The Invisible Burden Gender Disparities and Their Cascading Impact on NCD Risks in Bangladeshi Women

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"The Invisible Burden: Gender Disparities and Their Cascading Impact on NCD Risks in Bangladeshi Women."

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abstract

Introduction: Bangladesh symbolizes how systematic gender bias impairs women's health. Economic instability, violence, mental health issues, and environmental vulnerability are all interconnected issues that exacerbate the socio-economic challenges women face in their day-to-day lives. Eventually, it makes women more vulnerable to developing non-communicable diseases.

Objective: This study aims to establish causal links between poverty, gender disparity, and NCD risks in women. It is one of the first studies to execute machine learning techniques to explore the relationship between gender disparity and NCD mortality among Bangladeshi women. The paper evaluates the multidimensional aspect of gender norms that strain women's health.

Methodology: data analysis was done using a synthetic dataset generated using GAN that mimics real-world datasets. OLS, random forest, lasso regression, and XGboost were employed for assessing research objectives.

Results: The primary results identify income level as the main predictor of NCD mortality. Unemployment rate, unpaid domestic labor, and high stress levels are the secondary predictors.

Conclusion: Addressing economic, socioeconomic, and cultural oppression is crucial for improving the country's health. The government and policymakers need to introduce gendered health policies to improve health equity in Bangladesh.

Introduction

Gender inequality creates poverty among women, and poverty increases mortality later in life. Even women from upper-middle-class families, if the women do not have an income of their own, their health is compromised because she does not financially contribute to the family.

Bangladesh continuously ranks low on the gender inequality index. Despite the current economic development, the socioeconomic factors influencing Bangladeshi women hinder their day-to-day lives, eventually putting them in society's vulnerable position. This is especially true for economically disadvantaged people in Bangladesh. Women in these households invest most of their time in unpaid household work. As they do not earn, they have less decision-making power in the household. Often their needs and health are neglected. And they do not receive proper treatment due to financial insecurity. A study done in Kolkata, India, shows that women from

poorer areas mostly rely on informal healthcare, which is ineffective, and the earning members of the family receive formal healthcare. The main reason behind this was that the earning member needs to stay healthy and fit to earn money; therefore, it is more important for them to get medical care than women, as they do not contribute financially to the family. Women from economically downtrodden backgrounds also live in high-risk environments, as they live most of the time indoors; they do not have access to clean fuels for cooking, and they are also victims of secondhand smoke. Living in indoor air pollution increases their likelihood of developing respiratory problems, including cancer, asthma, and other respiratory-related issues. Women in Bangladesh are not encouraged to work and earn money on their own, especially after childbirth. It creates dependency of women on the earning member, which leads them to have less decision-making power on their health. Women are also the main caregivers for most families. Studies have shown the mental health caregivers face due to stress. This also takes a toll on their health, and caregivers on average earn less than their non-caregiver counterparts.

This study is going to argue how poverty and social and environmental factors influence women's health outcomes. Previous studies have shown how each of the different elements, eg. poverty, mental health neglect, high stress levels, bad living conditions, and food habits, increase the risk of developing non-communicable diseases in women.

What is the relationship between women's low income and NCD mortality?

How does gender disparity in employment influence the risk of developing noncommunicable diseases in women?

How does air pollution incidence affect women's development and morality of NCD disease in women?

What is the role of economic instability in worsening women's health?

The study serves as key evidence for understanding the complex interplay between social, economic, and environmental factors worsening women's health. The study's findings can inform gender-sensitive healthcare programs. The findings also employ the importance of financial independence and economic stability among women. The state of gender disparities is also the

same as in Bangladesh in most South Asian countries. The research advances the knowledge of different socioeconomic dynamics for future policy-making and intervention strategies.

The introduction provides a brief overview of the research topic, questions, significance, and research gap. The literature review provides an in-depth exploration of existing research. The methodology chapter gives a detailed view of all econometrics, statistical, and machine learning tools that were used, and it explains the research design and the argument behind choosing the specific research design. The results section showcases the data analysis results. Then the paper interpreted the results with possible policy implications. Then the conclusion summarizes the key findings and limitations and suggests future research paths.

