

# Quality of life among women living in Haor Basin in Bangladesh and its socio-economic predictors

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## ABSTRACT

The Haor region in Bangladesh is a relatively more poverty-driven area than other rural areas of Bangladesh. There is very little information about the quality of life of women living in Haor areas. Therefore, the present study aimed to assess Haor women's quality of life and identify predictors. The data from the project titled 'Livelihood and Socio-economic well-being of Women Living in Haor Basin: A Cross-sectional Survey' were utilized in this study. Results showed that household income was lower than that reported in the household income and expenditure survey or HIES Survey 2016 for rural people in Bangladesh. Around half of them actively participated in the household economic decision-making process and one-fifth were satisfied with their household and personal financial condition. Only 30% rated their quality of life as good or very good. Contribution to household income, importance and control over household economic decisions, and household savings and loans, were significantly associated with the overall quality of life and its domains. This study's findings would help to design and implement policies and development program to improve the living standard of women living in Haor Basin and thus help to achieve the relevant targets under specific sustainable development goals.

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## 1. INTRODUCTION

Women's contribution to the gross domestic product (GDP) is significant, although it remains unrecognized most of the time. They play an important role in household income both formally and informally. However, their informal contributions are often undermined compared to male earning members. It is also observed in rural areas, specifically rural women living in the Haor Basin, a wetland located in the northeastern region of Bangladesh. Based on the author's observation, most women living in the Haor Basin are involved in informal economic activities (i.e., cultivating vegetables, gardening beside the house, rearing cattle and poultry) and contribute to the household income. As women's informal economic participation is often unrecognized, it might impact their well-being and quality of life. However, there is a scarcity of information about the quality of life of women living in the Haor Basin. The present study aimed to assess the quality of life of women living in the Haor Basin and identify socio-economic predictors.

Quality of life is a broader concept that includes one's satisfaction with all aspects of life. It is "the degree to which a person's life is desirable versus undesirable, often with an emphasis on external components, such as environmental factors and income" (p.154) [1]. It is one's perception of one's life in the context of the society, culture, and values system where one lives [2]. It is one's cognitive assessment of one's standard of living [3]. It includes one's "physical health, psychological state, level of independence,

social relationships, personal beliefs and their relationships to salient features of the environment” (p.3) [2]. Studies showed that women have lower perception about their quality of life [4], [5]. Lee *et al.* [4] found that income, cognitive and physical function, and living environment were significantly associated with quality of life for male older adults from China, Ghana, India, Russia, and South Africa, while income and cognitive and physical function were significantly related to quality of life for female older adults.

The Haor Basin, comprised of 373 Haors, is located in the northeastern region of Bangladesh [6]. This wetland covers 19,998 sq km, around 43% of the total area of the seven administrative districts (Sunamganj, Sylhet, Habiganj, Maulvibazar, Netrokona, Kishoreganj, and Brahmanbaria) [6]. The estimated population in this Haor Basin is 21.38 million in 2020 [6], with a sex ratio of 99.27: 100 for males and females, respectively. Farming (mainly paddy) and fishing are the main occupations of people living in the Haor Basin. Besides, some people are involved in poultry, sailing the boat, and various small business. From the author’s observations, lives in these areas are more complicated than those lives in the plain land due to the nature of the wetland. This basin remains under water for more than half of the year. Boats are the only medium of communication from the end of the summer season to mid of the late autumn. Health services in this basin are very poor. Common identified problems in health services in Haor Basin are shortage of health service centers, doctors, nurses, and other staffs, medicines and medical equipment, and poor transportation systems in medical emergency [7].

