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HEALTH STATUS AND SOCIO-ECONOMIC CONDITION: A CASE STUDY ON THE RICKSHAW PULLERS OF SELECTED AREAS OF DHAKA CITY

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ABSTRACT:

In Dhaka city, rickshaw pullers are essential to maintaining urban mobility. Nevertheless, they are the most disadvantaged people in society. They have regular difficulties at work such as limitations on their activities, harassment from other drivers and the traffic police, traffic bottlenecks, and accidents. Poor people have moved from rural to urban regions in quest of a better living, better work prospects, and better social services because of rural poverty. Most of these migrants from the countryside are employed in the urban informal economy in petty retail commerce, transportation, manufacturing, construction, and domestic services. The rickshaw pullers of Dhaka, a significant occupational group in the urban informal sector, are the subject of this paper. Rickshaw pullers in Dhaka live a vulnerable life. Most of the rickshaw pullers are extremely underprivileged, with minimal education and few skills. They try to escape the terrible rural poverty by working as rickshaw pullers, who have relatively simple access to the urban labor market. The unsustainability of their livelihood is related to the extreme physical demands of the activity, which are unrealistic in the context of poverty and malnutrition, which results in high vulnerability to health shocks. The rickshaw pullers might be supported better through licenses, economic incentives, and by prioritizing their contribution to improving Dhaka's traffic system.

Keywords: Rickshaw Pullers, Low Income, Health Shocks, Informal Economy, Rural Poverty, Traffic Bottlenecks.

1. INTRODUCTION

A significant portion of the population in Dhaka city relies on this rickshaw pulling sector for their direct or indirect survival. People use it as their main way of transportation. It is wise to consider rickshaws as vital in Dhaka city until they are replaced by viable alternative jobs and modes of transportation. Surprisingly, the sector receives no support from the general population.

The appropriate authorities are increasingly restricting rickshaw driving, identifying it as a major cause of traffic congestion in the city, rather than improving the industry. Rickshaw pullers are unable to make enough money to cover their necessities despite working from early in the morning until late at night, or sometimes even around the clock, either waiting for passengers or commodities or operating rickshaws to deliver such items. They frequently cycle when they are starving.

The fact that the majority of rickshaw pullers do not own their vehicles, as well as the constant conflict and increasing level of rivalry among them, all show how vulnerable rickshaw drivers are. The working and living situations are both challenging. Low socioeconomic status individuals are getting worse every day, particularly in rural areas where more than 70% of the population resides. Disparities in the distribution of resources and possessions, unemployment, illiteracy, and unhygienic living conditions are all very common.

"Socio-economic Profile and Health Status of Rickshaw Pullers of Bangladesh" a study carried out to evaluate the disease prevalence, malnutrition, and hygienic conditions of rickshaw pullers in

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Tangail district, Bangladesh.[2] In this case, a formula from Krejcie and Morgan (1970) was applied. The study's overall analysis showed that although rickshaw pullers are essential to the transportation system., they are one of the most impoverished groups in society and live in squalor.[3]

Khan et. al (2012) in their paper titled "Socio-Economic Profile of Cycle Rickshaw Pullers: A Case Study" found that the inability to pay for medical expenses, long waiting for medical services, social class disparities, lack of trustworthiness in diagnostic services, and mastery of brokers in hospital settings were all recognized as major obstacles to accessing medical care. It was stated that the current standard of care quality for people who use public healthcare facilities is inadequate. [4]

Md Rezaul Karim (2019) suggests that despite being a major contributor to traffic jams in Dhaka City, rickshaws have several advantages as a mode of transportation. If 62 percent of the population must use motorized transportation in place of rickshaws, it must be determined how many motor cars and gasoline would need to be imported using foreign currencies, as well as the level of pollution and unemployment it will result in.[5]

According to the Bangladesh Statistic Bureau and the United Nations Population Fund (UNFPA), Dhaka's population is growing at a pace of 3.82 percent. Most individuals arrive in Dhaka City in the hopes of finding work, however due to a lack of accessible positions, they engage in rickshaw pulling. There are currently close to 15 lakh rickshaw drivers in Dhaka. Around 18.237 million people live in the city, 17.60 lakh of them rely on rickshaws.

They have very little access to housing, electricity, water, and other necessities. Urban rickshaw pullers frequently come from extremely low socioeconomic backgrounds that are associated with chronic poverty, rickshaw pulling may have offered an income that was superior to that available in the villages. As a result, the majority of people leave rural areas for cities in pursuit of work and better subsistence options, although their hopes are rarely satisfied. After landing in cities, they struggle to make ends meet while attempting to save as much money as they can to send back to their relatives in the countryside.

Since these disadvantaged and exploited groups are not explicitly acknowledged in government policy documents and very little effort have been made to humanize the livelihood of the rickshaw pullers, it is necessary to collect pertinent data to examine the socioeconomic composition, causes, issues, and effects of this occupation on the health and overall well-being of the rickshaw pullers.

This paper seeks to answer the following research questions:

1. How does different social, health and economic parameters impact each other?
2. What is the status of socio-cultural characteristics, economic characteristics, and health characteristics of the studied rickshaw pullers?
3. What policy recommendations can be made to protect the rights and ensure the security of the rickshaw pullers?

2. RATIONALE OF THE STUDY

An informal sector is the part of the economy that is neither taxed nor monitored by govt. This includes- Street vendors, housemaids, rickshaw pullers, waste pickers, etc. It is estimated that nearly1.5 million

[2] Md. Serajul Islam, Rakesh Kumer Podder, Md. Shamsul Haque, and Md. Kwoserul Alam, "Socio Economic Profile of Selected Rickshaw Puller at Hugra Union in Tangail District, Bangladesh," *MOJ Public Health* 4, no. 5 (2016): 161–167, https://doi.org/10.15406/mojph.2016.04.00096

[3] Robert V. Krejcie and Daryle W. Morgan, "Determining Sample Size for Research Activities," *Educational and Psychological Measurement* 30, no. 3 (1970): 607–610, https://doi.org/10.1177/001316447003000308

[4] Jabir Hasan Khan, Tarique Hassan, and Shamshad, "Socio-Economic Profile of Cycle Rickshaw Pullers: A Case Study," *European Scientific Journal* 8, no. 1 (2012): 310–330.

[5] Md. Rezaul Karim and Khandoker Abdus Salam, "Organising the Informal Economy Workers: A BILS Study of Rickshaw Pullers in Dhaka City," *Labour (A BILS Journal)* 22, no. 2 (July–December 2019): 9–19.

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rickshaw pullers & their family members are dependent on rickshaw pulling and in Dhaka city, 60 percent of the residents use rickshaw for commuting. Rickshaw pullers are chosen as the subject of the study as they constitute a huge portion of the informal sector.

This paper seeks to explore the status of health & socio-economic condition, to identify key socio-cultural, economic & health factors, and to investigate the change in socioeconomic conditions over the years among the rickshaw pullers of Mailbag, Mogbazar & Kakrail of Dhaka city. The present study was conducted as a baseline survey to know the overall condition of the rickshaw pullers of Dhaka city with a purpose to use the findings as basis for making realistic plan to improve the conditions and protect the rights and ensure the security of the rickshaw pullers of Dhaka city.

3. BACKGROUND OF THE STUDY

The most significant and widely used form of transportation in Bangladesh is the rickshaw. It is said that the rickshaw was first used in Chittagong, Bangladesh, in 1919 after arriving from what was then Burma. Later, around 1930, European jute exporters residing in Narayanganj and Netrokona imported rickshaw for their own usage.

