Livelihood assets and food consumption level of slum dwellers in some selected areas of Dhaka city of Bangladesh

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INTRODUCTION

Bangladesh is the 8th most populous country in the world, with a population exceeding 165 million people in an area of 148,460 square kilometers (BBS, 2022). According to the report of the Asian development bank (2022) and BBS (2022), out of the total population, about 47 million people are characterized as poor and 1.8 million are slum people (BBS, 2022). According to BBS (1999), “A slum is a cluster of compact settlements of 5 or more households which generally grow very unsystematically and haphazardly in an unhealthy condition and atmosphere on government and private vacant land. Slums also exist in the owner-based household premises”. This definition of Bangladesh Bureau of Statistics basically defines the slums of Bangladesh. Slums of Dhaka city (the capital city of Bangladesh) face various problems such as bad housing conditions, various kinds of seasonal and waterborne diseases, lack of drinking water, sanitation, and medical treatment, educational facilities, security, utility services (electricity connection, piped water supply), proper solid waste disposal and so on (Latif et al., 2016). Different studies also analyze the situation of slum dwellers in Dhaka city. For example, Uddin (2018) finds that slum dwellers have been experiencing a wide range of substandard, overcrowded, and unhealthy housing conditions as well as scarce and insufficient health, sanitation, water, and waste disposal services. Islam et al. (2015) find that the living condition in the slum area is very low. Slums have lacking access to safe water, drainage and sanitation facilities, and basic health care facilities. The level of hygiene knowledge and practice is also significantly low among the slum dwellers. Goswami and Manna (2013)
examine the impact of living condition of slums on slum dwellers health and find that living condition positively impact the health of slum dwellers. The study also finds low socio-economic status, low level of education, and high fertility and mortality among slum dwellers that indicate the need of special attention in terms of public health, family planning, and reproductive health programs. Rokanuzzaman et al. (2013) find that the most of the slum people belong to the low annual income category, having low media contact, low training exposure, and medium level of environmental knowledge. The study also finds the livelihood status of the slum dwellers very low and majorities (65.37%) of the slum dwellers have major problems like absence of proper waste management system, proper sanitation and drainage system problem, water crisis, and lack of proper health facilities. Latif et al. (2016) identifies the slum problems such as food and housing problems, poor sanitation condition, poor quality or no sewerage and drainage, inadequate educational facilities, lack of utility services like gas facility, electricity connection, piped water supply, etc. Singh (2016) explains slum dwellers as the stock of potential human resources which is possible to develop through skill enhancement programs initiated by the government. Apart from the studies mentioned above, this study aims to analyze the socioeconomic characteristics, identify the livelihood assets, determine the calorie intake level, and identify the problems and constraints faced by the slum dwellers. Very specifically this study focuses on the following four research questions: a) What are the socioeconomic conditions of the slum dwellers? b) What are the livelihood assets of the sample households? c) What are the calorie intake levels of the household’s members? d) What are the problems and constraints faced by the slum dwellers? Thus, this study will fill up the research gap regarding the in-depth analysis of figuring out the multidimensional factors influencing slum dwellers.

**MATERIALS AND METHODS**

This study will investigate the first research question via descriptive statistics. For the second research question, this study focuses on the sustainable livelihood framework (SLF). Department for International Development (DFID) has developed a sustainable livelihood framework that is widely used for the measurement of livelihood (Adato et al., 2002). The overall framework of SLF is illustrated in figure 1. This study randomly selects two slums in Dhaka city namely Korail and Noyapara. Then a sample of 60 households is randomly selected from Korail and Noyapara slums. Using a semi-structured interview schedule; data were collected through a field survey. The time period of the data collection was January to March 2021. Several Focus Group Discussions (FGDs) were also made. According to figure 1, SFA considers five types of assets namely human capital, natural capital, financial capital, social capital, and physical capital. These five assets are the key influencers of livelihood. So, the main goal of this study will be to quantify these five assets. The third and fourth research questions will also be investigated using descriptive statistics. Regarding the third research question, to determine the calorie intake level of the sample households, the food consumption data of the households for seven days will be measured by the per person per day calorie intake level. Each food item that is consumed by the family members of the sample households will be converted through the standard value of 100 gm of each food item. For the calculation, the OECD modified equivalence scale will be used. This scale, first proposed by Hagenaars et al. (1994), assigns a value of 1 to the household head, of 0.5 for each additional adult member, and of 0.3 for each child.

