behavior variances. In addition, health information, self-care, self-efficacy, and health status associated with health literacy described 34%.

Obesity in children has a high risk of becoming obese in adults and has the potential for various causes of morbidity and death, including cardiovascular disease and diabetes mellitus. In addition, obesity in children can also reduce the level of intelligence due to children's activity and creativity decreased and tend to be lazy [7], [8], [9].

Prevention of obesity in school-age children focuses more on health education, social support, and internal motivation to prevent obesity [10]. While the results of this study found two additional aspects of important and relevant variables in accordance with the current development, which are health status and socioeconomic conditions of parents. Both of these variables are related to research respondents who live in urban areas that are very vulnerable to increased income and accompanied by the emergence of diseases due to lifestyle.

The role of parents can help prevent obesity, which is to play a more active role in preventing obesity in their children by limiting the intake of calories, fat, and carbohydrates in the daily consumption, motivating, and facilitating children to be more active for exercise as well as increasing consumption of fiber, such as fruit and vegetables, is an effective way to overcome obesity.

In this study, there needs to be an increase in understanding of healthy lifestyles that is less obese, such as fruit and vegetable consumption, limiting watching television, games, reducing sweet and fatty foods, through searching information independently through the internet so that the danger of obesity and

food relations is not known healthy. Therefore, parents of students need to provide provisions that are provided at home for children to take to school so that the type and quality of food are maintained [10].

Parents also have to pay more attention to giving pocket money to avoid children's consumptive habits toward food at school, and its use in this case mainly to buy snacks, parents can play a role in advising children not to buy snacks at random and suggest choosing the type of good food for health [8], [9].

The obesity prevention model developed in this study emphasizes health literacy without having parents have prior knowledge about nutrition. Health literacy can be done by utilizing media and technological sophistication, such as the internet, with sufficient supervision from parents.

The model in this study indeed only produces 40.0%, meaning that 60.0% is related by other variables outside the variables that were observed in this study. Some of these other variables, according to the World Health Organization, can include genetic factors, hormones, age, sex, snacks and home food, imbalance of calorie and fat intake, family purchasing power, parenting style, and food habits. However, this model has advantages and complements other models that have been developed in the previous studies [11].

Thus, it can be said that the prevention model of obesity in children in this study is feasible to develop. This model is also worthy of being used as parents when wanting children regardless of the risk of obesity. This model needs to be supported and used by health workers to help parents, regardless of the risk of childhood obesity.

Conclusion

This analysis confirmed maternal health behavior based on health literacy to prevent childhood obesity. Based on SEM analysis, the model of maternal health behavior to prevent childhood obesity based on health literacy, health information, and health status explained 40% of maternal health behavior variances. In addition, health information, self-care, self-efficacy, and health status associated with health literacy described 34%. These results will help health professionals promoting effective childhood obesity prevention among mothers.

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