According to Rob Gallagher's book "The Rickshaws of Bangladesh," a Bangali Zamindar who lived in Sutrapur, Dhaka, imported rickshaws and began exploiting them for personal gain in 1938.[6] Although rickshaws were originally used for personal transportation, they later evolved into a significant source of employment and public transit.[7]

Bhuyan and Ali (2010) in their paper titled “Socio-economic Analysis of Rickshaw Pullers: An Introduction of Mini-bus Services of Chittagong University” found that the introduction of mini-bus services had a detrimental effect on the income of rickshaw pullers. As part of holistic social development, they advocate for providing rickshaw pullers with a better environment. The paper stated that the cost and profitability of starting a university rises over time. It demonstrated how the institution raises the living conditions of rickshaw pullers.[8]

Zirack Laiq (2020) in his paper found that India has approximately 8 million rickshaw pullers, with around 95% not owning their rickshaws. Most rent their vehicles from owners due to financial constraints, which substantially reduces their daily earnings. The paper highlights that dependence on rented rickshaws perpetuates poverty and financial insecurity among pullers.[9]

Sen (2004) argues that rickshaw pulling serves as a survival strategy for chronically poor rural migrants. The occupation remains as one of the most physically exhausting, unstable, and poorly remunerated one. The study characterizes rickshaw pullers as coming from extremely disadvantaged socioeconomic backgrounds, with chronic poverty shaping their livelihood choices.[10]

Khan et al. (2012) in his study showed that the majority of rickshaw pullers are rural-to-urban migrants who relocate in search of employment and better livelihood opportunities. Most possess low levels of education, limited vocational skills, and minimal assets, making informal transport one of the few accessible employment options. Despite migrating for improved economic prospects, many

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[6] Rob Gallagher, *Dhaka's Future Urban Transport: Costs and Benefits of Investment in Public and Private Transport* (Lowell, MA: Copenhagen Consensus Center, 2016), 75.

[7] Omar Faruk, Avijit Saha, Arpita Dutta, Ridwan Islam Sifat, and Loban Rahman, "Factors Associated with Living Arrangement of Older Rickshaw-Pullers in Bangladesh," *Journal of Social Service Research* 48, no. 5 (2022): 682–695, https://doi.org/10.1080/01488376.2022.2112364

[8] Mohammad Mamun Morshed Bhuyan and Kazi Julfikar Ali, "Socio-economic Analysis of Rickshaw Pullers: An Introduction of Mini-bus Services of Chittagong University," *Bangladesh Journal of Political Economy* 26, no. 1 (2010): 313–321.

[9] Laiq Zirack, S. Veeramani, and Mohammad Hasan Zaidi, "Chronic Poverty, Technology and Human Development: A Comparative Analysis of Cycle Rickshaw Pullers and Electric Rickshaw Pullers," *Asian Journal of Management* 11, no. 4 (2020): 479–492, https://doi.org/10.5958/2321-5763.2020.00072.4

[10] Sharifa Begum and Binayak Sen, *Unsustainable Livelihoods, Health Shocks and Urban Chronic Poverty: Rickshaw Pullers as a Case Study*, CPRC Working Paper No. 46 and PRCPB Working Paper No. 6 (Manchester: Chronic Poverty Research Centre, 2004), 2.

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continue to experience poverty, poor housing conditions, and limited access to healthcare and social services.[11]

Warren (1985) emphasizes that migration to urban areas does not necessarily translate into upward socioeconomic mobility. While migrants relocate with expectations of improving their livelihoods, many remain trapped in low-paying informal occupations characterized by economic vulnerability, poor living conditions, and limited opportunities for long-term advancement. The study suggests that the aspirations of many rural migrants remain largely unfulfilled due to structural barriers in urban labour markets.[12]

Kumar et al. (2016) examined healthcare access among rickshaw pullers and found that they face significant barriers to obtaining medical treatment. Public healthcare facilities often suffer from inadequate service provision, shortages of medicines and personnel, and long waiting times, while private healthcare services remain unaffordable for most rickshaw pullers due to their low and irregular incomes. Consequently, many delay treatment or rely on informal healthcare providers.[13]

Brems et al. (2006) highlighted the structural barriers to healthcare access, particularly in rural settings. These barriers include shortages of healthcare professionals, inadequate medical resources, concerns regarding confidentiality, overlapping responsibilities among healthcare workers, insufficient training, and limited availability of specialized services. These systemic challenges reduce healthcare accessibility for vulnerable populations.[14]

Douthit et al. (2015) identified financial hardship as one of the primary barriers to healthcare utilization. Their study found that individuals with low incomes frequently postpone or forgo medical treatment because of healthcare costs, transportation expenses, lack of insurance coverage, and the indirect costs associated with seeking care. Financial constraints significantly influence health-seeking behaviour among marginalized populations.[15]

Flatscher and Liem (2011) argued that health should be understood as a multidimensional concept extending beyond the absence of disease. They emphasized that individuals' perceptions, lived experiences, social contexts, and subjective well-being are essential components of health and should complement objective medical indicators when assessing health status and quality of life.[16]

Begum and Sen (2004) investigated the socioeconomic conditions of urban rickshaw pullers in Bangladesh. The study found that most pullers were poor rural migrants who entered the occupation because of chronic poverty and limited employment opportunities. Although rickshaw pulling generated higher earnings than rural agricultural work, workers continued to experience income insecurity, poor housing, inadequate healthcare, and vulnerability to health shocks, making it difficult to escape chronic poverty.[17]

The study conducted in Comilla City found that most rickshaw pullers were migrants from rural areas with low educational attainment and unstable incomes. Many supported large families, lived in

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[11] Jabir Hasan Khan, Tarique Hassan, and Shamshad, "Socio-Economic Profile of Cycle Rickshaw Pullers: A Case Study," *European Scientific Journal* 8, no. 1 (2012): 310–330.

[12] James Francis Warren, "The Singapore Rickshaw Puller: The Social Organization of a Coolie Occupation (1880–1940)," Journal of Southeast Asian Studies 16, no. 1 (1985): 1–15.

[13] Anant Kumar, Joe Thomas, Sonal S Wadhwa, Aprajita Mishra, Smita Dasgupta. 2016. "Health and Social Security Needs of Rickshaw Pullers in Ranchi." *Social Work in Public Health* 31 (4): 246-254. https://doi.org/10.1080/19371918.2015.1125323.

[14] Brems, Christian, Michael E. Johnson, Tammy D. Warner, and Laura Weiss Roberts. 2006. "Barriers to Healthcare as Reported by Rural and Urban Interprofessional Providers." *Journal of Interprofessional Care* 20 (2): 105-118. https://doi.org/10.1080/13561820600622208.

[15] Nathan Douthit, Sarah Kiv, Darrin Dwolatzky, and Bruce Biswas, "Exposing Some Important Barriers to Health Care Access in the Rural USA," *Public Health* 129, no. 6 (2015): 611–620, https://doi.org/10.1016/j.puhe.2015.04.001

[16] Flatscher, Matthias, and Torsten Liem. 2011. "What Is Health? What Is Disease? Thoughts on a Complex Issue." *AAOHN Journal* 59 (1): 27-30.

[17] Sharifa Begum and Binayak Sen, *Unsustainable Livelihoods, Health Shocks and Urban Chronic Poverty: Rickshaw Pullers as a Case Study*, CPRC Working Paper No. 46 (Manchester: Chronic Poverty Research Centre, 2004).

