Examining the Impact of Educational Attainment and Gender on Obesity in Saudi Society: A Cultural Capital Approach(*)

Dr.Najwa Helal Alharbi
Social Work Department, College of Social Sciences,
Umm Al-Qura University: Makkah, SA

Abstract

This study examines the relationship between educational attainment and obesity across genders in Saudi Arabia, drawing on Bourdieu's cultural capital theory as a theoretical framework. Given the limited Saudi research in this field, this study is significant because it is the first to apply Bourdieu's sociological perspective to analyze the impact of educational attainment on obesity within Saudi culture, focusing on potential gender differences. The study uses secondary data from the National Health Survey 2023, and logistic regression analyses were conducted to test its hypotheses. The results indicate that the relationship between educational attainment and obesity is moderated by gender. Females without a high school diploma have a higher likelihood of obesity than their male counterparts. For those with a high school diploma or some college education, obesity rates were similar for both genders.

Moreover, the results suggest that higher educational attainment reduces the risk of obesity, particularly among females. These findings underscore the importance of educational attainment in addressing obesity, with a pronounced protective effect observed in women. This emphasizes the need for targeted health promotion strategies that consider the unique influences of education on health behaviors, particularly concerning gender differences.

Keywords: Obesity, educational attainment, gender, Saudi society, cultural capital, Bourdieu

تأثير التعليم والنوع الاجتماعي على السمنة في المجتمع السعودي :دراسة من منظور رأس المال الثقافي

ملخّص

هدفت هذه الدراسة إلى فحص العلاقة بين التحصيل العلمي والسمنة بين الذكور والإناث في المملكة العربية السعودية، بالاعتماد على نظرية رأس المال الثقافي لبورديو كإطار نظري. ونظراً لندرة الأبحاث السعودية في هذا المجال، تكتسب هذه الدراسة أهمية خاصة كونها الأولى من نوعها التي تستخدم منظور بورديو الاجتماعي لتحليل تأثير التحصيل العلمي على السمنة ضمن الثقافة السعودية، مع التركيز على الفروقات المحتملة بين الجنسين. استخدمت الدراسة بيانات ثانوية من المسح الصحي الوطني لعام 2023، وتم إجراء تحليلات الانحدار اللوجستي لاختبار فرضياتها.

أظهرت النتائج إلى أن العلاقة بين التحصيل العلمي والسمنة لدى أفراد المجتمع السعودي تتأثر بالنوع الاجتماعي؛ حيث تُظهر النساء اللاتي لم يحصلنّ على شهادة الثانوية العامة احتمالية أعلى للإصابة بالسمنة مقارنةً بالذكور. أما الأفراد الذين حصلوا على شهادة الثانوية العامة أو دبلوم، فكانت معدلات السمنة متقاربة بين الجنسين. بالإضافة إلى ذلك، تشير النتائج إلى أن التحصيل العلمي المرتفع يقلل من مخاطر السمنة، خاصة لدى النساء. وتؤكد هذه النتائج على أهمية التحصيل العلمي في مكافحة السمنة، مع تأثير وقائي ملحوظ لدى النساء. وتبرز الدراسة الحاجة إلى استراتيجيات صحية مستهدفة تراعي التأثيرات الفريدة للتعليم على السلوكيات الصحية، خصوصاً فيما يتعلق بالفروقات بين الجنسين.

الكلمات الدالة: السمنة، التعليم، النوع الاجتماعي، المجتمع السعودي، رأس المال الثقافي، بورديو

Introduction

Obesity is a complex public health issue shaped by various social factors, including socioeconomic status, gender, and cultural influences. The World Health Organization (WHO) defines obesity as excess body fat, with a Body Mass Index (BMI) over 30 indicating obesity. Globally, high BMIs contributed to around 5 million deaths from noncommunicable diseases in 2019, and obesity rates among adults have increased dramatically, from 7% in 1990 to 16% in 2022 (WHO, 2020).

In the Kingdom of Saudi Arabia, obesity has emerged as an urgent public health challenge, affecting both genders. Studies show significant increases in obesity rates, rising from 22% in 1990 to 36% in 2005 (Al-Quwaidhi et al., 2014). The Saudi Arabian Ministry of Health (MOH) reported that over 1.9 billion adults worldwide were overweight by 2016, with projections indicating that by 2030, half of all adults might be overweight or obese. This trend has an economic burden of approximately $2.0 trillion, equivalent to about 2.8% of global GDP, and is associated with roughly 5% of global deaths (MOH, 2024).

The rise in obesity rates exhibits notable gender disparities, with women typically experiencing higher rates (DeNicola et al., 2015). A study revealed that 50% of females in Saudi Arabia were classified as obese, compared to 31% of males. Additional data suggests that around 35% of adults aged 18 and older are considered obese (General Authority for Statistics, 2020). An understanding of these trends requires an analysis of individual, societal, and systemic factors beyond biomedical explanations (Grace, 2020). This disparity prompts a closer examination of the role of socio-cultural factors and gender in shaping health behaviors and outcomes.

Gender disparities play a significant role in Saudi obesity rates, with women generally exhibiting higher obesity rates compared to men

(Al-Raddadi et al., 2019). Obesity is most prevalent among females in Central Province and males in Western Province, while overweight affects both sexes more in Central Province. Males are generally more overweight, and females are more obese (El-Hazmi & Warsy, 1997). Obesity is more common in men than women, starting from ages 18–19 for men and 30–39 for women. From ages 40–60, both genders experience a decline in muscle mass. Men typically have a larger waist circumference and more visceral fat, while women have a higher total body fat percentage (Azzeh et al., 2017). Approximately 33.5% of women were found to be obese, and 28.0% were classified as overweight. The study highlighted the need for women to enhance their health behaviors to lessen the impact of chronic diseases in the Kingdom (Daoud et al., 2016; DeNicola et al., 2015).

