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Household Wealth and Women's Health: Evidence from India

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Abstract

The relationship between socioeconomic status and health, especially the link between income and health, has been extensively studied, but wealth still needs to be researched. This report uses India's female BMI index from 2019 to 2021 as a health indicator to research the relationship between household wealth and health. The study results from show that household wealth positively correlates with BMI unhealthy indicators formed by underweight, obese, and overweight, which means that the possibility of unhealthy conditions will also increase with wealth. This relationship is because the rise of wealth reduces underweight but increases the incidence of overweight and obesity. This suggests that in India, the problem of obesity may outweigh the negative effects of malnutrition. In addition, increasing age and improving educational background can effectively reduce the probability of unhealthy occurrences. The feedback of these results can help the authorities have a more multi-dimensional understanding of women's health and provide a new perspective for them to formulate more reasonable policies and improve women's medical welfare policies.

Keywords: household wealth, India economy, socioeconomics

1. Introduction

The interrelationship between health and socioeconomic status is a cornerstone of research on human capital and productivity (Wolfe & Behrman, 1984). Health outcomes do not only reflect the efficacy of healthcare systems but are also inextricably linked to socioeconomic factors such as income, education, and wealth. Empirical studies confirm a positive association between socioeconomic status and health (Dieker et al., 2019; Joe et al., 2008), with those higher in socioeconomic hierarchy typically exhibiting better health. While initial research predominantly focused on income, wealth has been less examined due to data limitations (Aittomäki et al., 2010; Pollack et al., 2007). Addressing this gap, this paper explores the wealth-health nexus and its role in health disparities.

Recent literature recognizes the importance of wealth as a protective factor against income volatility (Boen et al., 2021) and a measure of long-term economic stability. Wealth inequality often intensifies health disparities, as chronic conditions and mortality often result from cumulative disadvantage. Research by Aittomäki et al. affirms the distinct impacts of income and wealth on health metrics. The association between wealth and health indicators, however, varies. Ecob and Smith

(1999) identified an inverse relationship between morbidity/mortality and income, while studies in diverse contexts have linked higher income with improved self-rated health, albeit mitigated by inclusion of other socioeconomic variables (Aittomäki et al., 2010; Benzeva & Judge, 2001). Conversely, higher socioeconomic status is conventionally linked with increased Body Mass Index (BMI), posing a greater risk of overweight and obesity among the affluent (Aitsi-Selmi et al., 2012; Haregu et al., 2018; Little et al., 2016; Templin et al., 2019).

The phenomenon of the dual burden — combining undernutrition with overweight and obesity — is particularly prevalent among Indian women (Global nutrition report, 2020). Between 1998 and 2006, higher-SES Indian women were more likely to be obese compared to their lower-SES counterparts. With female obesity rates exceeding 20%, issues of undernutrition persist among the lower-income groups (Little et al., 2016; Jones-Smith et al., 2010). Urbanization and dietary changes, compounded by an underdeveloped rural healthcare infrastructure, magnify these challenges (Chauhan, 2011; Dupas & Jain, 2021; World Economic Forum, 2021). Women's health, beyond child-centric studies, remains largely unexplored in relation to household wealth.

Inspired by Aittomäki et al. (2010), this study replaces self-rated health with BMI to assess the relation between household wealth and women's health in India. It investigates the impact of household wealth on BMI categories and hypothesizes an inverse relationship between wealth and underweight status, and a positive relationship with overweight and obesity.

Utilizing recent Indian data, the study provides a comprehensive analysis of the wealth-health linkage in women, contributing new insights into the Indian socioeconomic-health landscape. The categorization of underweight, overweight, and obesity as non-optimal health outcomes enables a fresh perspective on health inequalities. The results support the hypothesis, highlighting wealth as a key determinant of health and underscoring the imperative for interventions to address health disparities and foster well-being across societal segments.

2. Data

This analysis utilizes data procured from the fifth iteration of the National Family Health Survey (NFHS-5), housed within the Demographic and Health Surveys (DHS) Program's database. The survey encompassed an extensive geographic scope, with data collected from 707 districts across all 28 states and eight union territories of the nation. For the purpose of achieving representativeness at multiple administrative levels—national, state/Federal Territory, and district—a stratified sampling design was meticulously implemented in each survey iteration.

