

# PERCEPTION OF ENVIRONMENTAL DEGRADATION AND FAMILY SIZE

## A COMPARATIVE STUDY ON MARRIED MAN AND WOMEN IN (INDIGENOUS PEOPLE), BANGLADESH

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**Abstract:** In the study we try to understand and compare how the married man and women in the indigenous community (Khasia people), Bangladesh perceive the relation between family size and environmental degradation. The findings of the study show that people who think their local environment such as land productivity, water level and biodiversity are declining are more concerned about the family size and contraceptive use. Children in poor areas or forested areas are involved to collect fuel wood and water. Most the parents in the study area perceive an additional child as a helping hand in domestic works or fuel woods and water collection. The factors involved having additional children and subsequently negative effects on environment are low level of education, lack of employment opportunities and alternative sources of income and cultural belief. Socio-economic development of indigenous communities through education of women, participation to reproductive decision and access to contraception, and improvement of environment such as proper sanitation, clean drinking water, and environmental awareness should be considered to change the perception to a larger family size and excessive use natural resources.

**Keywords:** Gender preference, Environmental factors, Family size, Indigenous people, Perception, Socio-economic development

### I. INTRODUCTION

As a global phenomenon, population growth and environmental deterioration has become a new important focus in the public and ecological research studies [5]. Relationship between environmental degradation and choice of family size is complex and many claim that poor environmental conditions produce lower demand for children [1] and others say that fertility behaviour and perception of family size

might have impacts on environmental conditions [10], [2]. In developing countries, cultural values support high fertility and oppose to use of contraception by family members, and make worries about the health risks or side effects of contraception [3]. A large number of people create more demands for food, fresh water, timber, fibre and fuel [13]. 60% of the ecosystem services, the benefits people obtain from ecosystems are being degraded or used unsustainably [7].

Population growth poses a major problem for the exploitation of forest resources in Bangladesh. Salam and Noguchi [11] say that rural poor people, who live in forest areas, are the primary agent of environmental degradation since they use forests for agricultural land, fuel wood and for their subsistence. In fact, evidences show that women and children are primarily involved in many rural and subsistence based economies for collecting fuel wood, fodder and water, and for conducting much of the work on their family farms [4]. As people need water and they need to collect water from away, they may desire larger family sizes. They may not have perception that the non-availability of water in dry season is resulted from the activities linked to environmental degradation. If people think that resource collections are burdened now and collection time has increased due to environmental degradation, then they might perceive to reduce their desire to additional children and they will consider use of contraception positively. Nevertheless, poor people perceive children as an economic return in future, helping hand in domestic works and forest wood collectors. The majority in Bangladesh are illiterate and they do not have enough knowledge and awareness to environmental degradation, family size and contraceptive use. Along with illiteracy, cultural values and poverty also influence to desire more children.

In the study area-Lawachara National Park, indigenous people (Khasia) live within the forest area and protect trees for their livelihood, including selling betel leaf, collecting fuel wood, consuming and selling fruits from support trees [12]. Therefore, as indigenous people (Khasia) live and interact with the environment in Lawachara National Park, there might have more awareness to environmental degradation. If they perceive that environment (land productivity, water level and biodiversity) has declined than the previous years, they will perceive to lower their family size. The study on perception of family size and environmental degradation in indigenous people might help to explore and analyze the relation and provide important policy implications to upgrade the livelihood of indigenous people and the conservation of forest in developing countries like Bangladesh.

## II. MATERIALS AND METHODS

Populations living in Lawachara National Park, Sylhet in Bangladesh were selected in the study. Most Khasia villages are located in the Moulvibazar district and out of five upazilla in the Moulvibazar district, Kamalganj Upazila was selected. Out of the seven Khasia villages (Punjis) in Khamalghanj upazila, the two villages (Punjis) are inside the core area of the Lawachara National Park. One is called Lawachara Punji with 23 households and another is called Magurchara Punji with 40 households [8]. Lawachara village (Khasia Punji) in Khamalghanj Upazila was selected purposively in the study. From 23 households in Lawachara village (Khasia Punji), information was gathered from 23 married man and 27 married women randomly living in the households in the study area.