Literature review

Noncommunicable diseases have risen as one of South Asia's most challenging public health problems. Noncommunicable diseases are responsible for around 60% of deaths in South Asia (WHO, 2021). The prevalence of NCDs is disproportionately affecting women in South Asia, and it's exposing deep-seated gender disparities in health outcomes. Current research indicates that women face various forms of disparities. It consists of economic inequalities, cultural norms, systematic violence, the toll on mental health, and poor environmental conditions, all of which hinder women's access to health care, further exacerbating their vulnerability to health risks. Moreover, the widespread normality of violence and inequality against women adds another layer of complexity, which creates an adverse effect on both mental and physical health.

Despite recognizing these interconnected factors, the existing literature fails to address how the spectrum of gender disparities is affecting the increasing incidence among South Asian women. Current studies overlook the ways poverty, gender inequality, violence against women, mental health factors, and environmental stressors influence one another, which creates a multifaceted barrier to women's health. Consequently, there is a substantial amount of nuance in understanding how these variables collectively fuel the rise of NCD in South Asia.

This literature review synthesizes the current research done on economic instability, violence, cultural norms, mental health, and environmental factors affecting South Asian women's health that are increasing the burden of non-communicable diseases in this region. However, this review will further argue how all of these factors are interconnected. It will address the urgent need for targeted interventions and for implementing policies that address relevant health challenges women face in South Asia.

From 1990 to 2010, nearly all non-communicable diseases increased at a higher rate in South Asia compared to the global rate of NCD, whereas diabetes and cardiovascular heart disease increased at 104% and 73%, respectively. (global burden of disease; 2021)
Women buried under financial strain are in a vulnerable position for rapid health decline due to actual differences in income and wealth. The financial strain puts a toll on women's health, exacerbating the risk of non-communicable diseases. (shipper et al.). Study finds that elevating financial stress significantly improves women's health. Results imply that even temporary relief from financial burden is beneficial for women's health (shipper et al.). Research has shown that financial strain predicts multiple health outcomes; people with adequate financial resources are more likely to live healthy lives than those who are financially unstable. (Angel et al., 2003; Szaton et al., 2010). Empirical studies based on large populations have found that caregivers earn lower wages (Bittman et al. 2007, Heitmueller & Inglis 2007). A study done in 2010 showed that cardiovascular disease leads to an immense amount of expenditure for 25% percent of Indian families, and 10% of Indian families drive into poverty. It's estimated that cardiovascular disease patients are to be 17.9 million by the year 2030 in India; a similar figure is likely for the rest of South Asia. (World Bank; 2010; Mahal et al; 2010)

Violence against women in South Asia is ever…… throughout women's lives, from childhood through adolescence, adulthood through old age. Physically abusing the wife is one of the most common practices in South Asia. Some violence is particularly persistent in South Asia, such as child marriage, intimate partner violence, excess female child mortality, child abuse, trafficking, honor crimes, and dowry-related violence. South Asian girls who survive through birth and early marriage still face violence in the home, in school, or after marriage. a study in Bangladesh reports that girls on the street are twice as likely to get picked on and face sexual abuse (Conticini and Hulme 2007) violence is a tool that men use against women to overpower women's autonomy. The phenomenon of violence comes from the patriarchal notion of control over women's bodies, labor, reproductive rights, mobility, and the level of autonomy.
Women in this region are still not considered individuals who are first and foremost citizens; rather, women and girls are identified by their relationships with men and boys. They are mothers daughters, and sisters. These rigid gender norms have been because of traditional values, which further justified the violence against women. (Kapur;2013)

Gender norms dictate the role of women in the economy, freedom of their speech, and mobility (Seguino, 2007) a study done in slums of Kolkata examines the health-seeking behavior of men and women, and that study finds that men are more likely to seek formal healthcare and get medication from doctors while women are more likely to seek informal healthcare. According to men women nag about their illness; therefore, chronic disease does not occur in women. Since men are the sole breadwinners for the family, they need to stay healthy while neglecting the need for women's healthcare entirely. (Moumita Das et al., 2018)

