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PROJECT TITLE: THE MEAN BODY MASS INDEX AMONG REPRODUCTIVE-AGE WOMEN (15 TO 49 YEARS)

Sarashwati Giri, Raghab Raj Giri

Students, Lecturer

BRAC/James P grant, Kathmandu Model College

1. BACKGROUND OF THE STUDY

According to figures from the World Health Organization, the prevalence of overweight and obesity has increased thrice since 1975. In 2016, it was discovered that over 1.9 billion teenagers were overweight, with over 650 million of them being considered obese. These figures show how the burden of overweight and obesity has significantly increased over the world. Additionally, it's critical to emphasize that obesity is a condition that is preventable, as stated by (WHO 2021). The average BMI of ever-married women aged 15 to 49 varies greatly among nations and regions, according to a survey of international literature. Women between the ages of 15 and 49 who are in reproductive age often have higher mean BMIs in North America and Europe. For instance, research in the United States found that reproductive women aged 15 to 49 had a mean BMI of 28.8 (Ogden et al., 2016). According to a European study, reproductive women aged 15 to 49 had a mean BMI that ranged from 23.7 in Bosnia and Herzegovina to 28.6 in Malta. (Pikhart et al., 2009).

According to a study done in India, women are more likely than men to be overweight or obese. Due to the weight of dual nutrition concerns, a sizable portion of women may also be at risk for cardiovascular disease and other detrimental consequences on their reproductive system. Therefore, in order to effectively address these issues, large-scale intervention programs must be implemented(Obesity and Overweight, 2021). While the mean BMI tends to be higher in some regions, such as North America and Europe, it tends to be lower in others, such as Sub-Saharan Africa and South Asia (Subramanian et al., 2010).

The BMI of reproductive women in Nepal between the ages of 15 and 49 varies by area. According to a study done in the Bagmati region of Nepal, the prevalence of overweight and obesity was, respectively, 19.4% and 4.4%(Rana et al., 2021). Similar findings were found in research done in the Kavre-palanchowk district of Nepal, which found that obesity and overweight were both prevalent—20.2% and 4.1%, respectively. In another study, the prevalence of overweight and obesity was found to be 22.8% and 6.7%, respectively, in the Pokhara Valley of Nepal (Khatri et al., 2023).

1.1 JUSTIFICATION OF THE STUDY

Nepal is a developing country with a high prevalence of malnutrition and obesity, particularly among women of reproductive age. Reproductive aged 15-49 years in Nepal are at risk for various health issues related to nutrition and reproductive health, including low birth weight, maternal and infant mortality, hypertension, and diabetes. Monitoring BMI in this population can provide insights into their nutritional status and help identify areas where interventions are needed to improve their health outcomes. Study can inform the design and implementation of targeted interventions and programs to address malnutrition among reproductive women, such as nutrition education, food supplementation, and health promotion activities. Understanding regional and global patterns in BMI among reproductive women in Nepal can also contribute to evidence-based policy and decision-making to address the nutritional challenges in the country.

1.2 RESEARCH QUESTIONS OF REPRODUCTIVE AGE WOMAN 15 TO 49 YEARS

1. What is the mean body mass index (BMI) of women reproductive aged 15-49 years?
2. Is there any regional variation in the mean BMI of reproductive women aged 15-49 years?
3. Examine the relationship between age and mean BMI of reproductive women aged 15-49 years?
4. Examine the relationship between educational attainment and mean BMI of reproductive women aged 15-49 years.
5. What are the factors associated with the mean BMI of reproductive women aged 15-49 years?

1.3 OBJECTIVES OF THE STUDY

1. The objective is to determine the average BMI of women aged 15-49 who are of reproductive age, and examine potential disparities across various subgroups based on variables such as age, education level, residence, and other relevant factors.

2. The goal is to investigate geographical disparities in the mean BMI of reproductive-aged women aged 15-49 and identify possible causes for these variations.

3. The aim is to observe potential moderating variables, including age wealth index and geographic location, in the relationship between age and BMI among reproductive-aged women aged 15-49.

4. To identify any differences, the purpose is to compare the relationship between educational achievement and BMI among reproductive-aged women aged 15-49 across different age groups and geographic regions.

5. To examine the connection between explanatory variables, such as the number of children, education level, residence, employment status and age, and their influence on the mean BMI of reproductive-aged women aged 15-49, while also investigating any possible interactions among these variables.