The primary sources of data collection were the local peoples in the Khasia village (Punji) through intensive field work and the secondary sources of information was based on using 'Google Scholar' search engine to find relevant literature. In the study, data were collected through an individual level interview of the married men and women using a questionnaire. Respondents who were married at the time of the survey and who were living in households in Khasia villages were included purposively in the field survey. To comprehend the perception level of respondents about family size and environmental degradation, in addition, focus group discussions were conducted with seven married males and eight married females separately, and they were also included in the individual level survey. In addition, to comprehend and compare the perception of family size and environmental degradation in indigenous peoples, how married males as a group and married women as a group perceived environmental degradation and family size in their daily lives were discussed among the participants.

There was also a discussion on how focus group members think about the contraceptive use and son preferences, and how they relate family size, contraceptive use and son preferences with environmental degradation

The individual level measures included the informant's perceptions of environmental degradation over the last five years. Respondents were asked their opinions about declining productivity, water level and biodiversity in comparison to the last five years in the National Park. If respondents agreed that the environmental factors such as land productivity, water quality and biodiversity have declined, what changes they found and what they thought about the changes were included in the study.

Moreover, opinions were collected about respondent's preference for large family size and son preference to understand the relation with environmental degradation in the future in Lawachara National Park. If respondents perceive that the expectation of additional children and excessive son preference will degrade the environment, they will be positive in the use of contraception and control large family size. In addition, respondent's opinion was asked on contraceptive use that will reduce family size and, subsequently, environmental degradation in the area. On the other hand, if respondents believed that son preference and expectation of additional children does not influence the environment, why they preferred a son or an additional child was asked.

## III. RESULTS AND DISCUSSION

### 3.1 Perception to Environmental and Demographic Factors

#### 3.1.1 Perception about Changes of Land Productivity

Land productivity is an important factor to understand environmental degradation. High population and unsustainable access to land use results in declining land productivity and further environmental degradation. Respondents were asked to give opinion on the statement that land productivity has declined in the study area. 36%, 30% and 16% of respondents had an opinion of medium, low and high levels of land productivity changes, respectively. The other 12% and 6% had opinions of very low and very high levels of land productivity changes in the study area. Most importantly, 18% and 22% of female respondents had an opinion of low and medium whereas 12% and 14% of male respondents had the same opinion, respectively. This indicates that female respondents are more concerned about land productivity changes in the sampled population in the study area.

TABLE I:  
PERCENTAGE DISTRIBUTION OF RESPONDENTS BY PERCEPTION OF LAND PRODUCTIVITY

Response	Sex of Respondents		Total
	Male	Female	
Very low	3 (6%)	3 (6%)	6 (12%)
Low	6 (12%)	9 (18%)	15 (30%)
Medium	7 (14%)	11 (22%)	18 (36%)
High	5 (10%)	3 (6%)	8 (16%)
Very High	2 (4%)	1 (2%)	3 (6%)
Total	23 (46%)	27 (54%)	50 (100%)

3.1.2 Opinions to Changes of Land Productivity

Respondents were asked the reasons that are most important for declining land productivity. From the respondent’s own observations, the maximum respondents (34%) said excessive cutting of trees and 26% said excessive cultivation on the same land. 18% thought it was more use of chemical fertilizers in the study area. The other 22% of respondents only observed declining land productivity by decreasing fruit production now more than in previous years and they were not more concerned about changes of land productivity in the study area, though they live in forest areas. The percent distribution in Table -2 shows that female respondents had more knowledge about land productivity than male. 18% and 10% of female respondents had as an opinion that the cutting of trees and use of chemicals was important. On the other side, 16% and 8% had the opinion for the same reasons for declining land productivity.

TABLE II:  
PERCENTAGE BY OPINIONS TO LAND PRODUCTIVITY CHANGES

Opinions	Sex of Respondents		Total
	Male	Female	
Excessive cutting of trees	8 (16%)	9 (18%)	17 (34%)
More use of chemical fertilizers	4 (8%)	5 (10%)	9 (18%)
Excessive cultivation in a same land	5(10%)	8 (16%)	13 (26%)
Decreased production of fruit	6 (12%)	5 (10%)	11 (22%)
Total	23 (46%)	27 (54%)	50 (100%)

3.1.3 Perception about Changes of Water Level

A change of water level is a significant indicator of environmental degradation. Respondents were asked to provide an opinion about water level changes in the study area. They were asked to respond to the statement that water level has declined more now than in previous years. According to Table- 3, 30%, 26% and 22% of respondents had the opinion of low, medium and high water level changes, respectively. The other

16% and 6% of respondents had the opinion of very low and very high levels of water changes. In general, Table- 13 shows that female respondents had more response as to water level changes in comparison to male respondents in the sampled population.

