Perception, fertility preference and climate change event (flood) in a vulnerable area in Bangladesh

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1. Introduction

Bangladesh as the most vulnerable countries for climate change has already been affected by climate change impacts. IPCC estimates that regional frequencies of tropical cyclones may change and the peak intensity may increase by 5% to 10% and precipitation rates may increase by 20% to 30%, sea level rise will range at 30-100 cm by 2100 in Bangladesh, whereas global average will range 9-88 cm (IPCC, 2001).

Population is increasing at alarming rate in the coastal areas in Bangladesh and the population is expected to increase from 36.8 million in 2001 to 43.9 million in 2015 and to 60.8 million in 2030 (Ahmad, 2004). According to IPCC (2001), 20% and 40% of the world population live within 30 kilometers and 100 kilometers of the coast respectively. Population growth in the coastal areas is higher than the national growth and it was projected that by 2020, the coastal population will be 44 million from 39 million in 2010 which indicates that more people will be landless and more people will migrate from coastal rural to coastal urban for their livelihood earning (PDO-ICZMP, 2003) and more people will be exposed to climate change risks.

Climate change perception in coastal zone in Bangladesh reports that women are more concerned about the issues of potable water and sanitation while men are more concerned about cyclone, declining resources and lack of capital. More concerned issues among men are about lack of employment, declining resources and cyclones. More concerned issues among women are about salinity and non-availability of drinking water and lack of cash capital during crisis period coming from natural hazards and the issues are considered by the coastal people as the main vulnerabilities (PDO-ICZMP, 2002b). Hasan and Akhter (2011) show that people who are having formal education, media access, personal or family experiences of environmental problems are more likely to be concerned about environment and climate change, and they are more likely to perceive environmental and climate change impacts on livelihoods, subsistence, and even the risk of loss of life. They also show that there is a relationship between peoples' observation, experience in changing weather pattern, natural disasters and awareness on climate change and they suggest considering local people's experiences, perception, observations into climate change adaptation and mitigation strategies.

Jiang and Hardee (2011) mention that climate-related hazards (cyclones, droughts, floods, and landslides) largely concentrate in certain areas where poor people usually live and are largely at high risk for climate-related hazards. They argue that future climate change will increasingly hit poor people and high fertility rates and rapid population growth outpace the ability of a country to provide services such as schooling, employment opportunities and infrastructures. They suggested that population change and demographic factors (e.g. fertility, population growth rates, urbanization, and movement of people to marginal areas) should be

integrated into climate change policy and adaptation strategy. And achievement of future development goals should consider population policies and programs, and climate change policy and adaptation as interrelated issue for a more sustainable demographic future and minimizing climate change risks (Jiang and Hardee, 2011).

IOM (International Organization for Migration, Bangladesh, 2010) mentions that poor people usually lose their tiny agricultural land and their home due to floods, cyclones, soil erosion. As a result, they might think that migration can only be a possible response to adverse impacts of climate change and migration can help to reduce risks to lives, livelihoods and ecosystems. Reducing the loss, raising public awareness among vulnerable people for climate change adaptation is a big challenge to policy makers and any government (Weingart et al., 2000). Bord et al., (1998) illustrated that people who are aware of the adverse impacts of climate change are more likely to take personal initiatives and support government initiatives during natural hazards (cyclones, floods, salinity, erosion and drought) in which media's roles on climate change issues (e.g. adaptation and mitigation, response and preparedness to natural hazards, raising environmental awareness) are very important (Mazur and Lee, 1993), since media in vulnerable countries can significantly inform and mobilize local people to climate change impacts (Udwala, 2007).

The present study develops a conceptual framework and causal mechanism showing how fertility preference, demographic factors, socio-economic and culture, environmental conditions and climate change are interrelated. Socio-economic and cultural factors influence demographic factors. If socio-economic status of an individual is high, then the individual may follow modern values, and the individual will be more rational and aware in consideration of fertility decisions. Individual with relatively high socio-economic status may reduce fertility preference. Socio-economic and cultural factors of a society strongly shape an individual to perceive the impacts of a more preference to fertility on environmental conditions and climate change. However, people's level of awareness to climate change impacts might highly be influenced by socio-economic and culture. Perception among people living more close to coast or low lying areas might be different than people living far from coast or low-lying areas. Along with people perception and experiences about climate change impacts and changes into environmental conditions, socio-economic conditions influence people level of environmental/climate change awareness and reduction of high preference to fertility.

2. **Materials and methods:**

The research will be conducted on the rural people who live in mostly vulnerable area for climate change impacts in Bangladesh. The study includes a village named Sharatpur out of 165 villages in Jamalgonj Upazila in Sunamganj District as a most vulnerable floodplains area (BBS, 1991). A village named Sharatpur from Sunamganj district in Sylhet Division is selected, since the district is mostly affected by flooding. And in the study, people living in the Sharatpur included as primary sources of collecting relevant information. And the study included 158 respondents for collecting information.