The subset of data under scrutiny in the present discourse pertains to the responses obtained from the targeted cohort, specifically eligible women aged 15-49 who participated in comprehensive health interviews conducted in the biennial spanning 2019-2021. Methodologically dissected into bi-phase survey interviews, the temporal bounds of data collection extended from June 17, 2019, to January 30, 2020, for the initial phase, and from January 2, 2020, to April 30, 2021, for the subsequent phase, thus capturing a panoramic snapshot of health-related indicators during the pre-specified duration.

In total, the dataset reflects the collective responses of 7,241,515 women, providing an extensive repository of information. Due to the voluminous nature of the data encompassed within the NFHS-5 questionnaire, this paper judiciously extracts and presents only those fractions which are pertinent to the study at hand.

Descriptive statistics for the variables under consideration are systematically presented in Table 1.

Table 1. Descriptive statistics

	N	Mean	Std. Dev.	min	max
Dependent variable BMI	724115	2.584	2.158	1	7
Independent variable Hwealth	724115	2.897	1.382	1	5
Control variable age	724115	3.71	1.972	1	7

Edu level	724115	1.561	0.995	0	3
Employment	108785	0.588	0.886	0	3
Occupation	108785	1.92	4.357	0	98

Notes: 1). BMI: some data (missing, less than 12.0 and greater than 60.0) were excluded.

2). Employment: According to the official guidelines' classification of women's working conditions, missing and unknown data are divided into "no", shown in Table 2.

3). Occupation missing values or "don't know" responses are shown in different categories for each percentage distribution. Therefore, the max occupation is 98, and there are only 8 remaining classes according to the categories excluding missing values and unknowns. The classification percentage is shown in Table 2.

This investigation employs Body Mass Index (BMI) as the dependent variable to reflect women's health and nutrition status. BMI is computed by dividing an individual's mass (kg) by their height squared (m^2), as per standard procedures. Pregnant and recently postpartum women have been excluded to avoid distortion in BMI measurement. Table 1 and Table 2 segregate BMI data into standard categories according to pertinent authoritative sources. The remaining data post-exclusion, comprising 40% of the original sample, is bifurcated into three cohorts—underweight, overweight, and obese—following World Health Organization (WHO) norms.

The primary independent variable, the wealth index, informs the stratification of households into quintiles — 'poorest', 'poorer', 'middle', 'richer', and 'richest' — representative of economic stature. Given the Demographic and Health Surveys (DHS) database's lack of direct income or consumption metrics, household wealth is approximated using assets, housing, and consumer access indices, which have proven to be reliable wealth proxies and health outcome predictors (B & C, 2001).

The investigation incorporates control variables such as age, education, employment, and occupational class of women, with these predictors presented categorically within the analysis. Table 1 delineates variables, using a 0 or 1 base, and extends to a maximum of 7 or 8 discrete classes. Table 2 articulates the categorical variable frameworks, detailing the classification and proportionate distribution among the study's participants.

Table 2. Percentage description for each variables

wealth index wealth	n.	%
poorest	149,844	20.69
poorer	160,340	22.14
middle	151,505	20.92
richer	139,607	19.28
richest	122,819	16.96
Total	724, 115	100
BMI		
Normal	420415	60.11
Mildly thin	74672	10.68
Moderately and severely thin	50317	7.19
Overweight	116576	16.67
Obese	37382	5.35
Total	699362	100
age in 5-year groups		

15- 19	122,480	16.91
20-24	118,700	16.39
25-29	118,379	16.35
30-34	101,049	13.95
35-39	98,068	13.54
40-44	81,380	11.24
45-49	84,059	11.61
Total	724, 115	100
highest educational level		
no education	167,304	23.1
primary	84,983	11.74
secondary	370,012	51.1
higher	101,816	14.06
Total	724, 115	100
employment		
no	73809	67.85
in the past year	6634	6.1
currently working	27740	25.5
have a job, but on leave last 7 days	602	0.55
Total	108785	100
occupation (grouped)		
not working	73809	67.85
professional / technical / managerial	2985	2.74
clerical	479	0.44
sales	2046	1.88
services / household and domestic	3433	3.16
agricultural	18031	16.57
skilled and unskilled manual	6394	5.88
other	1477	1.36
don't know	131	0.12
Total	108785	100

The data presented in Tables 1 and 2 indicate a significant limitation in the dataset regarding employment and occupation, as gleaned from interview responses. Specifically, the information on employment and occupation has been reported by a mere fraction of the respondents, approximately 15%, thereby raising legitimate concerns about the representativeness and comprehensiveness of the data. A drastic imbalance is evident in the distribution of employment data across the total sample; 67.85% of the data points pertain to individuals who are unemployed, including those for whom employment status could not be determined because of missing values or undefined employment circumstances. Moreover, looking specifically at gender disparities, it becomes clear that employment is

more elusive for female interviewees—a mere 25.5% of this subgroup currently hold employed status.