2. DESCRIPTION AND MEASUREMENT DEPENDENT AND INDEPENDENT VARIABLE

2.1 THE PROCESS OF CREATING A WORKING DATASET

To create a working dataset for evaluating the BMI of reproductive-age women from 15-49, the first step was to obtain the data from a reliable source. The DHS (Demographic and Health Surveys) datasets provided information on a variety of demographic and health indicators, including BMI for females of reproductive age. Therefore, approval was requested from the DHS survey to access data on reproductive women aged 15-49. After receiving approval from the DHS, the relevant country and survey year were entered to obtain the DHS dataset in Stata format.

The dataset was quite large, so the command "set maxover of 10,000" was used to make sure all data was accessible and we are using Stata version 17.0 for statistical analysis. Relevant factors, such as BMI, and explanatory variables like age, education, income, Number of children, residence and wealth Index were determined after reviewing the literature. In Stata keep the variable name" command was used to select the necessary variables. Similarly, after selection if it's not necessary and the "drop" command was used to eliminate other variables and create a new working file.

The variable names were then renamed using the "recode" and rename all explanatory variables by using the "rename" command. A new Stata dataset was created containing only the chosen variables. The dataset was examined for errors or missing information, and the data was cleaned as required. created a do file and checked each variable by using codebook and tab. The working dataset the as then used to conduct statistical analysis by stata version 17 to answer research questions.

Outcome variable:

BMI is described as "a simple index of weight-for-height that is commonly used to classify overweight and obesity in adults" by the World Health Organization (WHO) (WHO, 2021). Underweight (BMI 18.5 kg/m2), normal weight (BMI 18.5-24.9 kg/m2), overweight (BMI 25-29.9 kg/m2), and obesity (BMI 30 kg/m2) are the four categories recommended by the WHO for BMI values (WHO, 2021).

The BMI scale is a popular instrument for determining body fatness and is regarded as a trustworthy indicator of the health concerns brought on by carrying too much weight. (CDC, 2021).

To make the BMI values easier for statistical analysis, I divided them by 100 to get the actual BMI value. This way, the resulting values can be used for analysis. To ensure the values are in line with standard medical and scientific conventions, I rounded them to two decimal places. For example, if the raw data had a BMI value of 24.5693, dividing by 100 would give a value of 0.245693. Rounding this to two decimal places would give a BMI value of 24.57.

Explanatory (independent) variables:

1. After reviewing the relevant literature, it has been determined that there are several factors that may impact the BMI of Reproductive women aged 15-49 years. Based on this, the selected variables to answer the research questions are:
2. Age: The age variable refers to a woman's actual age, expressed in years. A continuous variable. There are 5 categories of reproductive-aged women. Its continuous variable Its label in DHS vo13 rename as age_married. Its measurement scale is ratio.
3. Education level: The length of a woman's formal education, expressed in years or the degree(s) she has earned, it is an ordinal or continuous variable. V106 label as education status and its measure in ordinal scale.
4. Marital status: A woman's present marital status, including, what is referred to as her marital status. v501 is the label as marital status measured in the Nominal scale.
5. Employment status: A woman's employment status is her present line of work or career, as determined by conventional occupational codes like the Standard Occupational Classification (SOC) system. The variable is categorical. V714 rename as employment status. It is also measured on a nominal scale.
6. Residence: A woman's primary abode is her domicile, it falls into 2 categories urban, and rural. The variable is categorical. DHS recode v025 label as type residence.
7. Wealth Index: The term "wealth index" refers. It to a complete assessment of a woman's financial situation including household assets, service access, and housing quality. V190 is label as the wealth index its ordinal scale of measurement.
8. A Total number of living children: The of number live children, is referred to as her "number of live children." A continuous variable, it is. DHS recode was V218 label as no_living_children and it's measured in ratio scale.
9. The division is a categorical variable that refers to a woman's administrative or geographic division, such as province. DHS recode was V024 recode as the division and it's measured in Nominal scale.

2.2 SAMPLING STRATEGY AND DATA COLLECTION PROCEDURE

A two-stage cluster sampling design is used in the DHS sampling strategy. Clusters are chosen using probability proportional to size (PPS) sampling in the initial step. Enumeration areas (EAs) or villages in urban areas are the typical components of clusters. Within each cluster, homes are chosen in the second stage using systematic sampling. Standardized questionnaires are often used in face-to-face interviews with qualified women to obtain data. The surveys gather data on a variety of demographic and health markers, including BMI. In rare circumstances, the interview may also involve taking physical measurements like height and weight.

DHS uses a range of measures, such as standardized interviewer training, field testing of questionnaires, and data quality control checks throughout data collection and data input, to assure data quality. To test the accuracy of the data, a group of families is randomly chosen for a second interview.

