RESEARCH ARTICLE

AWARENESS OF COVID-19 AMONG GENERAL POPULATION OF NORTHEAST INDIA: A WEB BASED CROSS-SECTIONAL STUDY

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Manuscript Info

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Abstract

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Introduction: The emerging infection of COVID-19 was initiated from Wuhan, China, have been spread to more than 210 countries around the globe including India. Now India is 4th position in the world scenario of COVID-19 with 426910 infected cases and 13,703 deaths by 22 June 2020. In the northeast, Assam is in highest position with 5,586 cases and 9 deaths till now. Awareness is the key factor for prevention of spread of COVID-19 among general people. In view of these contexts, the present study was undertaken to assess awareness of COVID-19 among general population of Northeast India. The aim of the study was to assess the level of awareness among general population of Northeast India regarding COVID-19.

Materials and Methods: A web based survey was conducted among 185 people of deferent states of northeast during the period of April and May 2020. A self-structured validated questionnaire used for collecting information. Descriptive analysis was performed to represent the study characteristics. Awareness among the study population was categories into 3 Levels i.e Adequate, Moderately Adequate and Inadequate. Level of Adequate awareness considered as > (Mean + SD, Moderately Adequate as (Mean-SD)-(Mean + SD) and Inadequate as < (Mean-SD.

Results & Discussion: Overall awareness on COVID-19, majority of respondents, 97(52.4%) have moderately adequate awareness. 49(26.5%) of respondents have adequate awareness and 39(21.1%) have inadequate awareness. It reveals that overall level of awareness is not satisfactory. Less than half of people were aware adequately about the COVID-19. Highest percentage of adequate, 36(44.4%) and inadequate, 21(25%) awareness reported from Manipur, Highest percentage of moderately adequate awareness reported from Nagaland, 17 (85%). Slightly more than half of respondents were aware about the general information, 102 (67.45%) and risk factors, 119 (64.3%) of COVID-19. Most of the respondents were aware about the mode of transmission, 176(95.1%), meaning of community transmission, 135 (72.9%), common sign and symptoms, 154(83.2%), and incubation periods 164(88.6%) of COVID-19. Regarding prevention of COVID-19, average awareness of total respondents was 154 (83.24%). Similar percentage of all levels of awareness have seen in male and female both.

Conclusion: The virus is primarily <u>spread</u> between people during close contact, most often via <u>small droplets</u> produced by coughing, sneezing,

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and talking. Lack of awareness and negligence of general people regarding mode of transmission of COVID-19 which created community transmission. General people of Northeast still required awareness regarding COVID-19. There is a need of regular awareness programme among the general population by the health care professionals.

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Introduction:-

Coronavirus disease 2019 (**COVID-19**) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It was first identified in December 2019 in Wuhan, China, and has resulted in an ongoing pandemic.[1] The first case may be traced back to 17 November 2019. As of 8 June 2020, more than 6.98 million cases have been reported across 188 countries and territories, resulting in more than 401,000 deaths. More than 3.13 million people have recovered.[2]

Common symptoms include fever, cough, fatigue, shortness of breath, and loss of smell and taste. While the majority of cases result in mild symptoms, some progress to acute respiratory distress syndrome (ARDS) likely precipitated by a cytokine storm, multi-organ failure, septic shock, and blood clots. The time from exposure to onset of symptoms is typically around five days, but may range from two to fourteen days.[3]

The virus is primarily spread between people during close contact, most often via small droplets produced by coughing, sneezing, and talking. The droplets usually fall to the ground or onto surfaces rather than travelling through air over long distances. It is most contagious during the first three days after the onset of symptoms, although spread is possible before symptoms appear, and from people who do not show symptoms.[4] The standard method of diagnosis is by real-time reverse transcription polymerase chain reaction (rRT-PCR) from a nasopharyngeal swab. Chest CT imaging may also be helpful for diagnosis in individuals where there is a high suspicion of infection based on symptoms and risk factors.[5]

Recommended measures to prevent infection include frequent hand washing, maintaining physical distance from others (especially from those with symptoms), quarantine (especially for those with symptoms), covering coughs, and keeping unwashed hands away from the face.[6] The use of cloth face coverings such as a scarf or a bandana is recommended in public settings to minimise the risk of transmissions, with some authorities requiring their use. Medical grade facemasks such as N95 masks should only be used by healthcare workers, first responders and those who care for infected individuals.[7]

According to the World Health Organization (WHO), there are no vaccines nor specific antiviral treatments for COVID-19.[6] On 1 May 2020, the United States gave emergency use authorization to the antiviral remdesivir for people hospitalized with severe COVID-19.[8] Management involves the treatment of symptoms, supportive care, isolation and experimental measures.[9] The World Health Organization (WHO) declared the COVID-19 outbreak a public health emergency of international concern (PHEIC) on 30 January 2020 and a pandemic on 11 March 2020. Local transmission of the disease has occurred in most countries across all six WHO regions.[10]

Awareness is the key factor for prevention of spread of COVID-19 among general people. Although very few study conducted in our country, a study reported that despite many awareness programs conducted by the governments and other agencies, there are certain false beliefs among the general public of India towards the transmission, prevention, and treatment of COVID-19.[11] As per my knowledge concern, till now there is no study on awareness of COVID-19 in the northeast region. Furthermore, in the northeast region, especially in Assam COVID-19 positive cases increases every day. In view of these contexts, the present study was undertaken to assess the awareness among the general population of Northeast region of India

Materials and Methods:-

A web-based cross-sectional survey was conducted among the general population of Northeast region of India during the period of April and May 2020.

A self-structured validated questionnaire used for collecting information. The questionnaire was conveniently distributed among the people using Google forms through social media networks. Participants who gave consent to willingly participate in the survey would click the 'Continue' button and would then be directed to complete the self-administered questionnaire.