Similarly, occupation details exhibit a skewed pattern, with only 30.67% of female participants confirming engagement in a defined occupation. This pronounced underrepresentation highlights the necessity for a more rigorous data collection methodology to better understand the employment and occupation landscapes, particularly for female interviewees. The current data restricts the ability to formulate robust, generalizable findings and calls for a critical evaluation of the recruitment and interviewing procedures that could have led to such a prominent data gap.

3. Empirical Strategy

Drawing on the work of Mackenbach et al. (2005), it is important to note that income and health exhibit a generally non-linear relationship; incremental income gains are associated with diminishing health improvements. The character of this relationship varies across different measures of health, with some demonstrating non-linear patterns — such as self-rated health and chronic disease in certain UK and Sweden studies — while others, like studies in Finland, display more linearity. Aittomaki et al. (2010) have broadened these insights to encompass the nexus between household wealth and health, also uncovering a non-linear relationship. Their methodology, employing piecewise regression and logistic models, is paralleled by the work of Kumar et al. (2016) and is further echoed in research addressing nutritional health outcomes, including undernutrition and obesity (Aitsi-Selmi et al., 2012; Templin et al., 2019). In light of the variable categorizations employed herein, logistic regression models are utilized in alignment with the aforementioned studies to examine the influence of varying wealth levels on the likelihood of unhealthy outcomes.

Health status was examined with respect to nutritional criteria, delineating underweight (BMI <18.5), overweight (BMI >25 and ⩽30), and obesity (BMI >30). An analysis of the probability of suboptimal health among Indian women aged 15-49 was conducted, segmenting the sample by household wealth quintile, age cohort, educational attainment, work status, and occupational category. Age was stratified into seven brackets (15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49), education parsed into four levels (No education, Primary, Secondary, Higher), and occupations categorized into five distinctive groups (Professional, Sales, Household and Service Industry, Agriculture, Manual Labor).

$$P\ (Unhealth = j \mid x) = \Lambda(\beta 0 + \beta 1 HWealth)i$$

$$P\ (Unhealth = j \mid x) = \Lambda(\beta 0 + \beta 1 HWealth\ i + \beta 2 age\ i + \beta 3 Edulevel)i$$

$$P\ (Unhealth = j \mid x) = \Lambda(\beta 0 + \beta 1 HWealth\ i + \beta 2 age\ i + \beta 3 Edulevel\ i + \beta 4 nowork\ i + \beta 5 \text{occupation})I \quad (1)$$

The study constructs a series of distinct regression frameworks to quantitatively assess the impact of household wealth on women's health across varying strata of health status. Initially, the influence of familial wealth on divergent health levels is scrutinized on a discrete basis (refer to Table 3). Subsequently, the variable of age is integrated into the regression model (as depicted in Table 4).

The analysis is further refined by incorporating additional control variables—namely educational attainment, employment status, and occupational classification—in conjunction with age, thereby facilitating a more nuanced examination of the nexus between household wealth and women's Body Mass Index (BMI) (presented in Table 5). To more precisely dissect the aspect of health, the category of 'unhealthy' is disaggregated into three sub-categories: underweight, overweight, and obesity. These sub-strata are then subjected to regression analysis employing the same model as expressed in Equation (1), with the corresponding formulas designated as Equation (2), (3) and (4).

$$P\ (Underweigth = j \mid x) = \Lambda(\beta 0 + \beta 1 HWealthi + \beta 2 agei + \beta 3 Eduleveli + \beta 4 nowork + \beta 5 \text{occupation}i) \quad (2)$$

$$P\ (Overweight = j \mid x) = \Lambda(\beta 0 + \beta 1 HWealthi + \beta 2\ agei + \beta 3\ Eduleveli + \beta 4\ nowork + \beta 5\ \text{occupation}i) \quad (3)$$

$$P\ (Obesity = j \mid x) = \Lambda(\beta 0 + \beta 1 HWealthi + \beta 2\ agei + \beta 3\ Eduleveli + \beta 4\ nowork + \beta 5\ \text{occupation}i) \quad (4)$$