A longitudinal study shows that the saviors of intimate partner violence have difficulties in employment, financial instability, severe psychological health distress, insufficient social support, and parenting challenges. (Rolins et al; 2012) House is a location where we feel most in control of our lives and it provides high levels of security and mental peace. But for women who are experiencing intimate partner violence, home becomes a prison; it disrupts the feeling of safety, stability, and control over their own lives. (Dunn, 2002; Dupuis & Thorns, 1998; Shaw, 2004). Women living with a perpetrator of violence are constantly subjected to financial abuse, which besetes their ability to work and have economic stability. The material and psychological consequences stayed with them even when they were attempting to rebuild their life. Women living with intimate partner violence experience a range of co-occurring challenges (e.g., Anderson & Saunders, 2003; Baker et al., 2003; Bassuk et al., 2006; Buel, 1999; Campbell et al., 1998; Galano et al., 2013; Hardesty & Chung, 2006; Hughes et al., 2011) For most women in our study, the women subjected to violence took a toll on their health; they experienced elevated stress and decreased self-care. Women talked about unhealthy behaviors over or undereating, substance abuse, and neglecting health, all of which worsened health outcomes. Women earning a low income or being financially dependent make them more likely to become victims of

intimate partner violence. (Dillon et al. 2013). Victims of violence suffer from depression, anxiety, PTSD, and difficulty in daily functioning. The findings have been reported in research on sheltered women who suffered abuse. (Humphreys et al., 2001)

Evidence supports that chronic daily stressors and chronic psychological trauma increase the risk of developing and dying from cardiovascular diseases and other non-communicable diseases. Chronic stressors also worsen the prognosis in patients with existing cardiovascular disease. (Cohen et al., 2024) The American Heart Association labels depression as a risk factor for poor prognosis among patients with coronary syndromes. (American Heart Association; 13th edition) European guidelines for health say that depression, anxiety, and psychological stressors such as work-related stress and poor social support are major risk factors for CVD, and they create adverse outcomes in patients with existing CVD. (Lightman JH; 2012) Studies have found that depression significantly increases the risk of developing hypertension. (Meng lin et al; 2012) . biological indicators such as cortisol, epinephrine, and norepinephrine; measures of immunologic function such as natural killer cell activity and healing response to a standardized skin puncture wound (wound healing); antibody markers such as vaccination response; cardiovascular markers such as blood pressure and heart rate; and metabolic markers such as insulin, transferrin, and plasma lipids these are a physiological response to chronic stress. (Allen et al. 2017, Vitaliano et al. 2003).

Unprocessed solid fuels produce enough pollution to affect the local neighborhood significantly, with pollution levels causing implications for total exposure (Smith et al., 1994). Everyday cookstove exposure effectiveness of toxins is high, i.e. the percentage of their emissions that reach people's breathing zones is much higher than outdoor sources (Smith, 2002; Bennett et al., 2002) Studies have understood the connection between indoor air pollutants' effect on the health of poor women and children. As poverty is associated with both biomass-fuel use and the prevalence of these diseases, the effect of fuel quality must be distinguished from the relationship solely because of poverty. This makes the women and children of developing countries vulnerable to certain diseases.

Methodology

The main objective is to investigate how gender disparities are causing economic, societal, and mental vulnerabilities in women, which increases their probability of developing non-communicable diseases. It seeks to establish a causal relationship between gender disparities and NCD risks among women in Bangladesh. The methodology is structured as follows: it uses an inductive research approach to comprise a quasi-experimental research design, which uses quantitative secondary data collected through non-probability sampling and non-probability over a longitudinal time horizon. Hence the study has included inferential statistical tools, econometrics, and machine learning methods for rigorous data analysis.

