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Analyzing Hospital Preferences and Disparities in Healthcare Affordability Among Child-Bearing Women in Aizawl City, Mizoram

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Abstract:
This research investigates hospital preferences and disparities in healthcare affordability among childbearing women in Aizawl City, Mizoram, India. Primary data from surveys conducted in March and April 2024 are utilized to analyze the impact of age, education, and income on hospital preferences and affordability. A structured questionnaire was administered to a sample of 120 women aged 16-45 from various socioeconomic backgrounds. Binary Logistic Regression Application (BLRA) and Pearson Correlation analysis were used to interpret the data. The findings reveal that younger women (21-30 years) prefer private hospitals due to faster services and modern facilities, while older women (31-40 years) and those with lower incomes (below Rs. 10,001 per month) choose more affordable government hospitals. Education levels also play a role in preferences, with graduates more inclined to select private hospitals. The regression analysis demonstrates that income significantly influences hospital preference, with individuals with lower incomes less inclined to choose private hospitals. Although the correlation between education and preference for private hospitals is weaker, it remains significant. The study suggests the necessity for policies addressing financial barriers and the aim to improve healthcare quality through government initiatives such National Health Mission (NHM) and the Janani Suraksha Yojana (JSY), to enhance maternal health outcomes in Aizawl City.

Keywords: Socioeconomic disparities, Hospital preferences, Healthcare affordability, Awareness of government schemes, Aizawl City

Introduction

Healthcare preferences and disparities in affordability significantly influence maternal health outcomes, especially among childbearing women. Understanding these dynamics is crucial for addressing inequities and enhancing the accessibility and quality of healthcare services. This research paper aims to analyze hospital preferences and disparities in healthcare affordability among childbearing women in Aizawl City, the capital of Mizoram, India.

Maternal health is a base of public health, greatly impacting the well-being of families and communities. The World Health Organization (WHO) emphasizes the importance of accessible, high-quality maternal healthcare services to reduce maternal and infant mortality rates (WHO, 2020). However, disparities in healthcare access and affordability remain prevalent, posing challenges to achieving optimal health outcomes for all women (UNFPA, 2020).

Aizawl City, characterized by its hilly terrain and rapid urbanization, presents unique healthcare challenges. The city has a mixed healthcare system comprising both public and private hospitals, each with varying levels of accessibility and affordability (Lalthanpuii & Zothanzama, 2018). Public hospitals often provide essential services at lower costs but are frequently overcrowded and under-resourced (Zodinpuii, 2021). In contrast, private hospitals offer more amenities and shorter wait times but at higher costs, which may be prohibitive for many women (Ranjan et al., 2018).

The preferences for hospital types among childbearing women are influenced by multiple factors, including perceived quality of care, availability of services, cultural beliefs, and socioeconomic status (Kruk et al., 2019). In Aizawl, these preferences can significantly impact health outcomes, given the disparities in service provision between different types of healthcare facilities. Understanding these preferences is crucial for policymakers and healthcare providers to address gaps and improve maternal health services. Affordability is a critical barrier to accessing healthcare services in many parts of India, including Aizawl. High out-of-pocket expenditures can hinder women from seeking timely and necessary maternal health services, leading to adverse health outcomes (Patel et al., 2021). Financial barriers are particularly pronounced among low-income populations who may lack insurance coverage or the means to pay for private healthcare (Ranjan et al., 2018). This financial strain can result in delayed care, worsening health disparities and undermining efforts to improve maternal health (Mishra & Singh, 2020). Government initiatives, such as the National Health Mission (NHM) and the Janani Suraksha Yojana (JSY), aim to improve

maternal health by reducing financial barriers and enhancing service delivery (Government of India, 2020). These programs focus on providing financial incentives for institutional deliveries and improving the quality of care in public hospitals. However, further examination and adaptation to local contexts are needed to assess the effectiveness of these initiatives in addressing the specific needs of childbearing women in Aizawl (Singh et al., 2019).