4. Results

Table 3. Logistic regressions for association between wealth quintile and unhealth, underweight, overweight and obesity outcome measures, India female, 2019-21

	(1)	(2)	(3)	(4)
	Model 1	Model 2	Model 3	Model 4
VARIABLES	unhealth	underweight	overweight	obesity
Richest	0.448***	-1.183***	1.356***	2.213***
	(0.00791)	(0.0115)	(0.0118)	(0.0242)
Richer	0.307***	-0.780***	1.144***	1.758***
	(0.00769)	(0.00987)	(0.0117)	(0.0246)
Middle	0.178***	-0.532***	0.907***	1.286***
	(0.00759)	(0.00913)	(0.0119)	(0.0255)
Poorer	0.0472***	-0.292***	0.539***	0.712***
	(0.00755)	(0.00862)	(0.0123)	(0.0272)
Poorest(ref.)	1.00	1.00	1.00	1.00
Constant	-0.655***	-1.090***	-2.488***	-4.293***
	(0.00545)	(0.00595)	(0.00971)	(0.0224)
Observations	724,115	724,115	724,115	724,115

Note: Standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1)

Table 3 presents a compelling analysis of the relationship between household wealth and women's health outcomes in India. In the initial model (Model 1), a clear inverse association emerges: women from households of higher economic status exhibit a greater propensity towards poorer health when compared to their counterparts in the lowest wealth quintile. Notably, the wealthiest individuals appear to have the highest likelihood of poor health indicators.

To further distill the nuances of this relationship, Model 1 was refined to differentiate between various body mass index (BMI) categories, namely underweight (BMI < 18.5), overweight (BMI > 25 and ≤ 30), and obesity (BMI > 30). Each category was evaluated using the same regression model.

Model 2 offers an intriguing contrast to Model 1, showcasing a decreasing trend in the probability of malnutrition as household wealth escalates. Specifically, individuals in the poorest wealth quintile face a higher risk of malnutrition, which systematically diminishes across the spectrum towards the richest quintile, where the risk is minimal.

Conversely, results from Models 2 and 3 reveal a direct correlation between wealth and the likelihood of being overweight or obese—the greater the wealth of the group, the higher the probability of excess weight. These patterns underscore a dual burden of malnutrition, where increased wealth mitigates the risk of undernutrition while simultaneously elevating the risk of overweight and obesity.

These associations are statistically robust, maintaining significance at the 1% level. This evidence suggests a complex interface among socioeconomic factors, dietary practices, and health outcomes, warranting comprehensive policy responses to address the multifaceted aspects of nutrition and well-being in India.

Table 4. Logistic regressions for association between wealth quintile and unhealth, underweight, overweight and obesity with age outcome measures, India female, 2019-21

	(1)	(2)	(3)	(4)
	Model 1	Model 2	Model 3	Model 4
VARIABLES	unhealth	underweight	overweight	obesity

richest	0.450*** (0.00794)	-1.129*** (0.0118)	1.315*** (0.0120)	2.156*** (0.0243)
richer	0.314*** (0.00772)	-0.763*** (0.0102)	1.139*** (0.0119)	1.735*** (0.0248)
middle	0.181*** (0.00761)	-0.532*** (0.00945)	0.912*** (0.0121)	1.272*** (0.0256)
poorer	0.0496*** (0.00757)	-0.310*** (0.00895)	0.555*** (0.0125)	0.716*** (0.0273)
Poorest (ref.)	1.00	1.00	1.00	1.00
Age 15-19	-0.0653*** (0.00913)	1.659*** (0.0135)	-2.065*** (0.0171)	-2.199*** (0.0316)
Age 20-24	-0.380*** (0.00933)	1.056*** (0.0139)	-1.211*** (0.0132)	-1.502*** (0.0237)
Age 25-29	-0.340*** (0.00931)	0.576*** (0.0146)	-0.591*** (0.0116)	-0.855*** (0.0193)
Age 30-34	-0.167*** (0.00954)	0.269*** (0.0156)	-0.222*** (0.0114)	-0.373*** (0.0180)
Age 35-39	-0.0764*** (0.00957)	0.0880*** (0.0161)	-0.0773*** (0.0113)	-0.127*** (0.0172)
Age 40-44	0.00417 (0.00998)	0.00382 (0.0171)	0.00197 (0.0116)	0.0147 (0.0175)
Age 45-49 (ref.)	1.00	1.00	1.00	1.00
Constant	-0.499*** (0.00859)	-1.812*** (0.0131)	-1.968*** (0.0123)	-3.697*** (0.0251)