Examining obesity trends in Saudi Arabia reveals significant gender disparities and the influence of socioeconomic factors on obesity rates among adolescents and adults, as presented by Mahfouz et al. (2011) and Al-Nozha et al. (2005). Notably, gender disparities in obesity rates are particularly pronounced. Though existing literature indicates a higher prevalence of obesity among women globally, women tend to be healthier overall than men (Cockerham, 2018; Crosnoe, 2007; Paek & Kim, 2013; SS, 2016). Past studies highlight that women generally demonstrate greater health consciousness as they are socialized from a young age to prioritize their health. This socialization results in women visiting doctors more regularly and adopting healthier habits. Conversely, men are more prone to risky behaviors, such as smoking and poor dietary choices, which contribute to higher accident rates and shorter lifespans (Cockerham, 2018). Furthermore, women often experience greater health benefits from higher education than men (Hill & Needham, 2006), indicating that the relationship between education and health outcomes may be gender-specific. Several studies have explored education's impact on health outcomes such as obesity (Devaux et al., 2011; Kim, 2016), indicating

that lower educational attainment correlates with higher obesity rates.

Interestingly, some research suggests that individuals with education beyond high school might also face a higher risk of obesity (Salem et al., 2022). This observation aligns with findings that college graduates tend to adopt healthier dietary habits, including increased consumption of vegetables, protein, and dairy, while also being more attentive to nutrition information. Notably, these healthy habits appear to be unaffected by household income, underscoring the critical role of education in promoting healthy eating (Andrews et al., 2017) and reducing obesity.

In the context of Saudi Arabia's conservative culture, several factors—such as age, location, income, gender, and education—significantly predict obesity rates (Alabdulkader et al., 2024). Research indicates a higher prevalence of obesity among females, urban residents, and older individuals (Al-Nuaim et al., 1997). The association between female gender and obesity is particularly notable, with reductions in obesity rates observed as education levels increase. Key predictors include low education and chronic diseases, especially hypertension (Al-Haqwi et al., 2015). Memish, El Bcheraoui, et al. (2014) further emphasize the connection between obesity in women and factors such as marital status, educational background, and a history of chronic illnesses.

Understanding the roots of obesity in Saudi Arabia requires an intersectional approach that considers not only biological mechanisms but also societal and cultural factors that contribute to health disparities within the population. This sociological perspective is crucial for developing effective public health interventions aimed at combating obesity and promoting healthier lifestyles.

Despite existing research on obesity and its relationship with socioeconomic factors in Saudi Arabia, there remains a significant gap in understanding how sociocultural elements—especially gender

disparities and educational attainment—impact obesity rates. Most extensive studies have primarily concentrated on medical and epidemiological aspects, often neglecting the vital role of these sociocultural factors.

Obesity is a crucial topic for sociologists, accentuating the relationship between the body and society, frequently overshadowed by psychological and genetic perspectives (Crossley, 2004). Local studies tend to maintain a strictly medical viewpoint, overlooking broader sociological theories such as Pierre Bourdieu's concept of cultural capital. This term refers to non-financial social assets that enhance social mobility, including inherited traits like language skills, family values, and knowledge and skills developed through education and personal experiences.

The existing literature highlights the complexity of educational attainment as part of cultural capital, revealing how educational variations can create differences in health behaviors, food choices, and access to health resources (Devaux et al., 2011). With the National Health Survey (2023) indicating that approximately 24% of adults aged 15 and older in Saudi Arabia are classified as obese, little attention has been directed toward the intersection of educational attainment and gender in influencing these statistics (GASTAT, 2024).

Therefore, the relationship between gender, educational attainment, and obesity in Saudi Arabia remains unclear, particularly when assessed through a medical-sociological lens such as Bourdieu's cultural capital theory. This study aims to bridge this gap by examining how educational attainment relates to obesity rates, specifically focusing on the disparities between women and men and exploring how different educational levels influence obesity prevalence within each gender. This investigation is crucial given the significant social and economic shifts currently occurring in the country.

Research Objective

The objective of this study is to examine the moderating effects of gender on the relationship between educational attainment and obesity rates, explicitly investigating how educational levels influence obesity prevalence among women compared to men.

The Significance of The Study

This study addresses a significant gap in the literature regarding the interplay between educational attainment and obesity in Saudi Arabia, specifically through the lens of Bourdieu's theory of cultural capital. Previous research has primarily focused on non-Arab or non-Western settings, leaving a significant gap in understanding how educational capital and socio-cultural factors impact health in Saudi society. By applying Bourdieu's theory to the local context, the research makes a qualitative contribution to medical sociology. It paves the way for future studies to better understand the health-social relationship. This research enriches the field of medical sociology in Saudi Arabia by enhancing our understanding of the role of cultural capital in shaping health behaviors and outcomes across genders.

This study highlights the importance of integrating medical sociology with public health policy by examining the relationships between education attainment, gender, and obesity. The findings may inform health planning and public policy initiatives in the Kingdom and provide a basis for targeted interventions that address the social determinants of obesity. Understanding how social variables affect prevalent health problems such as obesity is essential to developing effective strategies to promote healthier lifestyles among different demographic groups. Overall, this study represents one of the first research efforts to examine obesity in Saudi Arabia from a medical sociological perspective, focusing on the interaction between educational attainment and gender. The findings of this study will

provide valuable knowledge that can support efforts to address obesity and to develop a more health-conscious society.