In conclusion, the sampling approach and data collection process used by the DHS program are intended to deliver precise and trustworthy information on population, health, and nutrition indicators in more than 70 countries, including Nepal. To assure representative and impartial data at the national and sub-national levels, the program uses a two-stage cluster sampling approach that combines systematic sampling and PPS sampling. Face-to-face interviews with eligible women are conducted using standardized questionnaires, and physical measurements are obtained to determine nutritional status. To assure data quality, the application also uses a number of quality control procedures. Policymakers, program directors, and academics frequently use the data gathered through the DHS program to create and put into practice evidence-based interventions targeted at enhancing the health and wellbeing of populations in developing nations.

2.3 DESCRIPTION OF MISSING VALUES OF OUTCOME VARIABLE BMI AND EXPLANATORY VARIABLE

The dataset containing information about the Body Mass Index (BMI) of reproductive women aged 14 to 49 years old has 6,405 missing values out of 12,862 total observations for this variable. This means that almost half of the observations do not have BMI data available. The reasons for missing data are unclear, but it is possible that some women did not have their height and weight measured or did not provide this information during the data collection process. Therefore dropped the by using this code."drop if BMI_1==.".

It is important to handle missing data appropriately because they can impact the accuracy of estimates and results obtained from the dataset. While excluding cases with missing data is one approach to dealing with missing data, it can introduce bias if there are systematic differences between individuals with and without missing data. Imputation methods are another strategy for approximating missing data, but the choice of method depends on the assumptions made about the missing data mechanism and the specific research question. It is crucial to carefully consider the impact of missing data on the study outcomes and choose an appropriate approach to handle them.

Despite the high number of missing values for the BMI variable, other selected explanatory variables in the dataset do not have any missing values. However, the absence of BMI data can have a significant impact on the outcome of the study, particularly if the research question focuses on the relationship between BMI and other variables in the dataset. Therefore, it is important to consider the potential implications of missing data and choose an appropriate approach to handle them in order to obtain valid and reliable study results.

2.4 IMPORTANCE OF SURVEY WEIGHT DURING THE ANALYSIS OF DATA

In order to take into consideration, the likelihood of selection and nonresponse bias in survey data, the survey weight variable is often developed. To put it another way, it accounts for the fact that some population segments are more likely than others to be chosen or to answer to a survey, resulting in a sample that might not fairly represent the population as a whole.

The specific method for creating the survey weight variable may depend on the sampling strategy used in the survey. In the example provided, the survey weight variable was created using the formula "gen wgt = v005/1000000," where "v005" is a variable that represents the sampling weight for each respondent. This formula divides the sampling weight by one million to create a more manageable weight variable.

Additionally, the "svyset" command is used to specify the survey design, including the stratification variable (v023) and the weighting variable (wgt). This information is used to appropriately adjust the estimates in subsequent statistical analyses.

By using the survey weight variable in statistical analysis, we can provide estimates that are more representative of the population by accounting for the sample's biases and the sampling strategy.

2.5 PROPOSED STATISTICAL ANALYSES PLAN TO ADDRESS THE RESEARCH QUESTIONS

To answer the first question, we will use descriptive statistics to calculate the mean BMI for the sample of Reproductive women aged 15-49 years. The outcome variable for this analysis is BMI, and the explanatory variable is marital status, specifically whether the woman is reproductive age or not. We will use the sampling weights provided in the dataset to account for the complex sampling design of the DHS survey.

To address the second question, I will conduct mean BMI over residence to compare the mean BMI of reproductive women aged 15-49 years across different regions of residence. The outcome variable for this analysis is BMI, and the explanatory variable is the region of residence. We will also use the sampling weights provided in the dataset to account for the complex sampling design of the DHS survey.

To answer 3rd question, we will use analysis of variance (ANOVA) to examine the relationship between age and mean BMI of reproductive women aged 15-49 years. The outcome variable for this analysis is BMI, and the explanatory variable is age, education. We will use the sampling weights provided in the dataset to account for the complex sampling design of the DHS survey.

To address 4th question, we will use Analysis of variance to examine the relationship between educational attainment and mean BMI of reproductive women aged 15-49 years. The outcome variable for this analysis is BMI, and the explanatory variable is the highest level of education attained by the woman. We will use the sampling weights provided in the dataset to account for the complex sampling design of the DHS survey.

To answer this question, we will conduct regression analysis to examine the factors associated with the mean BMI of reproductive women aged 15-49 years. The outcome variable for this analysis is BMI, and the explanatory variables include age, educational attainment, region of residence, occupation, wealth index, and the number of children. We will use the sampling weights provided in the dataset to account for the complex sampling design of the DHS survey.

