Married and Gained Weight: The Role of Gender and Marital Life on Overweight or Obesity Status

Auliya Nareta[1], Anna Undarwati [2]
Universitas Negeri Semarang
Retaa2903@gmail.com[1], anna.undarwati@mail.unnes.ac.id. [2]

Abstract

The problem of overweight or obese people is increasing every year. This is due to overeating and reduced physical activity. Being overweight or obese has become a serious problem because currently, no country has been able to reduce the number of overweight or obese. In addition, obesity can also cause cardiovascular disease, diabetes, hypertension, metabolic syndrome, depression, and even worse can cause death. Therefore, this study will examine overweight or obesity in the context of marriage. This study uses quantitative research with the measurement using two-way Anova and generalized linear model. This study used the Dutch Eating Behaviour Questionnaire (DEBQ) scale using a Likert scale with a score range of 1 (never) to 5 (very often) for responses. The results of this study explained that female participants were more likely to be overweight or obese than male participants. When viewed based on marital status, both married men and women are more likely to be overweight or obese than those who are not married. It's just that when viewed based on gender and status married women are more likely to experience overweight or obesity.

Keywords: Overweight; obesity; gender; married

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Introduction

Globally, the problem of obesity and overweight has increased significantly every year (Agustina, et al, 2021). In 1975, the problem of overweight or obesity was only 4% and increased in 2016 to 18% (Feforoff, et al, 2003). Countries with the highest rates of overweight or obesity are Nauru, American Samoa, Cook Islands, Palau, and Marshall Islands (Economist, 2017). In Indonesia, the prevalence of overweight or obesity has increased in all age groups (Grzywacz, 1999). So far no country has been able to reduce obesity rates in the last 33 years and Indonesia is ranked as the tenth country with an obese adult

population after Germany and Pakistan (Cawley, 2012). In Indonesia, overweight adults aged 18 years and above increased from 19.1% in 2007 to 26.3% in 2013 (Gillespie, et al, 2013).

The high rate of obesity is important because of its impact on health. Numerous studies have shown the adverse effects of obesity on health and psychosocial functioning (Heman, et al, 1975). Each year, deaths caused by overweight or obese people reach 2.8 million. Overweight or obese can cause cardiovascular disease, diabetes, hypertension, metabolic syndrome, and depression (Fedoroff, et al, 2003). In 2019 the Royal College of Physicians (RCP) recognized that obesity is a disease and even the United States recognized it (Cawley, 2012).

Individuals who are overweight or obese can be caused by specific behaviors, such as overeating and reduced physical activity. Eating behaviors that cause obesity are consuming fast food, large meal portions, consumption of high-sugar drinks and not eating breakfast (Islam, 2020). Setyawati et al (2016) reported that as many as 95.4% of Indonesian adolescents consume fast food. Fast food is high in salt and is also one of the factors that cause obesity. However, the cause of overweight or obesity in Indonesia is mainly due to frequent consumption of meat and milk. In Southeast Asia, the cause of obesity and overweight is ultra-processed food (Setyawati, et al (2016). In addition to food, a person's eating behavior is thought to affect obesity. People who are overweight or obese are thought to have a different eating style from ordinary people. Previous research explains that one of the causes of obesity is due to restraint eating. People with restrained eating will limit their food intake for a long period, but they often ignore food restrictions and overeat (Heman & Mack, 1975).

Obese individuals can influence the weight of those closest to them, such as married couples. Having an obese partner can increase the risk of obesity by 40% (Ecoomist, 2017). Married couples can be referred to as agent control because they can encourage healthy and unhealthy behaviors by providing coercion such as coercion to eat (Malik, et al, 2020). Another study also explained that married couples make efforts to regulate their partner's eating behavior. and explained that romantic partners contribute

greatly to unhealthy eating experiences (Luli, et al, 2023). In addition, women have a role in regulating their partner's eating behavior because women are very concerned about weight-related issues.

The impact of gender and marital life on overweight or obesity status is highly complex, involving various social, psychological, and biological factors. Women generally have a higher risk of being overweight or obese compared to men (Madani et al., 2024). This increased risk is associated with greater physical and psychological comorbidities as well as a higher mortality rate (Murakami et al., 2017).

Research shows that obesity significantly affects the quality of life (HRQL) more severely in women than in men, particularly in terms of physical and mental health (Torres et al., 2016). Other findings suggest that entering marriage is associated with an increase in BMI for both genders. Conversely, transitioning out of marriage (e.g., through divorce or widowhood) tends to result in weight loss (Hanson et al., 2007).

The study by Chen et al. (2018) showed that positive marital support is inversely related to weight gain and the incidence of obesity, especially in men. However, marital strain does not show a significant association with weight changes. Other findings indicate that widowed women, particularly those in their 50s and 60s, show a higher prevalence of obesity and abdominal obesity compared to their married counterparts (Kapoor et al., 2021).