Theoretical Framework

This study draws on the foundational theoretical contributions of Pierre Bourdieu, a distinguished sociologist renowned for his concepts of cultural capital, cultural fields, and habitus. Within this framework, I investigate the relationship between educational attainment levels and obesity rates in Saudi society, focusing on gender disparities.

Bourdieu (1984) posits that individuals hold distinct positions within a complex social structure shaped by various forms of capital—economic, social, and cultural (Christensen & Carpiano, 2014). Cultural capital encompasses the non-financial social resources that individuals acquire, influencing social mobility and reinforcing hierarchies beyond simple economic factors (Bourdieu, 2011). This capital manifests in three forms: embodied (long-term dispositions), objectified (cultural goods), and institutionalized (academic qualifications) (Bourdieu, 2018).

Specifically, institutionalized cultural capital is evident in academic qualifications, which influence individuals' intellectual and social skills (Sullivan, 2001). In this context, cultural capital refers to a person’s educational attainment, including their completed qualifications. Educational attainment is typically divided into three categories: no high school diploma, high school to some college, and a college degree or higher. This classification is a crucial determinant of cultural capital and significantly impacts health behaviors and outcomes.

Research indicates that obtaining higher academic qualifications is pivotal in accessing various forms of social and economic capital, which in turn impacts social mobility and overall life opportunities (Lareau & Weininger, 2003). Bourdieu (1984) highlights the

importance of knowledge and skills acquired through education and social experiences, noting that access to cultural capital is often linked to family background. This relationship highlights how cultural resources are distributed unevenly, affecting individuals' health behaviors and choices related to obesity.

The application of Bourdieu's theories reveals how capital influences gender disparities in health outcomes, particularly in Saudi Arabia. The ideal of masculinity often emphasizes hearty meals associated with substantial foods, like meat, which require strength and practicality in preparation and consumption. In this regard, men are culturally permitted to engage with significant, practical foods that align with an ideal body image defined by strength and size. For example, while educated men may begin to adopt health-conscious behaviors, reflecting a gradual recognition of health as a status symbol, they still experience less scrutiny regarding body size compared to women. In contrast, women are often held to stricter societal standards regarding body image and dietary choices, leading to a greater focus on health and fitness, especially as educational attainment increases.

Studies show that while higher educational attainment is associated with increased health literacy and better dietary practices for both genders, it tends to contribute to lower obesity rates more significantly among women. Research supports this notion, indicating that mothers with higher cultural capital are less likely to have overweight children and are more adept at accurately assessing BMI and weight categories (Christensen, 2011). Meanwhile, food choices also vary by education level; those with less education, regardless of gender, tend to choose cheaper, calorie-dense options lacking nutrition, resulting in higher obesity rates. Conversely, individuals with more education—both men and women—are more likely to understand and adopt healthier eating habits and body management practices.

Moreover, maintaining a healthy weight is often viewed as a

marker of cultural capital. Being thin or fit signifies that an individual possesses the knowledge and resources to meet societal standards, especially in higher socioeconomic and educated demographics. However, the implications vary between genders; educated men might still be judged less harshly for body size, while women face more intense pressure to conform to ideals of thinness. Bourdieu's examination of food preferences further illustrates the connection between education and obesity: those with higher education tend to choose lighter, healthier options, while those with lower education often favor traditional, heavier meals, reinforcing different dietary practices across genders.

The relationship between social class, gender, and cultural capital, particularly education, plays a crucial role in understanding obesity trends. Contrary to expectations that wealthier individuals would be more prone to obesity due to greater access to dining out and convenience foods, research indicates that higher social classes often experience lower obesity rates (Crossley, 2004). This suggests that economic resources alone do not determine health outcomes; cultural capital—encompassing education and social values—significantly influences dietary behaviors and health across genders. Bourdieu's discussions on gender in "Masculine Domination" (2001) shed light on the social construction of gender differences, particularly regarding body image and food choices. He argues that women face societal scrutiny over their physical appearance, which can influence their dietary habits. This dynamic suggests that while higher levels of educational attainment empower both men and women with better health knowledge, the impact on body image and food consumption is more pronounced among women, challenging prevailing societal norms.

Review of The Literature

The intersection of gender, educational attainment, and obesity

has become a focus of contemporary research, particularly through Bourdieu's concept of cultural capital. This theoretical framework posits that individuals' social positions, as defined by factors such as education, influence their behaviors and health outcomes. Existing literature indicates significant gender disparities in obesity rates, with women generally experiencing higher prevalence than their male counterparts across various global contexts (Devaux et al., 2011; Kim, 2016). In the Kingdom of Saudi Arabia (KSA), empirical studies have documented this trend, revealing that women are more likely to be obese compared to men (AlTamimi et al., 2020).

Education emerges as a crucial determinant in this discussion. Higher educational levels are consistently linked to healthier lifestyle choices and improved health literacy, which can mitigate the risk of obesity (Andrews et al., 2017). However, Bourdieu's framework suggests that cultural capital plays a significant role in how education translates into behavioral changes. In the context of Saudi Arabia, the lower educational attainment of women compared to men contributes to their limited access to health resources and negatively affects their ability to adopt healthier behaviors. The Global Burden of Disease study underscores the importance of Body Mass Index (BMI) as a significant risk factor for disease burden, particularly among women in KSA (Memish, Jaber, et al., 2014; Tyrovolas et al., 2020).

Despite being generally more health-conscious and visiting healthcare providers more frequently, women in KSA face sociocultural barriers that impede their ability to implement healthy lifestyle changes. Many women looking to lose weight often come from lower education and income backgrounds, highlighting the intricate links between socioeconomic status, education, and health (AlTamimi et al., 2020). Furthermore, a significant portion of the Saudi adult population—over 81%—fails to consume the recommended daily servings of fruits and vegetables, leading to escalating obesity rates

(Memish, El Bcheraoui, et al., 2014).