In summary, we will use descriptive statistics, mean, A, and regression analyses to address the research questions. We will use the sampling weights provided in the dataset to account for the complex sampling design of the DHS survey. It is important to check the assumptions of each statistical analysis and report the p-values and confidence intervals when presenting the results. The missing data will be handled using appropriate imputation techniques to avoid any bias in the estimations.

3. STATISTICAL ANALYSES PLAN

Table 1: Socio-Demographic profile of reproductive-age women 15 to 49 years

Name	Weighted Frequency	Weighted Percent
Age of reproductive woman Category		
15-19	2598	20.5
20-24	2251	18.57
25-29	2135	15.75
30-34	1806	14.06
35-39	1572	12.36
40-44	1388	10.24
45-49	1113	8.52
Type of place of residence		
Urban	8072	63
Rural	4790	37
Residence by Province		
Province 1	2172	16.9
Province 2	2563	19.93
Province 3	2732	21.24
Province 4	1249	9.713
Province 5	2274	17.68
Province 6	724.2	5.631
Province 7	1145	8.906
Education at all level count		
No education	4281	33.3
Primary	2150	16.7
Secondary	4516	35.1
Higher	1915	14.9
Total	12862	100
Wealth Index		
Poorest	2176	16.9
Poorer	2525	19.6
Middle	2595	20.2
Richer	2765	21.5
Richest	2801	21.8
Number of Live Children		
0	3724	28.95
1	2177	17.00
2	3007	23.38
3	1979	15.39
4	1108	8.61

5	532.3	4.00
6	209.5	1.60
7	82.28	0.63
8	28.04	0.22
9	6.533	0.05
10	5.84	0.05
11	2.233	0.02
Current Marital Status		
Never	2669	20.75
Married	9868	76.72
Living With	6.36	0.05
Widowed	213	1.66
Divorced	24.07	0.18
No long	81	0.63
Respondent Currently Working		
No	5540	43.00
Yes	7322	57.00