TABLE III:  
PERCENTAGE BY PERCEPTION OF WATER LEVEL CHANGES

Response	Sex of Respondents		Total
	Male	Female	
Very low	3 (6%)	5 (10%)	8 (16%)
Low	7 (14%)	8 (16%)	15 (30%)
Medium	6 (12%)	7 (14%)	13 (26%)
High	5 (10%)	6 (12%)	11 (22%)
Very High	2 (4%)	1 (2%)	3 (6%)
Total	23 (46%)	27 (54%)	50 (100%)

3.1.4 Opinions to Changes of Water Level

Respondents were asked to give opinions from their own experience about changes of water level that indicates environmental degradation as a particular criterion. The opinions respondents provided were sorted with priority and importance. Table- 4 shows that 42% of respondents had the opinion of an increased time of water collection, about 30-50 minutes more than previous times. They said that they need to go far away from their home to collect water and the trends have increased gradually through the years. Another important opinion was that respondents (36%) said the water level had declined around 20-30 feet. They understood this from tube-wells where the level had gone down compared to previous times. The other 22% of respondents had the opinion that water collection by outsiders decreased the water level in the study area. According to Table- 4, the maximum number of opinions came from female respondents about water level decreases because most of the females in the study area were involved with water collection and they understood the changes from their own experience.

TABLE IV:  
PERCENTAGE BY OPINIONS TO WATER LEVEL CHANGES

Opinions	Sex of Respondents		Total
	Male	Female	
Increased time for water collection (nearly 30-50 minutes)	9 (18%)	12 (24%)	21 (42%)
Water layer declined 20-30 feet (for tube-wells)	9 (18%)	9 (18%)	18 (36%)
Outsiders collect water from the Park	5 (10%)	6 (12%)	13 (22%)
Total	23 (46%)	27 (54%)	50 (100%)

3.1.5 Perception about Changes of Biodiversity

Biodiversity is currently a very important concept and, many researchers and policy makers are involved with it as a burning issue. In the sampled population, respondents were asked to provide

opinion on biodiversity decline in the study area. Table -5 shows that 28%, 26% and 24% of respondents had opinions of low, medium and high to biodiversity decline in the study area, respectively. The other 12% and 10% had opinions of very low and very high concerning biodiversity decline compared to previous years in the respondent's living area. The percentage distribution as indicated in Table- 5 shows that 16% and 14% of female respondents had more responses and understanding of biodiversity decline than male respondents, comparing with 10% male respondents with medium and high levels of responses. This indicates that female respondents are more concerned about environmental changes.

TABLE V:  
PERCENTAGE BY PERCEPTION TO BIODIVERSITY CHANGES

Response	Sex of Respondents		Total
	Male	Female	
Very low	4 (8%)	2 (4%)	6 (12%)
Low	8 (16%)	6 (12%)	14 (28%)
Medium	5 (10%)	8 (16%)	13 (26%)
High	5 (10%)	7(14%)	12 (24%)
Very High	1 (2%)	4 (8%)	5 (10%)
Total	23 (46%)	27 (54%)	50 (100%)

### 3.1.6 Opinions to Changes of Biodiversity

During the field survey, respondents were asked to explain their responses to different levels of responses from very low to very high. The opinions of respondents from their own experience and understanding are summarized in Table -6. About 42% of respondents had opinions of increased deforestation and stealing of trees by outsiders causing a decline in biodiversity and 32% had opinions from their own observation of the disappearance of different kinds of birds that were present before. The rest (26%) said that NGOs (Nishorga) that worked in the Park and protected resources from illegal operations like stealing and cutting have now closed and the deforestation trend has increased, according to the field survey. According to respondents, there is an increased number of birds and monkeys recently because of burning of the nearest forest of the study area. The data shows that 28% of female respondents told about deforestation and stealing of forest resources from the study area (Lawachora National Park) whereas only 14% of male respondents had the same opinion of biodiversity decline. Information as indicated in Table -6 shows that females had more interaction with nature and they were more concerned about the environment from their own experiences. Nevertheless, most of them had only a few years of schooling.