In the study, relevant information was collected through an individual level in-depth interview and questionnaire survey by targeting married men and women' and unmarried with a discussion regarding relation between climate change impacts and fertility preference for an understanding of factors involved with fertility behavior in the most vulnerable areas in Bangladesh. Information regarding fertility aspects and socio-economic and culture, and environmental conditions was collected through using a structured/unstructured questionnaire and the questionnaire survey was conducted through a set of close-ended and open-ended questions. The study included a few opinion questions and statements to respondents and it included their opinions and reactions based on different environmental/climate change, vulnerability and natural disasters and fertility issues. And the respondent's reactions, opinions and reasons regarding climate change impacts and fertility preference was shown how they perceive and how they relate adverse impacts of climate change on their fertility decision and preference to addition children.

The study will summarize collected information and use descriptive statistics-frequency distribution, central tendency (mean, medium, and mode), and dispersion (standard deviation, variation and range). Though description of variables cannot generalize a large population, but information about variables such as demographic, socio-economic and culture, and environmental conditions/climate change impacts will be summarized and tabulated. Reduction of variables into a factor and finding relationship between variables, the study will use factor analysis (Thurstone, 1931) and the study uses principal component analysis to get the influential factors related with climate change and fertility preference as well.

Since the study includes two villages from two districts in Bangladesh, t-test and one-way ANOVA test will show differences and comparisons between the two selected villages about perception of environmental conditions/climate change and fertility preference. For the opinion questions, the study will justify hypotheses for the following answer of the respondents-agree or disagree and yes or no by a contingency table with Chi-square test.

3. Results and Discussions

3.1 Gender and perception to a large family size during flood period

Respondents were asked to say about their preference to a large family size during flood and whether a large family size is advantageous to tackle the impacts of climate change event especially the flood or not. From field study, it was found that 84.6 percent of them do not think that a large family size is advantageous during flood period or immediate after the flood for recovering damages. 84.6 percent of respondents who do not think that a large family size is advantageous include 32.69 percent male and 51.92 percent female. Only 15.4 percent of total respondents think that a large family size is advantageous and it helps to tackle the impacts of flood. And the respondents who think a large family size is advantageous during flood periods include 5.77 percent male and 9.63 percent female. And **Table-1** shows that most of the respondents (84.6 percent) do not believe that a

large family size is advantageous in which 56 percent of total respondents mention that a large family size is difficult to manage during flood period which indicates that finding a place to stay and getting food at subsistence level is difficult during flood for the people living in flood affected areas.

Table-1 Opinions to a large family size during flood period

Response	Reasons	Percent	Total (percent)
No	Difficult to manage food and accommodation	56.0	84.6
	Difficult to work and earn money for subsistence	8.8	
	Difficult to move in a safe place	16.8	
	All the above	18.4	
	Total	84.6	
Yes	All can help to carry things in a safe place during flood	15.4	15.4
	Total	15.4	
Total			100

Source: Field survey, 2012

The respondents who do not think that a large family is not advantageous mention that if there is a large family size, it can help to transfer important belongings in a safe place and all of the members in a big family can tackle difficulties within a short time and they can distribute the total work and labour to all members during flood periods. And the respondents who believe that a large family size is advantageous include 31.82 percent male and 68.18 percent female. On the other hand, the respondents (66 percent) who do not think that a large family size is important during flood periods mention that it is very difficult to manage food and accommodation for a large family and it includes 23.2 percent male and 32.8 percent female. And the respondents (8.8 percent) mention that it is very difficult to work and earn money for subsistence during flood and it includes 4 percent male and 4.8 percent female. And 16.8 percent respondents think that if there is a large family size it will be difficult to move bringing all family members and all important belongings in a safe place and it includes 6.4 percent male and 10.4 percent female. Whereas 18.4 percent respondents mention about the difficulties such as managing food and accommodation, doing work and earn money for their subsistence, and moving in a safe place and the respondents include 4.8 percent male and 13.6 percent female which shows in **Table-2**. **Table-2** shows that 61.6 percent male and 38.4 percent do not think that a large family size can help and is beneficial during flood period. And it indicates that female living in the flood affected areas usually face the difficulties and they understand the impacts of flood and difficulties to tackle than male during flood period, although the present study includes 98 female respondents (68 percent) and 60 male respondents (32 percent).

Table-2 Not advantageous a large family size during flood period

Reasons	No (percent)		Total (percent)
	Male	Female	
Difficult to manage food and accommodation	23.2	32.8	66
Difficult to work and earn money for subsistence	4	4.8	8.8
Difficult to move in a safe place	6.4	10.4	16.8
All the above	4.8	13.6	18.4
Total	38.4	61.6	100

Source: Field survey, 2012

3.2 Marital status and perception to a large family size during flood period

The study includes total 158 respondents in which 24 respondents (15.2 percent) are unmarried and 134 respondents (84.8 percent) are married. The respondents were asked to provide their opinions on whether a large family size is advantageous or not. In the 134 married respondents and 24 unmarried respondents, 81.61 percent (113) and 79.17 percent (19) mentioned that a large family size is not advantageous during flood period respectively. And only 14.39 percent married and 20.83 percent unmarried said that a large family size can help to recover from the impacts of flood respectively.