Further findings from Madani et al. (2024) reveal that among unmarried women, lower educational attainment is significantly associated with higher odds of being overweight or obese. For married women, the husband's level of education plays a crucial role, with lower educational attainment of the husband correlating with higher obesity rates in their wives. Then, food insecurity is linked to higher obesity rates in women, particularly those who are married or living with a partner (Lee et al., 2020). This relationship is less clear in men, where food insecurity sometimes correlates with lower body weight.

Married individuals generally have a higher prevalence of obesity compared to those who are unmarried. This trend has been observed in several studies across various countries, including Iran (Janghorbani et al., 2008), Greece (Tzotzas et al., 2010), and Korea (Lee et al., 2020).

In Iran, both married men and women were found to have a higher likelihood of being overweight and obese compared to individuals who had never been married (Janghorbani et al., 2008). Similarly, in Greece, married men and women had a higher risk of obesity and abdominal obesity compared to their unmarried counterparts (Tzotzas et al., 2010).

Other findings suggest that gender plays a significant role in how marital status affects obesity. For instance, in Korea, widowed women exhibited a higher prevalence of obesity and abdominal obesity compared to married women, especially in their 50s and 60s (Lee et al., 2020). In Japan, changes in marital status affected obesity differently for men and women. Women who transitioned from being married to unmarried had a lower risk of obesity (Murakami et al., 2017). Educational level also interacted with marital status to influence obesity. In Japan, married women with husbands of lower educational attainment had a higher risk of obesity (Oliveira et al., 2013).

In the Indonesian context, women are at potential risk of becoming overweight or obese during marriage (Rachmi, et al, 2016). Whereas in South Africa, men have the potential to become overweight or obese during marriage. However, in general, marriage in Indonesia may increase the risk of becoming overweight or obese (Fleming, et al, 2014). However, studies that explain whether gender and marital status influence each other on obesity are very limited, especially in Indonesia (Nurwanti et al., 2019; Nugroho et al., 2020; Thamrin et al., 2022; Ferdina et al., 2024). In addition, personal factors such as restraint are also predicted to influence food choices and body weight in married individuals. Thus, this study will examine overweight or obesity in the context of marriage.

Method

Design

This study employs a quantitative research design using Generalized Linear Model (GLM) measurements. The GLM is used to analyze data with numerical dependent variables and independent variables that can be either categorical or numerical. In addition to the GLM, a Two-Way ANOVA is also used to measure

the effect of two independent variables on the dependent variable, where each factor has two or more levels. The use of these two methods aims to investigate the complex relationships between demographic factors, such as age and marital status, and eating behaviors, as measured by the DEBQ scale. This design allows for the examination of interactions between independent variables and their impact on the dependent variable.

Participants

The participants in this study were categorized into three distinct adult age groups: early adulthood (21-29 years), middle adulthood (30-39 years), and late adulthood (40-60 years). Each participant was further classified based on their marital status, either as single or married. The sample size was calculated using G-Power 3.1.9.4 software, with an assumption of a medium effect size (d = 0.5), a significance level of 0.05, and a statistical power of 0.95. Based on these parameters, the analysis suggested that a minimum of 210 participants was necessary to detect a meaningful effect. However, to mitigate the impact of potential dropouts, 250 participants were ultimately recruited.

Participants were asked to complete a Google Form, which included demographic questions and the Dutch Eating Behavior Questionnaire (DEBQ) scale. Upon completing the form, participants received a reward as a token of appreciation for their involvement. In addition, they were provided with a brief explanation of the survey's purpose and the importance of their contribution to the research. This approach ensured clarity about the study and helped maintain participant engagement throughout the process. Informed consent was obtained from participants prior to their involvement in the study.

Measurement

The measurement tools used in this study included a demographic questionnaire, which collected data on participants' age and marital status. Collecting demographic data is crucial for identifying the baseline characteristics of participants that may influence the study's outcomes, such as the potential effects of

age or marital status on eating behavior. With comprehensive demographic data, a more accurate analysis of the relationships between these factors and eating patterns can be conducted.

Additionally, the Dutch Eating Behaviour Questionnaire (DEBQ), which is based on psychosomatic theory, externality, and restraint theory, was utilized. This questionnaire aims to assess eating patterns, conceptualized as trait indicators related to overeating and weight gain (Van Strien, T., et al., 1986). The DEBQ contains 33 items, each rated on a Likert scale ranging from 1 (never) to 5 (very often). Example items from the DEBQ include: "I eat when I feel anxious," "I am tempted to eat when I see others eating," and "I control my food intake to maintain my weight." The reliability of the DEBQ was confirmed with acceptable Spearman correlation coefficients (rho > 0.30 and $p < 0.05$) and Cronbach's Alpha ($\alpha \geq 0.70$) for all items, indicating that the instrument is reliable and consistent for use in this research.