Non-governmental organizations (NGOs) also play a vital role in bridging gaps in healthcare services, especially for marginalized populations. NGOs in Mizoram, such as the Young Mizo Association (YMA), Mizoram State AIDS Control Society (MSACS), and the Zoram Entu Pawl (ZEP), work on various health and social issues, including maternal health (Das & Rai, 2017). Their efforts complement government initiatives by providing additional resources, advocacy, and community-based services. The collaboration between the government and NGOs is essential for creating a comprehensive healthcare system that meets the diverse needs of childbearing women (Nath & Garg, 2019).

Cultural factors and societal attitudes greatly influence how women access healthcare during pregnancy. To enhance maternal health outcomes, it is crucial to tackle these cultural barriers through community engagement, education, and advocacy. By examining hospital preferences and disparities in healthcare affordability among expectant women in Aizawl City, we can obtain valuable insights to shape policies and interventions that improve maternal health services. This study emphasizes the necessity for a comprehensive approach that addresses financial barriers, enhances healthcare infrastructure, and involves the community. By understanding the unique challenges and preferences of women in Aizawl, this research aims to contribute to the development of effective strategies that enhance maternal health and overall well-being in the region.

Study Area

Aizawl, the capital city of Mizoram, is located in the southern corner of India's northeastern region. The city was founded in 1894, and it has emerged as one of the country's fastest-growing hill cities. According to the 2011 Census of India, the state capital district, Aizawl district, has a population of 293,416, making up 26.89 percent of Mizoram's total population. The district has the highest sex ratio among Mizoram's districts, with 1009 females per 1000 males. The city's growth, both demographically and economically, makes it a significant urban center in the region.

The Aizawl Municipal Corporation (AMC) governs the city, which is administratively divided into 19 Municipal Wards (see Figure 1) and 83 Local Councils. These divisions facilitate localized governance and the efficient delivery of civic amenities and services, contributing to the city's orderly growth and development.

The city is characterized by its hilly terrain, with elevations ranging from 700 to 1,200 meters above sea level. The literacy rate in Aizawl is notably high, reflecting Mizoram's overall emphasis on education. In the 2011 Census, the literacy rate in Aizawl district was 97.89%, one of the highest in India. This high literacy rate is indicative of a well-educated workforce and a populace that values education, which is essential for the city's socio-economic development.

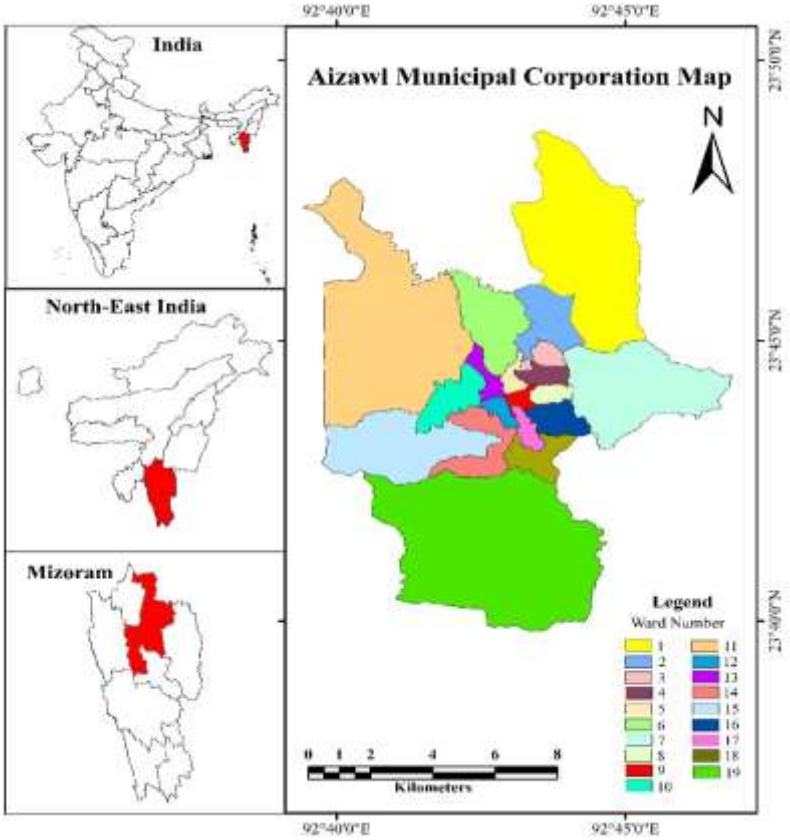

Figure 1. Study Area Map

Source: https://livingatlas.esri.in/server/rest/services/Wards/Aizawl_Ward_Boundary/MapServer