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poor housing conditions, lacked savings, and experienced limited access to healthcare and social protection. The authors concluded that rickshaw pulling remains an important source of livelihood despite persistent socioeconomic vulnerabilities.[18]

Takashi et al. (2007) in their study investigated the socioeconomic conditions of cycle rickshaw pullers in Delhi. It found that migration into rickshaw pulling was primarily driven by rural poverty and unemployment. Although the occupation provided an immediate source of income, workers remained vulnerable because of low wages, indebtedness, insecure employment, and lack of access to formal financial institutions. The authors suggested that improved financial inclusion and employment opportunities could reduce urban poverty.[19]

Bhuiya et al. (2007) in their USAID-supported study focused on HIV/AIDS and sexually transmitted disease (STD) prevention among Bangladeshi rickshaw pullers. It found relatively low levels of knowledge regarding HIV transmission and prevention, widespread misconceptions about sexually transmitted infections, and limited utilization of preventive health services. The study emphasized the need for targeted awareness campaigns and behaviour change interventions among mobile informal workers.[20]

Ali (2013) examined the socioeconomic conditions of rickshaw pullers in urban centres of Uttar Pradesh, India. The study found that most pullers were rural migrants with low educational attainment and belonged to economically disadvantaged households. A large proportion did not own their rickshaws and instead rented them, reducing their daily earnings. Long working hours, low and irregular incomes, poor housing conditions, and limited access to healthcare and social security were common. The study concluded that rickshaw pulling serves as a survival livelihood rather than a sustainable means of escaping poverty and recommended policy interventions such as social protection, access to affordable credit, and alternative employment opportunities.[21]

Hossen and Khatun (2018) compared rickshaw fares and pullers' incomes between Trishal and Mymensingh Municipality in Bangladesh. The study found significant differences in fare structures and daily earnings across the two locations, influenced by passenger demand, route characteristics, and local economic conditions. Although pullers in Mymensingh generally earned higher incomes, both groups faced financial instability due to fluctuating passenger demand, seasonal variations, vehicle rental costs, and rising living expenses. The authors recommended regulating rickshaw fares and introducing welfare measures to improve the livelihoods of rickshaw pullers.[22]

Rahman et al. (2022) explored rural rickshaw pullers' perceptions of health and barriers to healthcare utilization through qualitative interviews. The study found that participants generally viewed health as the ability to work and earn a living rather than merely the absence of illness. Financial hardship, high treatment costs, transportation difficulties, long distances to health facilities, long waiting times, inadequate services at public hospitals, and dependence on informal healthcare providers were identified as major barriers to healthcare access. Many participants delayed seeking treatment because of income loss associated with missing work. The authors emphasized the need for affordable, accessible, and worker-friendly healthcare services for informal workers in rural Bangladesh.[23]

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[18] M. N. Sadekin, A. Akhtar, and M. H. Pulok, "Socioeconomic Analysis of the Migrated Rickshaw Pullers in Comilla City of Bangladesh," *International Journal of Innovation and Applied Studies* 9, no. 1 (2014): 329–337.

[19] Takashi Kurosaki, Yasuyuki Sawada, Abhijit Banerji, and Deepak Mishra, *Poverty, Livelihoods, and the Cycle Rickshaw Economy in Delhi* (Tokyo: Foundation for Advanced Studies on International Development, 2007).

[20] Ismat Bhuiya, Mizanur Rahman, Md. Zahiduzzaman, and S. I. Khan, *An Assessment of Risk Behaviours and HIV/AIDS Intervention Needs of Rickshaw Pullers in Bangladesh* (Dhaka: Population Council and USAID, 2007).

[21] Mushir Ali, "Socio-Economic Analysis of Rickshaw Pullers in Urban Centres: A Case Study of Uttar Pradesh, India," *International Journal of Advanced Research in Management and Social Sciences* 2, no. 12 (2013).

[22] Md. Altap Hossen and Aklima Khatun, "A Comparative Study on Rickshaw Fare and Rickshaw Pullers' Income between Trishal and Mymensingh Municipality," *Bangladesh Journal of Political Economy* 34 (2018): 183–192.

[23] Quazi Maksudur Rahman, Md. Tajuddin Sikder, Md. Taqbir Us Samad Talha, Rajon Banik, and Mamun Ur Rashid Pranta, "Perception Regarding Health and Barriers to Seeking Healthcare Services among Rural

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According to the Bangladesh Bureau of Statistics (BBS), the average monthly income of rickshaw pullers was BDT 11,517. Despite this income level, many pullers remained economically vulnerable due to vehicle rental costs, irregular employment, rising living expenses, and the absence of social protection.

4. DEMOGRAPHIC CHARACTERISTICS

4.1. Socio-Cultural Characteristics

4.1.1. Age Distribution

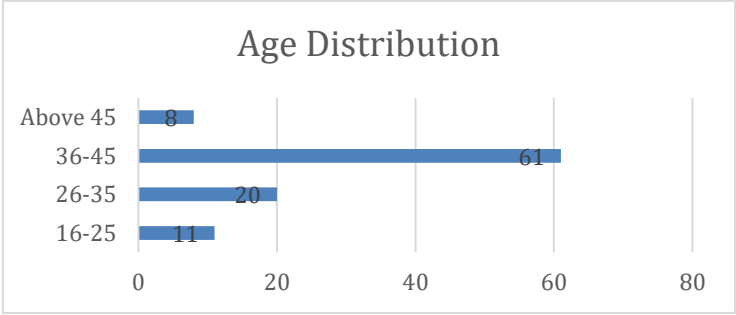

Figure 1:Age Distribution

Most of the respondents such as 61% are of age 36 to 45 years. On the other hand, 8% of all respondents concluded that their ages are above 45 years. 11% of the respondents are aged 16 to 25 and rest 20% are aged between 26 to 35 years old.

4.1.2 Level of Education

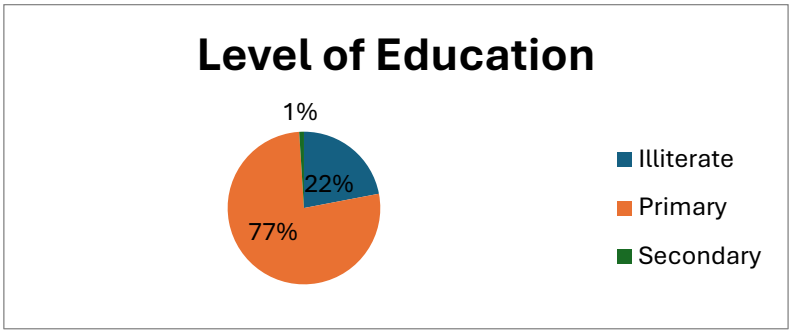

Figure 2: Level of Education

Majority of the respondents (22) didn't attain any formal education. 77 out of 100 attended primary level education, from class 1 to class 5. Only 1 respondent attained secondary school education, while none of the respondents attended higher education or graduate or post-graduate level education.

4.1.3. Number of Family Members

Rickshaw Pullers in Bangladesh: A Qualitative Exploration," *Heliyon* 8, no. 10 (2022): e11152, https://doi.org/10.1016/j.heliyon.2022.e11152

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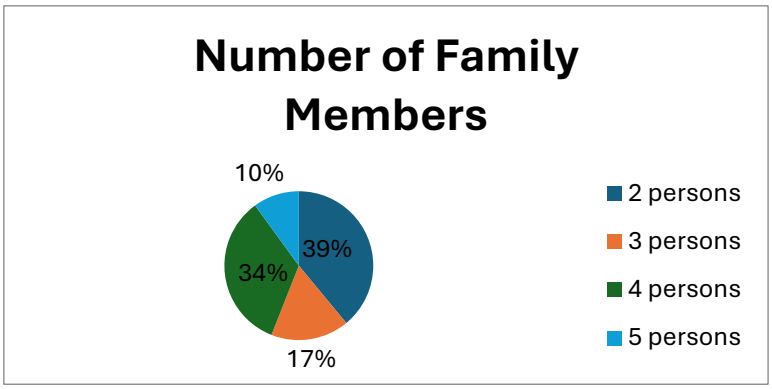

Figure 3:Number of Family Members

Bangladesh is a populated country. So, the rickshaw pullers having more than 4 family members are quite common. When doing survey, out of 100 respondents 17% said that they have 3 people in their family. On the other hand, 34% concluded that they have 4 family members. 17% of the respondents said that they hold 3 people in the family. But it is quite interesting that 39% of the respondents said that they have only 2 family members. It provides a positive sign of choosing nuclear family now-a-days.