Research Theory

Well, determining the effect of a social phenomenon requires rigorous data analysis; a predefined hypothesis will be completely ineffective while studying such phenomena; hence, the study has a positivist approach as its research philosophy. Positivism research philosophy emphasizes the objectivity of the research rather than the predisposed subjective assumptions. This inarguably helps to examine overlooked controversial phenomena like gender disparities. Which are mostly taboo topics in civil society. Therefore, objective, reliable, and quantifiable results are necessary. The positivist approach is specifically effective as it identifies patterns and casual relationships among different social factors. Even though it produces quantifiable results, this approach may not capture the depth of subjective individual experiences, which makes it less suitable for studies that require individual perspectives. However, its structured, objective, and quantifiable methods produce generalizable findings applicable to a broader social context.

Research approach

The effect of gender disparities on women's health is a fairly unexplored topic; therefore, this study seeks to understand it from the ground up. Hence inductive research theory is most preferable. The inductive approach starts with data collection and then identifies patterns, theories, and broader generalizations. Data was collected on various indicators that indiscriminately affect one gender. The collected data was analyzed to answer the specific research objectives and questions. Rather than focusing on a predisposed hypothesis, this research has collected detailed information without a predisposed hypothesis and through detailed data analysis. The data analysis has revealed patterns, themes, and categories that have answered the research questions and objectives. After that, based on observed patterns, the study has made broader generalizations. The inductive research

Research design

Since the data available on gender disparities is already formed and selected based on their existing condition, the study has adopted a quasi-experimental research strategy While

examining social phenomena, it is highly unethical to randomly assign groups as treatment and control groups; therefore, approaching a quasi-experimental research design is the most practical and appropriate solution. A quasi-experimental design is flexible, and it can be applied to determine the causal relationship between different social variables, eg. poverty, indoor air pollution, and domestic violence, without randomized controlled trials. Even though a quasi-experimental research design is feasible, it is prone to potential bias because of the absence of random assignments. However, it is still the most effective research design for determining the effect of social constructs due to ethical considerations.

Time horizon

Here we have assessed the social impact of gender disparities on women's health over some time. It allows analysis of trends and patterns over time and showcases how each of the variables has changed over different time periods. It also reduces recall biases. Through a longitudinal study, we have examined temporal relationships between variables.

Sampling method

Our study is mainly explanatory as it seeks insights into environmental, economic, socio-economical, and health-related cues rather than simply representing the data; hence, a non-probability sampling method was used. Here the participant's data is selected based on specific characteristics, not through pure randomization. Though it has limited generalizability, it is the most feasible and cost-effective method for this moment. Non-probability sampling is particularly useful for exploratory research; the goal is to explore certain topics rather than make generalizations.

Data sources

Secondary quantitative data was used due to time constraints and feasibility. The data sets were collected from World Bank open data, BDHS datasets, the Global Health Observatory, Bangladesh government annual reports, and UN women's annual reports. A synthetic dataset was created by implementing Python's GAN (generative adversarial network). The dataset integrated BDHS, GHO, and World Bank datasets.

Data from BDHS, GHO, and World Bank was cleaned, normalized, and merged using Python's Pandas and numpy Library. Then the GAN model was trained by leveraging a tensor flow library with an integrated dataset. The dataset was created to stimulate real-life conditions. The generator was configured to mimic real data. The Kolmogorov-Smirnov KS test was conducted to ensure consistency in the datasets. The synthetic dataset was created because real datasets were not robust for testing complex methods, e.g., random forest, xgboost. The synthetic dataset replicates all the statistical properties of secondary datasets. The synthetic dataset was used because of the limited resources to the dataset appropriate for research. A synthetic dataset

allows us to do robust data analysis and enables us to implement advanced statistical and machine-learning tools for data analysis.

This study explores the relationship between the variables and how poverty, mental health neglect, environmental vulnerabilities, and health risks are all correlated with each other and create a domino effect of negative health outcomes in women. Therefore, an explanatory quantitative research design was used. It illustrates the relationship between each variable and explores casual links and trends.