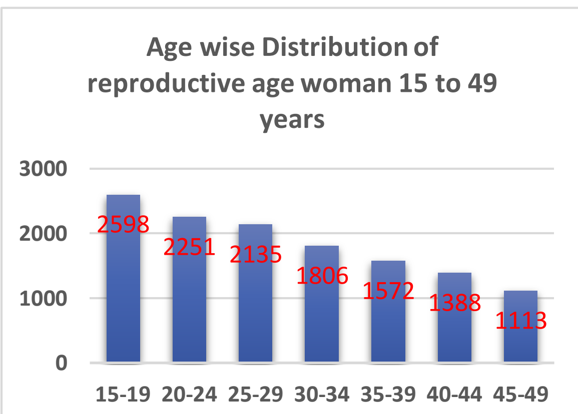

Figure 1: Reproductive age women age wise distribution

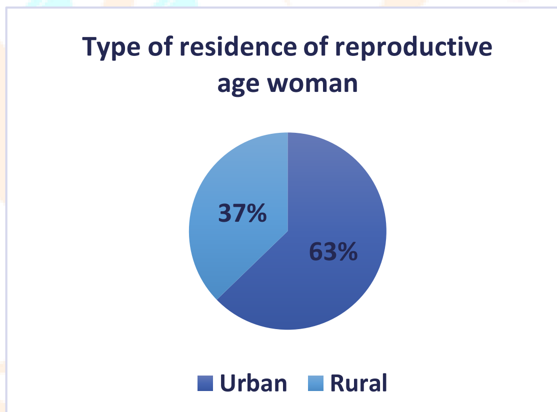

Figure 2: Type of residence of reproductive aged women

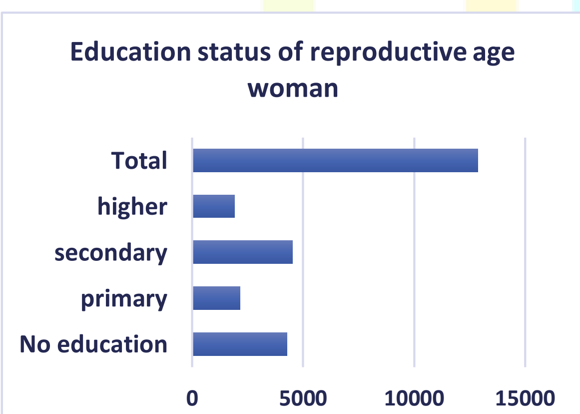

Figure 3: Education status of reproductive aged women

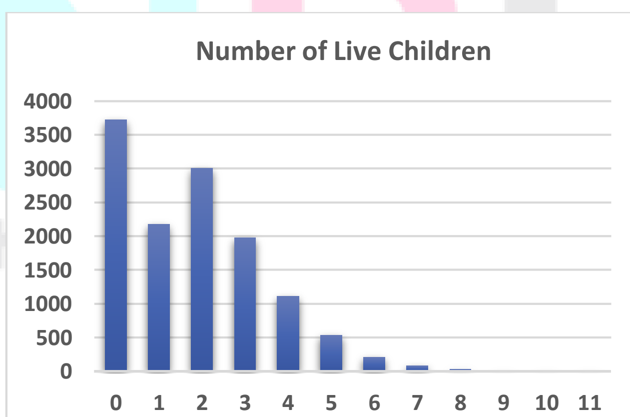

Figure 4: Number of Live children

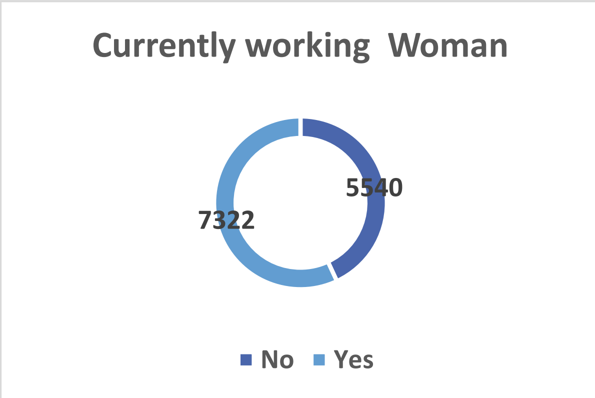

Figure 5: Currently working women

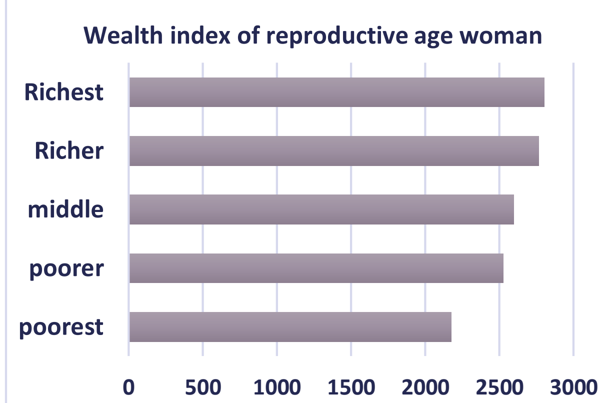

Figure 6: Wealth index of reproductive age group

The above table and figure illustrate that socio-demographic profile of reproductive-age women between the ages of 15 and 49. The majority of women (63%) live in urban areas, with the remaining 37% residing in rural areas. Province 3 has the highest number of women (21.24%), while Province 6 has the lowest (5.63%). Regarding education, 33.3% of women have no education, while 35.1% have secondary education. In terms of wealth, the majority of women (43.3%) are in the middle-income group. The number of live children varies, with 28.95% of women having no children and 23.38% having two children. The majority of women (76.72%) are currently married, while 20.75% have never been married. About 57% of women are currently working.

3.1 THE MEAN OF BODY MASS INDEX OF REPRODUCTIVE AGE WOMAN.

Table 2: Mean BMI of reproductive-age women 15 to 49 years

The mean BMI weighted			95% confidence interval	
	Mean	Standard error	Min	max
	22.027	0.048	22.12	22.57

The given data illustrate to a sample of reproductive age women, with a calculated mean of 22.027 and a standard deviation of 0.048 which reflects the variability within the sample. Additionally, a 95% confidence interval is provided, indicating that there is a 95% confidence level that the true population means falls within the range of 22.12 to 22.57.

3.2 THE MEASURE OF ASSOCIATION BETWEEN BMI AND OTHER INDEPENDENT VARIABLE

Table 3: Association of Outcome variables explanatory variable/Bivariate Table

BMI AND RESIDENCE WEIGHTED				
	Mean	Standard error	(95% confidence interval Max	Min
Urban	22.66	.138	22.39	22.93
Rural	21.45	0.118	21.22	21.68
BMI AND AGE				
Age	Mean	Standard error	95% confidence interval	
15-19	20.12	0.171	19.95	20.29
20-24	21.33	.144	21.09	21.57
25-29	22.39	.165	22.06	22.71
30-34	23.22	.253	22.83	23.62
35-39	23.50	.212	23.08	23.92
40-44	23.48	.227	23.04	23.93
45-49	23.52	.278	22.98	22.06
BMI AND EDUCATION				
Name	Mean	Standard error	95% confidence interval	
			Max	Min
No Education	21.90	0.124	21.61	22.10
Primary	22.62	0.183	22.26	22.98
Secondary	22.11	0.134	22.85	22.38
Higher	22.81	0.200	22.41	23.20

The above table illustrates the mean BMI (Body Mass Index) values and their standard errors along with the 95% confidence interval for different variables. Based on the table, it can be observed that the mean BMI for rural residents (21.45) is lower than that of urban residents (22.66), suggesting a possible association between place of residence and BMI. Moreover, there is an increasing trend in mean BMI with age, with the highest mean BMI observed in the 35 to 39 age group. Lastly, the mean BMI for individuals with higher education is higher (22.81) compared to those with no education (21.90) or primary education (22.62), indicating a possible relationship between education and BMI.

