Psychosocial stress, food preferences, and screen time with nutritional status of women of reproductive age in Sukamulya Village, Tangerang Regency

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ABSTRACT

Background: The increase in age and the pandemic conditions experienced cause Women of Reproductive Age (WRA) to encounter many environmental issues that disturb their psyche, resulting in psychosocial stress. A strategy for dealing with stress is called coping with stress. A higher screen time and high sugar, salt, or fat to deal with stress might change nutritional status.

Objective: This study aims to determine the relationship between psychosocial stress, food preferences, and screen time with the nutritional status of WRA in Sukamulya Village, Tangerang Regency.

Materials and Methods: This research design is cross-sectional and was conducted in March 2022 in Sukamulya Village, Tangerang Regency. The research sample amounted to 55 participants with a purposive sampling technique. The questionnaires used were Psychosocial Stress Assessment Instrument, Food Frequency Questionnaires, and recall screen time. Data analysis using the Chi-Square test.

Results: The majority of participants experienced psychosocial stress (61.8%), food preferences low in sugar, salt, and fat (63.6%), and most of them were in the high screen time category (52.7%). The results showed that there was no relationship between psychosocial stress and food preferences with nutritional status (p > 0.05), but there was a relationship between screen time and nutritional status (p = 0.011).

Conclusion: In this study, food preferences and psychosocial stress were not factors that affected the nutritional status.

Keywords : BMI; food preferences; psychosocial stress; screen time; women of reproductive age

BACKGROUND

Women of Reproductive Age (WRA) is a group of productive women ranging from 15-49 years regardless of their marital status.[1] Nutritional status is one of the things that need to be considered in this group. Based on data from the World Health Organization (WHO), in 2014, those aged ≥18 years in the world experienced underweight as many as 462 million people, and 1.9 billion were overweight.[2] In 2016, globally, 9.4% of women aged >19 years were underweight.[3] According to the National Basic Health Research in 2018, among women >18 years in Indonesia, 7.8% were underweight, 15.1% were overweight, and 29.3% were obese.[4] In Banten Province, the prevalence of nutritional status based on BMI in women aged ≥18 years is 7.25% underweight, 15.54% overweight, and 30.05% obese. More specifically, Tangerang Regency has an overweight incidence rate above the overweight incidence rate in Banten Province, which is 17.03%.[5]

A preliminary survey conducted previously at Sukamulya Village, Tangerang Regency, Banten Province on 25 women aged 15-33 years found that 28% were overweight and obese. As many as 70% who are overweight are women aged >20 years and 52% of women complain of feeling depressed due to a condition or problem, especially family and economic conflicts. Their preferred food preferences are salty and savory snacks and foods. In addition, 68% have high screen time which is more than 2 hours per day. Based on these results, the research was conducted in the Sukamulya Village area.

Many factors can cause nutritional problems, including psychosocial stress. A survey in 2020 by WHO on 130 countries found that 89% of these countries included mental health and psychosocial support plans in dealing with COVID-19. This survey shows that COVID-19 has an impact on psychosocial health.[6] Previous research in 2018 showed a relationship between psychosocial stress and adolescent nutritional status. The nature of stress influences individual capacity to adapt to stress and individual character, so psychosocial stress must be appropriately managed so as not to cause depression. Psychosocial stress was found to be one of the factors of weight gain in adolescents through the mechanism of changes in food consumption and choice.[7]

Food choices or preferences when dealing with stress tend to be high-energy foods such as high sugar, salt, and fat. Preference for sweet, salty, and fatty foods was found to have a significant relationship with

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nutritional status.[8] There is an assumption that the consumption of sweet, salty, and fatty foods is a strategy to turn off one's feelings and memories regarding unpleasant things or events.[9] Consumption of these three food types and sedentary activity will cause fat accumulation.