4.1.4. Number of Children Studying

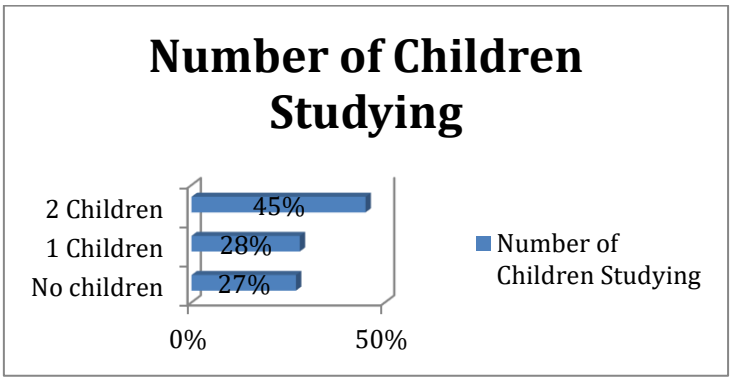

Figure 4:Number of Children Studying

When doing survey, out of 100 respondents 45% said that they have 2 children studying. On the other hand, 27% concluded that their children do not get admitted to school. 28% of the respondents said that their 1 child is studying. The solvency level of the rickshaw pullers is very low and so, the children have not found scope to study.

4.1.5. Marital Status

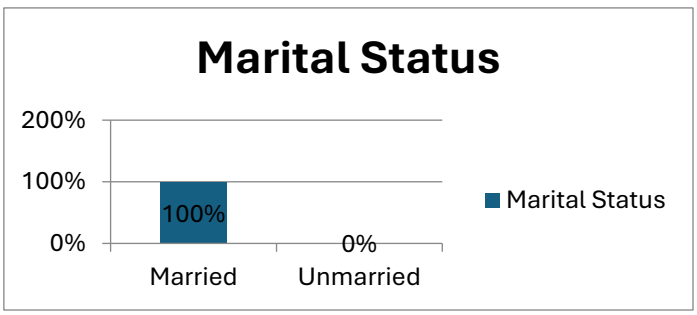

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Figure 5: Marital Status

It is quite interesting that all the respondents said that they are married. This might've happened because they are not educated, and they tend to get married before they are 20 or 21 years.

4.1.6. Living Arrangement

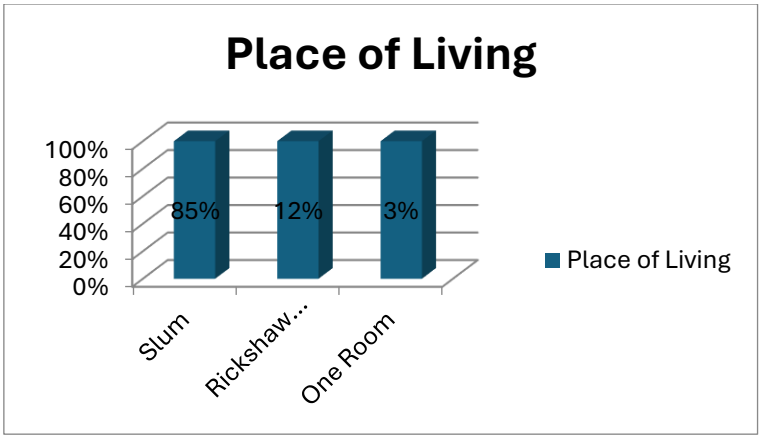

Figure 6: Living Arrangements

Most of the rickshaw pullers live from hand to mouth. They generally don't have option to save funding. Apart from this, the low-level income cannot make them afford to live standard way. Thus, while doing survey, it has been found that around 85% rickshaw pullers live in the slum. Whereas 12% said that they live in the rickshaw garage. Only 3% respondents concluded that they stay in one room.

4.1.7. Access to Electricity

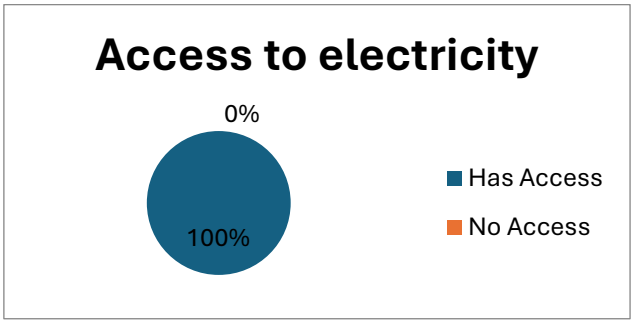

Figure 7: Access to Electricity

It is quite convincing that 100% respondents said that they have access to electricity. The development of electricity section of the country confirms this.

4.1.8. Ownership of Goods

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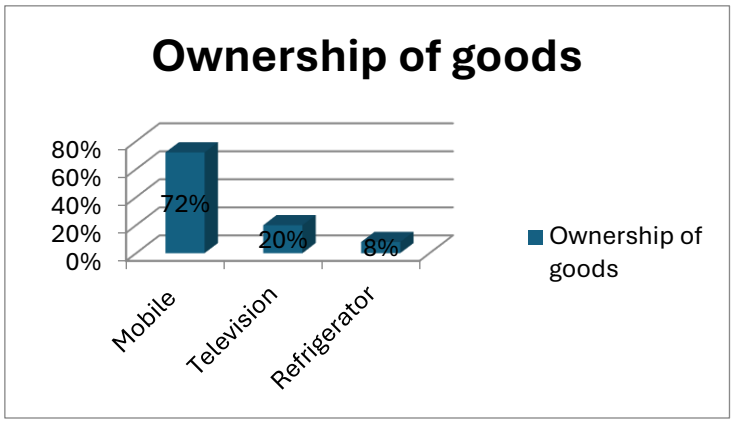

Figure 8: Ownership of Goods

Around 72% of the respondents said that they have mobile phone. Only 8% said that they have refrigerator and 20% of the respondents concluded that they have television.

4.2. Health-Related Characteristics

4.2.1. Unhealthy Intake

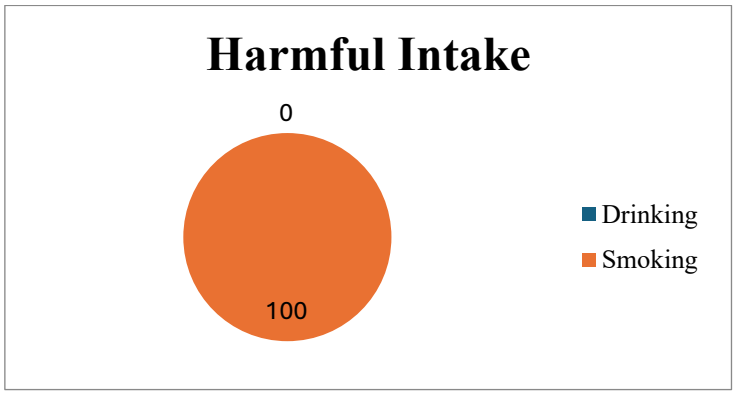

Figure 9: Unhealthy Intake

100% of rickshaw pullers responded that most of the time they smoke as it's cheaper than any other form of intake. As a result, most of them are into smoking.

4.2.2. Body Weight

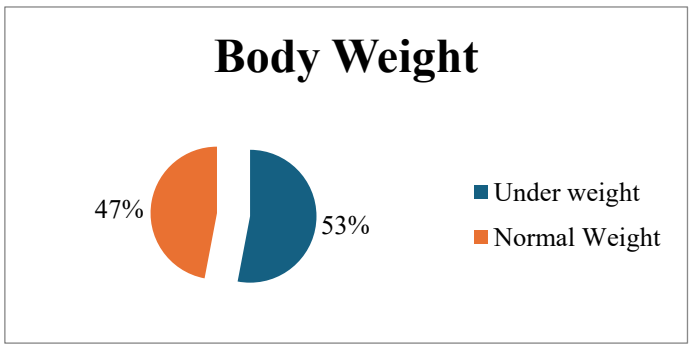

Figure 10: Body Weight

Around 53% of rickshaw pullers are underweight and remaining 47% are of normal weight. The reason

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most rickshaw pullers have come into this profession is because of their extreme poverty. Sometimes they cannot even eat properly because of poor earnings.