![Figure 1. Sustainable livelihoods framework (Source: Adapted from Sustainable Livelihoods Guidance Sheet: DFID, 1999).](image-url)
RESULTS AND DISCUSSION

Socioeconomic condition

Table 1 represents three main socioeconomic parameters of slum dwellers in Dhaka city. It is clear that more than 90 percent of slum dwellers in Dhaka city belong to the age groups that are lower than 45 years old. This also means that the share of old people is very low among the slum dwellers. This result goes in line with Latif et al. (2016); Kamruzzaman and Hakim (2016), where Latif et al. (2016) finds an almost similar result in a study of the Kalyanpur slum in Dhaka city, Kamruzzaman and Hakim (2016) find similar results among slum dwellers in Dhaka city (not for specific slum). Although Hossain et al. (2010) study the slums of Khulna and Rajshahi city, the age structure is almost identical to this study. The reason behind this very small share of old people can be explained by the study of Farah et al. (2016). The study figures out that a large share of elderly people of urban slums in Bangladesh suffers from various kinds of diseases such as diabetes, vertigo, joint pain, depression, chest pain, chronic cough, difficulty in micturition, anxiety, and so on. As they largely belong to ultra-poor or hard-core poor groups (Table 1) and the Bangladesh government doesn’t have any proper health policy for these people, this makes it challenging for slum dwellers to take care of these diseases (Mannan, 2018) and it results in the early death of these people. Regarding the education level, it is seen that only 1.67% of slum dwellers have more than 10 years of schooling. This is very alarming because this lacking education results in low skills and in the end low paid or unpaid jobs such as a maidservant, garment workers, rickshaw pullers, shopkeepers, and day laborers, which doesn’t bring any long-term change to their life (Rokanuzzaman et al., 2013). The descriptive statistics of education level and occupation are also almost identical to the study of Latif et al. (2016), Kamruzzaman and Hakim (2016), and Hossain et al. (2010).

Table 2 represents the family size, the number of earners, average annual income, and expenditure of slum dwellers. According to the table, almost 82% of slum dwellers have a medium family which means their family consists of 4-6 members. About 67% of families have two earning members. But the amount of money they earn is very low compared to their family size and average national income. According to data from the BBS (2022), per capita income for the financial year 2021-22 is 2,40,040 TK ($2624. Considering 1$=85 TK). So, if a family consists of four members their income is expected to be 9,60,160 TK ($11,296). But the current income of medium families is 6 times lower compared to the average national income. This low income forced them to low expenditure. This low income also directly contributes to many other problems, for example, health-related problems (Mannan, 2018), housing problems (Zanuzdana et al., 2013), education-related problems (Farah et al., 2019), child labor problems (Farah et al., 2019), problems regarding calorie intake (Mannan, 2018). The descriptive output of table 2 also goes in line with previously mentioned studies such as Rokanuzzaman et al. (2013); Latif et al. (2016); Kamruzzaman and Hakim (2016); and Hossain et al. (2010).

Livelihood asset

In this step, the following five key influencers of livelihood (following DFID sustainable livelihood framework) will be quantified to analyze the livelihood of slum dwellers:

Human asset
Social asset
Natural asset
Physical asset and
Financial asset.

Table 1. Descriptive statistics of age, education level, and occupation of slum dwellers in Dhaka.