Limitations of methodology

Even though robust data analysis was employed, there's still a chance of potential biases due to using synthetic data sources. Even though the synthetic dataset was created to replicate real-world situations, an empirical dataset will still give more insights into real-world situations. The study does not involve experimental design which hinders the way to establish a casual relationship.

Using empirical data is recommended, as it will reduce the biases of using secondary data. Exploring the relationship between health outcomes and gender disparities beyond the Bangladeshi context

The methodology is tailored to answer the specific objectives and availability of data. The positivist research philosophy, inductive research strategy, non-probability sampling, quasi-experimental research strategy, and exploratory research design were used in the study to ensure robustness. Statistical, econometric, and machine learning methods were used for data analysis.

Results

VIF, White test, Bruseche pagan test

```
==============================================================================
Omnibus:                        0.759   Durbin-Watson:                   2.040
Prob(Omnibus):                  0.684   Jarque-Bera (JB):                0.630
Skew:                           0.010   Prob(JB):                        0.730
Kurtosis:                       3.121   Cond. No.                     3.72e+05
==============================================================================

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.
[2] The condition number is large, 3.72e+05. This might indicate that there are
strong multicollinearity or other numerical problems.

Variance Inflation Factor (VIF):
                          feature         VIF
0                           const  147.986743
1                    Income_level    1.007983
2                  Poverty_status    1.004547
3               Unemployment_rate    1.005477
4             Access_to_healthcare    1.005690
5        Secondhand_smoke_exposure    1.010801
6   Household_air_pollution_index    1.007251
7                 Nutrition_score    1.012579
8              Domestic_violence    1.013695
9                Education_level    1.015479
10     Unpaid_domestic_work_hours    1.013616
11        Gender_inequality_index    1.007783
12     Mental_health_stress_level    1.019452
13  Access_to_mental_health_services    1.010704
14                            Age    1.010509

White Test for Heteroscedasticity:
White test statistic: 106.03523641001478, p-value: 0.6900027630123121

Breusch-Pagan Test for Heteroscedasticity:
BP test statistic: 10.404760784526456, p-value: 0.7320326918602609
```

Here VIF for all variables is 1. And p-value for the white test is 0.69

And p-value for Bruseche pagan test is 0.732

OLS Regression

OLS Regression Results

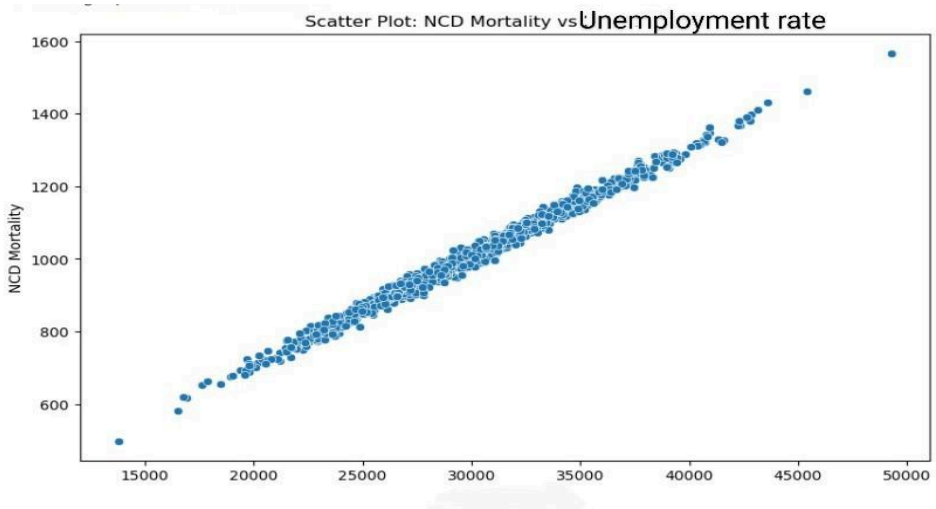
Dep. Variable:	NCD_mortality	R-squared:	0.999
Model:	OLS	Adj. R-squared:	0.999
Method:	Least Squares	F-statistic:	6.098e+04
Date:	Sun, 01 Dec 2024	Prob (F-statistic):	0.00
Time:	09:29:24	Log-Likelihood:	-3029.0
No. Observations:	1000	AIC:	6088.
Df Residuals:	985	BIC:	6162.
Df Model:	14		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
const	-0.9183	1.939	-0.474	0.636	-4.724	2.887
Income_level	0.0300	3.27e-05	916.833	0.000	0.030	0.030
Poverty_status	4.6389	0.350	13.254	0.000	3.952	5.326
Unemployment_rate	2.0973	0.037	56.836	0.000	2.025	2.170
Access_to_healthcare	9.9575	0.400	24.869	0.000	9.172	10.743
Secondhand_smoke_exposure	8.7096	0.349	24.928	0.000	8.024	9.395
Household_air_pollution_index	0.4625	0.055	8.395	0.000	0.354	0.571
Nutrition_score	0.2071	0.019	11.175	0.000	0.171	0.244
Domestic_violence	5.9195	0.325	18.222	0.000	5.282	6.557
Education_level	4.1072	0.194	21.161	0.000	3.726	4.488
Unpaid_domestic_work_hours	0.3188	0.014	22.382	0.000	0.291	0.347
Gender_inequality_index	5.1410	0.558	9.215	0.000	4.046	6.236
Mental_health_stress_level	2.9612	0.109	27.058	0.000	2.746	3.176
Access_to_mental_health_services	6.8370	0.321	21.329	0.000	6.208	7.466
Age	0.1850	0.013	14.077	0.000	0.159	0.211