Levels of poverty in most of the haor basin range between moderate to very high, especially in Kishoreganj, Netrokona, and Sunamganj administrative districts [8]. Several studies assessed the livelihood and socio-economic status of people living in haor areas [9]–[12]. These studies mainly focus on people of certain occupations, for example – fishermen, or specific small areas like one village or two-three villages on the bank of a Haor [13]–[16]. Sarma [16] explored the socio-economic vulnerability (landlessness, migration, and food insecurity) of people living in Haor areas in Nikli Upazila (administrative sub-district), Kishoreganj. Studies suggested that around 42% and 68% of fishermen in Haor areas were below and upper poverty lines, respectively [13]. Almost three-fourths of fishermen’s annual income ranged between USD 488 and USD 732 [14]. Their socio-economic condition does not consistent with the national economic progress [10]. However, a few studies have focused explicitly on women living in Haor. Khanum and Mahadi [15] investigated the extent of women’s participation in duck rearing farms and addressed women’s economic empowerment in the Hakaluki Haor area of Maulvibazar administrative district. However, best to the author’s knowledge, none of the studies specifically assessed the quality of life of Haor women and probable predictors of the quality of life. Moreover, information about the portion of haor women contributed to household income, their household savings and loans, their importance to household economic decision-making process and control over it, and their satisfaction with the present economic conditions, are unknown. Therefore, the present study aimed to address this gap in literature. The present study’s main objective was to evaluate women’s quality of life in the haor basin, Bangladesh, and identify possible socio-economic predictors.

## 2. METHOD

### 2.1. Data

In this study, the data from the project titled ‘Livelihood and Socio-economic well-being of Women Living in Haor Basin: A Cross-sectional Survey’ [17] were utilized. The Sheikh Hasina University, Bangladesh, partially funded this project. In this project, the data were collected from women living in the Haor Basin, Bangladesh, using multi-stage sampling technique. Among seven administrative districts, three (Sunamganj, Netrokona, and Kishoreganj) were selected using the simple random sampling technique. Next, seven Upzillas (administrative sub-district) from these districts and eleven villages from these selected Upzillas were selected through the convenience sampling technique. In the final stage, participants from these villages were recruited through the convenience sampling technique. The only inclusion criterion was that participants must be 18 years old or older. Participants received a token gift as a reward for participating in this project. The data were collected from the participants (n=480) using the structured interview method. The interviewers read the research objectives, inclusion and exclusion criteria, risks, benefits, confidentiality, data management and feedback strategies to the participants and took the informed consent. As a number of the participants did not read and write well, therefore, verbal consent was taken as well as completing the interview was also considered as consent. The interviewers read the questionnaire and participants responded to each item of the questionnaire. In the present study, the data of the 405 participants were utilized after excluding missing responses.

The present study included data about demographic information, socio-economic factors, and quality of life data. Demographic data included participants’ age, marital status, occupation, number of family members, and number of earning members in the family. Data about socio-economic factors included

household income (monthly), contribution to household income, importance and control over household economic decisions, household savings and debt, satisfaction with household financial economic situation, and future financial security.

Data about quality of life were collected using the Brief WHOQOL [18] is the short form of the WHOQOL-100 [19]. This scale contains 26 items. Uddin and Islam [20] assessed the psychometric properties of this scale for women living in rural areas in Bangladesh. They found only 19 items had good fits. The data utilized in this study about the quality of life were collected using this modified version of the WHOQOL brief. This scale assesses four domains of quality of life (physical, psychological, social, and environmental) along with the overall quality of life and satisfaction with general health. The question about sexual activity (a question for assessing social dimension) was omitted from the study questionnaire as participants would not be comfortable with this question. Besides, this question is not suitable for unmarried and older participants. Participants responded on this scale utilizing a five-point Likert-type scale. Scoring of each domain was done as suggested in the WHOQOL Brief manual. Total scores were transformed into 0-100 scale. The higher score suggested a higher quality of life in each domain. In this study, this scale had acceptable internal consistency reliability (Cronbach's alpha ranged between 0.56 and 0.77). Confirmatory factor analysis and Rasch analysis confirmed construct validity of this scale.

## 2.2. Statistical analysis

Descriptive statistics (mean, standard deviation, frequency, and percentages), confirmatory factor analysis (CFA), Rasch model, and multiple linear regression were performed in this study. Descriptive statistics were utilized to assess the distribution of the participants. Confirmatory factor analysis and the Rasch model were utilized to evaluate the construct validity of the modified WHOQOL Brief Bangla version [20]. These analyses did not include items about the overall quality of life and satisfaction with general health. Five multiple linear regressions were run to assess the impact of predictors on the overall quality of life and four domains of quality of life. Descriptive statistics and multiple linear regression were performed through STATA MP 14, confirmatory factor analysis was performed through RStudio, and Rasch analysis was performed through jMetrik 4.1.1 software.