Furthermore, higher sedentary activity, especially during the COVID-19 pandemic, may increase screen time activity. Research on Semarang in 2016 showed that higher screen time and lower physical activity might increase the risk of being overweight and obese. Screen time may lead to increased energy intake and altered metabolic processes.[10]

According to the results of research conducted at the University of Tanjungpura that there is a relationship between stress and the body mass index of female students at the Faculty of Medicine.[11] Meanwhile, the results of Zaini's research (2020) show that there is no significant relationship between levels of psychosocial stress with the nutritional status of female health students in Jember Regency because stress does not directly affect the nutritional status of female students.[12] Research related to food preferences in 2017 stated that food preferences also have a weak relationship with the nutritional status of female students. Food preferences can not directly affect nutritional status except through the level of adequacy of energy consumed.[13] However, another study also in 2017 stated that there is a relationship between food preferences and sweet or salty taste and nutritional status.[8] Consuming high-energy foods with high screen time will increase nutritional status.[14]

To our best knowledge, no research mentioned the relationship between psychosocial stress, food preferences, and screen time on nutritional status. So, this research aimed to analyze that relationship in WRA in Sukamulya Village, Tangerang Regency.

MATERIALS AND METHODS

The research design used cross-sectional. This research was conducted in three neighbourhoods in Sukamulya Village, Tangerang Regency in March-August 2022. The ethical approval for this research was obtained from the Universitas Esa Unggul Research Ethics Commission, no. 0922-02.031/DPKE-KEP/FINAL-EA/UEU/II/2022. Furthermore, this research also received approval from the participants concerned before the study began by filling out a statement of consent to participate in the study.

The sampling technique used was purposive sampling. Where samples were taken according to the consideration of the characteristics and criteria inclusion to obtain information and data in accordance with the research objectives. The total population was 86 WRA aged 19-34 years at the research place. Due to the condition of the pandemic, it is possible to limit the research area so that research is carried out in 3 neighborhoods of one village. Sampling is also based on those who are willing to be used as research samples to achieve a minimum sample size. The minimum sample in this study is 50 participants and an additional 10% to avoid dropping out. This amount is calculated based on the two-proportion test formula. There were 55 participants in this study.

Eligible participants fulfilled the following criteria: (1) aged between 19 and 34; (2) owns and use electronic devices (smartphone, laptop/computer, and television); (3) residents and domiciled in the research place; (4) present when the research was conducted and in good health; (5) willing to be research participants. Meanwhile, participants who met the following criteria were excluded: (1) university student; (2) pregnant; (3) works in a specific profession with demands for work in front of electronic screens and also has school-age children; (4) changes residence outside of the research place; (5) did not participate in the series of research data collection to completion; and (6) resigned as participants.

Independent variables in this study include psychosocial stress, food preferences, and screen time with the dependent variable including nutritional status. Data collection used interview techniques for food preference questionnaires and screen time, while self-filling forms were used for psychosocial stress data. The characteristic data questionnaire contains age, employment status, and monthly salary. Anthropometric measurements are weight and height using digital scales and digital microtoice. Body Mass Index (BMI) is calculated as weight in kilograms divided by height in meters squared. BMI is categorized into two categories, normal and abnormal (underweight and obese), according to the classification of the nutritional status of Indonesians by the Ministry of Health of the Republic of Indonesia, where the nutritional status is underweight if the BMI <18.5 kg/m^2, 18.5-25.0 kg/m^2 is normal, and obese if the BMI value is >25.0 kg/m^2.[15]

Psychosocial Stress Assessment Instrument (IPSP) used to measure level of stress psychosocial. This questionnaire consists of 35 events experienced during the last six months and one additional blank item (number 36) if there is another event that participants can mention themselves. The sum of the scores is interpreted into seven categories. These categories are: not experiencing stress (0); experiencing low or little

stress (1-8); being mild stress (9-16); moderate stress (25-33); high stress (25-33); very high stress (34-40); and catastrophic stress (>41). Based on these seven categories, they were further categorized into two major categories: stress and non-stress. The category of stress if the score and interpretation of the IPSP are included in the low to catastrophic stress category. IPSP has been tested by previous studies to be used for further research.[16]

The sweet, salty, and fatty food preferences questionnaire used the FFQ and were categorized into two categories: food preferences high in sugar, salt, and fat and low in sugar, salt, and fat. The list of sweet, salty, and fatty foods is obtained from data on food commonly consumed and found around the research place. If the FFQ score is more excellent/equal to the average score of the entire sample, it is categorized as a food preference high in sugar, salt, and fat.[17]