Research indicates that educational attainment can significantly influence dietary habits and health behaviors (Devaux et al., 2011). Studies suggest that individuals with lower educational levels exhibit higher rates of obesity, as they tend to lack the health literacy necessary to make informed dietary choices (Mosli et al., 2020). However, while education tends to improve health outcomes for both genders, its impact varies greatly. Liu et al. (2024) found that the protective effect of education against obesity is particularly pronounced among women. In contrast, for men, higher education levels may correlate with increased obesity rates due to differing cultural expectations and lifestyle choices.

This relationship between education and obesity highlights a gender difference: education serves as a protective factor against obesity, primarily for women, likely due to greater health awareness and access to resources among educated individuals (Drewnowski, 2009). While education positively impacts self-reported health, alcohol consumption, and smoking behaviors in women, men with higher education levels tend to be more obese than those without a high school diploma (Paek & Kim, 2013). This suggests a complex interplay of education, gender, and obesity across various cultural contexts, warranting further investigation, especially in Saudi Arabia. Obesity is closely linked to female gender and marital status, with prevalence declining as education levels rise (Al-Haqwi et al., 2015).

Despite the growing evidence connecting education, gender, and obesity, a significant research gap remains regarding the mechanisms through which cultural capital influences these relationships in Saudi Arabia. Previous studies have not adequately explored how gender dynamics intersect with educational attainment to affect obesity rates.

Hypothesis Derivation

Drawing on Bourdieu's concepts of cultural capital and previous

studies, my primary research hypothesis posits that gender moderates the relationship between educational attainment and obesity rates. Specifically, I hypothesize the following:

> Hypothesis: Higher education, as a form of cultural capital, is significantly associated with lower obesity rates among women compared to men in Saudi society.

Methodology

The study employed a descriptive-analytical methodology to describe and analyze the relationships between educational attainment and obesity across genders in Saudi Arabia. Understanding these dynamics through the lens of cultural capital theory can provide deeper insights into how social factors influence health outcomes, especially concerning gender differences.

This study used secondary data from the Saudi National Survey conducted in 2023, which provides a comprehensive dataset aligned with the research objectives. Permission was obtained from the General Authority for Statistics to access this valuable dataset. The survey included a sample of 624 participants between the ages of 15 and 55, collected through a two-stage method that involved computer-assisted telephone interviewing (CATI) and computer-assisted web interviewing (CAWI). Data was collected from April 30, 2023, to July 18, 2023 (GASTAT, 2024).

The survey includes various health-related variables such as body mass index (BMI), socioeconomic status (including education level and income), and sociodemographic factors such as gender, age, and marital status.

Study Variables

The focus of the study was on obesity as the primary outcome. Obesity is defined as a body mass index (BMI) greater than 30. BMI is calculated by dividing the weight of a person in kilograms by their height in meters (BMI = weight (kilograms) / (height (meters)

²)(Crossley, 2004). A BMI of ≥ 30 indicates obesity, and a BMI of < 30 indicates non-obesity (WHO, 2020). Therefore, in this study, obesity was coded as a binary variable (≥ 30 = obesity, < 30= non-obesity).

The main predictor variables in this study were gender (male and female) and educational attainment, viewed as cultural capital. In the dataset, educational attainment was initially measured on a scale from 1 to 9, ranging from less than primary education to PhD or equivalent. To facilitate clearer analysis, educational attainment was recoded into three categories: "No high school diploma," which includes individuals with less than primary, primary, and intermediate education; "High school to some college," encompassing secondary education, intermediate diplomas, and associate diploma, and "college degrees and higher," consisting of those with bachelor's degree or equivalent, master's degree or equivalent, or PhD. This classification makes the dataset more condensed and is consistent with Bourdieu's concepts of cultural capital, where individuals with higher levels of education tend to have access to better health resources and knowledge, potentially influencing obesity rates.

The theoretical foundation for this coding stems from the understanding that education impacts both awareness and lifestyle choices related to diet and physical activity. Research indicates that higher educational attainment often correlates with healthier behavioral patterns, thereby influencing obesity rates (Andrews et al., 2017).

Income was measured in various ranges, including those with no income and individuals earning less than 3,000 SAR up to more than 30,000 SAR. For this analysis, income was recoded into three categories: "Low income," capturing those with no income and earnings less than 3,000 SAR; "Middle income," which includes individuals earning between 3,000 SAR and 12,000 SAR; and "High income," defined as earnings above 12,000 SAR and below 20,000 SAR. Marital status was categorized as married or unmarried, while age

was grouped into four ranges: 15–24 years, 25–39 years, 40–54 years, and 55 years and older.

Statistical Analysis

The researcher utilized Stata software to analyze the study variables. First, to provide an overview of the data, descriptive statistics were obtained to calculate percentages for all variables categorized by gender. A chi-squared test was then performed to examine the relationship between gender and several categorical variables, including obesity, educational attainment, marital status, age groups, and income levels.

Moreover, logistic regression analysis was conducted to compute odds ratios (OR) and 95% confidence intervals (CI). This analysis tested the research hypothesis regarding the impact of gender on the relationship between educational attainment and obesity. Two models were employed in the logistic regression analysis: the Unadjusted Model, which included gender, educational attainment, and the interaction term to evaluate the direct relationship without controlling for other variables, and the Adjusted Model, which took into account covariate variables such as income, marital status, and age, to provide a more accurate interpretation by addressing potential confounding factors. It clarifies how much of the relationship can be attributed to gender and educational attainment versus other influencing factors. This dual approach increases the robustness of the conclusions and provides a clearer picture of how these variables interact with obesity.