## 3. RESULTS AND DISCUSSION

### 3.1. Participants' information

Participants' demographic distribution is presented in Table 1. The participants' age mean was 37.34 years (standard deviation=12.35 years). Among participants, 88.9% were married, 3.2% were unmarried, and 7.9% were widows and others. Regarding occupation, four-fifths were housewives. Regarding the number of earning members in the family, 71.9% of the participants reported that there was only one earning member in the family, and 21% reported two earning members. In Table 1, the household income mean was \$140.79, and the standard deviation was \$449.51. In 2016, the average monthly household income in rural areas was \$199.85 [21]. For rural areas, this ratio was \$174.975. In March 2020, the average monthly household income reached \$228.7, which decreased by 17.2% to \$182.6 in August 2020 because of COVID-19 in the country [22]. However, reported household income (monthly) is substantially lower for people living in Haor areas. Among participants, 31.1% formally contributed to their household income. Their (n=126) personal income mean was \$33.22 (standard deviation of \$41.36). Their average income is much lower than reported in the household income and expenditure survey (HIES) report, 2016 [21].

### 3.2. Socio-economic description, and the association between socio-economic variables and quality of life

Table 2 demonstrates the frequency and percentages of participants' responses to questions about different socio-economic predictors. About 12.6% of the participants perceived their opinion as unimportant, 33.8% perceived some importance, 30.4% perceived much importance, and 23.2% perceived full importance. Among participants, 16.0% perceived no control over household economic decisions, 37.0% perceived somewhat control, 23.5% perceived much control, and 23.5% perceived complete control over household economic decisions. These results suggested that women living in haor areas are more involved in household decision-making. Nearly half of them play an almost equal role to the male family member. Rahman *et al.* [23] reported that more than one-third of women were not involved in household decision-making. Mahmud *et al.* [24] found that 84% of rural women had an importance on the decision regarding treatment for sick children, 78% on visiting doctor for self, 76% on spending household savings, 75% on buying furniture, 74% on taking loans, 71% on purchasing livestock, and 68% on her working outside the home. Murshid [25] suggested that control over resources plays an important role in having decision-making power in the household. However, further study needs to get more detailed information about the importance and control over the household economic decision-making process.

Table 1. Demographic distribution of the participants

Variables	Group	Frequency (%) / Mean (SD) [Range]
Age		37.34 (12.35) [18-70 years]
Marital status	Married	360 (88.9%)
	Unmarried	13 (3.2%)
	Others	32 (7.9%)
Occupation (n=382)	Housewife	307 (80.4%)
	Handcrafting	19 (5.0%)
	Housemaid	9 (2.4%)
	Student	9 (2.4%)
	Service holder	9 (2.4%)
	Others	29 (7.6%)
Number of family member		5.02 (2.07) [1-19]
Number of children		2.65 (1.63) [0-9]
Number of earning members	One	291 (71.9%)
	Two	85 (21.0%)
	Three	20 (4.9%)
	More than three	3 (0.7%)
Household income (monthly)		\$140.79 (449.51) [\$11.7 - \$8755]
Contribution to household income	Yes	126 (31.1%)
Income self (n=126) (monthly)		\$33.22 (41.36) [\$3.51-\$234]

Table 2. Frequency and percentages of participants' responses about importance and control over decisions, household savings and loans, satisfaction with the current household economic condition, and future security

Variables	Group	Frequency (%) / Mean (SD)
Importance of opinions on economic decision	No importance at all	51 (12.6%)
	Some importance at all	137 (33.8%)
	Much importance at all	123 (30.4%)
	Full importance	94 (23.2%)
Control over economic decisions/choices	Absolutely no control	65 (16.0%)
	Somewhat control	150 (37.0%)
	Much control	95 (23.5%)
	Full control	95 (23.5%)
Household savings	Yes	76 (18.8%)
Household loans	Yes	296 (73.1%)
Household economic condition	Fully dissatisfied	125 (30.9%)
	Somewhat dissatisfied	182 (44.9%)
	Somewhat satisfied	90 (22.2%)
	Fully satisfied	8 (2.0%)
Future economic security	No	149 (36.8%)
	Yes	72 (17.8%)
	Uncertain	184 (45.4%)