The economy is primarily driven by the tertiary sector, with significant contributions from trade, services, and administration. Healthcare is a critical aspect of Aizawl's infrastructure. The city has several hospitals and healthcare centers, including the

Civil Hospital, Synod Hospital, and various private clinics. These facilities provide a range of medical services, from basic healthcare to specialized treatments. However, as the study seeks to investigate, the accessibility, availability, and quality of reproductive health services remain areas needing further exploration and improvement.

Objectives

1. To investigate the preferences for private and government hospitals among women of childbearing age in Aizawl City, considering their age group, educational level, and income level.
2. To examine how healthcare affordability varies by age group, educational level, and income level in the study area.

Data Collection & Methodology

The study is based on primary data collected through field surveys conducted in 19 Municipal Wards of Aizawl City, Mizoram, covering the period from March to April 2024. A pre-structured questionnaire was employed to gather information from a target group selected 120 women aged between 16 and 45 years from diverse socioeconomic backgrounds. To ensure a representative sample reflecting the diversity of responses within the study, households were meticulously selected based on observed house types commonly found in Aizawl, including Assam type, Semi-RCC, and RCC houses. All interviewed women fell within the child-bearing age group. Additionally, in-depth interviews were conducted using structured questionnaires in a close-ended model, employing the random sampling technique, to explore questions regarding types of hospital preferences and affordability of hospital expenses among the various age groups, education levels, and income levels. The author used descriptive statistics to describe the demographic and socio-economic characteristics of the respondents, including frequencies and percentages. Binary Logistic Regression Application BLRA was then employed to model and predict individuals' likelihood of preferring private hospitals over government hospitals, based on their demographic and socio-economic factors. This method allowed us to analyze how age group, education level, and income influenced hospital preference among the surveyed women.

To examine the relationships between key variables in the study, such as age group, education level, income, medicine affordability, and affordability of hospital services, Pearson Correlation analysis was utilized. The application regarding the BLRA and Pearson Correlation analysis was conducted with the SPSS statistical package version 27. These analyses helped us understand how these factors might interact or influence each other within the context of healthcare preferences and expenses among women in Aizawl City.

Results and Discussion

Table 1 shows the demographic and socio-economic characteristics of a sample of 120 respondents. In the case of the types of households, nuclear households constitute the majority at 96.7%, with joint households representing only 3.3% of the total. A significant majority of the respondents are married, amounting to 106 (88.3%). Other marital statuses include 7 respondents who are divorced (5.8%), 4 respondents who are single mothers (3.3%), and 3 respondents who are widowed (2.5%). The age distribution of the sample women is then presented, with the highest frequency in the 21 to 30 age group at 50.8%, followed by the 31 to 40 age group at 34.2%. The occupation structure of the respondents shows that the majority of the women are unemployed at 45%, followed by those in services and the public sector at 27.5%. The educational attainment level of the respondents highlights the highest frequency in the class 10 category at 30%, followed by graduation at 26.67%. Furthermore, the income levels per month reveal that the majority of respondents earn below Rs.10,001 per month at 72.5%, followed by those earning between Rs.10,001 to 20,000 at 17.5%. The data presents a predominance of nuclear households and a significant majority of young women in the 21 to 30 age group. The occupation structure indicates a high percentage of unemployment among the respondents, and the educational attainment level shows a considerable proportion at class 10 and graduation levels. Moreover, the income distribution highlights that a large portion of the respondents earn below 10,001 per month.