Furthermore, the fit of the models was assessed using the Hosmer-Lemeshow test. To clarify the interaction effect between education and gender in the adjusted model, marginal effects of educational attainment on obesity across genders were conducted, as presented in Figure 1. Support for the research hypothesis was determined by examining the direction and significance of each model (alpha = .05). The testparm function was utilized to evaluate the

significance of interaction terms ($p < .05$).

Results

This study included a sample of 624 individuals from the Saudi population, consisting of 412 males (66%) and 221 females (34%). Summary statistics for the analyzed variables by gender are presented in Table 1. Overall, there were no significant differences in obesity rates between males and females, with 26% of males and 20% of females reporting that they are obese ($p>.05$). However, males and females significantly differed in educational attainment ($p< .05$). A more significant proportion of males reported holding college degrees or higher than females. Specifically, 15% of male and 26% of female participants reported not having a high school diploma. Additionally, 47% of males and 41% of females reported having a high school diploma or some college education.

The chi-squared test showed significant differences between males and females in marital status, age, and income level ($p < .05$). The majority of participants in both groups were married: 79% of males and 61% of females. All participants were 15 years and older, with the highest percentages in the 25-39 age category (51% for males and 45% for females). Furthermore, 27% of females were in the 14-24 age category, compared to 12% of males. Males aged 40-54 represented 30%, while females in the same age range accounted for only 19%. Regarding income, a higher percentage of males reported high income (22%) compared to females (2%). In contrast, 80% of females reported having low incomes, while only 30% of males fell into this category. Additionally, more males (48%) reported having a middle income than females (18%).

Table 1

Descriptive Statistics for National Health Survey, 2023, (*N*= 624).

Variable	Male (66%) N=412	Female (34%) N=212	Chi-square *p*
Obesity			>0.05
Not Obese (BMI <30)	74.2	80.1	
Obese (BMI >= 30)	25.7	19.8	
Educational Attainment			<0.05
No high school diploma	15.0	26.4	
High school to some college	46.6	41.0	
College degree or higher	38.3	32.5	
Marital Status			<0.05
Married	78.8	60.8	
Unmarried	21.1	39.1	
Age groups			
15–24 years	11.8	26.8	<0.05
25–39 years	50.9	45.2	
40–54 years	29.8	19.3	
+55 years	7.2	8.4	
Income Level			
Low income	29.8	79.7	<0.05
Middle income	48.3	17.9	
High income	21.8	2.3	

Table 2 presents the logistic regression analysis results for both unadjusted and adjusted models to explore the relationship between gender, educational attainment, and obesity. To test the study hypothesis, interaction terms were included, specifically the interaction between gender and educational attainment in both models. I incorporated additional covariates in the adjusted model to examine these relationships more comprehensively. Both models report odds ratios (OR) and 95% confidence intervals (CI), along with the results of the Hosmer-Lemeshow test to assess model fit.

As shown in Table 2, in the unadjusted model, the results

indicated that females had significantly lower odds of obesity compared to males (OR = 0.23, 95% CI [0.09, 0.57], p < .01). Educational attainment was not significantly associated with obesity when comparing individuals with less than a high school diploma (OR = 0.84, 95% CI [0.43, 1.64]) or some college education (OR = 0.72, 95% CI [0.44, 1.17]) to those with a college degree or higher (p > .05). However, the interaction between gender and educational attainment was statically significant (p<.05), revealing that females with no high school diploma had significantly higher odds of obesity compared to males with a college degree or higher (OR = 6.88, 95% CI [2.07, 22.88], p < .01). A similar and lower effect was observed for females with some college education (OR = 3.26, 95% CI [1.08, 9.89], *p* < .05). The goodness-of-fit test results as indicated by the Hosmer-Lemeshow test for the unadjusted model showed no evidence of a lack of fit test (*F* = 0.00, *p* = 1.0).

Table 2

Unadjusted and adjusted odds ratios for reporting Obesity by Gender and Educational Attainment (National Health Survey 2023, $N = 624$).

	Obesity	
	Unadjusted Model OR (95% CI)	Adjusted Model[a] OR (95% CI)
Gender (Female)	0.23 [0.09–0.57] **	0.29 [0.11–0.76] *
Educational Attainment (College degree or higher =*reference*)		
Less than high school	0.84 [0.43–1.64]	1.01 [0.48–2.12]
High school to some college	0.72 [0.44–1.17]	0.85 [0.51–1.44]
Gender x Educational Attainment (Male x College degree or higher= *reference)*		
Female x No high school diploma	6.88 [2.07–22.88] **	5.98 [1.74–20.54] **
Female x High school to some college	3.26 [1.08–9.89] *	3.23 [1.04–9.96] *
Fit Statistics		
Hosmer-Lemeshow test	F= 0.00, p = 1.0	F= 7.19, p= 0.51

[a]Model adjusted for marital status, age, income level OR= Odds Ratio; *** p<0.01, ** p<0.05, *p < 0.1.

In the adjusted model, I added control variables such as marital status, age, and income level. As shown in Table 2, females still had significantly lower odds of obesity compared to males (OR = 0.29, 95% CI [0.11, 0.76], $p < .05$). Educational attainment remained non-significant for individuals with less than a high school diploma or some college education compared to those with a college degree or higher (p

>.05) However, the interaction effect persisted statically significant (p<.05), with females who had no high school diploma showing significantly higher odds of obesity (OR = 5.98, 95% CI [1.74, 20.54], p < .01) and females with some college education also experiencing elevated odds (OR = 3.23, 95% CI [1.04, 9.96], $p < .05$). This adjusted model demonstrated good fit, as indicated by the Hosmer-Lemeshow test ($F = 7.19$, $p = .51$). These findings highlight the significant interaction between gender and educational attainment, suggesting that lower levels of education are particularly associated with higher odds of obesity for females compared to males ($p < .05$).

