Knowledge of farm women on causes and effects of climate change: A study in Imphal-East districts of Manipur, India

ABSTRACT

Climate change is one of the most crucial environmental problems all over the world. It may adversely affect the atmosphere and livelihood of people. The knowledge and awareness about climate change play a vital role in responding to climate change. The present study was carried out in Sawombung Block and Heingang Block from Imphal East District of Manipur with a sample size of 100, which were selected randomly. The objective of the study was to assess the knowledge of farm women on causes and effects of climate change. The data were collected using a structured interview schedule and informal discussion. From the study it was found that majority of the respondents (71%) had medium knowledge, 21 per cent of the respondents had low level of knowledge followed by 16 per cent had high level of knowledge on the causes and effects of climate change. It was also found that from Block 2 (Heingang), education had a positive and significant (r=0.3641) relationship with the respondents knowledge on climate change. In order to improve the level of knowledge of the respondents on climate change, different trainings and awareness programmes can be conducted by concerned authority.

KEYWORDS: Farm women, Climate change, Knowledge, Cause, Effects

INTRODUCTION

Climate change is the change of environmental conditions of the Earth. Climate change refers to any change in climatic conditions overtime. It can be initiated by various causes, it could be either the natural variability or as a result of human activity. The changes occur due to variation in different climatic parameters such as cloud cover, precipitation, temperature and increase in Greenhouse Gases emissions through human activities. According to the United Nations Framework Convention's climate change is the change that can be attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods. Climate change is one of the main environmental challenges faced globally. India is also facing several problems concerning environmental conditions. India has a reason to concern about climate change as a vast population depends upon climate-sensitive sectors like agriculture, forestry and fishery for their livelihood. The adverse impact of climate changes in the form of low precipitations, rise in temperature, has resulted in increased severity of livelihood issues in the country. Climate change would represent additional stress on

the ecological and socio economic systems that are already under tremendous pressure due to rapid industrialization, urbanization and economic development. It is one of the most important global environmental challenges humanity have ever faced with the implications for food production, balance in natural ecosystems network, freshwater supply, health, etc. According to the latest scientific assessment, the earth's climatic condition has demonstrably changed on both global and regional scales since the preindustrial era (Balasubramania and Birundha, 2012).

Knowledge is a precondition for environmental awareness. In this study, it is operationally defined as the farmers' ability to understand and evaluate the impacts of a climate change on agriculture and its production. The knowledge and awareness about climate change can play a vital role in responding to climate change. There is an urgency to address the issues of climate change and to raise awareness among farmers so that they could deal with the effects of climate change on agricultural production. The adequate knowledge on causes and impact of climate change will direct the farmers to join the force in minimizing agricultural losses, heath risk and hazards of climate change in future. Therefore, this study was conducted to assess the knowledge of farm women on causes and effects of climate change.

METHODOLOGY

The study was conducted in Imphal - East District, Manipur where two blocks were selected purposively for data collection. Again, 50 farm women from each of the block were selected randomly, thus the sample size was 100. Data were collected with the help of a structured interview schedule and informal discussion. The socio- economic profile of the respondents was assessed on the basis of various parameters like age, marital status, educational qualification, family type, family size, income, land holding and farming experience. Following a review of the relevant literature, a structured interview schedule was prepared to assess the knowledge of the respondents on causes and effects of climate change. The schedule was consisting of 29 knowledge statements and the responses were scored with a 2 point rating scale (1= yes and 0= No) and accordingly the knowledge level was categorized into three categories with the help of mean and standard deviation. Further, on the basis of the responses, the data were analyzed and tabulated using statistical tools such as frequency, percentage and Karl Pearson's correlation coefficient.

RESULTS AND DISCUSSION

1. Socio- economic characteristics of farm women

The data in Table 1 revealed that more than half (58 %) of the respondents in Block -1 belonged to the age group 41-54 and 42 per cent of the respondents in Block-2 belonged to the age group 41-54. Also, from Block 1, a large majority of the respondents (98%) were married. Similar findings were observed by Ujoh *et. al,* 2019, from Block 2 all the respondents were married women. Further it revealed that more than one fourth of the respondents (28%) from Block 1 had education level up to High School and from Block 2, 30 per cent of the respondents had passed high school. The data further indicates that from Block 1 majority of the respondents (66%) belonged to nuclear family similarly in the case of Block 2 (60%). Again majority (64%) of the

respondents Block 1 belonged to medium size family on the other hand, from Block 2 large proportion of the respondents (48%) belonged to each small size family. Also, majority of the respondents i.e., (68%) and (62%) from Block 2 and Block 1 had annual income of Rs 50,000-1,00,000 respectively. On the other hand, the data show that, all the respondents (100%) from Block 2 were marginal farmers (had land holding of less than 1 hectare) whereas a large majority (86%) of the respondents were marginal farmers i.e. had land holding of less than 1 hectare. Also it was revealed that from Block 1, majority of the respondents i.e. (82%) and (52%) from Block 1 and Block 2 had 1 to 9 years of farming experience respectively.