<table>
<thead>
<tr>
<th>Age group</th>
<th>Number of respondents</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young (up to 30 years)</td>
<td>22</td>
<td>36.67</td>
</tr>
<tr>
<td>Middle aged (31-45 years)</td>
<td>33</td>
<td>55</td>
</tr>
<tr>
<td>Old aged (&gt;45 years)</td>
<td>5</td>
<td>8.33</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education level</th>
<th>Number of respondents</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illiterate (no schooling)</td>
<td>5</td>
<td>8.33</td>
</tr>
<tr>
<td>Literate (Can sign only)</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>Primary (1-5 years schooling)</td>
<td>28</td>
<td>46.67</td>
</tr>
<tr>
<td>Secondary (6-10 years schooling)</td>
<td>17</td>
<td>28.33</td>
</tr>
<tr>
<td>Above secondary (&gt;10 years of schooling)</td>
<td>1</td>
<td>1.67</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Number of respondents</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maid servant</td>
<td>21</td>
<td>35</td>
</tr>
<tr>
<td>Garments worker</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>Rickshaw puller</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Shopkeeper</td>
<td>5</td>
<td>8.33</td>
</tr>
<tr>
<td>Day labor</td>
<td>2</td>
<td>3.33</td>
</tr>
<tr>
<td>Others</td>
<td>11</td>
<td>18.33</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: author’s calculation

Table 3 shows the four key influencers of livelihood. As for human assets and social assets, the slum dwellers express their condition or satisfaction level by ranking 1 to 5. Rank 1 means a low condition, rank 2-3 means moderate condition, and rank 4-5 means good condition. Regarding human assets, most of the slum dwellers mention that they live in very low conditions in terms of health and nutrition. For other parameters such as education and life expectancy, most of the people mention moderate conditions. This is a bit surprising, as we have already seen that most of the people living in slums are illiterate and only 1.67% of them can cross 10 years of schooling (Table 1), but still people think it is moderate. At the same time, we have already seen that the share of old people is also very low among the slum dwellers (Table 1), which is because of bad living conditions in slums. But in spite of this, slum dwellers mention that their life expectancy is moderate. This study recommends further investigation regarding this issue.

Table 3 also reveals that a large share of slum dwellers mentions that their capacity to adapt, capacity to work, skill, and knowledge is in a good condition. This result is not surprising, as the large share of the slum population is young (Table 1) and came from different parts of the country due to climate change or unemployment (McNamara et al., 2016).

Table 2. Family size, number of earners, average annual income and expenditure of slum dwellers

<table>
<thead>
<tr>
<th>Family Size</th>
<th>No. of households</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small family (up to 3 members)</td>
<td>8</td>
<td>13.33</td>
</tr>
<tr>
<td>Medium family (4 to 6 members)</td>
<td>49</td>
<td>81.67</td>
</tr>
<tr>
<td>Large family (7 and above)</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td>Number of Earners</td>
<td>Number of Respondents</td>
<td>Percentage (%)</td>
</tr>
<tr>
<td>One member</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>Two members</td>
<td>40</td>
<td>66.67</td>
</tr>
<tr>
<td>Three members</td>
<td>8</td>
<td>13.33</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: author’s calculation

Table 3. Distribution of households according to human assets, social assets, physical assets, financial assets.

<table>
<thead>
<tr>
<th>Items</th>
<th>Low</th>
<th>Moderate</th>
<th>Good</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of respondents</td>
<td>Percentage (%)</td>
<td>No. of respondents</td>
<td>Percentage (%)</td>
</tr>
<tr>
<td>Human assets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>12</td>
<td>20</td>
<td>34</td>
</tr>
<tr>
<td>Health status</td>
<td>25</td>
<td>41.67</td>
<td>22</td>
</tr>
<tr>
<td>Nutrition</td>
<td>27</td>
<td>45</td>
<td>22</td>
</tr>
<tr>
<td>Skill and knowledge</td>
<td>12</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td>Capacity to work</td>
<td>5</td>
<td>8.33</td>
<td>9</td>
</tr>
<tr>
<td>Capacity to adaptability</td>
<td>6</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Life expectancy</td>
<td>13</td>
<td>21.67</td>
<td>43</td>
</tr>
<tr>
<td>Social assets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social relation</td>
<td>10</td>
<td>16.67</td>
<td>45</td>
</tr>
<tr>
<td>Network and communication</td>
<td>9</td>
<td>15</td>
<td>29</td>
</tr>
</tbody>
</table>