To better understand the interaction between educational attainment and gender regarding the likelihood of obesity after adjusting control variables, the researcher conducted a predictive margin analysis, as illustrated in Figure 1. Among males, the likelihood of obesity remained relatively consistent across educational levels, with no significant differences observed between those with no high school diploma, those with a high school education to some college, and those with college degrees or higher. In contrast, women showed a significant disparity. Those without a high school diploma had the highest odds of obesity, while women with a college degree or higher had the lowest odds of obesity. These findings highlight a gendered effect of education on obesity, where educational attainment appears to be a more robust protective factor against obesity for females than males (p < .05). These results support the study's hypothesis.

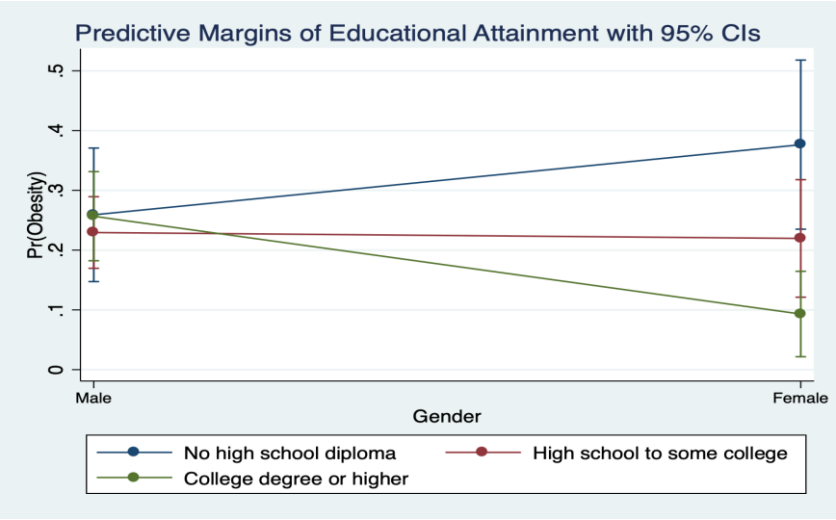

Figure. 1. Predicted average marginal effects of Educational Attainment on Obesity by Gender.

Discussion

The current study findings show that females are less likely to be obese than males, which aligns with prior research indicating a higher prevalence of obesity and overweight among men (Azzeh et al., 2017). These findings corroborate the sociocultural context outlined by Paquette and Raine (2004) who examined how societal expectations and pressures influence women's body image. Their study underscores the significant impact of sociocultural factors on women's perceptions of their bodies, which may contribute to their lower obesity rates in comparison to men. In a similar vein Crossley (2004) highlights that feminist scholars, such as Bordo (1993) and Bartky (1990), emphasize how gender dynamics further complicate the discourse on obesity. They argue that societal pressures surrounding body image affect men and women differently, contributing to higher obesity rates among men. In contrast, women maintain body weights within the 'normal' range. This nuanced understanding underscores the importance of considering gender, social class, and cultural capital in addressing obesity as a

significant sociological issue. By recognizing the influence of these sociocultural and gendered dynamics, targeted interventions can be developed to address the unique challenges faced by both women and men concerning body image and health. A comprehensive approach that considers these experiences will be essential for creating effective public health strategies to promote healthier lifestyles for all individuals.

On the other hand, my study results indicate that there were no significant differences in the odds of obesity based on educational attainment. This is an exciting contrast to existing research, which suggests that individuals who are illiterate or have only an elementary education are at higher risk of obesity than those with a college degree or higher (Mosli et al., 2020). The common understanding is that higher educational levels correlate with healthier dietary habits. These habits include a greater intake of vegetables, protein, and dairy and an enhanced awareness of nutritional information (Andrews et al., 2017). Several explanations exist for my findings regarding the lack of significance between educational attainment and obesity. One key factor is the unique sociocultural context of Saudi Arabia, which affects health behaviors in the region. Although there have been improvements in access to academic resources and health information, these advancements may lessen the overall impact of education on obesity rates. Individuals with higher educational attainment still face challenges, such as limited access to healthy food options and strong cultural attitudes toward body image.

Moreover, Bourdieu's concept of habitus illustrates how individuals from different social classes possess distinct attitudes toward food and health, influenced by their educational backgrounds and cultural norms. For instance, those from lower socioeconomic groups may have similar fast-food consumption patterns as their affluent counterparts but exhibit different health outcomes due to

varying cultural beliefs and practices (Crossley, 2004). Additionally, the rapid urbanization in Saudi Arabia has transformed dietary patterns and lifestyle choices, potentially overshadowing the protective benefits typically associated with educational attainment. Even though educated individuals generally possess greater health knowledge, the fast-paced lifestyle demands may compel them towards convenience foods rather than healthier options. This complex interplay of education, access, and sociocultural influences emphasizes the need to consider additional contextual factors when examining obesity trends in this population.

These findings support my analysis of the moderated relationship between education and obesity, especially among women with higher education. When I included interaction terms between gender and educational attainment in the study after accounting for control variables such as age, marital status, and income to test the main research hypotheses, it was interesting to find that educational attainment significantly protected against obesity, particularly among women with a college degree or higher. This finding is consistent with previous research suggesting that education enhances health awareness and access to resources, thereby lowering obesity rates in women (Drewnowski, 2009; Paek & Kim, 2013).