3.3 REGIONAL VARIATION BETWEEN THE REPRODUCTIVE AGE OF WOMEN AND RESIDENCE.

Table:4 Relationship between BMI over the residence

BMI AND RESIDENCE				
	Mean	Standard Error	(95% confidence interval Min	Max
Urban	22.66	0.138	22.39	22.93
Rural	21.45	0.118	21.22	21.68

The table shows the descriptive statistics for BMI in two different groups - urban and rural. The mean BMI for women living in urban areas is (22.66), which is higher than the mean BMI of for women living in rural areas. The 95% confidence interval for the mean BMI in urban areas ranges from (22.39 to 22.93) while in rural areas, it ranges from 21.22 to 21.68).

Based on these findings, it can be understood that women who are living in urban areas of Nepal tend to have a higher BMI than those living in rural areas. This difference could be attributed to several factors, such as differences in lifestyle, access to healthcare, diet, and physical activity patterns.

3.4 UNADJUSTED TABLE TO SHOW THE RELATIONSHIP WITH DEPENDENT AND INDEPENDENT VARAIBLE

Table: 5 Unadjusted Linear Regression Table of Reproductive 15 to 49 Years BMI and other variable.

Name	Co-efficient	P value	95% CI	
Place of Residence				
References (Urban)				
Residence Rural	-1.206	<0.001	-1.576	-.835
Constant	22.66	<0.001	22.39	22.93
Wealth Index				
Reference(poor)				
Poorer	0.306	0.055	0.0064	0.620
Middle	0.216	0.181	-.1010	0.534
Richer	1.199	<0.001	.8402	1.558
Richest	3.556	<0.001	3.155	3.957
Constant	21.100	<0.001	20.88	21.31
Education				
References (No education)				
Primary	.7685	<0.001	0.396	1.141
Secondary	.2583	<0.001	-.0668	.5834

Higher	.9553	<0.001	.5392	1.371
Constant	21.85	<0.001	21.61	22.10
Age				
References (15 to 19 yrs.)				
20-24	1.210	<0.001	0.966	1.454
25-29	2.266	<0.001	1.924	2.607
30-34	3.105	<0.001	2.673	3.537
35-39	3.381	<0.001	2.948	3.814
40-44	3.362	<0.001	2.901	3.824
45-49	3.404	<0.001	2.827	3.98
Constant	20.124	<0.001	19.95	20.29
No of children				
references (0)				
1	1.691	<0.001	0.301	2.081
2	2.873	<0.001	2.500	3.246
3	1.781	<0.001	1.459	2.104
4	1.362	<0.001	.9400	1.785
5	1.309	<0.000	.7464	1.873
6	.8202	0.034	.0639	1.576
7	.2014	0.728	-.9359	1.338
8	.5843	0.613	-.1.686	2.855
9	-.1458	0.157	-.3482	0.565
10	-.4738	0.703	-2.912	1.964
11	-.3758	<0.001	-.578	-1.7356
constant	20.79	<0.001	20.59	20.99
Employment Status				
reference (No)				
Yes	.3527	0.033	.0279	.6775
Constant	22.012	<0.001	21.782	22.911

3.5 ADJUSTED LINEAR REGRESSION TABLE

Table 6: Findings of BMI ever married Woman 15 to 49 years after adjusting linear Regression

Name	**Coefficient**	**P value**	**Confidence interval 95%**	
Residence			**Max**	**Min**
Urban References				
Rural	-0.241	.1660	-0.568	.0849
Age				