Note: Standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1)

Table 4 incorporates age into the analysis of the relationship between household wealth and women's health outcomes in India. Consistent with the patterns noted in Table 3, wealthier quintiles exhibit lower malnutrition rates and higher overweight and obesity instances regardless of the inclusion of age as a covariate.

The sample distribution across age groups, delineated in Table 2, shows 17% of subjects are adolescents (15-19 years), while middle-aged women (45-49 years) account for approximately 12%. Women aged 40 to 44 do not exhibit a statistically significant influence on undernutrition, overweight, or obesity prevalence across all four models evaluated.

Conversely, women aged 15 to 39 demonstrate a substantial effect on health outcomes at the 1% significance level. Model 2 indicates a negative association between age and underweight likelihood, suggesting adolescents possess a heightened risk for malnutrition. This trend is inversely mirrored in Models 3 and 4, where the probability of overweight and obesity escalates with age within the scrutinized cohort.

These results underscore an age-related gradient in nutritional health risks, identifying a propensity for undernutrition among the young and an increased likelihood of overweight and obesity in older demographics. These findings highlight the imperative for targeted interventions and policy measures that are attuned to the variable nutritional and health needs across different life stages within the Indian population.

Table 5. Logistic regressions for association between wealth quintile and unhealth, underweight, overweight and obesity with control variables outcome measures, India female, 2019-21

	(1)	(2)	(3)	(4)
	Model 1	Model 2	Model 3	Model 4
VARIABLES	unhealth	underweight	overweight	obesity
Richest	0.417*** (0.00885)	-0.978*** (0.0127)	1.186*** (0.0132)	2.043*** (0.0259)
Richer	0.276*** (0.00815)	-0.647*** (0.0107)	1.035*** (0.0125)	1.628*** (0.0255)
Middle	0.149*** (0.00783)	-0.446*** (0.00974)	0.837*** (0.0123)	1.191*** (0.0260)
Poorer	0.0276*** (0.00765)	-0.257*** (0.00906)	0.509*** (0.0126)	0.665*** (0.0274)
Poorest (ref.)	1.00	1.00	1.00	1.00
Age 15-19	-0.147*** (0.00990)	1.856*** (0.0147)	-2.195*** (0.0178)	-2.322*** (0.0323)
Age 20-24	-0.426*** (0 00999)	1.239*** (0 0149)	-1.317*** (0 0139)	-1.564*** (0 0247)

Age 25-29	-0.379*** (0.00972)	0.719*** (0.0151)	-0.680*** (0.0121)	-0.912*** (0.0201)
Age 30-34	-0.199*** (0.00976)	0.368*** (0.0158)	-0.291*** (0.0117)	-0.425*** (0.0185)
Age 35-39	-0.0998*** (0.00967)	0.151*** (0.0162)	-0.125*** (0.0114)	-0.169*** (0.0175)
Age 40-44	-0.00720 (0.0100)	0.0330* (0.0172)	-0.0213* (0.0117)	-0.00645 (0.0176)
Age 45-49 (ref.)	1.00	1.00	1.00	1.00
No-education	-0.0474*** (0.00986)	0.394*** (0.0137)	-0.232*** (0.0129)	-0.134*** (0.0211)
Primary school	0.0502*** (0.0105)	0.157*** (0.0148)	-0.0742*** (0.0138)	0.0923*** (0.0221)
Second school	0.115*** (0.00787)	0.0621*** (0.0112)	0.0320*** (0.0102)	0.164*** (0.0161)
Higher (ref.)	1.00	1.00	1.00	1.00
No-work	0.0222*** (0.00804)	-0.0147 (0.0106)	0.0377*** (0.0111)	0.0439** (0.0179)
professional/ technical/ managerial	-0.0307 (0.0380)	-0.0987 (0.0635)	-0.0382 (0.0457)	-0.0540 (0.0699)
sales	-0.0306 (0.0940)	-0.135 (0.153)	0.00297 (0.114)	-0.0788 (0.179)
services/ household and domestic	0.0164 (0.0455)	-0.201*** (0.0732)	0.0249 (0.0560)	0.188** (0.0817)
agricultural	0.00771 (0.0352)	-0.0544 (0.0536)	-0.0222 (0.0439)	0.0905 (0.0663)
skilled and unskilled manual	-0.0302* (0.0159)	0.246*** (0.0197)	-0.174*** (0.0228)	-0.472*** (0.0467)
Constant	-0.493*** (0.0128)	-2.156*** (0.0188)	-1.781*** (0.0176)	-3.630*** (0.0320)
Observations	724,115	724,115	724,115	724,115