Among them, 18.8% reported having household savings, and 73.1% had household debt. According to the HIES report 2016 [21], 22.40% of rural households deposited money for savings, and 32.70% had loans from formal and informal financial institutions and friends and relatives. The household savings ratio is much lower, and the household loan ratio is much higher than the HIES report 2016. These differences demonstrated the economic vulnerability of people living in the hoar areas. Among participants, 30.9% were dissatisfied with the current household economic condition. Among them, 17.8% thought they had the financial ability to overcome a crisis in the future, and 45.4% were uncertain about it. This uncertainty and inability to overcome a crisis in future depicted their helplessness and would lower their quality of life.

Table 3 demonstrates descriptive information about the overall quality of life, satisfaction with health and four domains of quality of life of Haor women. Regarding the overall quality of life, 37.5% of the participants rated their quality of life as poor or very poor, 33.1% as neither poor nor good, and 29.4% as good or very good. Regarding satisfaction with health, 25% were dissatisfied or very dissatisfied, and 40.5% were satisfied or very satisfied. Table 3 also presents mean scores of the four domains (physical [M=57.63, SD=13.98], psychological [M=52.91, SD=15.80], social [M=67.30, SD=18.42], and environmental [M=40.50, SD=16.20]) of quality of life. Haor women only had a better quality of life in the social domain. In the rest of the domains, their quality of life was poor.

Table 4 demonstrates the contribution of the socio-economic predictors on the overall quality of life and four domains of quality of life. Table 4 shows that economic predictors contributed 46% variability of the overall quality of life ( $F_{(8, 396)}=42.233$ ,  $p<0.001$ ). Among predictors, contribution to household income negatively associated ( $B=-0.28$ ,  $p<0.001$ ) and having household savings ( $B=0.38$ ,  $p<0.001$ ), and satisfaction with household economic condition ( $B=0.53$ ,  $p<0.001$ ) positively associated with overall quality of life.

Table 3. Descriptive statistics of overall quality of life, satisfaction with health, and four domains of quality of life

Variables	Group	Frequency (%) / Mean (SD)
How would you rate your quality of life?	Very poor	32 (7.9%)
	Poor	120 (29.6%)
	Neither poor nor good	134 (33.1%)
	Good	115 (28.4%)
	Very good	4 (1.0%)
How satisfied are you with your health?	Very dissatisfied	10 (2.5%)
	Dissatisfied	91 (22.5%)
	Neither dissatisfied nor satisfied	140 (34.6%)
	Satisfied	159 (39.3%)
	Very satisfied	5 (1.2%)
Quality of life domains		
Physical		57.63 (13.98)
Psychological		52.91 (15.80)
Social		67.30 (18.42)
Environmental		40.50 (16.20)

About the physical domain, Table 4 shows that predictors contributed 24.8% variability of the physical domain of quality of life ( $F_{(8, 396)}=16.357$ ,  $p<0.001$ ). Among these, control over economic decisions ( $B=-1.04$ ,  $p<0.001$ ) negatively and contribution to household income ( $B=0.71$ ,  $p<0.001$ ), having household saving ( $B=1.13$ ,  $p<0.001$ ), satisfaction with household economic condition ( $B=1.12$ ,  $p<0.001$ ), and future economic security to overcome sudden crisis ( $B=0.23$ ,  $p<0.041$ ) were positively associated with the physical domain of quality of life. Although these variables are significantly contributed to physical domain of quality of life, lower variability (24.8%) suggested that there are some other important predictor variables for physical domain of quality of life that this study did not cover. About the psychological domain, Table 4 demonstrates that predictors contributed 45.3% variability of the psychological domain of quality of life ( $F_{(8, 396)}=40.983$ ,  $p<0.001$ ). Among predictors, contribution to household income ( $B=-0.74$ ,  $p=0.001$ ) negatively and importance on economic decisions ( $B=0.61$ ,  $p=0.004$ ), satisfaction with household economic condition ( $B=1.21$ ,  $p<0.001$ ), and future economic security to overcome sudden crisis ( $B=0.33$ ,  $p=0.003$ ) were positively associated with the psychological domain of quality of life.

