



A Study of the Nutritional Intake on the Health Outcomes of the Women: A Regression Analysis-Enter Method

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Abstract: The study aims to determine the effect of the nutritional intake on the health outcomes of the women. This research study employed an exploratory and descriptive research design. A preliminary pilot study was conducted on the women. A web-based, structured Google form questionnaire was designed for the primary data collection from the women. The reliability and validity of the questionnaire was checked using Cronbach's alpha, Bartlett test of significance and Kaiser-Meyer-Olkin (KMO) values. This study employed a sample size of 394 respondents. The correlation, regression enter method was used to check the cause-and-effect relationship and hypothesis testing. The study's findings concluded that nutritional intake had a significant positive effect on the health outcomes of the women. The SPSS 23.0 version software was used for statistical calculation and pictorial presentation.

Index Terms - Nutritional Intake; Health Outcomes; Women; Correlation & Regression.

I. INTRODUCTION

Nutrition plays a vital role in maintaining and promoting overall health and well-being, particularly among women, who experience unique physiological and nutritional needs across different stages of life. From adolescence to pregnancy, lactation, and menopause, women's bodies undergo significant biological changes that influence their nutritional requirements. Adequate and balanced nutritional intake ensures proper physical growth, reproductive health, immune function, and protection against various diseases. Conversely, poor nutrition can lead to severe health consequences such as anemia, osteoporosis, reproductive complications, and chronic illnesses like diabetes and cardiovascular diseases. Therefore, understanding the relationship between nutritional intake and health outcomes among women is essential for improving public health policies and individual health management.

Globally, malnutrition among women remains a pressing concern. Both undernutrition and overnutrition significantly affect women's health and quality of life. In many developing countries, women are more vulnerable to nutrient deficiencies due to socio-economic inequalities, cultural food restrictions, and limited access to healthcare services. Iron, calcium, protein, and vitamin deficiencies are prevalent, often resulting in fatigue, poor maternal outcomes, and reduced productivity. On the other hand, in more urbanized settings, overconsumption of processed foods high in sugar, salt, and unhealthy fats has contributed to a rise in obesity, hypertension, and lifestyle-related diseases. This dual burden of malnutrition underscores the complexity of nutritional challenges faced by women across the world.

Nutritional intake directly influences various health outcomes, including reproductive health, bone density, metabolic balance, and mental well-being. For instance, adequate intake of iron and folic acid reduces the risk of maternal mortality and complications during pregnancy, while sufficient calcium and vitamin D help maintain bone strength and prevent osteoporosis. Moreover, balanced nutrition enhances cognitive performance and emotional stability, contributing to overall well-being. Research has shown that diet quality, rather than mere quantity, is crucial for sustaining good health. A diet rich in fruits, vegetables, whole grains, and lean proteins supports optimal body function, whereas excessive consumption of refined and high-fat foods increases the risk of metabolic disorders.

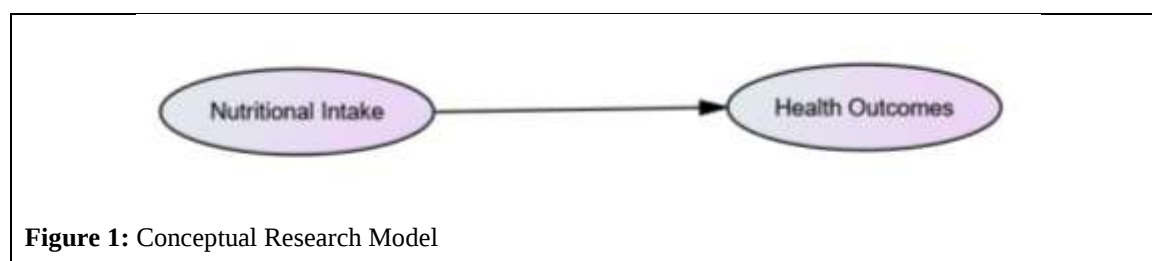
The significance of studying women's nutrition extends beyond individual health it has intergenerational effects. A woman's nutritional status before and during pregnancy profoundly impacts fetal development and child health. Malnourished mothers are more likely to give birth to underweight or stunted children, perpetuating a cycle of poor health outcomes across generations. Thus, improving women's nutrition is not only a matter of personal well-being but also a key strategy for enhancing family and community health.