TABLE VI:  
PERCENTAGE BY OPINIONS TO CHANGES OF BIODIVERSITY

Opinions	Sex of Respondents		Total
	Male	Female	
Increased cutting of trees and stealing of trees	7 (14%)	14 (28%)	21 (42%)
Disappearing varieties of birds	9 (18%)	7 (14%)	16 (32%)
Park was protected by Nishorga(NGOs) but now closed	7 (14%)	6 (12%)	13 (26%)
Total	23 (46%)	27 (54%)	50 (100%)

### 3.1.7 Perception about Early Marriage regarding Environmental Degradation

In the field survey, interviewers explained that early marriage increases the number of children. Furthermore, there will be a large population and this will impact the environment. Respondent's opinions to these issues are showed in Table -7. 32%, 28% and 18% of respondents had high, medium and low levels of opinion on the relation between early marriage and environmental degradation. The other 16% and 6% of respondents had very high and very low levels of reaction to the discussed topic. Regarding the high and very low levels of reaction provided by respondents, Table -7 shows that 18% and 10% of female respondents responded to the levels whereas 14% and 6% of male respondents had the same opinions. This indicates that females had more understanding about the relation between early marriage and environmental degradation.

TABLE VII:  
PERCENTAGE BY PERCEPTION OF EARLY MARRIAGE AND ENVIRONMENTAL DEGRADATION

Response	Sex of Respondents		Total
	Male	Female	
Very low	2 (4%)	1 (2%)	3 (6%)
Low	3 (6%)	6 (12%)	9 (18%)
Medium	8 (16%)	6 (12%)	14 (28%)
High	7 (14%)	9 (18%)	16 (32%)
Very High	3 (6%)	5 (10%)	8 (16%)
Total	23 (46%)	27 (54%)	50 (100%)

### 3.1.8 Opinions to Early Marriage and Environmental Degradation

During the field survey, interviewers asked respondents to explain why they reacted to levels of very low to very high. Their responses are shown in Table -8. 32% of respondents said that early marriage increases the number of children. It has an increased burden on family maintenance and impacts the environment, where 18% male of and 14% of female respondents had this opinion. This indicates that males are more concerned about

the issue because they have to maintain family expenditures and in this regard, they considered the environment with respect to decreased betel leaf production and subsequently their income. 20% of respondents had the opinion that an increased family size requires more space and consequently is responsible for deforestation and shortage of cultivated land. Regarding this opinion, 14% of male and 6% of female respondents reacted. The other 20% of respondents said that early marriage reduces female health quality and problems during complexities whereas 16% of female respondents and only 4% of male respondents had this reaction, indicating that female respondents are more concerned about the matter than male respondents and female respondents had problems due to early marriages, which discussed from their own experiences. The other 12% told that people are not well prepared for family life and do not have environmental knowledge, although in the study area, respondent' years of schooling were very low. 16% of respondents had the opinion that Government has laws for daughters not to be married before 18 years of age.

TABLE VIII:  
PERCENTAGE BY OPINIONS TO EARLY MARRIAGE AND ENVIRONMENTAL DEGRADATION

Opinions	Sex of Respondents		Total
	Male	Female	
Need enough space for many children and consequently deforestation and shortage of cultivated land	7 (14%)	3 (6%)	10 (20%)
Increased burden of family maintenance and impact on environment	9 (18%)	7 (14%)	16 (32%)
Decrease female health quality and problems during pregnancy	2 (4%)	8 (16%)	10 (20%)
Not well prepared for family life and lack of environmental knowledge	2 (4%)	4 (8%)	6 (12%)
law does not permit marriage for female before 18 years of their age	3 (6%)	5 (10%)	8 (16%)
Total	23 (46%)	27 (54%)	50 (100%)

3.1.9 Perception about Contraceptive Use and Environmental Degradation

Interviewers discussed contraceptive use and how the sampled respondents relate contraception to environmental degradation. Table -9 shows that 36% of respondents (16% male and 20% female) had a medium level of reaction and 26% of respondents (14% male and 12% female) had a high level of reaction to contraception and environmental degradation. In addition, 18% of respondents (6% male and 12% female) also had very high levels of reaction and the other 6% of respondents (4% male and 2% female) had a very low level of reaction relating contraceptive use and environmental degradation.