The screen time recall questionnaire simplifies the Adult Sedentary Behavior Questionnaire (ASBQ) to collect average screen time data for the previous four days on weekdays and weekends. Screen time duration is included in the High Screen Time (HST) category if the average screen time in four days is higher than the median of data, which is 210 minutes per day. The median data is used as the cut off point because there are no rules that state the amount of screen time limit for adults. Numerical data from the screen time variable were tested for normal data using the Kolmogorov-Smirnov, and showed that the data were not normally distributed ($P < 0.005$). So, the cut off point used in this study is the median data.

All data were analyzed using SPSS version 25.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics were used for the univariate test to determine the frequency distribution of the characteristics and all variables in this study. In addition, the Chi-Square test was used to analyze the relationship between each independent and dependent variable with a significance level of 0.05.[18]

RESULTS

The characteristics of the participants are presented in Table 1.

Table 1. Characteristics of Participants and Research Variables (n = 55)

Characteristics	n (%)
Age	
Late teens (19-25 years)	19 (34.5)
Early adults (26-34 years)	36 (65.5)
Employment status	
Unemployed	35 (63.6)
Employed	20 (36.4)
Monthly salary	
No income	35 (63.6)
Low income (< IDR 4,230,792/month)	11 (20.0)
High income (≥ IDR 4,230,792/month)	9 (16.4)
Psychosocial stress	
Stress	34 (61.8)
No stress	21 (38.2)
Food preferences	
Food preferences high in sugar, salt, and fat	20 (36.4)
Food preferences low in sugar, salt, and fat	35 (63.6)
Screen time	
HST (> 210 minutes/day)	26 (47.3)
LST (≤ 210 minutes/day)	29 (52.7)
BMI	
Abnormal	22 (40.0)
Normal	33 (60.0)

HST: High Screen Time, LST: Low Screen Time, BMI: Body Mass Index. IDR 4,230,792/month: regional minimum wage for Tangerang Regency 2022.

The age of the majority of participants is in the range of 26-34 years, an early adult group (65.5%). A total of 35 participants (63.6%) were housewives. Most employed participants had low income or < IDR 4,230,792/month (20.0%). It can also be seen in Table 1 that most of the participants experienced psychosocial stress (61.8%). Participants with high food preferences for sugar, salt, and fat, as many as 20 people (36.4%), and screen time were found mainly in the HST category (52.7%). Most participants had a BMI in the normal category (60.0%).

The results of the Chi-Square analysis in Table 2 show that psychosocial stress (p = 0.428) and food preferences (p = 0.567) were not associated with nutritional status. However, there was a significant relationship between screen time and nutritional status (p = 0.011).

Table 2. Relationship Between Psychosocial Stress, Food Preference, and Screen Time with Nutritional Status

Variable	BMI				Total		p
	Abnormal		Normal				
	n	%	n	%	n	%	
Psychosocial stress							
Stress	15	44.1	19	55.9	34	100.0	0.428
No stress	7	33.3	14	66.7	21	100.0	
Food preferences							
Food preferences high in sugar, salt, and fat	7	35.0	13	65.0	20	100.0	0.567
Food preferences low in sugar, salt, and fat	15	42.9	20	57.1	35	100.0	
Screen time							
HST	15	48.3	11	27.6	26	100.0	0.011[*]
LST	7	24,1	22	26.9	29	100.0	

[*]significant p<0.05, HST: High Screen Time, LST: Low Screen Time, BMI: Body Mass Index

DISCUSSION

The majority of participants in this study were in the early adult age range, which is 26-35 years.[19] In addition, most of the participants in this study are also unemployed. However, some of them work as factory employees. The married participants mostly are housewives, so to meet their needs, especially food, only comes from their husbands. Work is one factor that affects the nutritional status of WRA by describing the level of activity and economic welfare through the amount of income. Their low financial status makes it difficult to fulfil their nutritional and food needs. Higher-income households can enable them to consume more diverse and nutritious foods, thus affecting their nutritional status.[20]

The majority of working participants have low incomes. Low income has a positive correlation with the quality of food spending. Significantly, low food consumption among low-income people has lower nutritional quality because they purchase less healthful foods, fewer fruits and vegetables, and more sugary beverages.[20] Low income and financial status also trigger stress for WRA.