Note: Standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1)

Table 5's expansive analysis introduces four control variables—education, employment status, and occupation—in addition to age. Despite this inclusion, the link between household wealth and women's health persists as significant, corroborating earlier observations from Tables 3 and 4.

The age-based evaluation in Model 1 reveals an insignificant effect of age on health, whereas subsequent models validate previous assertions from Table 4. Increasing age correlates with less malnutrition and greater probabilities of overweight and obesity, notably for ages 40-44, significant at the 10% level in Models 3 and 4.

Education inversely affects health, with lower educational attainment associated with malnutrition at the 1% level. Women with minimal education face heightened malnutrition risks while being less susceptible to overweight and obesity (Model 1).

Work status impacts health variably. The initial model indicates higher health issues among the unemployed. However, Model 2 detects no significant work status-malnutrition link, suggesting employment's limited role in nutrition. Conversely, unemployment relates to increased overweight and obesity risks at the 1% and 5% levels, respectively.

Occupational type influences health outcomes; manual laborers face higher malnutrition rates and lower overweight/obesity risks. Conversely, service workers show less malnutrition and more obesity, with other occupations not showing significant health impacts.

These results underscore the complex drivers of women's health in India, emphasizing that addressing nutritional and health disparities demands strategies considerate of socioeconomic, educational, employment, and occupational factors.

5. Discussion

Our analysis presents a nuanced picture of the nexus between household wealth and female health in India, revealing a negative association

when considering a broader array of socioeconomic determinants (Aittomaki et al., 2010; Kumar et al., 2016). Wealthier Indian women exhibit lower malnutrition risk while encountering higher overweight and obesity propensities, echoing findings within some segments of existing literature (Little et al., 2016; Young et al., 2019). This pattern varies with age and education; with advancing age and higher educational levels attenuating malnutrition yet simultaneously elevating obesity rates. Occupational status, however, does not emerge as a significant factor influencing health disparities.

When considering overall health, wealthier women generally present with poorer health outcomes due to the predominance of overweight and obesity over undernutrition. This aligns with the economic dynamics of nutrient-rich foods, which often bear a higher relative calorie price, impeding efforts to combat malnutrition and contributing to overnutrition (Global nutrition report, 2020). Dietary habits and physical activity, influenced by socioeconomic status, underpin the observed correlations with BMI (Haregu et al., 2018). Notably, there appears to be a shift towards increased obesity rates among lower socioeconomic segments, potentially remodeling conventional associations between wealth and health (Jones-Smith et al., 2010).

Concomitantly, this research reaffirms wealth as a key determinant of health inequality, while occupational engagement shows limited impact. Yet, the study is not without its limitations, particularly with its inability to fully ascertain whether low-income cohorts will experience heightened obesity levels nor to detail nutritional intake specifics for women. Future inquiries may benefit from a broader inclusion of socioeconomic and environmental variables, while also assessing the repercussions of the COVID-19 pandemic on familial wealth and female health dynamics. Trends in rural obesity warrant further investigation to delineate disparities in wealth and health between urban and rural women.

The implications for Indian policy-making are profound. Emphasis should be placed on addressing female overweight and obesity, enhancing health systems to include obesity in chronic disease prevention frameworks. Advocacy and routine screenings should target these issues, while malnutrition interventions focus on younger and poorer demographics through agricultural advancements and food affordability strategies. Additionally, enhancing food access for low-income groups through subsidies and local support systems is imperative.

In summary, this research highlights the dual burden of malnutrition and obesity among Indian women, influenced by wealth disparities, and suggests a redirection of public health priorities to effectively address this multifaceted challenge.