Table-3 shows that 40.27 percent married respondents and 6.71 percent unmarried respondents said that a large family size makes difficulties to manage food and accommodation during flood respectively. Whereas 12.72 percent married respondents and 3.36 percent unmarried respondents emphasized to have a large family size during flood because if there is a large family, all can handle the difficulties and help to carry things and move others in a safe place. And the respondents provided their opinions and priority reasons based on their experiences during flood period, as the people live in a vulnerable area for flood and they usually face flood every year. According to the **Table-3**, most of the married and unmarried respondents think that if there is a large family, it is really difficult to manage food for all and a place to stay during flood periods in particular, since their own homes usually are affected by flood. And 71.81 percent married and 12.08 percent unmarried respondents told the reasons why they do not want to have a large family size during flood period and how a large family creates difficulties, but few of total respondents only said whether a large family size advantageous or not and they did not mention any reasons why they agree or not. **Below Table-3** shows that 83.89 percent respondents (married and unmarried) believe that a large family size is not advantageous and they mentioned the difficulties such as food crisis, lack of accommodation, no work and earning source and moving in a safe place during flood periods. Although, 11.41 percent married respondents and 4.03 percent unmarried respondents mentioned about the difficulties of managing food and accommodation, earning money and work outside and moving in a safe place, if there is a large family size. And field level survey found that most of the families in the study area have a large family and they have the real experiences because they live in vulnerable

area and face the impacts of natural disasters especially flood on their livelihood.

Table-3 Marital status and opinions to a large family size during flood period

Response	Reasons	Married (percent)	Unmarried (percent)	Total (percent)
No	Difficult to manage food and accommodation	40.27 (60)	6.71 (10)	83.89 (125)
	Difficult to work and earn money for subsistence	6.71 (10)	.67 (1)	
	Difficult to move in a safe place	13.42 (20)	.67 (1)	
	All the above	11.41 (17)	4.03 (6)	
	Total	71.81 (107)	12.08 (18)	
Yes	All can help to carry things in a safe place during flood periods	12.72 (19)	3.36 (5)	16.11 (24)
	Total	12.72 (19)	3.36 (5)	
Total		84.54 (126)	15.46 (23)	100.00 149

3.3 Age and perception to a large family size during flood period

Table-4 shows that 83.89 percent respondents of different age categories do not think that a large family is advantageous during flood. And the respondents (24.16 percent) from 16-25 age category and 18.12 percent from 26-35 age category mentioned that a large family is burden and it cannot help during flood periods in which 14.77 percent from the 16-25 age group and 11.41 percent from the 26-35 age group said that a large family is burden and it makes difficulties to manage food and accommodation. It means that most of young people living in the flood affected area do not think that a large family size is advantageous since they face floods every year and see the difficulties of a large family size. And those who are in middle age category such as 36-45 year and 46-55 years believed that a large family size is not advantageous during flood and they significantly said about the difficulties of food, accommodation, work and move in a safe place and the percentages are 4.69 and 4.3 respectively. On the other hand, 16.11 percent from all age categories said that if there is a large family, it can help to move in a safe place and they can allocate and divide the tasks to all during flood period and they can handle the difficulties as they have more labour force.

Table-4 shows that the respondents from the age category 36-45 years to 65+ year's category believed that a large family size is helpful and advantageous during flood compared with the young age category 16-25 and 26-35 years. From Table-04, it might be said that people who are young do not believe that a large family is advantageous compared with the old people who believe that large family is important during climate change events like flood as the study area is highly vulnerable for flood. And it indicates that people are in old age category especially 55+ years had a high preference to have a large family and more children compared with the

young age group 1625 and 26-35 years who do not consider that a large family size or having more children is advantageous during flood periods. Although the young age group did not complete their reproductive span but they are more aware about the negative impacts of a large family during flood periods and they might have the low preference to have more children for handling climate change events like flood and getting recovery from the impacts of flood and it also means that they do not prefer to have more children during flood periods as a large family is itself a problem during natural disasters like flood.

Table-4 Age and opinions to a large family size during flood period

Response	Reasons	16-25 years (percent)	26-35 years (percent)	36-45 years (percent)	46-55 years (percent)	56-65 years (percent)	65+ years (percent)	Total (percent)
No	Difficult to manage food and accommodation	14.77 (22)	11.41 (17)	8.05 (12)	6.04 (9)	3.36 (5)	3.36 (5)	83.89 (125)
	Difficult to work and earn money for subsistence	2.68 (4)	1.34 (2)	2.68 (4)	0	.67 (1)	0	
	Difficult to move in a safe place	2.68 (4)	5.37 (8)	4.03 (6)	.67 (1)	1.34 (2)	0	
	All the above	4.03 (6)	0	4.69 (7)	4.03 (6)	1.34 (2)	1.34 (2)	
	Total	24.16 (36)	18.12 (27)	19.46 (29)	10.74 (16)	6.71 (10)	4.68 (70	
Yes	All can help to carry things in a safe place during flood periods	4.69 (7)	2.04 (3)	2.68 (4)	3.36 (5)	1.34 (2)	2.04 (3)	16.11 (24)
	Total	4.69 (7)	2.04 (3)	2.68 (4)	3.36 (5)	1.34 (2)	2.04 (3)	
Total		28.86 (43)	20.13 (30)	22.15 (33)	14.09 (21)	8.05 (12)	6.71 (10)	100 (149)

Source: Field survey, 2012

3.4 Religion and perception to a large family size during flood period

Table-5 shows that respondents believe in different religion how they think to have a large family size during flood and whether having more children advantageous or not. 83.89 percent from Muslim and Hindu religion living in the study area which is most vulnerable for flood mentioned that a large family is advantageous whereas only 16.11 percent said that a large family size is beneficial during flood periods. Specifically 65.10 percent Muslim and 18.79 percent Hindu respondents do not believe in having a large family size for handing difficulties during flood periods, and 13.42 percent Muslim and 2.68 percent Hindu said to have a large family for getting help and facing natural disasters especially flood as they live in flood affected area (the study area) and they almost every year face the impacts of flood. Most respondents from the both religion (34.23 percent Muslim and 12.75 percent Hindu) said about food crisis and accommodation problem for a large family during

flood period.