Table 1: Distribution of respondents based on the socio-economic characteristics

n=100

Sl No	Characteristics	*Block 1 (Sawombung) n_1=50*		*Block 2 (Heingang) n_2=50*		*Total (n=100)*	
		f	***%***	***f***	***%***	***f***	***%***
1	**Age (years)**						
	27- 40	12	24	12	24	24	24
	41-54	29	58	21	42	50	50
	55-68	9	18	17	34	26	26
2	**Marital Status**						
	Married	49	98	50	100	99	99
	Widow	1	2	0	0	1	1
3	**Educational qualification**						
	Illiterate	11	22	9	18	20	20
	Can read and write	6	12	4	8	10	10
	Primary School passed	4	8	5	10	9	9
	Middle School passed	3	6	6	12	9	9
	High School passed	14	28	15	30	29	29
	Higher Secondary passed	9	18	7	14	16	29
	Graduate	2	4	4	8	6	6
	Post- Graduate	1	2	0	0	1	1
4	**Family type**						
	Joint	17	34	15	30	32	32
	Nuclear	33	66	30	60	63	63
	Extended	0	0	5	10	5	5
5	**Family size**						
	Small (1-4 members)	16	32	24	48	40	40
	Medium (5-8 members)	32	64	24	48	56	56

	Large (9 and above)	2	4	2	4	4	4
6	**Annual income**						
	Rs 50,000- 1,00,000	31	62	37	68	68	68
	Rs 1,00,001- 1,50,000	7	14	7	14	14	14
	Rs 1,50,001- 2,00,000	5	10	9	18	14	14
	Rs 2,00,001- 2,50,000	3	6	0	0	3	3
	Rs 2,50,001- 3,00,000	4	8	0	0	4	4
7	**Land holding**						
	Marginal (less than 1 hectare)	43	86	50	100	93	93
	Small (1 to 2 hectare)	6	12	0	0	6	6
	Semi- Medium(2-4 hectare)	1	2	0	0	1	1
	Medium (4-10 hectare)	0	0	0	0	0	0
	Large (more than 10 hectare)	0	0	0	0	0	0
8	**Farming experience**						
	1-9 years	41	82	26	52	67	67
	10-18 years	6	12	16	32	22	22
	19-27 years	3	6	8	16	11	11

2. Knowledge of farm women on cause and effects of climate change

In Table 2, observation was recorded from Block 1(Sawombung) and Block 2 (Heingang) regarding the knowledge of the farm women on cause and effect of climate change. It was revealed that majority (80%) of the respondents from Block 1 and 78 per cent from Block 2 knew that overpopulation is a cause of climate change. Again, majority (80%) of the respondents from Block 2 and 76 per cent of the respondents from Block 1 knew that deforestation causes climate change. While, majority (70%) of the respondents from Block 1 in comparison to 68 per cent of them from Block 2 knew that rapid urbanization cause climate change.

Furthermore, all of the respondents i.e., 100 per cent from both Block 1 and Block 2 knew that atmospheric temperature, irregular and erratic rainfall and frequency of drought are increasing due to climate change. Further, it was observed that majority of the respondents (70%) from Block 1 and 62 per cent from Block 2 knew about that occurrence of flood increases due to climate change. Again, majority (70%) of the respondents from Block 2 and 64 per cent of the respondents from Block 1 knew that fluctuation in length of season like short winter, long summer is an effect of climate change.

Table 2 Distribution of the respondents on the basis of their knowledge on cause and effect of climate change