Data Analysis

The collected data were analyzed using two main statistical methods:

Generalized Linear Model (GLM) was applied to examine the relationship between the independent variables (age and marital status) and the dependent variable (eating behavior). GLM was chosen for its flexibility in handling various types of data distributions. Two-Way ANOVA was used to test the interaction effects between the two independent variables (age and marital status) on the dependent variable. This method helps determine if there are significant differences within each category of age and marital status and whether their interaction has a combined effect on eating behavior.

Result

Research data collection was carried out in August - September 2023. The number of female respondents was 189 and male 61 respondents, and for those who were married 111 and 138 were not married. The total number of respondents is 250.

Table 1
Descriptive Test

BMI	**Gander**		**Status**	
	Laki-laki	Perempuan	Menikah	Singel
Mean	21.662	23.156	24.566	21.351
SD	3.679	4.737	4.658	3.902
BMI	**Gander + Status**			
	Menikah laki-laki	Menikah Perempuan	Singel Laki-laki	Singel Perempuan
	24.6676	24.5961	23.5852	20.8071
	4.72919	4.64031	4.89990	3.43011

Based on the table above, shows that female participants are more likely to be overweight or obese (M= 23.566; SD= 4.737) than males (M= 21.662; SD= 3.679). Based on married status, it can be seen that someone who is married is more likely to be overweight or obese (M= 24.566; SD= 4.658) than someone who is not married (M= 21.351; SD= 3.902). In addition, unmarried men are more likely to be overweight or obese (M=23.5852; SD=4.89990) than women (M=20.8071; SD=3.43011) and women tend to gain weight when married (M=24.5961; SD=4.6403).

Table 2
Two way Anova

Source	**df**	**F**	**Sig.**	**Partial Eta Squared**
Gender	1	5.520	.020	.022
Status	1	14.775	.000	.057
Gender*Status	1	4.441	.036	.018

This test is used to see the interaction of factors that are being observed. Based on the output results above, it can be seen that there is a significant difference in body mass index on gender, namely, F (1) [246] = 5.520, p = .020, partial η2 = .022. This means that women are more likely to be overweight or obese than men. Whereas when viewed from married status shows that F (1) [246] = 14.775, p = .000, partial η2 = .057. This means that someone who is married is more likely to be overweight or obese than before marriage. When looking at the interaction, it was found that gender and status interacted together to affect body mass index status, F (1) = 4.441, p = .036, partial η2 = .018. When viewed with parameter estimate analysis, it can be concluded that unmarried women have a lower BMI than married women. However, not with men, although the mean results are different, the difference is not significant.

Additional analysis was conducted to see the effect of restraint on overweight or obesity in the context of marriage using the Generalized Linear Model. Based on previous research, it is explained that restraint has a significant influence on married individuals in increasing overweight or obesity.[37] Additional analysis has been conducted regarding the effect of restraint eating on marital status, F (2)=16.803, p=.000, partial η2 = .120. That is, based on the parameter estimate, married individuals are more likely to be overweight or obese due to restrained eating (Table 3).

Table 3
Generalized Linear Model

Source	Type II Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Status*Restraint	540.739	2	270.369	16.803	.000	.120

Discussion

The research hypothesis examining the role of marital status and gender in overweight and obesity was accepted. By gender, female participants were more likely to be overweight or obese than male participants. By marital status, both married men and women were more likely to be overweight or

obese than their unmarried counterparts. Considering both gender and marital status, married women showed a higher likelihood of being overweight or obese.

The findings that gender and marital status significantly impact overweight and obesity trends align with broader epidemiological patterns observed globally. In Indonesia, as with many countries, the prevalence of overweight and obesity is influenced by social, cultural, and lifestyle factors, which can vary based on gender and marital status (Nurwanti et al., 2019; Nugroho et al., 2020). The trend that women generally have higher obesity rates than men has been attributed to biological and lifestyle differences (Thamrin et al., 2022; Ferdina et al., 2024). For instance, research suggests that women, particularly in middle age, experience metabolic and hormonal changes that predispose them to weight gain, particularly in the abdominal area, which aligns with findings from the national Indonesian health surveys (Harbuwono et al., 2018). Additionally, societal expectations, sedentary behavior, and dietary patterns among women may contribute to their higher obesity rates compared to men.