References

Aittomaki, A, Martikainen, P, Laaksonen, M, Lahelma, E, & Rahkonen, O. (2010). The associations of household wealth and income with self-rated health — A study on economic advantage in middle-aged Finnish men and women. *Social science & medicine*, *71*(5), pp. 1018-1026.

Aitsi-Selmi, A, Chandola, T, Friel, S, Nouraei, R, Shipley, MJ, & Marmot, MG. (2012). Interaction between education and household wealth on the risk of obesity in women in Egypt. *PloS one*, *7*(6).

Benzeval, M & Judge, K. (2001). Income and Health: The Time Dimension. *Social Science and Medicine, 52*(9), pp. 1371-1390.

Boen, C, Keister, LA, & Graetz, N. (2021). Household Wealth and Child Body Mass Index: Patterns and Mechanisms. *RSF: The Russell Sage Foundation Journal of the Social Sciences*, *7*(3), pp. 80-100.

Chauhan, L. (2011). Public health in India: Issues and Challenges. *Indian journal of public health*, *55*(2), pp. 88-91.

Dieker, AC, IJzelenberg, W, Proper, KI, Burdorf, A, Ket, JC, van der Beek, AJ, & Hulsegge, G. (2019). The contribution of work and lifestyle factors to socioeconomic inequalities in self-rated health — a systematic review. S*candinavian journal of work, environment & health*, *45*(2), pp. 114-125.

Development Initiatives. (2020). Global Nutrition Report: Action on equity to end malnutrition 2020, Bristol, UK.

Dupas, P & Jain, R 2021, 'Women Left Behind: Gender Disparities in Utilization of Government Health Insurance in India'. *National Bureau of Economic Research, Inc,*

Cambridge, DOI 10.3386/w28972.

Ecob, R, & Smith, GD. (1999). Income and Health: What Is the Nature of the Relationship? *Social Science and Medicine*, *48*(5), pp. 693-705.

Haregu, TN, Mohamed, SF, Muthuri, S, Khayeka-Wandabwa, C, & Kyobutungi, C. (2018). Body mass index and wealth index: positively correlated indicators of health and wealth inequalities in Nairobi slums. *Global Health, Epidemiology and Genomics*, Cambridge University Press, 3.

Joe, W, Mishra, US, & Navaneetham, K. (2008). Health inequality in India: evidence from NFHS 3. *Economic and Political Weekly*, *43*(31), pp. 41-47.

Kumar, K, Shukla, A, Singh, A, Ram, F, & Kowal, P. (2016). Association between wealth and health among older adults in rural China and India. *The Journal of the Economics of Ageing*, *7*, pp. 43-52.

Little, M, Humphries, S, Patel, K, & Dewey, C. (2016). Factors associated with BMI, underweight, overweight, and obesity among adults in a population of rural south India: a cross-sectional study. *BMC obesity*, *3*, pp. 1-13.

Mackenbach, JP, Martikainen, P, Looman, CW, Dalstra, JA, Kunst, AE, & Lahelma, E. (2005). The shape of the relationship between income and self-assessed health: an international study. *International journal of epidemiology*, *34*(2), pp. 286-293.

Pollack, CE, Chideya, S, Cubbin, C, Williams, B, Dekker, M, & Braveman, P. (2007). Should Health Studies Measure Wealth? A Systematic Review. *American Journal of Preventive Medicine*, *33*(3), pp. 250-264.

Templin, T, Cravo Oliveira Hashiguchi, T, Thomson, B, Dieleman, J, & Bendavid, E. (2019). The overweight and obesity transition from the wealthy to the poor in low-and middle-income countries: A survey of household data from 103 countries. *PLoS medicine*, *16*(11).

Wolfe, BL & Behrman, JR. (1984). Determinants of women's health status and health-care utilization in a developing country: A latent variable approach. *The Review of Economics and Statistics*, *66*(4), pp. 696-703.

World Economic Forum. (2021). *Global Gender Gap Report 2021*. World Economic Forum, Switzerland.

Young, MF, Nguyen, P, Tran, LM, Avula, R, & Menon, P. (2020). A double edged sword? Improvements in economic conditions over a decade in India led to declines in undernutrition as well as increases in overweight among adolescents and women. *The Journal of Nutrition*, *150*(2), pp. 364-372.