Omnibus:	0.759	Durbin-Watson:	2.040
Prob(Omnibus):	0.684	Jarque-Bera (JB):	0.630
Skew:	0.010	Prob(JB):	0.730
Kurtosis:	3.121	Cond. No.	3.72e+05

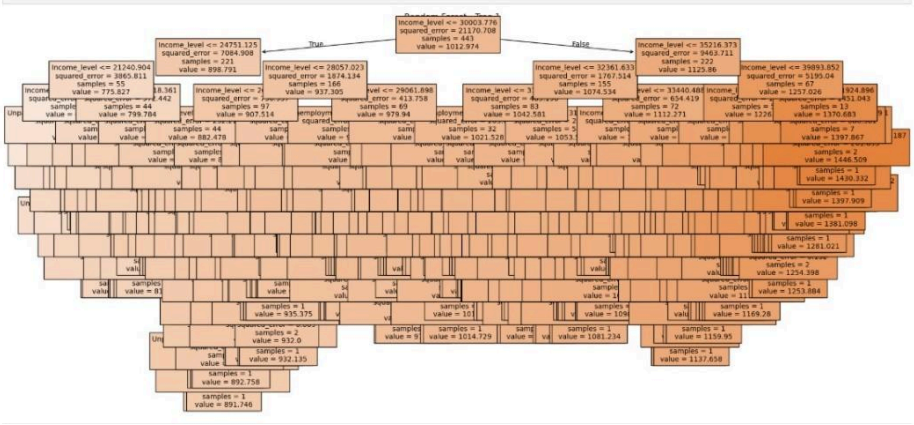
The P value for all variables is 0 which is statistically significant. Which indicates that all variables is affecting the dependent variable NCD mortality.

Scatter plot



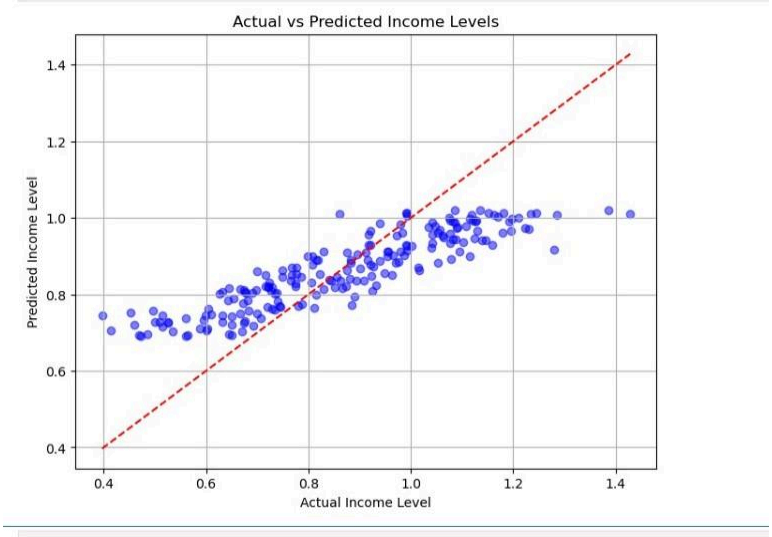
There's a positive correlation between NCD mortality and unemployment rate.