TABLE IX:  
PERCENTAGE DISTRIBUTION BY PERCEPTION OF CONTRACEPTIVE USE

Response	Sex of Respondents		Total
	Male	Female	
Very low	2 (4%)	1 (2%)	3 (6%)
Low	3 (6%)	6 (12%)	9 (18%)
Medium	8 (16%)	10 (20%)	18 (36%)
High	7 (14%)	4 (8%)	11 (22%)
Very High	3 (6%)	6 (12%)	9 (18%)
Total	23 (46%)	27 (54%)	50 (100%)

3.1.10 Opinions of Contraceptive Use and Environmental Degradation

The information regarding contraceptive use and environmental degradation was collected during the field survey and is represented in Table -10. In the sampled population, 38% of respondents (20% male and 18% female) said that children are gifts from God and resources are made by God for them. This indicates that religion is an important factor concerning contraception use. The most important observation was that the respondents who were old and had very low levels of education were very dogmatic to religious faith and they held that God created the world and God knows how to feed the many children. These reasons are also passed to the next generation by older individuals and the indigenous people only interact and share culture among each other. 18% of respondents (8% male and 10% female) said that they can reduce family size by contraception, though there is no health centre in the sampled population living area. They are in favour of sending their children to school have more knowledge about environment, and learn environmental friendly behaviour. In addition, 14% of respondents (6% male and 8% female) said that family planning reduces family size and impacts the environment through less consumption of natural resources. During the survey, 20% of respondents (12% male and 8% female) had opinions that a small family size is good for maintenance, but they did not say anything about the impacts of larger family sizes on the environment. The most important information was that 10% of female respondents said that they can avoid pregnancy naturally and that they can understand risky times and avoid pregnancy. But they did not say more about how they understand this because of cultural barriers of discussing the matter with others, though female interviewers discussed the matter with the respondents. The result of a Chi-Square test (Chi-Square=.003 with 4 degree of freedom at P<.05) shows that respondents who use contraceptive do not have any perception about land productivity. This means that the sampled population does not

have a perception regarding the issue that contraceptive use reduces the family size and gives less impact on land productivity.

TABLE X:  
PERCENTAGE DISTRIBUTION BY OPINIONS TO CONTRACEPTIVE USE AND ENVIRONMENTAL DEGRADATION

Response	Sex of Respondents		Total
	Male	Female	
Provide more time to make quality children than quantity and further environmental understanding	4 (8%)	5 (10%)	9 (18%)
Naturally(Basically female) avoid pregnancy and understand risk time from experience	0 (0%)	5 (10%)	5 (10%)
Children are gift of God and resources are made for them	10 (20%)	9 (18%)	19 (38%)
Family planning can reduce fertility and less impacts on environment in future	3 (6%)	4 (8%)	7 (14%)
Small family size is good for maintenance	6 (12%)	4 (8%)	10 (20%)
Total	23 (46%)	27 (54%)	50 (100%)

### 3.1.11 Perception of Son Preference and Environmental Degradation

If any community or culture gives more preference to having a son, there is the chance of increasing family size by expecting to have a son in further reproduction. If any culture supports this, subsequently it will have more impact on the environment, accommodating more people to get food and maintain subsistence. Respondents were asked to react on various levels of very low to very high and the responses are presented in Table- 11. Table -11 shows that 32% of respondents (12% male and 20% female) and 28% of respondents (16% male and 12% female) had opinions at levels of low or medium. Another 16% of respondents (4% male and 12% female), 10% of respondents (6% male and 4% female) and 14% of respondents (8% male and 6% female) had opinions at levels of high, very high and very low. Table-11 represents that most of the male and female respondents had relatively the same reaction to different levels. This means that there is no preference to having a son or daughter in the sampled population.