Source: author’s calculation

<table>
<thead>
<tr>
<th>Physical assets</th>
<th>No. of respondents</th>
<th>Percentage (%)</th>
<th>Average value (BDT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wooden stool</td>
<td>32</td>
<td>53.33</td>
<td>2375</td>
</tr>
<tr>
<td>Chair</td>
<td>47</td>
<td>78.33</td>
<td>585.11</td>
</tr>
<tr>
<td>Table</td>
<td>21</td>
<td>35</td>
<td>714.29</td>
</tr>
<tr>
<td>Almirah</td>
<td>9</td>
<td>15</td>
<td>5111.11</td>
</tr>
<tr>
<td>Rack</td>
<td>21</td>
<td>35</td>
<td>957.14</td>
</tr>
<tr>
<td>Television</td>
<td>48</td>
<td>80</td>
<td>9906.25</td>
</tr>
<tr>
<td>Wardrobe</td>
<td>9</td>
<td>15</td>
<td>3388.89</td>
</tr>
<tr>
<td>Showcase</td>
<td>24</td>
<td>40</td>
<td>2979.17</td>
</tr>
<tr>
<td>Water filter</td>
<td>4</td>
<td>6.67</td>
<td>1500</td>
</tr>
<tr>
<td>Van</td>
<td>2</td>
<td>3.33</td>
<td>40000</td>
</tr>
<tr>
<td>Bed</td>
<td>31</td>
<td>51.67</td>
<td>5854.84</td>
</tr>
<tr>
<td>Fridge</td>
<td>36</td>
<td>60</td>
<td>21888.89</td>
</tr>
<tr>
<td>Mir chip</td>
<td>33</td>
<td>55</td>
<td>1154.55</td>
</tr>
<tr>
<td>Fan</td>
<td>60</td>
<td>100</td>
<td>1678.33</td>
</tr>
<tr>
<td>Clock</td>
<td>10</td>
<td>16.67</td>
<td>245</td>
</tr>
<tr>
<td>Mobile phone</td>
<td>60</td>
<td>100</td>
<td>2795</td>
</tr>
<tr>
<td>Sewing machine</td>
<td>9</td>
<td>15</td>
<td>6333.33</td>
</tr>
<tr>
<td>Auto-rickshaw</td>
<td>1</td>
<td>1.67</td>
<td>130000</td>
</tr>
<tr>
<td>Financial assets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash in hand</td>
<td>56</td>
<td>93.33</td>
<td>383.93</td>
</tr>
<tr>
<td>Loan</td>
<td>11</td>
<td>18.33</td>
<td>74090.91</td>
</tr>
</tbody>
</table>

Source: author’s calculation
By the term “Social asset” this study refers to the involvement with network and communication (kinship and patronage), formal and informal social relationships, common rules and sanctions, women empowerment, leadership, etc. Social assets help people to work together and help each other to improve their community. According to Table 3, most of the slum dwellers mention that they have moderate formal and informal social relationships, and moderate network and communication.

By the term “physical assets” this study refers to physical infrastructure, household goods, tools, equipment, etc. From table 3, it is seen that more than 50 percent of slum dwellers don’t have any almirah, table, rack, wardrobe, showcase, and water filter, which are necessary for everyday life. But surprisingly, it is seen that slum dwellers are adopting new technologies on a large scale. All of the slum dwellers have a fan and mobile phone, about 80 percent of slum dwellers have a television and about 60 percent have a fridge in their house, although the price of these products is relatively high compared to others. This is a good indication. Policymakers can consider this willingness to accept new technologies and think about technology-related training opportunities for the young slum population so that they find some job opportunities with moderate or high pay. This may lead to a tremendous change in the livelihood of slum dwellers.

Regarding financial assets, table 3 shows that more than 18 percent of slum dwellers suffer from the extreme burden of loans. Although more than 90 percent of slum dwellers mentioned that they have some cash in hand, but the amount is too low (on average 383.93, which is equivalent to $4.5). This low amount of cash and higher burden of loans among the slum dwellers is not surprising as we have already seen that they belong to lower income groups and work in different low-paid or unpaid sectors (Tables 1 & 2). As for natural assets, the respondents have no access to urban land in slum areas. They generally live on vacant private or government land. There is no sufficient and affordable housing for them. They live in rented houses and the accumulated monthly house rent is BDT 3000 per room in Korail slum and BDT 2500 per room in Noyapara slum.