Table 1: Socio-economic profile of respondents

Types of Households		
Type	Frequency	Percent
Nuclear	116	96.7
Joint	4	3.3
Total	**120**	**100**

Educational Attainment Level		
Education Level	Frequency	Percent
Illiterate	2	1.67
Upper Primary	17	14.17
Class 10	36	30
Class 12	25	20.83
Graduation	32	26.67
Above Graduation	8	6.67
Total	**120**	**100**

Marital Status of the Respondent		
Marital Status	Frequency	Percent
Divorce	7	5.8
Married	106	88.3
Single Mother	4	3.3
Widow	3	2.5

Occupation Structure of the Respondent		
Type	Frequency	Percent
Entrepreneurship & Business	26	21.67
Services & Public Sector	33	27.5
Support Services	7	5.83
Unemployed	54	45

Total	**120**	**100**
Age Group of the Sample Women		
Age Group	Frequency	Percent
Below 21	15	12.5
21 to 30	61	50.8
31 to 40	41	34.2
Above 40	3	2.5
Total	**120**	**100**

Total	**120**	**100**
Income Level per Month		
Income Level	Frequency	Percent
Below 10,001	87	72.5
10,001 - 20,000	21	17.5
20,001 - 30,000	7	5.83
30,001 - 40,000	2	1.67
Above 40,001	3	2.5
Total	**120**	**100**

Source: Field Survey, March-April 2024

Hospital Preferences

Preference for government hospitals versus private hospitals varies significantly among women of different age groups, education levels, and income groups. Older adults often prefer government hospitals due to their affordability and the perceived reliability of long-established institutions. In contrast, younger individuals tend to favor private hospitals for their faster services and modern facilities, which meet their expectations of quick and efficient care (Tynkkynen, L.-K., & Vrangbæk, K. (2018). Educational attainment also plays a role in hospital preferences. People with higher education levels are more likely to choose private hospitals, valuing advanced technology and specialized care that aligns with their understanding and expectations of quality healthcare (Awoke, M. A., et al. 2017). Conversely, those with lower education levels may prefer government hospitals, often due to familiarity and the lower costs associated with these facilities.

Income is another crucial factor. Higher-income groups lean towards private hospitals, appreciating the personalized and prompt services that cater to their higher expectations and willingness to pay for better amenities. Lower-income groups, however, predominantly opt for government hospitals, where services are more affordable and sometimes free, despite longer wait times and less personalized care (Belete, G. T., & Walle, Y. 2023). These trends reflect how different demographics prioritize various aspects of healthcare, balancing cost, quality, and accessibility in their hospital choices.

Table 2. The pseudo R^2

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	112.768[a]	0.080	0.125
a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.			

Tables 2, 3, and 4 present an analysis of hospital preference using a binary logistic regression model, focusing on the factors influencing individuals' choices between private and government hospitals. The model is designed to predict hospital preference—whether an individual prefers a private hospital or a government hospital—based on three independent variables: Age Group, Education Level, and Income.

The model summary section provides key performance metrics for the logistic regression model at a single step. The -2 Log Likelihood value, which is a measure of the model's fit, is 112.768. The Cox & Snell R Square and Nagelkerke R Square values, which are analogous to R-squared in linear regression and indicate the proportion of variance explained by the model, are 0.080 and 0.125, (see Table 2) respectively. These values suggest that the model explains a relatively small amount of the variance in hospital preference.

Table 3. Observed and predicted the outcome of the hospital preferences

Observed			Predicted		
			Hospital Preference		Percentage Correct
			Private Hospital	Government Hospital	
Step 1	Hospital Preference	Private Hospital	4	21	16.0
		Government Hospital	1	94	98.9
	Overall Percentage				81.7
a. The cut value is .500					

The observed and predicted values Table, also known as the confusion matrix, shows the model's predictive accuracy. With a cut-off value of 0.500, the model correctly predicts hospital preference with an overall percentage of 81.7% (see Table 3). It is particularly good at predicting preference for government hospitals (98.9% accuracy) but less so for private hospitals (16.0% accuracy).