TABLE XI:  
PERCENTAGE DISTRIBUTION BY PERCEPTION OF SON PREFERENCE AND ENVIRONMENTAL DEGRADATION

Response	Sex of Respondents		Total
	Male	Female	
Very low	4 (8%)	3 (6%)	7 (14%)
Low	6 (12%)	10 (20%)	16 (32%)
Medium	8 (16%)	6 (12%)	14 (28%)
High	2 (4%)	6 (12%)	8 (16%)
Very High	3 (6%)	2 (4%)	5 (10%)

Total	23 (46%)	27 (54%)	50 (100%)
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### 3.1.12 Opinions to Son Preference and Environmental Degradation

Respondents were asked to give their opinion regarding son preference and environmental degradation. Table-12 shows that the maximum respondents (36%) said that sons and daughters are equally preferred. During the field survey, it was observed that female children were involved in preparing and processing betel leaf to sell and supply to markets. 18% of respondents (6% male and 12% female) said that daughter preference was for helping in domestic work. The most important matter was that 18% of respondents (10% male and 8% female) said that matrilineal systems of families is changing into a patrilineal system. According to respondents, previously a husband could have lived with a wife in the wife's parent's house, but now the wife lives with the husband in the husband's parent's house. 10% said that sons are uncertain and make a separate family after marriage. This indicates that there is also the tendency to change a joint family to a nuclear type of family. Another 10% said that the Government encourages female children to go to school. According to respondents, around the study area, there are no good high schools even primary school. The most important thing is that there was no opinion or reason relating excessive son preference and environmental degradation. The result of Chi-Square test (Chi-Square=.061 with 4 degree of freedom at P<.05) shows that there is significant relation between son preference and environmental degradation.

TABLE XII:  
PERCENTAGE DISTRIBUTION OF BY OPINIONS TO SON PREFERENCE AND ENVIRONMENTAL DEGRADATION

Response	Sex of Respondents		Total
	Male	Female	
Prefer daughter to help in domestic work and old age	3 (6%)	6 (12%)	9 (18%)
Matrilineal family but now changes to patrilineal	5 (10%)	4 (8%)	9 (18%)
Son and daughter are equally preferred	9 (18%)	9 (18%)	18 (36%)
Son can go out and collect fuel woods	2 (4%)	2 (4%)	4 (8%)
Government encourages female to go to school	3 (6%)	2 (4%)	5 (10%)
Sons are uncertain and make separate family after marriage	1 (2%)	4 (8%)	5 (10%)
Total	23 (46%)	27 (54%)	50 (100%)

### 3.2 Relation between Family Size and Environmental Factors

Analyses of the study population's perception were based on the two factors regarding environmental degradation and family size. First, a set of

statements about perception of environmental degradation and family size were interpreted to the respondents and they were requested to reveal their opinions on each of the statements. The statements that were asked to respondents to get responses were:

- 1) Land productivity has declined more now than five years ago in Lawachara National Park.
- 2) Water level has declined now than five years ago in Lawachara National Park.
- 3) Biodiversity has declined more now than five years ago in Lawachara National Park.
- 4) Early marriage tends to increase family size and further risk degradation of the environment.
- 5) Family planning and contraceptive use can reduce family size and further pressure the environment.
- 6) Excessive son preferences increase family size and further pressure the environment.

In the second step, respondents were asked to notify the relative importance of each statement on a five- point scale when they agreed on the statements. A value was assigned, e.g. 1 for very low, 2 for low, 3 for medium, 4 for high and 5 for very high importance. The ranks were then converted into weighted scores. A weight was assigned for every rank, such as .2 for rank 1, .4 for rank 2, .6 for rank 3, .8 for rank 4 and 1 for the highest rank of 5, respectively. Afterwards, the overall Environmental Awareness Index (EAI) for each respondent was computed by summing up the weighted scores of each statement divided by the total number of statements. A higher awareness index reflected the stronger indigenous people’s perception of family size and environmental degradation [9]. To compare perception between

married men and women among indigenous peoples in Lawachara National Park, the researcher constructed an awareness index separately for men and women.