This research paper titled “A Study of the Nutritional Intake on the Health Outcomes of Women: A Regression Analysis-Enter Method” aims to examine the relationship between dietary patterns and women’s health conditions. It seeks to identify how variations in nutritional intake affect health outcomes. By understanding these relationships, policymakers, healthcare providers, and nutritionists can design more effective intervention programs that promote healthy eating behaviors among women. Ultimately, this research emphasizes that ensuring proper nutrition for women is a fundamental step toward achieving sustainable health and well-being.

II. LITERATURE REVIEW

Previous studies were reviewed and organized using Mendeley Desktop and Mendeley Reference Manager. The references were formatted according to the American Psychological Association (APA) 7th edition. The findings and conclusions of earlier researchers were then presented in a chronological order as outlined below.: (Akshatha, 2023) examined the dietary pattern and nutritional status of 100 women (50 working and 50 non-working) aged 25–45 years in Thrissur district. Using a 24-hour dietary recall, nutrient intake was compared. Results showed no significant difference in BMI or hemoglobin levels, though working women demonstrated better nutritional knowledge and food selection awareness. (Vaishnav, 2023) found that women today are increasingly aware of their health and nutritional needs, recognizing their vital roles both at home and in the workplace. They value maintaining a healthy lifestyle through proper eating habits. Although economic status influences lifestyle choices, healthy eating does not necessarily depend on income but rather on one’s perception, awareness, and value placed on nutrition. (Waghmare et al., 2022) identified key determinants influencing maternal and child nutritional status. Children’s nutrition, measured through stunting, wasting, and underweight, and mothers’ nutrition, measured by BMI, were both affected by socioeconomic factors. Low household wealth, residence type, and women’s education significantly influenced outcomes. The study emphasizes targeted interventions, including maternal health education and poverty alleviation policies, to improve overall nutritional well-being. (Shafi & B, 2022) found that women’s nutrition plays a crucial role in ensuring their own health and the well-being of their families. A healthy woman supports her family’s nutritional needs but often neglects her own. Therefore, awareness about healthy eating habits is essential for both working and non-working women. Educating women about nutrient importance can help reduce disease risk and promote overall family health. (Singh & Verma, 2021) found that nutrient intake plays a vital role in maintaining a healthy life. The intake of macronutrients such as carbohydrates, proteins, and fats was found to be higher among working women compared to non-working women. This is because working women possess better knowledge of nutrition, balanced diets, and health awareness, leading to more diverse and nutrient-rich food consumption. (Armini et al., 2020) found that the nutritional status of pregnant women, analyzed through the lens of transcultural nursing, is influenced by technology use, family support, cultural values, political-legal awareness, economic status, and education, but not religiosity. Women with better access to technology, supportive families, positive cultural adaptation, and higher education tend to maintain healthier nutritional status during pregnancy. (Banerjee et al., 2020) revealed significant differences in the nutritional status of women in India and Bangladesh. Bangladeshi women show higher underweight prevalence and lower overweight rates than Indian women. Education strongly influences nutritional outcomes in both countries. Rural women face greater undernutrition challenges, emphasizing the need for government and health agencies to prioritize women’s nutrition research and interventions. (Shinde, 2020) found that the mean intake of cereals, pulses, vegetables, fruits, milk, fats, and sugars was significantly ($P < 0.01$) below recommended levels among both working and non-working pregnant women. However, working women consumed more cereals, pulses, and fruits, while non-working women had higher intake of roots, tubers, and dairy products. Overall, both groups consumed all food categories below the recommended dietary allowances. (Barth-Jaeggi et al., 2019) found that the high rate of micronutrient deficiencies, particularly iron, iodine, and vitamin A, among women and children in Tajikistan highlights the need for sustained public health interventions. Strategies include flour fortification, micronutrient supplementation, improved feeding practices, and breastfeeding promotion. Supported by United Nations Children's Fund (UNICEF), World Health Organization (WHO), World Food Programme (WFP) and United States Agency for International Development (USAID), these initiatives aim to strengthen nutrition-specific and nutrition-sensitive programs under the Scaling Up Nutrition movement. (Akseer et al., 2017) found that the prevalence of teenage births, particularly before 18, remains a major concern in low- and middle-income countries. Early pregnancy and high fertility negatively affect both mother and child. Researchers emphasize culturally appropriate reproductive interventions and adolescent nutritional supplementation, which can enhance fetal and child development while breaking the intergenerational cycle of malnutrition and poor health outcomes. (Bhandari et al., 2016) found that women of reproductive age in Nepal continue to face poor nutritional status due to inadequate dietary practices. Their diet mainly comprises starchy staples, with limited intake of vegetables, fruits, meat, and dairy products. Encouraging home cultivation and consumption of nutritious foods, along with active government and NGO interventions, is essential to enhance women’s overall health and nutrition. (Barma & Pintu, 2013) found that in the North Bengal region of India, housewives exhibited higher body weight compared to working women. However, working women showed better overall health status, reflected in healthier Body Mass Index (BMI) and lower body fat percentage, indicating that occupational activity may contribute positively to maintaining balanced weight and improved physical well-being among women.