Table-5 Religion and opinions to a large family size during flood period

Response	Reasons	Islam (percent)	Hindu (percent)	Total (percent)
No	Difficult to manage food and accommodation	34.23 (51)	12.75 (19)	83.89 (125)
	Difficult to work and earn money for subsistence	5.37 (8)	2.01 (3)	
	Difficult to move in a safe place	14.09 (21)	0	
	All the above	11.41 (17)	4.03 (6)	
	Total	65.10 (97)	18.79 (28)	
Yes	All can help to carry things in a safe place during flood periods	13.42 (20)	2.68 (4)	16.11 (24)
	Total	13.42 (20)	2.68 (4)	
Total		78.52 (117)	21.48 (32)	100 (149)

Source: Field survey, 2012

3.5 Occupation and perception to a large family size during flood period

Based on different occupations, **Table-6** shows that most of respondents included in the study are housewife, day labour, farmer, and small business. And housewife (40.89 percent), day labour (12.41 percent), farmer (9.49 percent) and small business (10.95 percent) said that a large family size is not advantageous during flood in which 22.63 percent housewife, 5.84 percent day labour, 4.8 percent farmer and 6.57 percent small businessmen provided importance on the difficulties of food and accommodation for a large family during flood. And 8.03 percent housewives mentioned about food crisis, accommodation problem, and work outside and move in a safe place since they cannot stay their own house and they have to leave their own house and flood comes and affects them suddenly. During that period they think that it's difficult to manage a large family size and housewives usually have to take roles their children who are early at their age for moving in a safe place and bringing the children and important belongings. However, 8.73 percent housewives also said that the benefits of a large family during crisis period as they can share burden and tasks during flood periods and suddenly flood affects on them and destroy their houses and crops as well. They feel that a large family size is important to tackle the crisis and they usually face the impacts of flood every year.

Table-6 Occupation and opinions to a large family size during flood period

Response	Reasons	Farmer (%)	Day labour (%)	Housewife (%)	Small business (%)	Small job (%)	Teacher (%)	Retired (%)	Student (%)
No	Difficult to manage food and accommodation	4.8 (6)	5.84 (8)	22.63 (31)	6.57 (9)	2.19 (3)	2.19 (3)	3.65 (5)	0
	Difficult to work and earn money for subsistence	1.46 (2)	2.92 (4)	2.92 (4)	1.46 (2)	0	0	0	0
	Difficult to move in a safe place	3.65 (5)	2.19 (3)	7.30 (10)	1.46 (2)	0	0	0	0
	All the above	0	1.46 (2)	8.03 (11)	1.46 (2)	.73 (1)	0	.73 (1)	1.46 (2)
	Total	9.49 (13)	12.41 (17)	40.89 (56)	10.95 (15)	2.92 (4)	2.19 (3)	4.34 (6)	1.46 (2)
Yes	All can help to carry things in a safe place during flood periods	1.46 (2)	.73 (1)	8.73 (13)	.73 (1)	0	0	.73 (1)	2.19 (3)
	Total	1.46 (2)	.73 (1)	8.73 (13)	.73 (1)	0	0	.73 (1)	2.19 (3)
Total		10.95 (15)	13.14 (18)	50.36 (69)	11.68 (16)	2.92 (4)	2.19 (3)	5.11 (7)	3.65 (5)

Source: Field survey, 2012

3.6 Years of schooling and perception to a large family size during flood period

Table-7 shows that 83.89 percent respondent do not think that a large family size is beneficial during flood whereas 16.11 percent think that a large family is important during flood. Table shows the respondents thinking based on their years of schooling meaning that if they have high years of schooling or low years of schooling how it influences on their thinking to family size preference and having a large family during natural disasters especially flood as they live in an area which is highly vulnerable for flood. Below table shows that most of the study respondents do not have any years of schooling (49.66 percent) and they mentioned that a large family size is not advantageous and among them 26.85 percent think that a large family increases food crisis and accommodation problem and they face difficulties to handle the problems as they have a large number of children. On the other hand, 10.07 percent respondents who have zero years of schooling mentioned about the positive sides of a large family size during flood. And the table shows that people living in highly vulnerable area for flood do not high years of schooling and maximum of the study respondents have zero years of schooling and a few have 1-5 years of schooling. Particularly the people who had 3-5 and 6-8 years of schooling mentioned about the problems of food, accommodation, income earning, and move in a safe place are 2.19 percent and 2.68 percent respectively. Although the people living in the flood affected area do not have years of

schooling, but the respondents had years of schooling significantly said about the negative impacts of a large family size during flood. Respondent are with zero years of schooling mentioned about the demerits of having large family size from their own experiences during flood periods.