15 to 18 references				
20-24	.9509	<0.001	0.631	1.270
25-29	1.998	<0.001	1.541	2.455
30-34	2.950	<0.001	2.437	3.463
35-39	3.674	<0.001	3.093	3.463
40-44	3.792	<0.001	3.239	4.344
45-49	4.258	<0.001	3.583	4.932
Wealth Index				
(Poorest) references				
Poorer	0.958	0.518	-.1950	0.386
Middle	0.144	0.707	-.2583	0.380
Richer	1.125	<0.001	.4915	1.274
Richest	3.425	<0.001	2.162	3.104
Education				
(No education) references				
Primary	1.214	<0.001	0.874	1.554
Secondary	1.315	<0.001	0.993	1.637
Higher	.9685	<0.001	0.549	1.387
No of living children				
(0) is references				
1	.7848	<0.001	.3871	1.182
2	.9711	<0.001	.5353	1.407
3	.0922	0.0713	-.3997	.5842
4	-2210	0.437	-.7797	.3377
5	-.3608	0.277	-1.012	.2907
6	-.7181	0.119	-.1621	.1848
7	-1.552	0.015	-2.802	-.3028
8	-1.097	0.285	-3.403	.9188
9	-1.154	0.001	-1.816	-.4929
10	-2.159	0.109	-4.803	.4848
11	-1.682	<0.001	-2.331	-1.033
Employment History				
(No) is references				
Yes	0.943	0.480	-.1681	.356
Constant	18.21	.2306	<0.001	18.66

Based on the unadjusted regression model, the coefficients for place of residence, age, wealth index, employment status, and education were all significant predictors of BMI among reproductive-aged women 15 to 49 years in Nepal. Based on the unadjusted table represents the regression coefficients, p-values, and 95% confidence intervals for six predictor variables (Place of Residence, Wealth Index, Age, Education, No of Children, and Employment Status) on the outcome variable, BMI. The R-squared values indicate the proportion of variance in BMI that can be explained by each predictor variable, with the Wealth Index variable having the highest R-squared value of (0.1064), it explains about 10.64% of the variation in BMI explained by wealth index where poorest is as a constant. Similarly ranging from R square for Residence (0.0207) represent that 2.07% variability in BMI which is explained by residence where rural is constant. Similarly, R square for Age (0.1034) R square for education is (0.0077) and R square for employment is (0.0019), meaning that variation in BMI explained by predictor variable keeping other effect constant. All predictor variables were statistically significant with p-values less than 0.001, indicating that they are related to BMI. The coefficients were relatively similar in magnitude, suggesting that each of the predictor variables has a similar degree of impact on BMI. Overall, the regression model suggests that Place of Residence, Wealth Index, Age, Education, No of Children, and Employment Status are significant predictors of BMI, with Wealth Index being the strongest among them.

Based on the adjusted table adjusted R-square value of (0.2337) indicates that the residence, age, wealth education, and occupation variables explain 23.37 % of the variation in the BMI keeping other factor constant.

Looking at the individual independent variables, the woman who is living in a rural area is a lower BMI as compared to the woman living in an urban coefficient is (-.2415). while residence and employment history are not present.

Specifically, older individuals tend to have higher BMIs, as indicated by the positive coefficients for age categories 20-24 through 45-49. Those in the richest wealth index category also tend to have higher BMIs compared to the poorest category. Primary and secondary education are associated with higher BMIs, while higher education is not. Finally, having more living children is associated with lower BMIs up until 3 children, after which the effect becomes negligible or negative.

4. CONCLUSION AND RESULTS

The results of unadjusted linear regression analysis between BMI and several explanatory variables such as place of residence, wealth index, age, education, number of children, and employment status. The table reports the coefficients, p-values, and 95% confidence intervals for each variable. The coefficients indicate the magnitude and direction of the relationship between the explanatory variable and BMI. The p-value represents the level of statistical significance of the relationship, and the confidence interval indicates the range of values that the true population coefficient is likely to fall within.

According to the results, all explanatory variables have a statistically significant association with BMI, with p-values less than 0.05. The coefficients suggest that age and number of children have the strongest positive association with BMI, followed by employment status, education, and wealth index. Place of residence has the lowest coefficient, indicating a weaker association with BMI than other variables.

The findings of the adjusted linear regression analysis, where the effects of all explanatory variables are simultaneously considered. The coefficients represent the adjusted effect of each explanatory variable on BMI, controlling for the effects of other variables.

The results show that age has the strongest positive association with BMI, with the highest coefficients observed in the 35 to 39 and 40 to 44 age groups. Education also has a significant positive association with BMI, with the highest coefficient observed in the secondary education group. The coefficients for residence are no longer statistically significant after adjusting for other variables, suggesting that the association between place of residence and BMI was confounded by other factors such as age and education.

Overall, the findings imply that age and education are significant variables linked to BMI among Nepalese women of reproductive age. To address the high prevalence of overweight and obesity in this group, additional study is required to examine the underlying causes and potential therapies.

Based on the above finding we can incorporate the following for a policy perspective.