2.1 Conceptual Research Model



Source: AMOS 23.0

According to the conceptual research model depicted in figure 1, nutritional intake is the independent latent construct and health

outcomes is the dependent latent construct. All the nutritional intake, cognitive skill and social skill constructs having 4 items/statements to measure it.

The objectives of this study are as follows:

- To know the effect of the nutritional intake on the health outcomes of the women.

The null and alternative hypotheses of this study are as follows:

- H0: There is no significant effect of the nutritional intake on the health outcomes of the women.
- H1: There is a significant effect of the nutritional intake on the health outcomes of the women.

III. RESEARCH METHODOLOGY

This study utilized an exploratory and descriptive research design. In exploratory research design new information and knowledge was explored as well as null and alternative hypotheses were formulated and in a cross-sectional descriptive design hypotheses were tested using statistical tools. The correlation-regression analysis was used in this study. The reliability and validity of the questionnaire was checked using Cronbach's alpha, Bartlett test of significance and Kaiser-Meyer-Olkin (KMO) values.

3.1 Data

The primary data was collected using a web based (Google form) structured questionnaire. The study measured demographic variables such as age, and education using a nominal scale, also referred to as grouping variables, and nutritional intake and health outcomes construct are measured using a 5-point Likert scale stating as 1 code is strongly agree, 5 code is strongly disagree and 3 code is neither agree nor disagree.

3.2 Population & Sampling

The sampling population targeted 400 respondents and successfully received 387 responses from the web-based Google form survey from the women. The responses rate was 96.75%. The primary data was collected using non-probability snowball sampling.

3.3 Pilot Study

Pilot research was conducted as a preliminary investigation, using a sample size that represented approximately ten percent of the total sample size. The reliability test using Cronbach's alpha. An acceptable value for Cronbach's alpha must be greater than or equal to 0.700. We used the KMO test to assess a sufficient sample. A KMO value of 0.500 is the minimum requirement for achieving optimal outcomes. The greater the quality of something, the more elevated its KMO value. We regard a KMO value of 0.848 as outstanding.

Table 1. Reliability and Validity Summary

Construct	Cronbach's Alpha	Kaiser-Meyer-Olkin (KMO) Test	% of Variance	Number of Items
Nutritional Intake	.724	.576	54.834	4
Health Outcomes	.789	.711	55.007	5

Source: SPSS 23.0

The table 1 results indicate that the Cronbach alpha value and KMO values are .724, .789) and (.576, .711) as well as the % of variance are (54.834%, 55.007%) for two constructs (Nutritional Intake, and Health Outcomes), hence the reliability and validity conditions are met. Some items under each construct are deleted having corrected item-total correlation (CITC) values are below 0.300 under the reliability and validity checking of the constructs.