4.2.3. Drinking Water Source

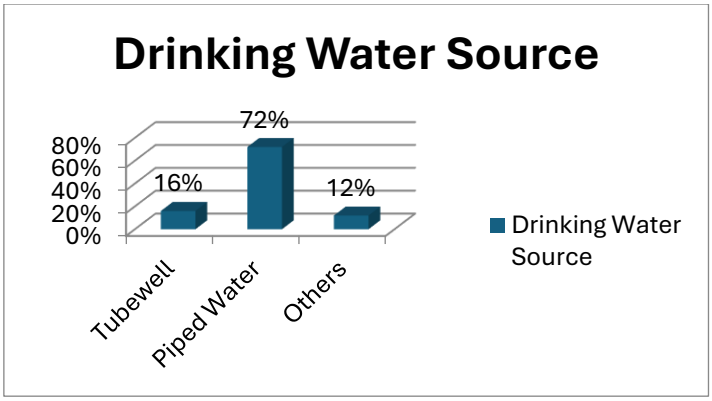

Figure 11: Drinking Water Source

In Dhaka city, tube well is rarer than in rural areas. As a result, people use piped water as their drinking water including rickshaw pullers. So according to my research, majority of the rickshaw pullers use piped water, and the percentages of piped users are 72%. And For lack of tube well, we found only 16% of rickshaw pullers use it. The remaining 12% of pullers drink water from other sources.

4.2.4. Latrine System

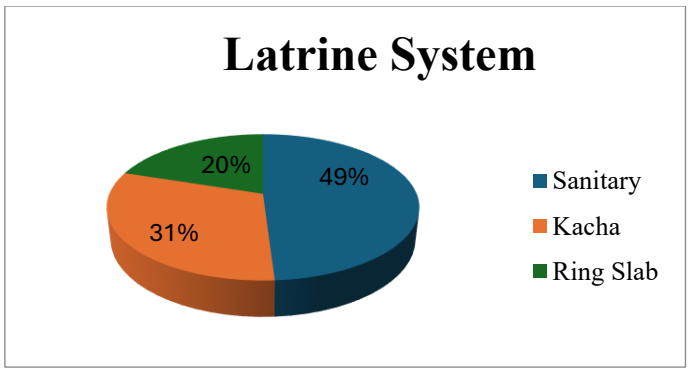

Figure 12: Latrine System

Typically, the accommodation system of rickshaw pullers is not healthy. They cannot afford a high-quality latrine system. Consequently, most of them use sanitary toilets which is nearly 49% and 31% pullers use kacha latrine. On the other hand, some rickshaw pullers who are in better condition than others use ring slab and the percentage of this category is 20%.

4.2.5. Incidence of Disease

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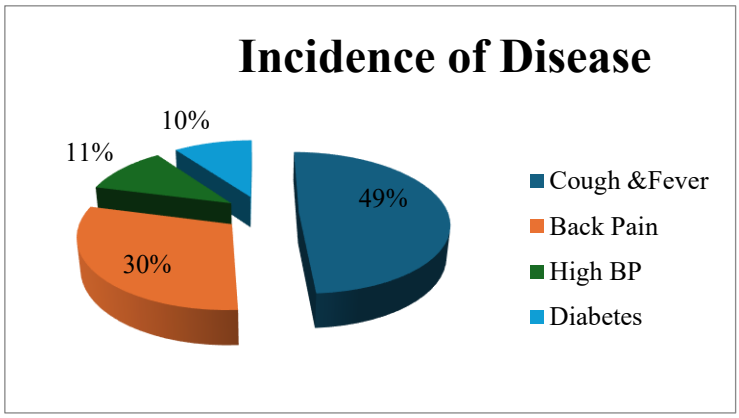

Figure 13: Incidence of Disease

Most of the rickshaw pullers generally don't eat healthy food & can't afford winter clothes because of their poverty and low income. Based on my research, there are 49% of rickshaw pullers who suffer from fever and cough and about 30% of rickshaw pullers suffer from back pain because of their tiresome & long work hours. On the other hand, as they work hard, high BP and diabetes are rare among them, which are only 11% and 10%.

4.2.6. Place of Treatment

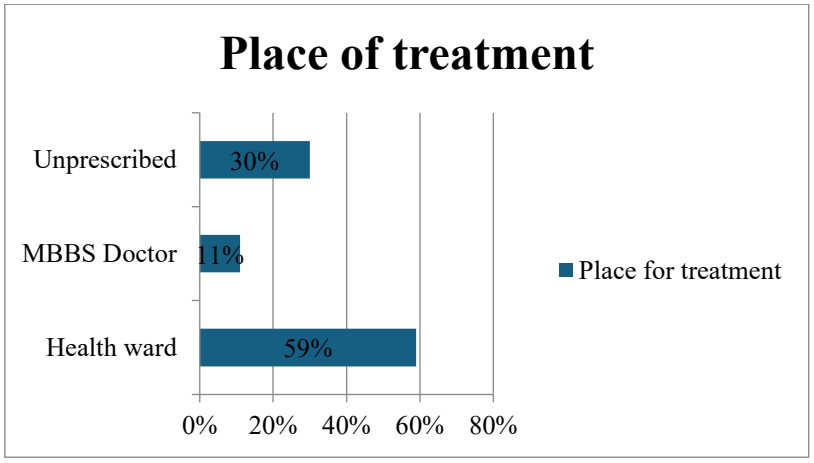

Figure 14: Place of Treatment

Generally, a rickshaw puller's earnings are very low. As a result, they cannot afford high treatment from MBBS or good doctors. According to my research, a big percentage of respondents said that 59 out of 100 pullers go to a health complex for their treatment but very few of them, which is 11%, can get treatment from an MBBS doctor and other remaining 31% of pullers take their unprescribed treatment from a local pharmacy.

4.3. Economic Characteristics

4.3.1. Average Daily Income

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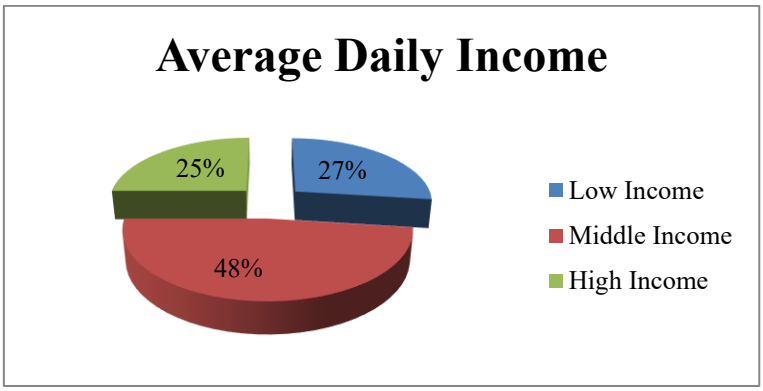

Figure 15: Average Daily Income

According to my research, 27% of pullers responded that they earn very low, while 48% said that their income position is medium and remaining 25% express that they are in a good position with high income. Average daily income varies across locations.