n=100

Sl no.	Knowledge statements	Block 1 (Sawombung) n_1=50				Block 2 (Heingang) n_2=50			
		Yes		no		yes		No	
		f	%	*f*	%	*f*	%	*f*	%
Causes of climate change									
1	Overpopulation is a cause of climate change	40	80	10	20	39	78	11	22
2	Deforestation cause climate change	38	76	12	26	40	80	10	20
3	Rapid urbanization cause climate change	35	70	15	30	34	68	16	32
4	Climate change is a cause for desertification	33	66	17	34	30	60	20	40
5	The fumes of vehicle pollute the air	32	64	18	36	27	54	23	46
6	Disposal of waste pollute the rivers	30	60	20	40	29	58	21	42
7	Increase in number of vehicles responsible for climate change	29	58	21	42	26	52	24	48
8	Poor industrial practices cause climate change	28	56	22	44	27	54	23	46
9	Natural disaster cause climate change	21	42	29	58	22	44	28	56
10	Improper garbage disposal also responsible for climate change	19	38	33	66	18	36	32	64
11	Carbon dioxide is released on burning of fossil fuel such as coal, oil and natural gas which is a cause of climate change	19	38	31	62	15	30	37	70
12	Emissions of chloroflurocarbon from refrigerator, Ac also responsible for climate change	15	30	35	70	16	32	34	68
13	Agriculture emissions of nitrous oxide from fertilizers cause climate change	5	10	45	90	4	8	46	92
Effects of climate change									
14	Atmospheric temperature is increasing due to climate change	50	100	0	0	50	100	0	0
15	Irregular and erratic rainfall is increasing as a result of climate change	50	100	0	0	50	100	0	0
16	Frequency of droughts is increasing due to climate change	50	100	0	0	50	100	0	0
17	Occurrence of flood increases due to climate change	27	70	23	30	31	62	19	38
18	Fluctuation in length of season(short winter , long summer) is a result of climate change	32	64	18	36	35	70	15	30

19	Climate change is the cause for uneven distribution of rainfall within a district	30	60	20	40	35	70	15	30
20	All the waste materials produced by the various activities of man and animals are leading to climate change	29	58	21	42	31	62	19	38
21	Climate change has led to the decline of forest resources	24	48	26	52	22	44	28	56
22	Increase in melting of glacier is a result of climate change	24	48	26	52	20	40	30	60
23	Global warming is average increase in the temperature	22	44	28	56	20	40	30	60
24	Decline of soil productivity increased as a result of climate change	20	40	30	60	21	42	29	58
25	Rise in sea level is one of the effect of climate change	21	42	29	58	19	38	31	62
26	Migration of birds and animals is increasing day by day	21	42	29	58	18	36	32	64
27	The decomposers decomposing the dead bodies of plants and animals and act as cleaning agent environment	20	40	30	60	18	36	32	64
28	Spread of Malaria is an effect of climate change	19	38	31	62	17	34	33	66
29	Depletion of ground water level is increasing due to climate change	17	34	33	66	23	46	27	54

3. Knowledge level of farm women on cause and effects of climate change

The data in the Table 3 indicate the distribution of the respondents on the basis of their knowledge level on causes and effects of climate change. Majority of the respondents (72%) from Block 2 and 70 per cent from Block 1 had medium level of knowledge on the causes and effects of climate change similar findings were cited by Sarmin and Hasan, 2019 in their study. On analyzing the knowledge of both the Blocks, it was found that majority (71%) of the respondents had medium level of knowledge, followed by 23 per cent had low level of knowledge and 16 per cent had high level of knowledge on causes and effects of climate change. Similar finding was reported by Bansal *et al.* (2022), where majority of the respondents had medium level of knowledge on climate change.

Table 3 Distribution of the respondents on the basis of their knowledge level on cause and effects of climate change n=100

Sl no.	Knowledge level	Block 1 (Sawombung) n1=50		Block 2 (Heingang) n2=50		Total
		f	%	*f*	%	%
1	Low (< 11.7039)	6	12	7	14	23

2	Medium (11. 7039)	35	70	36	72	71
3	High (>20.0161)	9	18	7	14	16
Total		50	100	50	100	100

4. Relationship between the dependent and independent variables

Pearson's coefficient of correlation (r) was computed in order to explore the relationship among the selected socio economic characteristics and the knowledge level of the respondents on climate change. The Table 4 revealed the relationship of independent variables with knowledge level on climate change. From both the Blocks, among the selected characteristic i.e., age, family size, income and farming experience found to have no significant relationship with their knowledge on climate change. But in Block 2 (Heingang), education has a positive and significant relationship (r=0.3641) with their knowledge on climate change (Niranjan and Bose, 2020).

Table 4 Relationship between knowledge level of the respondents and their socio economic characteristics

Dependent variables	Independent variable	Block 1 (Sawombung)	Block 2 (Heingang)
		r value	***r value***
Knowledge on climate change	1. Age	0.1629	0.1829
	2. Education	0.0942	0.3641*
	3. Family size	0.1026	-0.1937
	4. Income	-0.05	-0.0546
	5. Farming experience	-0.0666	-0.0263

CONCLUSION

Based on the findings of the present study it can be concluded that majority of the respondents had medium level of knowledge on the causes and effects of climate change followed by low level of knowledge and high level of knowledge on cause and effects of climate change. In order to improve the level of knowledge of the respondents on climate change, different trainings and awareness programmes can be conducted by concerned authority. It was also found that from one Block, education has a positive and significant relationship with the respondent's knowledge on climate change. So, if the respondents were encouraged for acquiring high level of education, then it may also lead to high level of knowledge of the respondents on climate change.

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