IV. RESULTS

4.1 Correlation and Regression between Nutritional Intake, and Health Outcomes

The cause-and-effect relationship was examined using correlation and regression analysis. The correlation analysis identified the degree and direction of association between the variables whether positive, negative, strong, or weak. The regression analysis determined the causal relationship and measured the strength and impact of one variable on another. Both analyses were conducted using SPSS software (version 23.0).

Table 2: Correlations: Nutritional Intake, and Health Outcomes

		Health Outcomes	Nutritional Intake
Pearson Correlation	Health Outcomes	1.000	.919
	Nutritional Intake	.919	1.000
Sig. (1-tailed)	Health Outcomes	.	.000
	Nutritional Intake	.000	.
N	Health Outcomes	387	387
	Nutritional Intake	387	387

Source: SPSS 23.0

According to the correlation table 3, it is clear that the Pearson Correlation coefficients is 0.919, between nutritional intake, and health outcomes, hence nutritional intake had a positive high significant (0.000) correlation with health outcomes among women., therefore it can be concluded that by increasing the nutritional intake, the health outcomes among women will increase significantly.

Regression Model

Y (Health Outcomes) = $a + b X$ (Nutritional Intake)

Where a and b are the constant.

Table 3: Variables Entered/Removed: Nutritional Intake, and Health Outcomes

Model	Variables Entered	Variables Removed	Method
1	Nutritional Intake ^b	.	Enter
a. Dependent Variable: Health Outcomes			
b. All requested variables entered.			

Source: SPSS 23.0

According to the variables Entered/Removed table 4, it is clear that nutritional intake is the independent variables whereas health outcomes is the dependent variable. The enter regression method is used in this study.

Table 4: Model Summary: Nutritional Intake, and Health Outcomes

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.919 ^a	.844	.844	.15805	.844	2085.962	1	385	.000
a. Predictors: (Constant), Nutritional Intake									

Source: SPSS 23.0

According to the model summary table 5, the R square value is 0.844, hence 84.4% variance is explained in the health outcomes dependent variable by combined all the four items of independent variable nutritional intake. Therefore, it is a good selection of questions to measure the nutritional intake, and health outcomes in the questionnaire.

Table 5: ANOVA: Nutritional Intake, and Health Outcomes

Model	Sum of Squares	df	Mean Square	F	Sig.
1					
Regression	52.106	1	52.106	2085.962	.000 ^b
Residual	9.617	385	.025		
Total	61.723	386			
a. Dependent Variable: Health Outcomes					
b. Predictors: (Constant), Nutritional Intake					

Source: SPSS 23.0

According to the ANOVA table 6, it is clear that F value is (2085.962) and significant (0.000) , hence the selected model is highly significant for the further interpretation of the coefficient table which explained about the magnitude and strength of the relationship between nutritional intake, and health outcomes of women.

Table 6: Coefficient: Nutritional Intake, and Health Outcomes

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	1.188	.052		23.050	.000	1.087	1.289
	Nutritional Intake	.649	.014	.919	45.672	.000	.621	.677
a. Dependent Variable: Health Outcomes								

Source: SPSS 23.0

According to the coefficient table 7, it is clear that for (Nutritional Intake), the significant value is (0.000) , hence it is safe to reject the null hypothesis (H01: There is no significant effect of the nutritional intake on the health outcomes of the women.) and it can be concluded that there was a significant effect of the nutritional intake on the health outcomes of the women. The regression equation can be formulated as

Regression Equation

Y (Health Outcomes) = 1.188+ (.919) X (Nutritional Intake)

Based on the above regression equation, it can be concluded that by increasing one unit in the nutritional intake, then there was increase of 0.919 unit in the health outcomes of the women. The regression line between nutritional intake, and health outcomes of women are shown below:

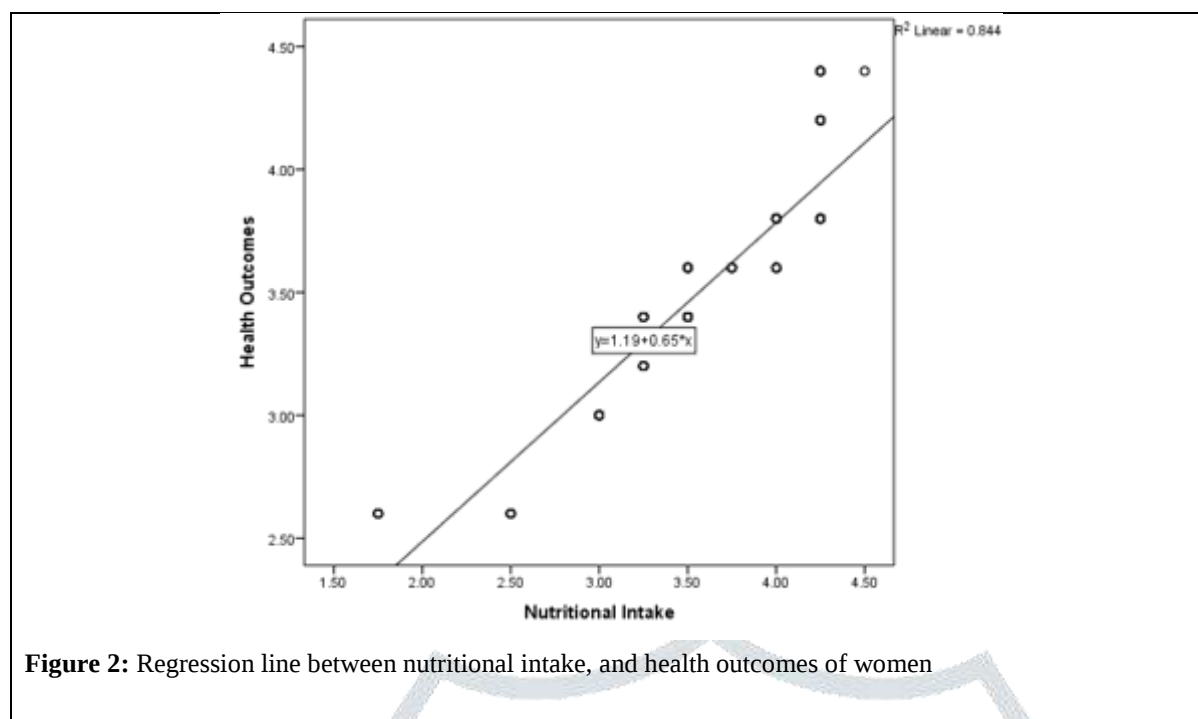


Figure 2: Regression line between nutritional intake, and health outcomes of women

Source: SPSS 23.0

According to the regression line between nutritional intake, and health outcomes figure 2, it is clear that by increasing the nutritional intake, the health outcomes of women will increase significantly.

V. CONCLUSIONS

In the case of regression model, for (nutritional intake), the significant value is (0.000), hence it is safe to reject the null hypothesis (H01: There is no significant effect of the nutritional intake on the health outcomes of the women.) and it can be concluded that there was a significant effect of the nutritional intake on the health outcomes of the women. (Akshatha, 2023) (Shafi & B, 2022) (Singh & Verma, 2021) also given the similar findings.

VI. ACKNOWLEDGMENTS

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VII. AUTHOR CONTRIBUTIONS

Idea and literature were first drafted by PY. Data were collected by PY. Analysis was performed by PY, while RS helped in overview.

VIII. STATEMENTS AND DECLARATIONS

The authors have disclosed no potential conflicts of interest regarding the research, authorship, and/or publication of this article.

IX. ETHICAL CONSIDERATIONS

The questionnaire included a 'Consent Form to Data Confidentiality', requiring respondents to sign a confidentiality agreement to keep their data confidential for the research work only. The study methods were conducted in accordance with the university's approved guidelines.

X. CONSENT TO PARTICIPATE

The women respondents provided their written informed consent to participate in this study.

XI. FUNDING STATEMENT

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