4.3.2. Monthly Income

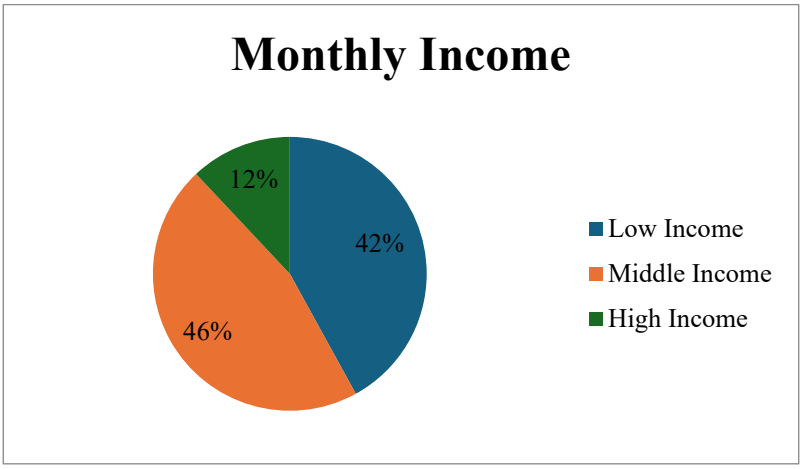

Figure 16: Monthly Income

While researching about monthly income of rickshaws pullers, they expressed that 42% of puller's monthly income is very low because large number of people are occupied in this same service. Some of them said that they cannot pull every day because of sickness. Majority of them earn low as they don't own a rickshaw. On the other hand, 46% of pullers said that their monthly income is currently in a medium position and the rest of 12%, which is a small number of pullers agree that their monthly income is higher than others.

4.3.3. Monthly Expenditure

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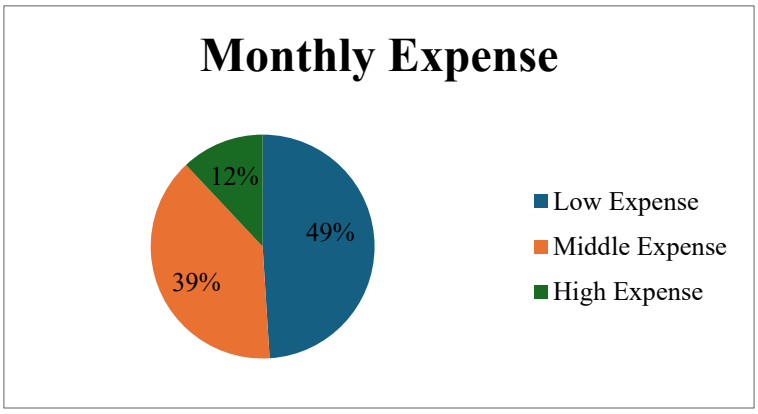

Figure 17: Monthly Expenditure

Based on my research, 49% of rickshaw pullers' expense is low because of their low income. As for pullers whose income is moderate, have moderate expenditure which is about 39%. But there are only 12% of pullers whose monthly expenditure is quite high.

4.3.4. Health Expense

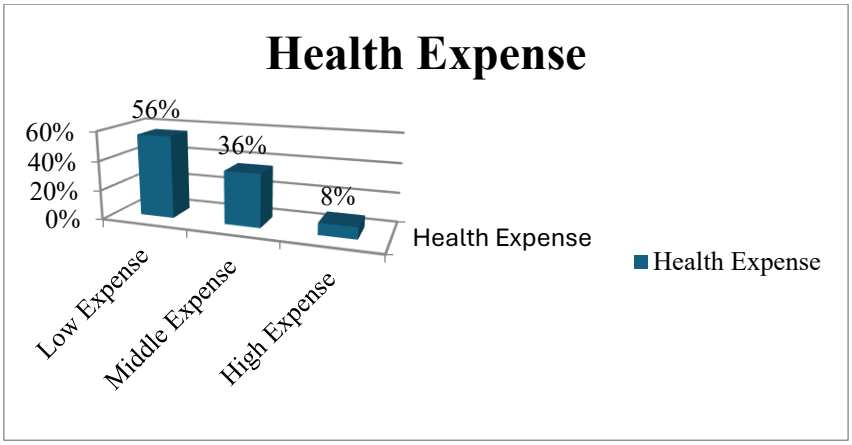

Figure 18: Health Expense

Rickshaw pullers are not very educated and don't care about their health condition. Also, as their income is very low, without facing big issues or being seriously sick, they don't go to the doctor. According to my research, 56% of pullers who responded that they don't spend much money for their health and 36% of pullers said that they spend medium for their health. And the rest of 8% of pullers spend low for their health as they cannot afford MBBS doctor or highly healthy food.

4.3.5. Reason Behind Pulling Rickshaw

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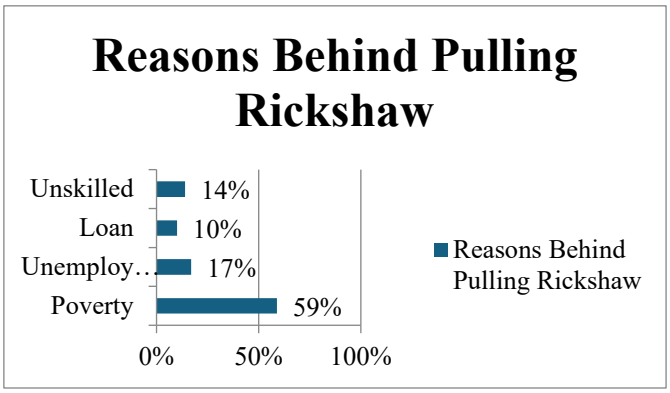

Figure 19: Reason Behind Pulling Rickshaw

In our country, nearly all rickshaw pullers are poor. They have chosen rickshaw pulling because of their poverty, which is almost about 60%. Then 17% responders said that because of their unemployment, they choose to pull rickshaws. Usually, they come from very low-income families. That's why they cannot continue their studies after a certain short time; hence they are not skilled enough to try for other good jobs and we can see 14% of unskilled pullers are in this profession.

4.3.6. Problems of Rickshaw Pulling

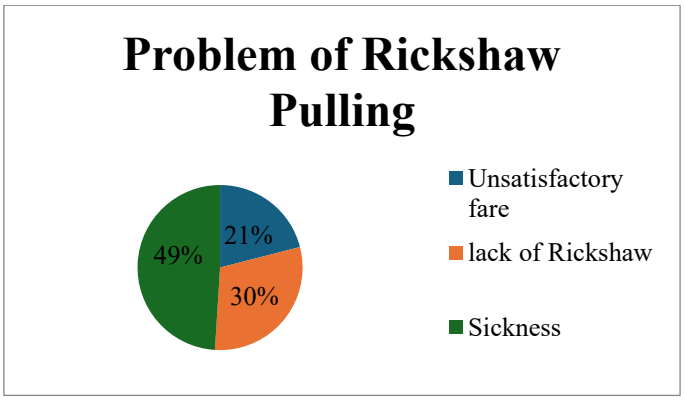

Figure 20: Problems of Rickshaw Pulling

Based on my research, it was found that problems of rickshaw pulling are 21% for unsatisfaction, 49% for sickness and the remaining 30% for lack of rickshaw stand. They said that they don't have their own rickshaw to pull because of their financial condition. Another reason is that Rickshaw pullers are not conscious about their health at all. So, they frequently face sickness. That's why most of the pullers are facing problems pulling their rickshaw for different kinds of sickness.

4.3.7. Working Hours

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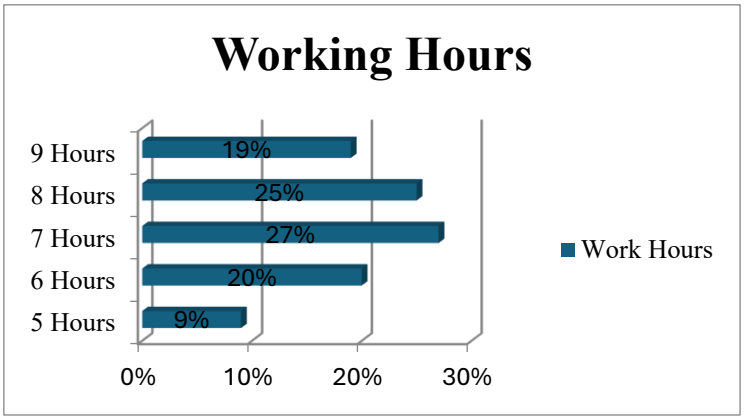

Figure 21: Working Hours

Most of the rickshaw pullers work 6 hours, which is 20%, some of them work 7 hours which is 27% and the rest of them work 8 hours which is 25% respectively. Their income is not sufficient according to their work, so they need to work hard and for extra hours to earn more money. Only a few pullers operate their rickshaw for 5 hours which is only 9%. And a moderate number of pullers, about 19% work very hard and pull their rickshaw for 9 hours daily for a better profit.