Marital status has also shown a significant association with obesity, with married individuals having higher obesity rates compared to single individuals (Janghorbani et al., 2008; Tzotzas et al., 2010). This phenomenon, often referred to as the "marriage effect," suggests that married people may experience lifestyle changes that lead to weight gain (Lee et al., 2020). For example, marriage is associated with changes in dietary habits, reduced physical activity, and social gatherings that often center around food. In Indonesia, marital status has shown to be a determinant of overweight and obesity in both men and women, with higher rates among married individuals compared to their single peers (Aizawa & Helble, 2017).

Gender differences in the marriage-obesity relationship have been widely reported, with married women exhibiting a higher likelihood of being overweight or obese compared to married men (Kapoor et al., 2021). This disparity may stem from the societal roles that often place a greater caregiving and homemaking responsibility on women, leaving them with less time and resources to dedicate to physical activities or dietary planning (Roemling & Qaim, 2012). Studies in Indonesia show that women are more

likely to experience physical inactivity, which can contribute to the likelihood of weight gain, particularly as they age (Nurwanti et al., 2019).

Furthermore, being married may create environments that reinforce weight gain through shared meal habits, lower motivation for physical fitness, or cultural acceptance of weight gain as a sign of stability and happiness (Markey et al., 2001). In Indonesia, where extended family meals and social dining are common, marriage may lead to more frequent high-calorie meals, often composed of traditional foods that are rich in fats and carbohydrates (Septiyanti & Seniwati, 2020). This setting can indirectly support a more sedentary and less health-conscious lifestyle, with findings indicating that married women, in particular, may experience an increase in body mass as they prioritize family roles over personal health initiatives.

The increase in overweight and obesity among married women can be explained by the social facilitation of eating theory (Markey et al., 2008), which posits that eating with others can increase food intake. Individuals often consume more calories when eating in groups compared to eating alone (Markey et al., 2001). This suggests that married individuals spend more time together, which may lead to higher food intake, such as more frequent fast-food consumption, increased time watching TV, and reduced physical activity (Perry et al., 2016). Additionally, during shared meals, married women may tend to consume more fat and meat and less fruit and vegetables, leading to a higher propensity for overweight and obesity (Sari & Amaliah, 2014).

Women often experience weight gain due to biological factors, one of which includes menstrual cycle irregularities (Rodin et al., 1989). Previous studies have shown that women have twice the risk of becoming overweight or obese compared to men (Setyawati & Rimawati, 2016), partly because they often consume foods high in sugar, such as pastries, chocolate, and ice cream (Schafer et al., 1999).

Married individuals tend to spend more time eating together, which can lead to increased food intake due to distraction from the presence of others, potentially causing overweight or obesity (Stunkard et al., 1980). Additionally, married individuals often consume more snacks, desserts, and alcoholic beverages

(Smith & Christakis, 2008). This aligns with previous research showing a positive relationship between marriage and the likelihood of being overweight or obese (World Health Organization [WHO], 2021).

Further analysis suggests that married individuals are more prone to being overweight or obese due to restrained eating behaviors. In 1990, restrained eating was identified as a contributing factor to overeating, obesity, and eating disorders (WHO, 2021). Researchers commonly explain that restrained eating involves focusing on healthy food choices (Stunkard et al., 1980). However, restrained eating can lead to obesity if individuals lack strong self-control; those with low self-control may struggle to make healthier choices when faced with appealing food options (Schafer et al., 1999).

To ensure a comprehensive understanding of the findings, it is essential to acknowledge both the limitations and strengths of this study. A limitation of this study is the uneven distribution of respondents by gender. Additionally, socioeconomic status was not measured, restricting the study's generalizability. Nonetheless, this study has strengths, as it provides insight into the factors contributing to overweight and obesity among married individuals. It also serves as a foundation for future research on overweight and obesity within the marital context, particularly in Indonesia.

Conclusion

The findings indicate that both gender and marital status significantly influence overweight and obesity rates, with a higher prevalence among married individuals, particularly women. This pattern likely stems from a combination of biological, social, and lifestyle factors, such as metabolic differences, dietary habits, and reduced physical activity linked to family and societal roles. Married women, who are more susceptible to weight gain, often prioritize caregiving and household responsibilities over personal health, which may limit their opportunities for exercise and healthy eating. These results underscore the need for targeted public health interventions that consider these demographic differences, particularly focusing on married women, to promote healthier lifestyles and reduce obesity rates in Indonesia.

Acknowledgment

Conflict of Interest
The researchers declare that this paper has no conflicts of interest.

Author Contribution
All authors have contributed equally to the study's conceptualization, interpreting data, reviewing, and editing the manuscript.

Data Availability
Data can be provided upon request to the author.

Declarations Ethical Statement
The study followed the guidelines of the Declaration of Helsinki.

Informed Consent Statement
Informed consent was obtained from all persons involved in the study.

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