Table 4. Regression coefficients of economic factors on the physical, psychological, social, and environmental domains of quality of life

Predictors	Overall quality of life		Physical domain		Psychological domain		Social domain		Environmental domain	
	B(SE)	p-value	B(SE)	p-value	B(SE)	p-value	B(SE)	p-value	B(SE)	p-value
Inco.	<.01 (<.01)	.828	<.01 (<.01)	.573	<.01 (<.01)	.628	<.01 (<.01)	0.155	<.01 (<.01)	.063
Cont.	-.28 (.08)	<.001	.71 (.22)	.001	-.74 (.21)	.001	-1.13 (.28)	<.001	-.44 (.24)	.070
Impo.	.13 (.08)	.110	.25 (0.22)	.242	.61 (.21)	.004	.47 (.28)	0.093	.06 (.24)	.820
Con.	.10 (.08)	.190	-1.04 (0.21)	<.001	.23 (.21)	.275	.33 (.28)	0.231	.26 (.24)	.299
Sav.	.38 (.10)	<.001	1.13 (0.27)	<.001	.09 (.26)	.739	-.43 (.35)	0.213	1.16 (.30)	<.001
Loan	-.11 (.08)	.175	-.12 (0.23)	.608	.03 (.22)	.880	.10 (.30)	0.732	-1.45 (.25)	<.001
Satis.	.51 (.06)	<.001	1.12 (0.17)	<.001	1.21 (.17)	<.001	.92 (.22)	<.001	.83 (.19)	<.001
Secu.	.08 (.04)	.066	.23 (0.11)	.041	.33 (.11)	.003	.06 (.15)	0.684	-.57 (.13)	<.001
	$R^2 = .460$ , Adjusted $R^2 = .449$ , $F_{(8, 396)} = 42.233$ , $p<.001$		$R^2 = .248$ , Adjusted $R^2 = .233$ , $F_{(8, 396)} = 16.357$ , $p<.001$		$R^2 = .453$ , Adjusted $R^2 = .442$ , $F_{(8, 396)} = 40.983$ , $p<.001$		$R^2 = .267$ , Adjusted $R^2 = .252$ , $F_{(8, 396)} = 18.020$ , $p<.001$		$R^2 = .310$ , Adjusted $R^2 = .296$ , $F_{(8, 396)} = 22.254$ , $p<.001$	

Inco.=Household income, Cont.=contribution to household income, Impo.=importance on economic decisions, Con.=control over economic decisions, Sav.=household savings, Loan=household loan, Satis=satisfaction with household economic condition, Secu.=Future economic security. B=unstandardized coefficient, SE=standard error of unstandardized coefficient,  $\beta$ =standardized coefficient, 95% CI=95% confidence interval of unstandardized coefficient.

Regarding social domain, Table 4 shows that predictors contributed 26.7% variability of the social domain of quality of life ( $F_{(8, 396)}=18.020$ ,  $p<0.001$ ). Among these predictors, contribution to household income ( $B=-1.13$ ,  $p<0.001$ ) and satisfaction with household economic condition ( $B=0.92$ ,  $p<0.001$ ) were positively associated with the social domain of quality of life. Lower variability (26.7%) suggested that there

are other important variables that contributed to social domain of quality of life of women living in Haor Basin apart from these variables. Regarding the environmental domain, Table 4 shows that economic predictors contributed 31% variability of the environmental domain of quality of life ( $F_{(8, 396)}=22.254$ ,  $p<0.001$ ). Among predictors, future financial security to overcome sudden crisis ( $B=-0.57$ ,  $p<0.001$ ) negatively and having household savings ( $B=1.16$ ,  $p<0.001$ ), having household loan ( $B=-1.45$ ,  $p<0.001$ ), and satisfaction with household economic condition ( $B=0.83$ ,  $p<0.001$ ) positively associated with the environmental domain of quality of life.