1. Based on their demographics and socioeconomic characteristics, distinct subpopulations should be the focus of targeted nutrition and health promotion programs.
2. Food insecurity among the poor could be reduced and improved nutrition encouraged by anti-poverty policies like income support plans or job creation programs.
3. Women's knowledge and abilities might be strengthened by education and empowerment initiatives, which would result in better health and nutrition outcomes.
4. Promoting reproductive health policies will help to lessen the inverse relationship between a woman's BMI and her childbearing capacity.
5. Adopting health equity policies will address BMI differences based on demographic and socioeconomic variables, giving everyone the chance to reach their best level of health.

   In conclusion, decision-makers should think about developing targeted programs to improve nutrition, reduce poverty, promote education and empowerment, promote reproductive health, and adopt a health equity approach to address the disparities in BMI based on demographic and socioeconomic factors. These policies can contribute to improving the health and well-being of women and the population as a whole.

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ANNEX

Do file of Stata

****# my working file of bio assignment**

**# save the drive

set maxvar 10000

use "D:\IT_BacKUp\Desktop\DHS Bio final project\NPIR7HDT my working\my final last updated by 17th april.dta"

****# save the selected variable from DHS survey 2016 Nepal**

****# tab of selected variable to cross check and confirmation of the variable its type and label**.

tab v501

tab v013

tab v025

tab v190

tab v106

tab v020

tab v024

tab v218

tab v714

 # **Codebook of variable

codebook v013

codebook v025

codebook v190

codebook v106

codebook v020

codebook v024

codebook v445

codebook v218

codebook v501

codebook v714

****# *My outcome variable:**

BMI v445

****# My explanatory variable**

v013, residence v025, wealth_index v190, educatioal attainment v106

****Development and organizing my working file**

gen BMI_1= v445/100

///The value must be converted to a decimal number. Because of this, we divided by 100.

rename v013 age_married

rename v020 married_sample

rename v025 type_residence

rename v106 education_status

rename v190 wealth_index

rename v445 bodymass_index

rename v025 residence

rename v106 education

rename v190 wealth_index

rename v013 age

rename v024 division

rename v218 no_living_children

rename v501 marital_status

rename v714 emplyment_status

******************* checking missing observation **************

count if BMI_1==.

count if residence==.

count if education==.

count if wealth_index==.

count if age==.

count if division==.

count if no_living_children==.

count if marital_status==.

count if emplyment_status==.

************ checking dispersion ******************

sum BMI_1

graph box BMI

br BMI

*drop if BMI>60

drop if BMI==.

******** Weight calculation**

gen wgt = v005/1000000

// v005 is the women's individual sample weight (6 decimals)

svyset v021 [pw=wgt], strata(v023)

keep caseid BMI residence education wealth_index age division no_living_children marital_status emplyment_status v021 v023 wgt

save BMI_continuous_variable

************* statistical Analysis**

svy: mean BMI

******************** Table 1: socio-demographic analysis ********

```
svy: ta residence, count
svy: ta residence, percent
svy: ta education, count
svy: ta education, percent
svy: ta wealth_index, count
svy: ta wealth_index,percent
svy: ta age, count
svy: ta age, percent
svy: ta division, count
svy: ta division, percent
svy: ta no_living_children, count
svy: ta no_living_children, percent
svy: ta marital_status, count
svy: ta marital_status, percent
svy: ta emplyment_status, count
svy: ta emplyment_status, percent
**# Graph and Table
graph pie [fweight = residence], over(residence) title(By Residence)
graph pie emplyment_status, over(residence)
```

****# Queation No 1 Mean BMI**

```
mean BMI_1
```

******************* Table 2: Measures of Association *************

```
svy: mean BMI, over(residence)
svy: mean BMI, over(age)
svy: mean BMI, over(education)
oneway BMI residence [aweight=wgt]
oneway BMI age [aweight=wgt]
oneway BMI education [aweight=wgt]
 by(residence)
```

******************* Table 3: Regression ******************

*************Unadjusted Bivariate Analysis*************

```
svy: regress BMI i.residence
svy: regress BMI i.age
```

svy: regress BMI i.wealth_index

svy: regress BMI i.education

svy: regress BMI i.emplyment_status

svy: regress BMI i.no_living_children

"include a regression for no_living_chindlren variavle"

**************** Adjusted Bivariate Analysis************

svy: regress BMI i.residence i.age i.wealth_index i.education i.no_living_children i.emplyment_status

// Categorize age into three groups using "cut()" function

replace age = "15-24" if age >= 15 & age <= 24

replace age = "25-34" if age >= 25 & age <= 34

replace age = "35 or older" if age >= 35