Table 4. Results of fitting the logistic regression model to the hospital preference

Variable		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1[a]	Age Group	-0.347	0.338	1.058	1	0.304	0.707	0.365	1.370
	Education Level	0.171	0.233	0.536	1	0.464	1.186	0.751	1.874
	Income	-0.066	0.024	7.318	1	0.007	0.936	0.892	0.982
	Constant	2.182	1.142	3.654	1	0.056	8.867		
a. Variable(s) entered on step 1: Age Group, Education Level, Income.									

The Variables in the Equation table presents the regression coefficients (B), standard errors (S.E.), Wald statistics, degrees of freedom (df), significance levels (Sig.), and the exponentiated coefficients (Exp(B)), which represent the odds ratios. The constant term indicates the log odds of preferring a private hospital when all other variables are at zero. Table 4 shows the odds ratio for the Age Group and suggests that older individuals are less likely to prefer private hospitals (Odds Ratio = 0.707), while the odds ratio for Education Level indicates no significant effect (Odds Ratio = 1.186). Income has a significant effect, with lower-income individuals being less likely to prefer private hospitals (Odds Ratio = 0.936).

In summary, the logistic regression model predicts hospital preference with moderate accuracy, particularly for those preferring government hospitals. The model suggests that younger and wealthier individuals are more likely to prefer private hospitals, while age and income significantly influence this preference. The model's explanatory power, however, is limited, indicating that other factors not included in the model such as marital status and occupational structure also play a role in determining hospital preference.

Hospital Expenses

Hospital expenses can vary significantly among different demographic segments in a small city like Aizawl. Age is a crucial factor, as older adults typically have higher medical costs due to chronic conditions and frequent healthcare needs. Younger age groups generally have lower expenses, mainly related to acute care and preventive services (Board on Health Care Services, Committee on the Future Health Care Workforce for Older Americans, & Institute of Medicine, 2008).

Education level also affects hospital expenses. Individuals with higher education levels often have better health literacy, leading to more effective use of preventive services and therefore lower overall medical costs. On the other hand, those with lower education levels may experience higher expenses due to delayed treatment and less efficient use of healthcare resources (Awoke, M. A., et al. 2017).

In small cities with a significantly low to middle-income population, accessing affordable healthcare can be challenging due to financial constraints. Low and middle-income households may struggle to cover hospital expenses, which can affect treatment accessibility and health outcomes.

Table 5. Table showing Karl Pearson correlation analysis

		Age Group	Education Level	Income	Medicine Affordability	Affordability of Hospital Expenses	Awareness of Government Schemes
Age Group	Pearson Correlation	1	0.014	0.036	-0.022	-0.027	-0.033
	Sig. (2-tailed)		0.878	0.700	0.810	0.774	0.719
	N	120	120	120	120	120	120
Education Level	Pearson Correlation	0.014	1	.486**	-.182*	-0.015	-0.126
	Sig. (2-tailed)	0.878		0.000	0.046	0.869	0.172
	N	120	120	120	120	120	120
Income	Pearson Correlation	0.036	.486**	1	-0.054	-0.077	-0.038
	Sig. (2-tailed)	0.700	0.000		0.558	0.401	0.678
	N	120	120	120	120	120	120
Medicine Affordability	Pearson Correlation	-0.022	-.182*	-0.054	1	0.057	0.169
	Sig. (2-tailed)	0.810	0.046	0.558		0.538	0.065
	N	120	120	120	120	120	120
Affordability of Hospital Expenses	Pearson Correlation	-0.027	-0.015	-0.077	0.057	1	0.088
	Sig. (2-tailed)	0.774	0.869	0.401	0.538		0.338

	N	120	120	120	120	120	120
Awareness of Government Schemes	Pearson Correlation	-0.033	-0.126	-0.038	0.169	0.088	1
	Sig. (2-tailed)	0.719	0.172	0.678	0.065	0.338	
	N	120	120	120	120	120	120
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