Random forest



The root node first split suggests income level as the main predictor and subsequent splits unemployment rate as interaction effect.

Lasso Regression

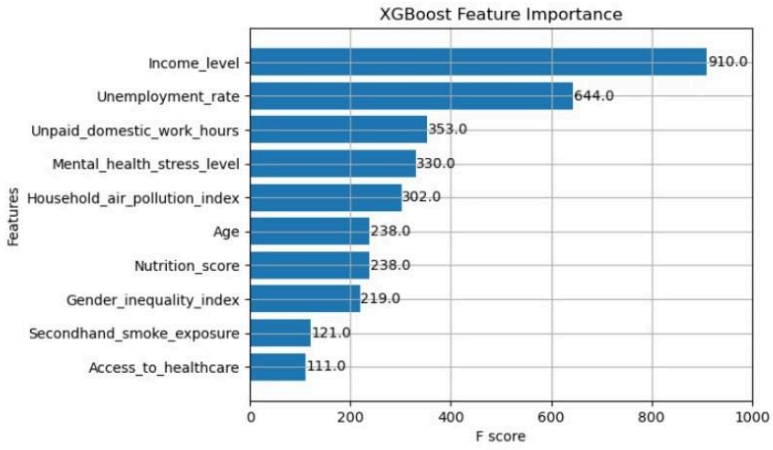


MSE (mean squared error) = 0.018

Dependent variable, income level

Independent variable, gender inequality

XGBoost



R squared = 0.98

RMSE = 0.45

Discussion

The main objective of the analysis was to determine the relationship between different socioeconomic, economic, and environmental factors and non-communicable disease mortality. This examines the role of gender disparity in increasing the non-communicable disease mortality rate among women. The research aim is to investigate different factors that are influenced by gender inequality, such as income levels, decision-making power, living conditions, etc., and how much they contribute to the increasing rate of NCD mortality among women.

The regression results have revealed that there is a strong association between each independent variable and the dependent variable, NCD mortality. The results highlight that there is a strong correlation between poor living conditions and mental health stress with NCD mortality. The findings of the test results align with the previous literature. The correlation matrix also illustrated a strong relationship among dependent and independent variables. The random forest analysis indicated that low-income levels were the top predictor of NCD mortality among women. Indicating that economic instability is the number one reason behind high NCD mortality rates among women.

Statistical tests

A Brusche pagan test was conducted to measure potential heteroscedasticity in the model. Here the p-value of the Brusche pagan test is 0.73, which indicates that there is heteroscedasticity in the regression model. which means that the variance of errors across the observation differs from each other. And the model is normally distributed.

The white test is similar to the Brushed Pagan test, but it checks the heteroscedasticity, but it does not rely on normality; it does not require the normality distribution across the observation.

The VIF result is 1 across all variables. It conveys there is no multicollinearity in the model.

0ls regression

The results from OLS regression showcase that there is a statistically significant relationship between the independent variable and dependent variable. The value of r squared is 0.99, and the adjusted r squared is 0.99, indicating good model fitness. To be statistically significant, the p-value must be below 0.05. Here, the value of each independent variable is below 0.05, which showcases that each independent variable has a statistically significant relationship, aka a strong relationship with the dependent variable. A positive or negative coefficient will determine how much each independent variable is related to the dependent variable

Scatter plot

The scatterplot shows a positive relationship between the unemployment rate and NCD mortality. This means that the higher the unemployment rate, the higher the NCD mortality rate. Women who are in economically vulnerable positions are much more likely to die from non-communicable diseases. The scatter plot shows a strong correlation between the unemployment rate and NCD mortality. This suggests that to decrease women's NCD mortality rate, we must decrease the unemployment rate in women.