In addition, my findings support Bourdieu's concept of cultural capital and highlight the relationship between education and obesity, particularly from a gender perspective. In Saudi Arabia, there are notable differences in body management habits between men and women, with educated women often adhering to global health and beauty standards emphasizing thinness. Although the lack of significant differences in education alone may deviate from the established literature, it underscores the importance of contextual factors and the need for further research to uncover the complexities of the relationship between education and obesity in this region.

Despite the valuable insights gained from this research, several

limitations must be acknowledged. First, the cross-sectional survey design limits the ability to establish causal relationships among the variables examined. While the results indicate a significant protective effect of educational attainment against obesity, the data cannot determine whether higher education directly leads to lower obesity rates or whether other factors are at play.

Additionally, the study lacked access to key variables such as physical activity levels, dietary habits, and social networks. These factors can differentially affect obesity rates among genders and may help explain the relationship between education and obesity more comprehensively. Moreover, the relatively small sample size may limit the generalizability of the findings, suggesting a need for larger, more diverse samples to enhance the robustness of the results.

Based on the findings that females are less likely to be obese than males and that educational attainment significantly protects against obesity—especially among women with a college degree or higher—several recommendations for implications and future research emerge. First, it is essential to investigate the reasons for the observed difference in obesity rates between genders, focusing on how social, cultural, and economic factors may uniquely influence women's health outcomes. Future research should also examine the relationship between educational attainment and obesity, particularly the lack of significant differences in obesity prevalence between different levels of education among men. This could provide valuable insights into how education affects lifestyle choices and obesity across genders.

In addition, studies examining the effectiveness of targeted educational programs for women could further illuminate how increased education influences health-related decisions and behaviors. Understanding these dynamics will be critical for developing community interventions aimed at reducing obesity rates, particularly among vulnerable populations.

Community outreach initiatives that engage families—particularly mothers, daughters, and younger women—could also play a vital role in reducing obesity rates among those with lower levels of education. Integrating these findings into public health strategies can help develop more effective approaches that address gender disparities and emphasize the protective role of education in promoting healthier lifestyles.

Conclusion

The findings of this study underscore the significant impact of gender and educational attainment on obesity odds, particularly among females in Saudi Arabia. While males exhibit consistent obesity odds irrespective of their academic level, females demonstrate a clear correlation between higher education and reduced obesity likelihood. This highlights the importance of addressing gender-specific factors in public health strategies. The discussion emphasizes the critical role of education in shaping health behaviors and outcomes. For women, education enhances awareness of healthy lifestyle choices and aligns with societal health and beauty standards, further influencing their lower likelihood of obesity. Given these dynamics, it is crucial for health promotion strategies to be tailored to the unique experiences and needs of both genders.

References

Al-Haqwi, A. I., Al-Nasir, M., Ahmad, N., Masaudi, E., Alotaibi, S. S., & Hamad, B. (2015). Obesity and overweight in a major family practice center, central region, Saudi Arabia. *Saudi Journal of Obesity*, *3*(1), 12-17.

Al-Nozha, M. M., Al-Mazrou, Y. Y., Al-Maatouq, M. A., Arafah, M. R., Khalil, M. Z., Khan, N. B., Al-Marzouki, K., Abdullah, M. A., Al-Khadra, A. H., & Al-Harthi, S. S. (2005). Obesity in Saudi Arabia. *Saudi Medical Journal*, *26*(5), 824-829.

Al-Nuaim, A. A., Bamgboye, E. A., Al-Rubeaan, K. A., & Al-Mazrou, Y. (1997). Overweight and obesity in Saudi Arabian adult population, role of sociodemographic variables. *Journal of community health*, *22*(3), 211-223.

Al-Quwaidhi, A., Pearce, M., Critchley, J., Sobngwi, E., & O'flaherty, M. (2014). Trends and future projections of the prevalence of adult obesity in Saudi Arabia, 1992-2022. *Eastern Mediterranean Health Journal*, *20*(10).

Al-Raddadi, R., Bahijri, S. M., Jambi, H. A., Ferns, G., & Tuomilehto, J. (2019). The prevalence of obesity and overweight, associated demographic and lifestyle factors, and health status in the adult population of Jeddah, Saudi Arabia. *Therapeutic advances in chronic disease*, *10*, 2040622319878997.

Alabdulkader, S., Alzaben, A. S., Almoayad, F., Mortada, E. M., Benajiba, N., Aboul-Enein, B. H., Dodge, E., Bernstein, J., & Bawazeer, N. (2024). Evaluating attitudes toward soft drink consumption among adults in Saudi Arabia: Five years after selective taxation implementation. *Preventive medicine reports*, *44*, 102808.

AlTamimi, A. A., Albawardi, N. M., AlMarzooqi, M. A., Aljubairi, M., & Al-Hazzaa, H. M. (2020). Lifestyle behaviors and socio-demographic factors associated with overweight or obesity among Saudi females attending fitness centers. *Diabetes, Metabolic Syndrome and Obesity*, 2613-2622.

Andrews, H., Hill, T. D., & Cockerham, W. C. (2017). Educational attainment

and dietary lifestyles. In *Food Systems and Health* (pp. 101-120). Emerald Publishing Limited.

Azzeh, F. S., Bukhari, H. M., Header, E. A., Ghabashi, M. A., Al-Mashi, S. S., & Noorwali, N. M. (2017). Trends in overweight or obesity and other anthropometric indices in adults aged 18–60 years in western Saudi Arabia. *Annals of Saudi medicine*, *37*(2), 106-113.

Bourdieu, P. (1984). A social critique of the judgement of taste. *Traducido del francés por R. Nice. Londres, Routledge*.

Bourdieu, P. (2011). The forms of capital.(1986). *Cultural theory: An anthology*, *1*(81-93), 949.