Table-7 Years of schooling and opinions to a large family size during flood period

Response	Reasons	1-2 (%)	3-5 (%)	6-8 (%)	9-11 (%)	12-14 (%)	Nil (%)	Total (%)
No	Difficult to manage food and accommodation	1.46 (2)	8.72 (13)	3.65 (5)	6.04 (9)	.73 (1)	26.85 (40)	83.89 (125)
	Difficult to work and earn money for subsistence	.73 (1)	.73 (1)	2.68 (4)	0	0	3.65 (5)	
	Difficult to move in a safe place	1.46 (2)	1.46 (2)	2.19 (3)	.73 (1)	0	8.72 (13)	
	All the above	0	2.19 (3)	0	2.68 (4)	0	10.74 (16)	
	Total	3.65 (5)	12.75 (19)	8.05 (12)	9.40 (14)	.73 (1)	49.66 (74)	
Yes	All can help to carry things in a safe place during flood periods	0	1.46 (2)	2.68 (4)	2.19 (3)	0	10.07 (15)	16.11 (24)
	Total	0	1.46 (2)	2.68 (4)	2.19 (3)	0	10.07 (15)	
Total		3.65 (5)	14.09 (21)	10.74 (16)	11.41 (17)	.73 (1)	59.73 (89)	100 (149)

Source: Field survey, 2012

3.7 Actual number of children and perception to a large family size during flood period

Table-8 shows that respondents having different numbers of children said their opinions on the advantages or disadvantages of a large family size during flood and it shows that 84.62 percent mentioned the disadvantages of a large family size during flood and only 15.38 percent mentioned about the advantages of a large family during crisis. And 26.50 percent respondents with 1-2 children, 32.48 percent with 3-4 children, 15.38 percent with 5-6 children and 7.69 percent with 7-8 children talked about the how a large family is a burden during flood periods and 5.13 percent with 1-2 children and 4.27 percent with 3-4 children stated that a large family helps to bring important things and can share tasks by all during flood periods. Respondents (22.22 percent with 3-4 children, 8.55 with 5-6children and 2.56 percent with 7-8 children) believed that managing food and a place to stay is very difficult during flood period since they have a large number of children and they face difficulties and they are experienced with floods in different periods. Respondents (26.5 percent) with 1-2 children said the

demerits of a large family but 5.13 percent with 1-2 children said that they prefer to have a large family to tackle the impacts of climate change events especially flood. It indicates that respondents who completed their reproductive span (women since the study included more women) and do not expect to have additional children mentioned that a large family brings difficulties such as food, living place for the period as they cannot stay in their home, no scope for work and earn money for them since they faced the realities and almost they handles natural disasters especially the study place is highly vulnerable for flood. However respondents who expect to have additional children may prefer that a large family is important during flood as they do not complete their reproductive span (women since the study included more women).

Table-8 Actual number of children and opinions to a large family size during flood period

Response	Reasons	1-2 (%)	3-4 (%)	5-6 (%)	7-8 (%)	9-10 (%)	Total (%)
No	Difficult to manage food and accommodation	13.68 (16)	22.22 (26)	8.55 (10)	2.56 (3)	.85 (1)	84.62 (99)
	Difficult to work and earn money for subsistence	5.13 (6)	.85 (1)	.85 (1)	0	0	
	Difficult to move in a safe place	5.13 (6)	6.84 (8)	1.71 (2)	.85 (1)	.85 (1)	
	All the above	2.56 (3)	2.56 (3)	4.27 (5)	4.27 (5)	.85 (1)	
	Total	26.50 (31)	32.48 (38)	15.38 (18)	7.69 (9)	2.56 (3)	
Yes	All can help to carry things in a safe place during flood periods	5.13 (6)	4.27 (5)	3.42 (4)	2.56 (3)	0	15.38 (18)
	Total	5.13 (6)	4.27 (5)	3.42 (4)	2.56 (3)	0	
Total		31.62 (37)	36.75 (43)	18.80 (22)	10.26 (12)	2.56 (3)	100 (117)

Source: Field survey, 2012

3.8 Relation between socio-demographic variables and perception to a large family size during flood time

The study considers gender, religion, occupation, marital status, years of schooling, age and actual number of children as independent variables and advantages of a large family size during flood time as dependent variable to justify how socio-demographic factors influence to believe that a large family size is advantageous during flood time. As the study area is highly vulnerable for climate change and they might think that handling and getting recovery from the impacts of flood such as destroy their homes and crops, lending money with high interests, lack of work and earning during flood or even after floods influence them to prefer a large family size. But Pearson's chi-square tests and Likelihood tests shows that there is no significant differences and relations

between thinking of a large family size advantageous and gender, marital status, religion, age, years of schooling, actual number of children which is shown in **Table-9**. That means that all socio-demographic factors does not have a significant influence on the preference of a large family size during flood time and consider a large family size as advantageous. Only the one variable-occupation has a significant relation or difference with a preference to have a large family size. Pearson's chi-square tests and Likelihood tests shows that the p-value for the occupation (independent variable) and thinking of a large family size as advantageous (dependent variable) is .024 and .05 respectively which is less than the P-value of .05 at 95% confidence level.