5. CHI-SQUARE (χ^2) TEST OF INDEPENDENCE

5.1. Chi-square (χ^2) Value of Monthly Income and Living Arrangement

Verification of Hypotheses I

The hypothesis to be verified is-

- Null Hypothesis (Ho): There is no significant relationship between Monthly Income & Living Arrangements.
- Alternative Hypothesis (Ha): There is a significant relationship between Monthly Income & Living Arrangements.

Income/Living Arrangement	High Income	Middle Income	Low Income	Total
Slum	7	24	17	48
Rickshaw garage	5	13	24	42
One room house	0	1	9	10
Total	12	38	50	100

Table 1: The observed frequencies of monthly income & living arrangement

Income/Living Arrangement	High Income	Middle Income	Low Income
Slum	5.76	18.24	24
Rickshaw garage	5.04	15.96	21
One room house	1.2	3.8	5

Table 2: The expected frequencies of monthly income & living arrangement

Observed Frequency (O)	Expected Frequency (E)	O-E	(O-E) ²	$\frac{(O-E)^2}{E}$
7	5.76	1.24	1.5376	0.27
24	18.24	5.76	33.1776	1.82

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17	24	-7	49	2.042
5	5.04	-0.04	0.0016	0.00032
13	15.96	-2.96	8.7616	0.55
24	21	3	9	0.43
0	1.2	-1.2	1.44	1.2
1	3.8	-2.8	7.84	2.06
9	5	4	16	3.2
				∑= 13.6623

Table 3: The chi-square value of monthly income & living arrangement

Decision

χ^2 calculated value= 13.7

Level of significance = 0.05

df= (3-1) X (3-1) =4

χ^2 critical value= 14.86

As χ^2 calculated value < χ^2 critical value, we can't reject the null hypothesis. So there exists no significant relationship between monthly income & living arrangements. Therefore, a high monthly income will have no impact on living condition.

5.2. Chi-square (χ^2) Value of Body Weight & Incidence of Disease

Verification of Hypotheses II

The hypothesis to be verified is-

- Null Hypothesis (Ho): There is no significant relationship between body weight & incidence of disease.
- Alternative Hypothesis (Ha): There is a significant relationship between body weight & incidence of disease.

Body Weight/Incidence of Disease	Cough & Fever	Back Pain	High Blood Pressure	Diabetes	Total
Underweight	39	9	0	0	48
Normal Weight	10	20	12	10	52
Total	49	29	12	10	100

Table 4: The observed frequencies of body weight and incidence of disease

Body Weight/Incidence of Disease	Cough & Fever	Back Pain	High Blood Pressure	Diabetes
Underweight	23.52	13.92	5.76	4.8
Normal Weight	25.48	15.08	6.24	5.2

Table 5: The expected frequencies of body weight and incidence of disease

Observed Frequency (O)	Expected Frequency (E)	O-E	(O-E) ²	$\frac{(O-E)^2}{E}$
39	23.52	15.48	239.6304	10.19
9	13.92	-4.92	24.2064	1.74

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0	5.76	-5.76	33.1776	5.76
0	4.8	-4.8	23.04	4.8
10	25.48	-15.48	239.6304	9.4
20	15.08	4.92	24.2064	1.61
12	6.24	5.76	33.1776	5.32
10	5.2	4.8	23.04	4.4
				∑=43.22

Table 6: The chi-square value of body weight & incidence of disease

Decision

χ^2 calculated value= 43.22

Level of significance = 0.05

df= (4-1) X (1-1) =3

χ^2 critical value= 12.838

As χ^2 calculated value > χ^2 critical value, we can reject the null hypothesis. So there exists a significant relationship between body weight & incidence of disease. Obesity is the root for all the diseases. So, maintaining a standard body weight & a healthy body is a prerequisite for preventing diseases.

5.3. Chi-square (χ^2) Value of Monthly Income and Monthly Expenditure

Verification of Hypotheses III

The hypothesis to be verified is-

- Null Hypothesis (Ho): There is no significant relationship between Monthly Income & Monthly Expenditure.
- Alternative Hypothesis (Ha): There is a significant relationship between Monthly Income & Monthly Expenditure.

Monthly Income/Monthly Expenditure	Low Income (5-6K)	Middle Income (7-8K)	High Income (9-10K)	Total
3K	27	4	0	31
4K	15	3	0	18
5K	0	26	7	33
6K	0	13	5	18
Total	42	46	12	100

Table 7: The observed frequencies of monthly income & monthly expenditure

Monthly Income/Monthly Expenditure	Low Income (5-6K)	Middle Income (7-8K)	High Income (9-10K)
3K	13.02	14.26	3.72
4K	7.56	8.28	2.16
5K	13.86	15.18	3.96
6K	7.56	8.28	2.16

Table 8: The expected frequencies of monthly income & monthly expenditure

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O	E	O-E	(O-E) ²	$\frac{(O-E)^2}{E}$
27	13.02	13.98	195.4404	15.01
4	14.26	-10.26	105.2676	7.38
0	3.72	-3.72	13.8384	3.72
15	7.56	7.44	55.3536	7.32
3	8.28	-5.28	27.8784	3.37
0	2.16	-2.16	4.6656	2.16
0	13.86	-13.86	192.0996	13.86
26	15.18	10.82	117.0724	7.71
7	3.96	3.04	9.2416	2.3
0	7.56	-7.56	57.1536	7.56
13	8.28	4.72	22.2784	2.691
5	2.16	2.84	8.0656	3.73
				∑=76.811

Table 9: The chi-square value of monthly income & monthly expenditure

Decision

χ^2 calculated value= 76.811

Level of significance = 0.05

df= 6

χ^2 critical value= 10.597

As χ^2 calculated value > χ^2 critical value, we can reject the null hypothesis. So there exists a significant relationship between monthly income & monthly expenditure. Rickshaw pullers with high income can opt for high expense and a better standard of living.

5.4 Chi-square (χ^2) Value of Average Daily Income & Work Hours

Verification of Hypotheses IV

The hypothesis to be verified is-

- Null Hypothesis (Ho): There is no significant relationship between Average Daily Income & Work Hours.
- Alternative Hypothesis (Ha): There is a significant relationship between Average Daily Income & Work Hours.

Avg. Daily Income/Work Hours	Low Income (400)	Middle Income (500)	High Income (600)	Total
5 Hours	6	3	0	9
6 Hours	3	0	17	20
7 Hours	18	9	0	27
8 Hours	0	17	8	25
9 Hours	0	19	0	19
Total	27	48	25	100

Table 10: The observed frequencies of average daily income & work hours

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Avg. Daily Income/Work Hours	Low Income (400)	Middle Income (500)	High Income (600)
5 Hours	2.43	4.32	2.25
6 Hours	5.4	9.6	5
7 Hours	7.29	12.96	6.75
8 Hours	6.75	12	6.25
9 Hours	5.13	9.12	4.75

Table 11: The expected frequencies of average daily income & work hours

O	E	O-E	(O-E) ²	$\frac{(O-E)^2}{E}$
6	2.43	3.57	12.7449	5.245
3	4.32	-1.32	1.7424	0.40
0	2.25	-2.25	5.0625	2.25
3	5.4	-2.4	5.76	1.067
0	9.6	-9.6	92.16	9.6
17	5	12	144	28.8
18	7.29	10.71	114.7041	15.73
9	12.96	-3.96	15.6816	1.21
0	6.75	-6.75	45.5625	6.75
0	6.75	-6.75	45.5625	6.75
17	12	5	25	2.08
8	6.25	1.75	3.0625	0.49
0	5.13	-5.13	26.3169	5.13
19	9.12	9.88	97.6144	7.70
0	4.75	-4.75	22.5625	4.75
				∑=100.952

Table 12: The chi-square value of average daily income & work hours

Decision

χ^2 calculated value= 100.952

Level of significance = 0.05

df= 8

χ^2 critical value= 21.955

As χ^2 calculated value > χ^2 critical value, we can reject the null hypothesis. So there exists a significant relationship between average daily income & work hours. As rickshaw pullers earn on daily basis, the more hours they work, the more they can earn.