Bourdieu, P. (2018). The forms of capital. In *The sociology of economic life* (pp. 78-92). Routledge.

Christensen, V. T. (2011). Does parental capital influence the prevalence of child overweight and parental perceptions of child weight-level? *Social Science & Medicine*, *72*(4), 469-477.

Cockerham, W. C. (2018). Health lifestyles and the search for a concept of a gender-specific habitus. *Social Theory & Health*, *16*, 142-155.

Crosnoe, R. (2007). Gender, obesity, and education. *Sociology of education*, *80*(3), 241-260.

Crossley, N. (2004). Fat is a sociological issue: Obesity rates in late modern,'body-conscious' societies. *Social Theory & Health*, *2*, 222-253.

Daoud, F., El Bcheraoui, C., Tuffaha, M., AlMazroa, M. A., Al Saeedi, M., Nooh, R. M., Al Rayess, Z., Al-Raddadi, R. M., Memish, Z. A., & Basulaiman, M. (2016). The health status of Saudi women: findings from a national survey. *Journal of Public Health*, *38*(4), 660-672.

DeNicola, E., Aburizaiza, O. S., Siddique, A., Khwaja, H., & Carpenter, D. O. (2015). Obesity and public health in the Kingdom of Saudi Arabia. *Reviews on environmental health*, *30*(3), 191-205.

Devaux, M., Sassi, F., Church, J., Cecchini, M., & Borgonovi, F. (2011). Exploring the relationship between education and obesity. *OECD Journal: Economic Studies*, *2011*(1), 1-40.

Drewnowski, A. (2009). Obesity, diets, and social inequalities. *Nutrition reviews*, *67*(suppl_1), S36-S39.

El-Hazmi, M., & Warsy, A. (1997). Prevalence of obesity in the Saudi population. *Annals of Saudi medicine*, *17*(3), 302-306.

Grace, S. G. (2020). Obesity: a sociological guide for health practitioners. *Australian journal of primary health*, *26*(5), 362-366.

General Authority for Statistics [GASTAT]. (2024) *National Health Survey 2023*. Retrieved Ocyober 13, 2024, from https://www.stats.gov.sa/en/awareness-surveys/health

Hill, T. D., & Needham, B. L. (2006). Gender-specific trends in educational attainment and self-rated health, 1972–2002. *American journal of public health*, *96*(7), 1288-1292.

Kim, Y.-J. (2016). The long-run effect of education on obesity in the US. *Economics & Human Biology*, *21*, 100-109.

Lareau, A., & Weininger, E. B. (2003). Cultural capital in educational research: A critical assessment. *Theory and society*, *32*, 567-606.

Liu, B., Ji, S., & Zhu, Z. (2024). Does higher education matter for health in the UK? *SSM-Population Health*, *25*, 101642.

Mahfouz, A. A., Shatoor, A. S., Khan, M. Y., Daffalla, A. A., Mostafa, O. A., & Hassanein, M. A. (2011). Nutrition, physical activity, and gender risks for adolescent obesity in Southwestern Saudi Arabia. *Saudi Journal of Gastroenterology*, *17*(5), 318-322.

Memish, Z. A., El Bcheraoui, C., Tuffaha, M., Robinson, M., Daoud, F., Jaber, S., Mikhitarian, S., Al Saeedi, M., AlMazroa, M. A., & Mokdad, A. H. (2014). Peer reviewed: obesity and associated factors—Kingdom of Saudi Arabia, 2013. *Preventing chronic disease*, *11*.

Memish, Z. A., Jaber, S., Mokdad, A. H., AlMazroa, M. A., Murray, C. J., Al Rabeeah, A. A., & Collaborators, S. B. o. D. (2014). Peer reviewed: Burden of disease, injuries, and risk factors in the Kingdom of Saudi Arabia, 1990–2010. *Preventing chronic disease*, *11*.

Ministry of Health Saudi Arabia [MOH]. (2024). *Obesity*. Retrieved November 1, 2024, from https://www.moh.gov.sa/en/awarenessplateform/ChronicDisease/Pages/Obesity.aspx

Mosli, H. H., Kutbi, H. A., Alhasan, A. H., & Mosli, R. H. (2020). Understanding the interrelationship between education, income, and

obesity among adults in Saudi Arabia. *Obesity facts*, *13*(1), 77-85.

Paek, E., & Kim, J. (2013). The relationship between educational attainment and obesity among Korean adults: focusing on age variations. *Korean journal of health education and promotion*, *30*(5), 91-100.

Paquette, M.-C., & Raine, K. (2004). Sociocultural context of women's body image. *Social Science & Medicine*, *59*(5), 1047-1058.

Salem, V., AlHusseini, N., Abdul Razack, H. I., Naoum, A., Sims, O. T., & Alqahtani, S. A. (2022). Prevalence, risk factors, and interventions for obesity in Saudi Arabia: A systematic review. *Obesity reviews*, *23*(7), e13448.

SS, M. A. (2016). A review of prevalence of obesity in Saudi Arabia. *J Obes Eat Disord*, *2*(2), 1-6.

Tyrovolas, S., El Bcheraoui, C., Alghnam, S. A., Alhabib, K. F., Almadi, M. A. H., Al-Raddadi, R. M., Bedi, N., El Tantawi, M., Krish, V. S., & Memish, Z. A. (2020). The burden of disease in Saudi Arabia 1990–2017: results from the Global Burden of Disease Study 2017. *The Lancet Planetary Health*, *4*(5), e195-e208.

World Health Organization [WHO]. (2020) *Obesity*. Retrieved November 1, 2024, from https://www.who.int/health-topics/obesity#tab=tab_1