Table-09 Relation between socio-demographic factors and preference to a large family size during flood

Chi-square test	Pearson Chi-Square (Asymp. Sig. (2-sided))	Likelihood Ratio (Asymp. Sig. (2-sided))
Does a large family size advantageous during flood time (DV) Gender (IV)	.916	.916
Does a large family size advantageous during flood time (DV) Religion (IV)	.508	.694
Does a large family size advantageous during flood time(DV) Marital status (IV)	.42	.437
Does a large family size advantageous during flood time (DV) Age (IV)	.591	.616
Does a large family size advantageous during flood time (DV) Occupation (IV)	**.024**	**.057**
Does a large family size advantageous during flood time (DV) Years of schooling (IV)	.657	.504
Does a large family size advantageous during flood time (DV) Actual number of children (IV)	.770	.694

The study asked respondents to provide their opinions on different statements which will show their understanding and perception about climate change events especially flood and family size preference. The

opinion questions included their opinions about burden of a large family size, pressure of a large family on natural resources, family planning programs in vulnerable areas, insurance and support from government and the statements was positive thinking of respondents to the negative impacts of a large family size during flood and family planning programs and insurance and support from government might reduce their preference to a large family size and think a large family size as advantageous during flood time. ANOVA test considered opinions on a large family size advantageous as dependent variable and the weighted scores of different statements as independent variables. And **Table-10** shows that there is a significant relation between thinking of a large family as advantageous and Statement one (Managing a large family size will be a burden during climate change events especially flood), Statement two (A large family size will bring pressure on natural resources), Statement three (Family planning program can lower the impacts of a large family size during flood time) and the ANOVA test for above mentioned statements had P-value (.000, .000 and .02. respectively) which are less than .05 at 95% confidence level. And the ANOVA test indicates that if people living in flood affected areas perceive positively about the Statement one Statement two and Statement three, they will not consider a large family size as advantageous during natural disasters even they face the negative impacts of climate change events every year. And climate change events such as flood, drought, salinity etc. will not be a cause to consider the benefits of a large family size for people especially living in a vulnerable area. And there is a significant relation between thinking of a large family as advantageous and statement five (A large family is not important during flood) and statement six (Only son cannot support and be a security during flood), as P-value from **Table-10** is .000 and .002 which is less than .05 at 95% confidence level.

However, statement four about the importance of insurance and support from government and statement seven about climate change events like flood and having more children does not show any relation with preference to a large family and the perception of a large family as advantageous, since ANOVA tests show that the P-value .44 and .95 is higher than .05. That means that the people who perceive that climate change events like flood, cyclones and getting more children occurs naturally think that a large family helps to tackle the impacts of climate change events like flood. And in Bangladesh there is no any insurance for recovering and handling climate change events like flood and the field interviews and focus group discussions shows that people living in the vulnerable area for flood do not get enough support from government during flood periods. As a result they perceive that taking initiatives for establishment of climate change insurance and support from government or non government originations may not be sufficient to handle the impacts of flood for them. Consequently perception to a large family size as advantageous during climate change risks might be rational for that group of people living in the study area.

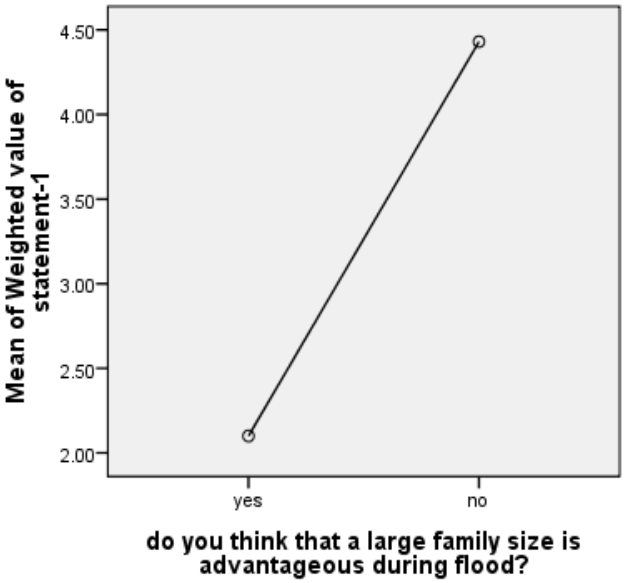
Figure-1 shows the mean plots of every statement (weighted value of each statement) with the respondent's opinion on whether a large family size advantageous or not. And it shows that statement one, two, three, five