### Calorie intake

Table 4 reveals some descriptive output of calorie intake per person per day. The categories, for example, ultra-poor, hard-core poor, absolute poor, and non-poor have been determined following Hossain (2020). The result is alarming. It says that about 90 percent of the total slum population belongs to ultra-poor, hard-core poor, and absolute poor categories. This demands immediate action. Because this low-calorie intake can result in malnutrition and many other diseases (Radhakrishna and Ravi, 2004; Vetta et al., 1999; Farah et al., 2016; Mannan, 2018).

### Problems and constraints

This study also asks the slum dwellers about the problems and constraints they are facing. According to table 5, more than 70 percent of the slum dwellers indicate inadequate income, lack of housing space, water crisis, and lack of proper sanitation as their major problems. They have also indicated unhealthy food and health problem as a problem, but around 65 percent of slum dwellers don’t consider it a major problem. Although different studies find that this unhealthy food and health are also among the major problems faced by the slum dwellers in Dhaka city (Farah et al., 2016; Mannan, 2018), surprisingly most of the slum dwellers don’t consider it a major problem. As they face extreme suffering from inadequate income, lack of housing, water crisis, and proper sanitation, thinking about healthy food and good health is thinking something luxurious for them. This can be a possible explanation for this. The same explanation applies to why a very small share of slum dwellers don’t consider the lack of a proper waste management system and the lack of proper education system as a problem.

### Table 4. Number and percentage of calorie intake per person per day.

<table>
<thead>
<tr>
<th>Categories (K. cal)</th>
<th>No. of respondents (Percentage, %)</th>
<th>Per person per day average calorie intake (K. cal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultra poor &lt;1600</td>
<td>22 (36.67%)</td>
<td>1356.92</td>
</tr>
<tr>
<td>Hard-core poor 1600-1804</td>
<td>23 (38.33%)</td>
<td>1653.09</td>
</tr>
<tr>
<td>Absolute poor 1805-2122</td>
<td>9 (15%)</td>
<td>1834.23</td>
</tr>
<tr>
<td>Non-poor&gt;2122</td>
<td>6 (10%)</td>
<td>2175.86</td>
</tr>
</tbody>
</table>

Source: author’s calculation

### Table 5. Problems and constraints faced by the respondents.

<table>
<thead>
<tr>
<th>Problems and constraints</th>
<th>Number of times problem was ranked</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First</td>
</tr>
<tr>
<td>Inadequate income</td>
<td>8</td>
</tr>
<tr>
<td>Lack of housing space</td>
<td>24</td>
</tr>
<tr>
<td>Water crisis</td>
<td>8</td>
</tr>
<tr>
<td>Lack of proper sanitation</td>
<td>9</td>
</tr>
<tr>
<td>Unhealthy food</td>
<td>6</td>
</tr>
<tr>
<td>Health problem</td>
<td>3</td>
</tr>
<tr>
<td>Lack of proper waste management system</td>
<td>3</td>
</tr>
<tr>
<td>Lack of proper education system</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: author’s calculation
Conclusion

This study focuses on socioeconomic conditions, livelihood assets, calorie intake, problems, and constraints faced by slum dwellers in Dhaka city. The study quantifies all of the relevant parameters. According to the above discussion, most of the slum dwellers are living in temporary habitats in vulnerable conditions due to low income, lack of support, etc. The slum dwellers are not facilitated of important fundamental rights like housing and health facilities, job opportunities, sanitation facilities, education, etc. In such circumstances, ensuring the food security of slum dwellers is a challenge if their socioeconomic condition remains bleak. On the basis of the findings, the following recommendations should be helpful for the development of slum dwellers in the slum area: sufficient job opportunities should be created for them so that they can also improve their socioeconomic conditions and food security. Government should take initial steps to improve the living condition of slum dwellers, utility service facilities, education facilities, etc. Government can also involve some non-governmental organizations (NGOs) in this process.

Conflict of interest

The authors declare that there is no conflict of interests regarding the publication of this paper.

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