Figure -1 and 2 show the relation between number of children and environmental factors (land productivity, water level and biodiversity) in terms of male and female respondents. Figure -1 and 2 show that the respondent’s Awareness Index (AI) on a 0-5 level scale regarding land productivity decline, water level decline and biodiversity loss with the actual number of children of respondents at every individual level. The figures indicate that the respondent who has a large number of children, has a very low level of awareness. For instance, respondent number -3 in Figure -1 and respondent number -15 in Figure -2 show that they have a very low level of awareness index while having a large family size (number of children is -7). The most important factors influencing a large family size and low level of awareness to environmental factors are low level of socio-economic conditions, such as lack of educational facilities, absence of alternative sources of income and employment opportunities outside the forest area, and lack of health facilities and media facilities in the indigenous community. On the other side, the respondents who have a relatively low number of children, have relatively a higher level of awareness to environmental factors. They find their environmental changes such as -productivity decline, water level decline and biodiversity loss from their own observation and experiences during the last years, even though they have low level of years of schooling. But they do not relate to the impact of larger family size on environment.

FIGURE I:  
RELATIONSHIP BETWEEN FAMILY SIZE AND ENVIRONMENT (MALE RESPONDENTS)

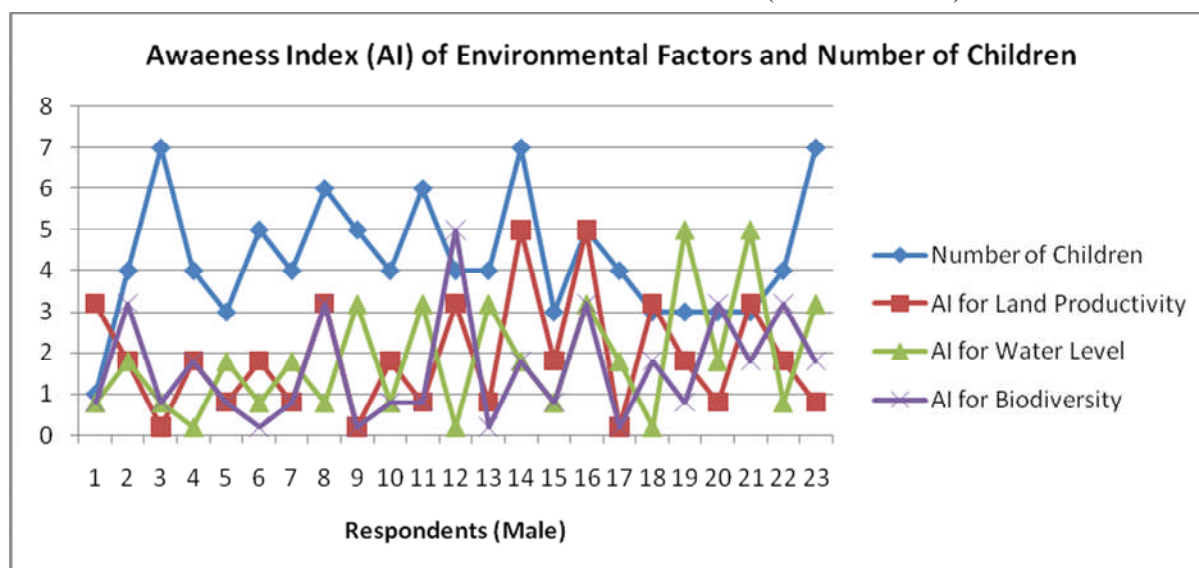
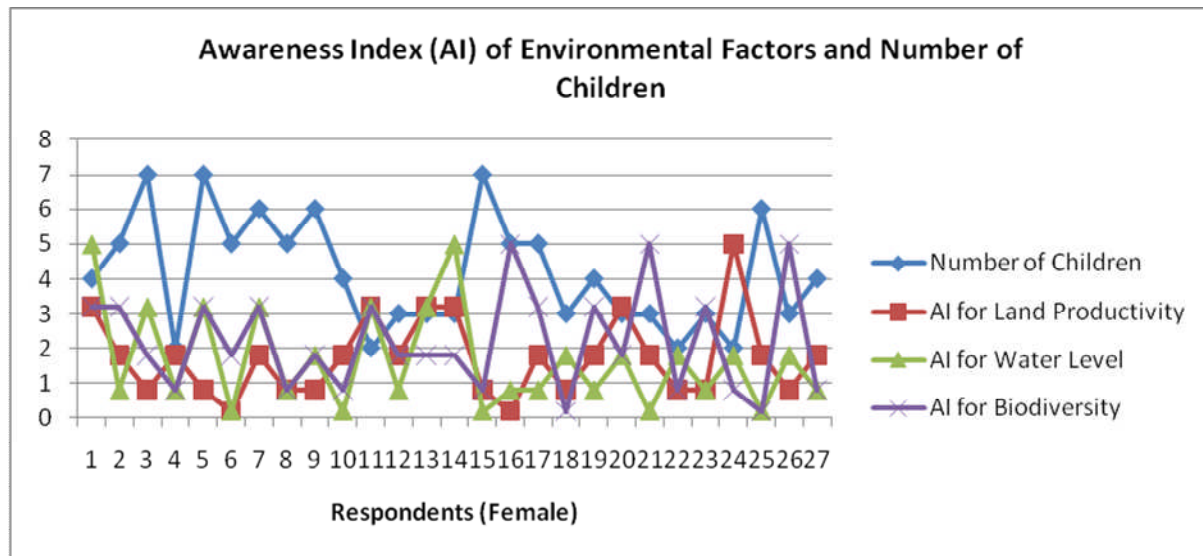