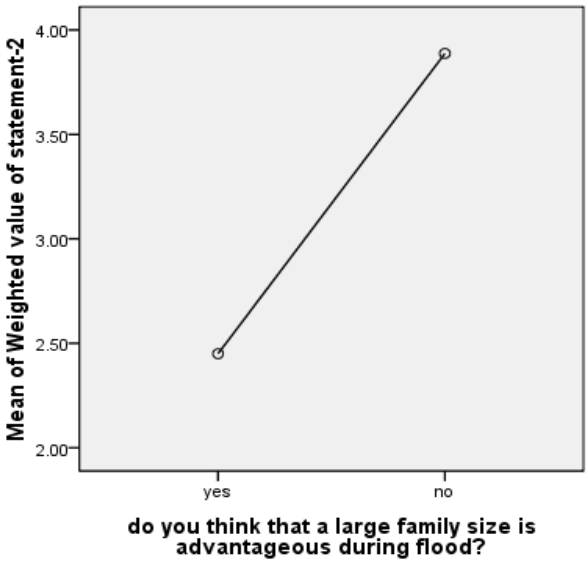
and six has the high mean value for weighted statements with the people who do not agree that a large family is advantageous which means that management of a large family during flood time is difficult, a large family brings pressure on natural resources and family planning program can reduce fertility rate, and only son cannot be dependable during flood periods. And field study in a vulnerable area (Sharat pur) in Bangladesh shows that family planning workers provide contraception and tries to aware people to lower their number of children for their wellbeing. However statement four and seven shows the totally inverse relation between weighted value and their opinion on the importance of a large family size during flood which means that people who think a large family size is advantageous has the high mean value had opinion that in a large family all can share tasks during flood periods. And they believe that climate change events like flood and having more children occur naturally and they also think that climate change insurance and support from government or nongovernmental organizations may not ensure them to lower preference for sons, as they expect support from a large family members during climate change events especially flood, since most areas of Bangladesh usually become affected by flood.

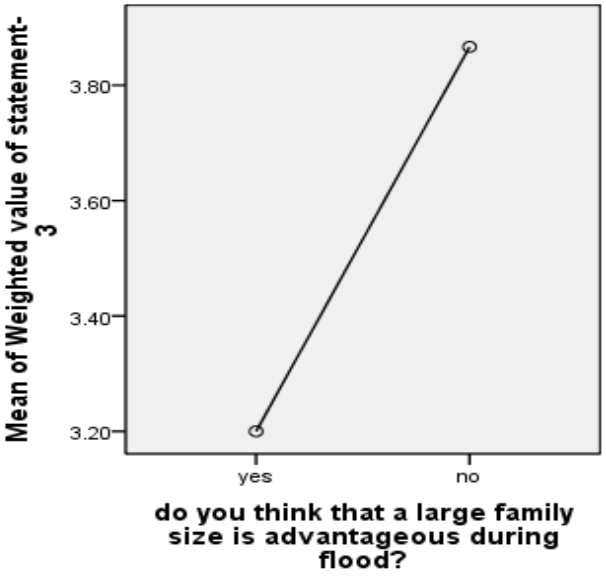
Table -10 ANOVA between advantages of a large family size and weighted value of different opinions

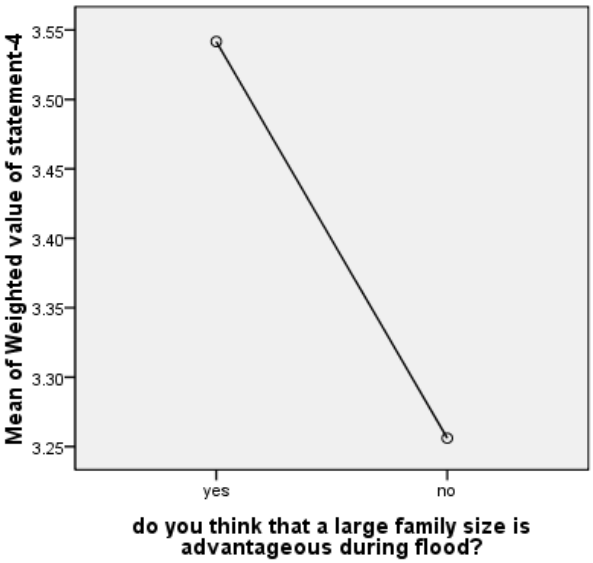
		Sum of Squares	df	Mean Square	F	Sig.
Statement one (weighted)	Between Groups	110.277	1	110.277	69.704	.000
	Within Groups	243.639	154	1.582		
	Total	353.916	155			
Statement two (weighted)	Between Groups	41.986	1	41.986	19.711	.000
	Within Groups	328.041	154	2.130		
	Total	370.027	155			
Statement three (weighted)	Between Groups	9.026	1	9.026	5.504	.020
	Within Groups	252.533	154	1.640		
	Total	261.559	155			
Statement four (weighted)	Between Groups	1.657	1	1.657	.601	.440
	Within Groups	424.703	154	2.758		
	Total	426.360	155			
Statement five (weighted)	Between Groups	124.397	1	124.397	48.972	.000
	Within Groups	391.185	154	2.540		
	Total	515.582	155			
Statement six (weighted)	Between Groups	26.434	1	26.434	10.290	.002
	Within Groups	395.606	154	2.569		
	Total	422.040	155			
Statement seven (weighted)	Between Groups	.008	1	.008	.003	.957
	Within Groups	415.882	154	2.701		
	Total	415.890	155			