Overall, whether participants could contribute to household income, household savings, and perceived satisfaction with the current household economic condition were three significant predictors of overall quality of life and its domains. Household income was not associated with quality of life and its four domains. This finding contradicted previous studies. Lee *et al.* [4] found significant association between income and quality of life for data from China, Ghana, India, Russia, and South Africa. Participants of the present study were from the geographically same region and poverty driven area. They have to fight poverty as well as natural calamities. Therefore, other factors rather than household income associated with quality of life of Haor women. However, a further exploratory study would be designed to know why household income did not contribute to quality of life of these population. Here, contribution to household income was negatively associated with the overall quality of life, and its psychological and social domains. It is obvious that contribution to household income gives a good feeling to any family member. In Economics, an increase in income leads to more happiness, where happiness is defined as a benefit [26], [27]. By contributing to household income, they can exert control over economic choices and actively participate in household decisions. Keyvanara *et al.* [28] found a moderate correlation between the quality of life and socio-economic status. Kahneman and Deaton [29] found that low income is associated with low life evaluation and low emotional well-being. Therefore, a positive association between these two variables was expected. A further explorative study would be undertaken to determine why the negative association existed.

Regarding household savings, it had a positive association with the overall quality of life and physical and environmental domains of quality of life. Savings is security to meet the financial challenges in the future caused by diseases or natural calamities. Haor Basin is prone to flash floods, monsoon floods, and hailstorms just before collecting paddy from the field. Savings always give certainty to meet the challenges, if suddenly they face distress caused by flash floods or hailstorms or suddenly get sick. Therefore, this positive association is expected.

Results showed that satisfaction with the current household economic conditions was positively associated with the overall quality of life and all domains. Perceived satisfaction with the current household economic conditions always gives a good feeling. It is reflected in the present study. Foong *et al.* [30] assessed financial well-being, including a question about satisfaction with current economic conditions. They found a positive association between financial well-being and life satisfaction. One important finding is that household income was not associated with the overall quality of life or any quality-of-life domains. This finding suggested that others socio-economic factors are more important for the quality of life of women living in the haor basin.

### 3.3. Implications of the present study

The present study is linked to several sustainable development goals (SDGs) (i.e., Goal 1: no poverty and Goal 5: gender equity). This study finding would be helpful to achieve Target 2 and 3: Goal 1 as this study is informing about the quality of life of women living in Haor areas. This information would be helpful in implementing policies to reduce the national poverty level and ensure equal rights to economic resources in this area. As this study specifically focused on haor women, this study findings are also linked to Target 5 and 7: Goal 5. The findings of this study would be helpful in ensuring women equal rights to economic resources, access to ownership and control over land and other properties, financial services, and promoting gender equality and women empowerment. Overall, this study would be helpful to policymakers and other government stakeholders to prepare and implement policies to ensure more participation of Haor women in formal income-generating activities, reduce poverty, and improve quality of life.

## 4. CONCLUSION

This study assessed the quality of life of women living in Haor areas in Bangladesh and identified its predictors. Results showed that household income is lower than that reported in the HIES Survey 2016 for rural people in Bangladesh. One-third of women formally contributed to their household income only. Around half of them actively participated in the household decision-making process as they had importance and control over household economic decisions. Only 30% of the participants rated their quality of life as good or very good. Contribution to household income, satisfaction with the current household economic

condition, and savings were associated with the overall quality of life and four domains. This study finding provided in-depth information about the current psycho-socio-economic status of Haor women. This information would be very helpful to the Bangladesh government, non governmental organization or NGOs, and international organizations to know the current conditions. This information would be beneficial to design and implement plans to improve the vulnerable conditions of women living in Haor areas.

The present study has several limitations. The data were self-reported. Self-reported data might be subjected to desirability bias. Participants estimated the amount of household income and personal income. These were not the exact figure. Therefore, it is a possible source of error. Another limitation is representativeness. Although the simple random sample was utilized at the first stage of sample selection, the convenient sampling technique was utilized in the final stage. Therefore, the generalizability of this study may be limited to the areas where data was collected. Moreover, only women were the participants in this study. The present study findings are generalizable to women living in Haor Basin, Bangladesh only. Therefore, whether the findings are related to gender or specific cultures or not could not be concluded unless other male participants or participants from other cultures are pooled. Finally, Lower variabilities for physical and social domains contributed by studied independent variables indicates other important variables that would significantly associate with these domains of quality of life. Further studies would be designed to identify these variables and their association with quality of life and its domains.

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