6. DISCUSSION AND FINDINGS

6.1. Case Studies on Socio-Economic Conditions of Rickshaw Pullers

Case Study: 1

Mr. Riaz Uddin, a rickshaw driver from the Panchagar area who works for the Padma garage in Uttara sector no. 9, is the son of Mr. Afaz Uddin. He has chronic asthma for 43 years, ever since he was a young child. Since 1991, or nearly 22 years, he has been pushing rickshaws. At a young age, he performed seasonal agricultural labour for a Panchagar farmer family. There, his yearly salary was

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barely Tk. 3600. He cannot work for a lengthy period due to his health condition, asthma. He suffers more in the winter.

He arrived in Dhaka in 1991 and began driving rickshaws in Khathalbagan. He is married and resides in the Panpata village in the Atoyari police station with his wife and three daughters. The rent at the time he began pushing rickshaws was merely Tk. 40 per day. He only pulls rickshaws during the day and works every day of the week, although he is unable to work continuously for long periods of time. He rests and drives a rickshaw for two hours. He always has some medication in his pocket. His doctor has advised him to use an inhaler, but he finds it difficult to do so. His daily earning goal is just Tk. 300–400, and he must pay Tk. 100 for food and Tk. 100 for rickshaw rent. He borrowed Tk 20,000 from Grameen Bank over two instalments, with Tk 530 being his weekly payment. To cover the cost of his daughter's wedding, he sold his 0.05-acre agricultural land. The independent sector that allows for the possibility of working at one's own will is rickshaw pulling.

Case Study: 2

Early in life, Mr. Monsur lost both his parents. In Thakurgao District, one of his relatives has been caring for him since he was eight years old and is the custodian of his assets. He travelled to Dhaka when he was 12 years old with a rickshaw puller from his village. He gave him rickshaw driving training. Since he was so young, he began pulling rickshaws for half the day. Having worked for eight days, he returned to his village.

He was sawing a large tree's branch when he received an electric shock, which caused him to fall from the tree. He is forced to incur a debt for the medical expenses of Tk. 70,000 at a high interest rate of Tk. 100,000 per year. He is now paying back that money. He borrows money from the microcredit lending NGO Asha each year to buy two or three calves, care for them for several years, and then sell them around Eid. They reduce their costs by using the paddy bhushi they obtained during the paddy-to-rice conversion procedure. He may pay back TK. 10,000–15,000 annually from the cattle business. He can no longer manage for himself and his family to eat three times a day without driving a rickshaw. He suggests that the price of vital goods, particularly rice, should be regulated by the government.

6.2. Policy Recommendations

Policy interventions should focus on encouraging exit from rickshaw pulling at a relatively early stage of involvement, through programs that, for example, provide credit, training, and information. The information hints that the rickshaw pullers who are "early middle duration" have the highest opportunity of acquiring different, more lucrative occupations. If the savings and asset accumulation of rickshaw pullers could be increased while they were in their prime, at the pinnacle of their productive capacity, by minimizing both health risks and associated costs, then rickshaw pulling might offer a longer-term escape from poverty.

Considering such findings, some important policy recommendations are stated below.

Barendra Economic Development Organization (BEDO)

BEDO is a non-governmental voluntary organization founded in 1993 by some social entrepreneurs under the leadership of Md. Abdul Bari, a class-1 marine engineer. Since its founding, BEDO has worked to eradicate unemployment, illiteracy, and poverty. The goal of Md. Abdul Bari's program is to modernize the rickshaw pulling industry by combining education, trade groups, and affordable insurance. Illiterate rickshaw drivers in Bari can benefit from training programs to better comprehend traffic laws and regulations, which reduces the likelihood of accidents. Additionally, he arranges pullers into unions and associations that 42 provide their members with identification cards. He has also created a low-cost insurance plan that pays a payout to a puller's family if they pass away while working.

Project 'RAMBO'

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'RAMBO' is the acronym for 'Rickshaw pullers Association for Mobile Business Opportunity', is a pilot project to improve the daily earnings of rickshaw pullers through a marketing intervention. Information about "soft" issues including addiction, relationships with garage owners, and professional issues was sought throughout the interview. The RAMBO Project seeks to make rickshaw pullers' living and working conditions better. Mobility is emphasized because it is one of the pullers' best qualities. The RAMBO project seeks to make use of these advantages to give rickshaw pullers a chance to go into business and earn more money.

Rickshaw Bank

In 2004, the Rickshaw Bank concept was conceived. After several experiments, a mechanism has been in place since 2006 that enables independent contractors to become the sole owners of their rickshaws. The Rickshaw Bank aims to improve urban life while enabling a considerable improvement in the living conditions for the very poor. With the widespread use of solar-powered rickshaws, the physical demands on drivers will also be significantly reduced.

The project also incorporates other advances, including:

a. The IIT has assisted in the development of a new rickshaw utilizing materials that are lighter and more aerodynamic.
b. The updated layout makes it feasible to add advertising, which boosts sales.
c. Following agreements with financial institutions and ministries, bank loans are now available to let them purchase their rickshaw with assistance from a development NGO.

7. CONCLUSION

The findings of this study indicate that rickshaw pullers constitute one of the most marginalized groups within the urban informal labour force. Despite making a significant contribution to Dhaka City's transportation system and urban economy, they continue to experience poor working conditions, income insecurity, inadequate access to healthcare, and limited social protection. Their dependence on daily earnings makes them particularly vulnerable to illness, accidents, and economic shocks, often forcing them to continue working even when physically unfit.

The absence of formal recognition of rickshaw pulling as a profession has further contributed to the exclusion of rickshaw pullers from labour rights, occupational safety regulations, and government welfare programmes. Integrating rickshaw pullers into existing labour and social protection frameworks would help improve their quality of life while recognizing their contribution to urban mobility.

Improving the welfare of rickshaw pullers requires a coordinated effort involving government agencies, city corporations, labour organizations, non-governmental organizations, and transport authorities. Policies should focus on ensuring access to affordable healthcare, accident and health insurance, financial inclusion through savings and microcredit programmes, skills development, and legal awareness.

In addition, regular health screening, occupational safety initiatives, and awareness campaigns on road safety, hygiene, and financial management should be incorporated into community-based programmes. Efforts should also be made to reduce workplace harassment and discrimination through stronger law enforcement and public awareness initiatives.

Given the growing role of non-motorized transport in promoting environmentally sustainable cities, policymakers should consider rickshaw pullers as important stakeholders in urban transport planning. Creating dedicated rickshaw lanes where feasible, improving road infrastructure, and developing supportive transport policies would enhance both road safety and the livelihoods of rickshaw pullers.

Finally, future research should examine the long-term socioeconomic mobility, occupational health outcomes, mental health, and social protection needs of rickshaw pullers across different regions of Bangladesh. Such evidence would support the formulation of comprehensive policies aimed at

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improving the living and working conditions of this vulnerable occupational group while promoting inclusive and sustainable urban development.