Random forest

Random forest is a machine learning model that identifies complex nonlinear relationships among variables and provides a feature importance score. At the very top of the root node, the dataset splits based on income level <= 19,518 With this, it has been suggested that income level is the most significant variable in predicting NCD mortality. It suggests that the lower the income level, the higher the NCD mortality rate. This prediction indicates the importance of a higher or good enough income is essential for women for a better health outcome.

Here the first few splits prioritize income level as the dominant predictor. Subsequent splits suggest the unemployment rate as an interaction effect. A higher unemployment rate correlates with household stress and reduced affordability of healthcare services.

Lasso regression

Lasso regression was implemented to predict [dependent variable, e.g., gender inequality index] based on [independent variables, e.g., unemployment rate, low income, etc.].

The value `0.018014486384259593` represents the MSE mean squared error of the Lasso regression model on the test data. The lower the MSE value, the closer the model's prediction to the actual values; a small value means the model's predictive performance is good.

The array `[-0.08714769, -0.01078568]` represents the coefficients of the features used in the Lasso model. Lasso regression does feature selection by reducing the coefficient to zero; therefore, the remaining coefficients are the most predictive of the target variable. Here, Feature 1 contributes negatively with a magnitude of `0.0871`. Feature 2 contributes negatively but less strongly, with a magnitude of `0.0108`.

XGBoost

The XGBoost (extreme gradient boosting) model was implemented through Python's scikict-learn library. The model has an R squared value of 0.92, which indicates that 92% of the dependent variable is explained by the independent variable. The RMSE score was 0.45, which means there were relatively few errors in the prediction. The xg boost feature importance score illustrates that income level, unemployment rate, unpaid domestic work, and high stress levels as the top predictors for NCD mortality among women. The result is similar to the random forest, which also showcased low-income levels and the unemployment rate as the top predictors.

Limitations

1. Even though the research implemented robust data analysis, but usage of a synthetic dataset through machine learning that mimics the real datasets still compromises the findings.

2. The research is limited to Bangladesh, failing to conclude the impact of gender inequality on women's health across the globe.

3. The findings are not relevant to most first-world countries, but they mainly showcase the realities of women in the developing world. The study has limited relevance.

Further research

1. Research based on empirical data will provide the most significant insights regarding gender disparity and women's health.
2. Studies that include multiple developing countries show the impact of gender disparities on women's health and compare each country to measure cultural and social impact. Studies on regional comparison among and beyond South Asia.
3. Qualitative research demonstrating cultural, social, and gender norms and their impact on women's health.

The study findings answer the critical question if gender disparities are putting women at more risk of dying from non-communicable diseases. It suggests that lower-income, unemployed women who spend most of their time doing unpaid labor are at the highest risk of dying from non-communicable diseases. Overall the study paves the way to broaden our understanding of gender inequality and its impact on women's lives.

Conclusion

The key findings from the study suggest gender disparity indeed significantly impacts women's health, and it increases their mortality from NCD.

The research suggests women with low income, unemployed women, and women who spend most of their time doing unpaid housework were more likely to die if diagnosed with NCD. Typically, in such households, women's health is not considered as a priority. Late diagnosis and lack of healthcare lead them to inevitable death.

The findings from the study emphasize the need to increase women's employment; if more women can afford their healthcare costs themselves, their lifespan will increase. It also illustrates the importance of acknowledging systematic gender inequality and its effect beyond the traditional routes.

Increasing healthcare access among women in Bangladesh and gendered health policies will likely improve the situation. But to improve the situation in the long term, education and employment policies targeted to women need to be implemented, especially in rural, improvised areas. More women need to be aware of the health implications resulting from poverty and unemployment.

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