The most common stress triggers found in the participants in this study were stress due to the economy and stress due to the environment and workload. Based on the results of the bivariate test, it was found that there was no relationship between psychosocial stress and nutritional status. Participants with psychosocial stress were found to have the most normal nutritional status. This finding is probably because the participant's age has entered the level of emotional and psychological maturity so that they can manage stress well without involving changes in eating patterns. Late teens to adults >18 already have more mature emotions than middle teens.[20] In addition, the coping stress they do also do not lead to changes in appetite to more or less, so the mechanism of stress on nutritional status through the presence of eating disorders in this study was not found to be associated.

Psychosocial stress is an individual's body response related to their interaction with social threat situations, including social exclusion and evaluation.[21] Psychosocial stressors come from various phenomena in their environment, both the living, work, or community environment, that can interfere mentally. This study showed that as many as 61.8% experienced psychosocial stress. The highest cause of stress is due to economic problems.[22] Research on students in China in 2017 also showed that 19.6% reported high levels of uncertainty stress. Also, in this study, 8.6% of students reported high levels of life stress associated with low family income.[22] Allegedly, due to the impact of the COVID-19 pandemic in recent years, some have lost their job and have no additional income, which has led to economic problems that cause psychosocial stress. Individuals with low socioeconomic status are two to three times more likely to stress.[23]

When stress occurs, the perceived threat will activate the hypothalamic-pituitary-adrenal (HPA) neuroendocrine axis, stimulating cortisol secretion.[24] Insulin and cortisol can act synergistically to regulate lipogenesis. Furthermore, increased cortisol stimulates gluconeogenesis which results in insulin resistance. Increased cortisol under psychosocial stress can increase brain activation to stress and reward motivation pathways, thereby increasing the desire for high-calorie foods such as those high in sugar, salt, and fat.[25]

Individual coping stress varies and is not always related to dietary changes. As in this study, based on interviews, most participants stated that they did not vent or express an unpleasant condition that they felt.

Usually, going out, praying, or playing with smartphones, and especially playing with children for those who are married, makes them calmer, and things that trigger psychosocial stress do not become a heavy burden to think about and disturb. These results are similar to research conducted on health students in the Jember Regency, that there is no relationship between psychosocial stress and nutritional status of students, with the majority aged 19-21 years. Psychosocial stress does not directly correlate with nutritional status but through behavioral patterns of nutritional fulfilment. From a stress perspective, not everyone exposed to psychosocial stressors will experience stress.[26]

Food preferences were also not found to be associated with nutritional status. Most participants have low sugar, salt, and fat food preferences. Financial limitations experience does not allow them to choose foods or snacks that are high in sugar, salt, fat and food sources of animal side dishes such as red meat. The high-energy foods they usually consume are often the only ones available at nearby stalls such as instant noodles and crackers so consumption of sugar, salt and fat is not too varied and high. The majority of them have a normal BMI. Similar to the research conducted on 350 nursing students at the Medan Health Polytechnic, there was no relationship between food preference and nutritional status and a weak relationship.[12] In contrast to the research conducted in Teresina on 1,036 school adolescents, there is a relationship between food preferences and nutritional status in adolescents.[8]

There is an assumption that consuming sweet, salty, and fatty foods is a strategy to improve mood.[9] However, in this study, most participants did not use these types of food to cope with stress. Based on the results of the study, 63.6% of participants had food preferences that were low in sugar, salt and fat. According to these data, it shows that most of the participants are neutral and not excessive towards the consumption of foods high in sugar, salt and fat. Chances are when they are stressed, there are other activities they do as stress coping.