FIGURE II:  
RELATIONSHIP BETWEEN FAMILY SIZE AND ENVIRONMENT (FEMALE RESPONDENTS)



#### IV. CONCLUSION AND RECOMMENDATIONS

The issue of population and environment as interrelated phenomena is being discussed among researchers and policy makers. Population growth is an important factor hindering development and carries much negative impact on the environment in many developing countries. Environmental degradation, as a common impact in developing countries like Bangladesh, is a result of high population pressure. People's expectation for larger family sizes is constructed by socio-economic and cultural factors like income, education, occupation, religious belief, and availability and access to contraceptive use. Perception of environmental degradation and family comes from socio-economic, and cultural processes and levels of technological development of a country or community. People who live in a forest area or rural area in developing countries basically depend on environmental resources for their livelihood and subsistence. The people have regular interaction with the environment and understand changes of environmental factors in regards to land productivity, water level and biodiversity. But the questions of what changes are observed by people living in forest areas and what level of understanding they have and how they perceive environmental degradation related to family size still need to be studied, not only in indigenous communities also in common people.

In conclusion, to some extent, a majority of the studied people understood about land productivity decline, water level decline and biodiversity decline, but they did not have any more concern about family size and contraceptive use relating to environmental issues. In this case religion and

strong cultural beliefs influenced them not to use contraception or family planning. They agreed on the environmental declines from their own observation. They did not have any education or training programs about the decline of environmental conditions or socio-economic problems (poverty, low access to education and high income generating sources) resulting from larger family size. In particular, they were more concerned about early marriage and son preference but they had little understanding how the factors increased family size and consequently, environmental degradation.

On the other side, Filmer and Pritchett [6] in their study found vicious cycle of poor people and poor environment. Due to environmental deterioration, land productivity, water level and biodiversity decline, people will either clear forest areas or intensify cultivation [6]. And that requires larger labour forces to do extra work and, then people will demand additional children [6]. The present study found that fuel wood and water collection time increased in the community but they did not have a significantly positive attitude to contraceptive use. Inversely they had large numbers of children for helping in betel leaf cultivation and processing, and preferred a large number of children because of gradual deterioration of environmental conditions. Betel leaf cultivation and sometimes fruit selling were the only sources of income and subsistence in the community. As a result, they had more children and this brought impact to the environment and produced poor socioeconomic conditions. So it was like a vicious cycle of environmental degradation and larger family size in the community.



In developing countries, it is important to establish a good governance system and ensure a sustainable management of the protected areas in Bangladesh by promoting and implementing the forest co-management model. There is also important to bring changes in environmental policies in favour of co-management, strengthen biodiversity protection, improvement of livelihood at local level and global level in order to reduce excessive dependence on the forest resources. Indigenous peoples who live in forest areas and depend on environmental resources are required to have alternative sources of income and employment opportunities to reduce environmental degradation. Involvement of indigenous people in national educational processes and encouragement to participate should be followed by specific strategies and policies by the government in Bangladesh. Finally, the government in Bangladesh needs to have long term policies to integrate and empower indigenous people in general, in social, economic and political process at the national level.

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