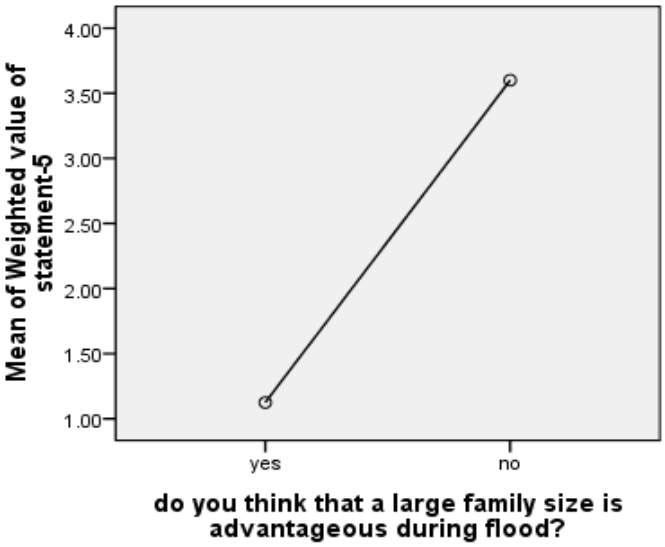
Figure-1 Mean plot of weighted value of statements and opinions on large family size during flood

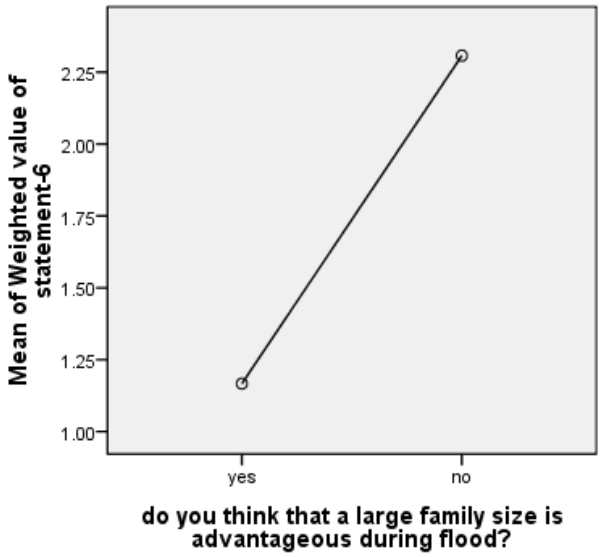


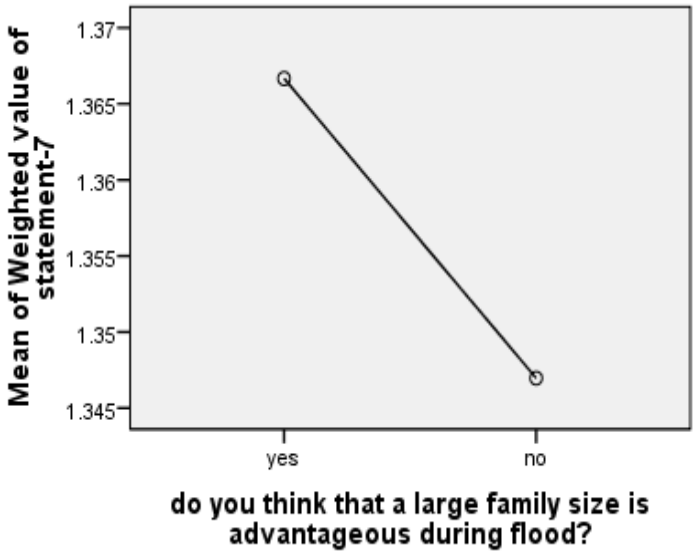












4. Conclusions

In the study village-Sharat Pur, people believe in Hindu and Islam religion have different thought about climate change and fertility preference. People believe in Hindu religion are more aware about climate change and fertility preference, but both of the religious people have the opinion to reduce or have low family size. Though they already have more children like 5 or 6. And they have a preference to son. And they think that having a large family is burden for them during environmental crisis as the people in the area face each year flood and the faced a big flood which brought damages to them. And they suggest support from government during flood or drought will lower fertility preference especially son.

Recently collected information from the respondents shows that most of the respondents think that climate change events like flood happens because Allah (God) is not happy with their activities such as women goes out of their home for doing works, people are not doing everyday prayers etc. And the most interesting finding is that respondents do not agree to have a large family size because it's difficult to manage a large family during

flood such as managing food, moving in a safe place etc. But they prefer to have more son and they think that male children are strong and they can help more and even go outside to earn money for recovering the impacts of flooding. And the risk of dying of their children during flood event does not have any influence to have more children as they think that dying and surviving of children depend on the wish of Allah (God). If Allah wishes children can survive and even I can have more sons. If Allah (God) does not want I will not have any son and they cannot survive during flood. And data show that most of the respondents do not have any schooling, even they never go to school.

The study of perception, climate change and fertility preference will contribute to find out the factors influencing people living in coastal areas to perception of climate change and fertility preference. And the people observations and experiences like what changes they consider about climate change or environmental factors how it's related with fertility preference will add more concrete and practical evidences for reducing climate change impacts and loss of life in vulnerable areas, since there is a clear evidence on the changes into temperature, precipitation, sea level rise, floods, cyclones, salinity and soil erosion in Bangladesh and almost 28% of the country's total population live in coastal zone. If there is a present of high fertility rate and high fertility preference due to frequent climate change events like cyclones, floods etc., the research will try to explore how the perception of climate change and natural hazards influence on fertility behavior how they prioritize risks and factors for climatic change impacts and fertility preference. Therefore, the outcome of the research would help to explore the mechanism between perception of climate change and fertility preference in an effective climate change adaptation and mitigation strategy, and importantly in population policy to reach the MDGs target for population stabilizing and sustainable development as an integrated policy issue in Bangladesh.

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