In addition, the economic factor also allows them to choose food depending on the availability of the family's economy so that they rarely consume various foods or snacks high in sugar, salt, and fat or high-fat animal side dishes such as meat. The high-energy foods that are most often consumed on average are mostly only available at stalls, such as crackers and instant noodles, so the consumption pattern of sugar, salt, and fatty foods is not too high and varied. An earlier study based on the survey in Inner Mongolia noted that high socioeconomic groups consume relatively more high-fat foods such as red meat, high calories, and sugar than low socioeconomic groups.[13]

Furthermore, factors suspected to be the trigger for the increase in nutritional status of participants apart from food preferences high in sugar, salt, and fat are due to the effect of using contraceptive injections/pills considering that most of them are married. According to the participants' statements, their weight significantly increased after marriage and regular use of contraception. Married participants in this study were 78.2% and almost all of them used contraception, both pills and injections. Based on previous research in Surabaya, it was stated that the effect of using injectable contraceptives for three months or more on weight gain.[27] So, in this case, food preferences for sugar, salt, and fat are not the main factors of changes in the nutritional status of participants.

Most participants with high sugar, salt, and fat preferences were found in participants with normal nutritional status, and some were underweight. Previous research stated that individuals with underweight and normal nutritional status prefer sweet foods.[8] This is thought to affect these participants' preference scores for sugar, salt, and fat foods. The sweetness intensity does not predict the number of calories of sweet food or drink.(28) Also, sweet foods and drinks tend to be high in sugar or simple carbohydrates that are very easily absorbed by the body. Metabolism in underweight and normal nutritional status persons tends to be faster. So, high consumption of sugar, salt, and fat does not show significant changes to their nutritional status. Similar to a review conducted in 2021, which stated that sweet or salty food preferences did not differ according to individual BMI. The incidence of obesity also could not be proven by the high consumption of sweets as expected.[28]

The incidence of obesity is also caused by excessive caloric intake accompanied by a lack of physical activity and switching to screen time behavior. Screen time is the time an individual spends in front of a digital media screen. The majority of participants in this study were in the HST category. The bivariate test results showed a relationship between screen time and nutritional status. Participants with HST were mainly obese, and participants with the LST category had a more normal nutritional status. It was found that participants of young age (<25 years) and unmarried tend to use smartphones more, so physical activity becomes very rare. According to previous research on students at the University of Hong Kong that an increase in smartphone addiction was accompanied by a decrease in physical activity.[29]

Screen time reduces physical activity because it tends to be done by sitting and staring at the screen for a long time and indirectly affects the condition of weight gain.[30] Participants who are married and have families, along with watching television, eat their children's food that has not been eaten. Hence, if done continuously, it can increase the participant's energy intake when this situation is accompanied by decreased physical activity, which might be causes nutritional problems.

The results of a similar study conducted on adolescents in suburban Philadelphia, there is a relationship between screen time and BMI.[31] Gadget addiction had a negative impact on health, stress management, spiritual health, nutrition, and physical activity.[32] Physical inactivity due to screen time causes fat accumulation and causes obesity.

The strength of this research is to discuss the relationship between psychosocial stress, food preferences, and screen time on nutritional status in a more specific age group (WRA). This study also shows the results that high screen time along with other factors in the form of contraceptive use can improve nutritional status in WRA.

There are limitations in this study where it is difficult for the participants to remember the amount of screen time when using the screen time recall technique. Second, because this research was conducted house-to-house, so it can not control the environmental conditions when in participant's house. Sometimes for some participants, the interview process be in a hurry.

For further research, similar topics should also conduct with a different design, such as a case-control study, to find the causal relationship. Next, research can investigate the correlation between contraceptive pills and injections on nutritional status. Participants can fill in data daily for data collection, especially during screen time, to reduce bias.

CONCLUSIONS

The present study suggested a significant relationship between screen time and the nutritional status of WRA. There is no relationship between psychosocial stress, food preferences, and nutritional status. Provision of education through social activities related to nutrition and physical activity by Health Service officers, especially nutritionists to increase participants' awareness of the importance of exercising and maintaining optimal body weight as well as consumption of blood-boosting supplements for young women to fulfill iron before pregnancy. The goal is for them to further reduce screen time which should only be a maximum of 2-3 hours per day and engage in physical activities such as sports to achieve optimal nutritional status.

ACKNOWLEDGMENT

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