The study examines the correlations between five key variables: Education Level, Income Level, Occupation Structure, Affordability of Hospital Services, and Medicine Affordability. The correlations are measured using Pearson's correlation coefficient, and the significance of these correlations is indicated at both the 0.01 and 0.05 levels (2-tailed).
The age group shows no significant correlation with any of the other variables, as indicated by the high p-values (>0.7) across all correlations. Education level has a significant positive correlation with income ($r = .486$, $p < .001$), indicating that higher education levels are associated with higher incomes. Interestingly, education level has a significant negative correlation with medicine affordability ($r = -.182$, $p = .046$) and awareness of government schemes ($r = -.126$, $p = .172$), suggesting that higher education levels are associated with lower perceived affordability of medicines and lower awareness of government schemes. Education Level has a significant positive correlation with Income ($r = .486$, $p < 0.01$), suggesting that higher levels of education are associated with higher incomes. Table 5 shows that there is a significant negative correlation between Education Level and Medicine Affordability ($r = -.182$, $p < 0.05$), which implies that individuals with higher education levels are more likely to perceive medicines as less affordable. Interestingly, Income has a significant negative correlation with Medicine Affordability ($r = -0.054$, $p < 0.558$) and Affordability of Hospital Services ($r = -0.077$, $p < 0.401$), though these correlations are weak and not statistically significant. This indicates that while there might be a tendency for higher incomes to be associated with lower perceived affordability of medical services, the relationship is not strong enough to make a definitive conclusion. Medicine Affordability and Affordability of Hospital Services have a weak positive correlation ($r = 0.057$, $p < 0.538$), suggesting that individuals who perceive medicines as less affordable might also perceive hospital services as less affordable, but this relationship is not statistically significant. The analysis also reveals a negative correlation ($r = -.126$, $p = .172$) between education level and awareness of government schemes, indicating that higher levels of education may be linked to lower awareness of these schemes, although not significantly. In terms of medicine affordability, there exists a weak positive correlation ($r = .169$, $p = .065$) between awareness of government schemes and perceived affordability, suggesting that individuals who are more aware of the schemes tend to find medicines more affordable, with a trend towards significance. Furthermore, there is a weak positive correlation ($r = .088$, $p = .338$) between awareness of government schemes and hospital expense affordability, suggesting a potential association that lacks statistical significance. The analysis reveals notable variations in healthcare costs in Aizawl, which are influenced by age and education. Older adults experience higher expenses due to chronic conditions, while individuals with higher education levels have better affordability and utilize preventive healthcare more frequently. However, low and middle-income families in Aizawl encounter challenges in affording healthcare, emphasizing the importance of strengthening government initiatives such as NHM and JSY to improve maternal health outcomes through financial assistance.

Conclusion

The present study has used a couple of statistical tools to identify the association of significant variables with the preferences and affordability of healthcare by women under childbearing age groups in Aizawl City. Binary Logistic Regression Application and Pearson Correlation analysis were performed to examine the impact of various socio-demographic factors on healthcare preferences and expenses. The findings reveal that younger women (aged 21-30) are the largest group who prefer private hospitals (50.8%) due to the faster services and modern facilities they offer. On the other hand, older women (aged 31-40) and those in lower-income brackets (earning below Rs. 10,001 per month, 72.5%) tend to choose government hospitals because they are more affordable, despite potential drawbacks like overcrowding. Education also plays a role in hospital preferences, as 26.67% of respondents with a graduation degree opt for private hospitals, possibly because they perceive a higher quality of care. Logistic regression analysis further confirms these trends, showing that income level significantly affects hospital preference, with lower-income individuals being less likely ($Exp(B) = 0.936$, $p = 0.007$) to choose private hospitals compared to those with higher incomes. Although the association is weaker, education level also has a significant impact ($Exp(B) = 1.186$, $p = 0.464$), suggesting that higher education correlates positively with a preference for private hospitals. These findings emphasize the complex relationship between socioeconomic factors and healthcare choices among childbearing women in Aizawl, highlighting the need for targeted policies to improve healthcare accessibility and quality in both the public and private sectors.

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