Complete data was collected from 185 numbers of respondents from different states of northeast India. Questionnaire survey was based on two parts- one is Socio-demographic variables of respondents it consist of 6 items ie. Age, Sex, Educational status, Occupation and Place of residence. Another is related to awareness of COVID-19 i.e General information about the COVID-19, Risk factors and sign and symptoms of COVID-19, and preventive measures. Descriptive analysis was performed to represent the study characteristics. Awareness among the study population was categories into 3 Levels i.e Adequate, Moderately Adequate and Inadequate. Level of Adequate awareness considered as **> (Mean + SD,** Moderately Adequate as **(Mean-SD)-(Mean + SD) and Inadequate as < (Mean-SD).**

Results and Discussions:-
In regards of socio-demographic variables, it has been observed that a total of 185 participants from different states of Northeast India responded to the survey. Out of total respondents, 81(43.8%) from Manipur, 42(22.7%) from Assam, 42(22.7%) from Meghalaya and 20(10.8%) from Nagaland. The highest number of respondents, 67(36.2%) belongs to age group 26 to 30 years of age which was followed by 54(29.1%) at the age of >30 years, 34(18.4%) at the age of 21 to 25 years and 30(16.2 %) respondents below 20 years of age. Majority of respondents 134(72.4%) were female and male respondents were 51(27.6%). Majority of respondents, 122(65.9%) their educational status was graduate level and above. 37(20 %) of respondents were primary level and 26(14.1%) were secondary level of education. In regards of religions, majority of respondents, 92(49.7%) were Hindu as compared to 79(42.7%) were Christian, 10(05.4%) Islam and 6(03.24%) were others. Majority of respondents, 59(49.7%) were students which was followed by 53(28.6%) were private employees, (17.8%) were Govt employees. 177(63.2%) of respondents belong to urban and 67(36.2%) were in rural community. (**Table-1**)

Awareness level of COVID-19 categorized into Adequate, Moderately Adequate and Inadequate. Level of Adequate awareness considered as >(Mean + SD) = (15.5 +2.6) =18.1 ≈ 18. Moderately Adequate as (Mean - SD) - (Mean + SD) =13-18 and Inadequate as < (Mean-SD) = (15.5-2.6) =12.9 ≈ 13

Overall awareness of COVID-19, majority of respondents, 97(52.4%) had Moderately Adequate awareness, 49(26.5%) of respondents had Adequate awareness and 39(21.1%) had Inadequate awareness. (**Table-2**) State wise it reported that in Manipur 36(44.4%) was Adequate, 24(29.6%) Moderately Adequate and 21(25.9%) Inadequate. In Assam 07(16.7%) was Adequate, 29(69.0%) Moderately Adequate and 06(14.3%) Inadequate awareness. In Meghalaya, 06(14.3%) was Adequate, 27(57.1%) Moderately Adequate and 09(21.4%) Inadequate awareness.(**Table-3**)

More than half, 102(67.45%) respondents were aware about the general information of COVID-19. Only 75(40.5%) and 124(67%) respondents could answer the question of what is corona virus and which virus can causes COVID-19 respectively. Average (80.82%) respondents were aware about the disease process of COVID-19, whereas out of that 119(64.3%) respondents were aware about the risk factors of COVID-19, i.e. Responded correctly as older person and person with pre-existing medical conditions like hypertension, diabetes Mellitus and heart diseases etc. Regarding the mode of transmission, 176(95.1%) of total respondents were reported correctly. Majority of people, 135(72.9%) were aware about the meaning of community transmission like spreading infection through community people. In regards of common sign and symptoms, 154 (83.2%) of total respondents could correctly answered. Majority of respondents 164(88.6%) were aware about correct incubation periods of COVID-19.(**Table-3**)

An average of 154 (83.24%) respondents out of total were aware regarding prevention of COVID-19. 150(81.1%) of respondents were aware the meaning of "Quarantine" as isolating the person but less than half of respondents were aware about the treatment of Covid-19. Regarding frequency and duration of hand washing, 167(90.3%) and 134(72.4%) of respondents have correct concept respectively. 160(89.2%) of total respondents reported correct answer regarding the minimum distance between one person to another person to prevent Covid-19. Majority of people 165(89.2%) were aware about the step to do when any person is suspected of COVID-19 near their home. 173(93.5%) respondents have the knowledge of increasing body immunity which is the important concern of prevention of COVID-19. 180(97.3%) of respondents have given correct answer regarding the body parts that

should be avoided to touch for prevention of COVID-19. Regarding the measures to be taken for prevention of COVID-19, majority of respondents 176(95.1%) were aware about the wearing mask and gloves, maintaining social distancing and cover nose and mouth while sneezing. (**Table-4**)

In regards of age, it was observed that majority of respondents i.c. 21(31.3 %) were adequately aware at the age of 26-30 years and at the age group of 21-25 years 25(73.5 %). had highest moderately adequate awareness. Highest inadequate awareness was found in the age group of <20 years. Regarding gender, male and female both were almost same in all levels of awareness although slightly female were higher than male in adequate, 36(26.8%) and male were higher than female in moderately adequate awareness, 13(25.4%). Highest percentage of adequate awareness, 35(28.7%) found at graduate level or above and otherwise highest percentage of moderately adequate awareness have seen among the respondents of primary and high school level of education, 23(62.2%). In regards of religions, it was found that majority of Hindu respondents were adequately aware compared to other religions 37(40.2%) and highest inadequate awareness found among Christian religions 24(40.4%). Private employees were more aware adequately compared to others 18(33.9%) and highest inadequate awareness found among daily workers 5(100%). In place of residence, it was found that urban people were more adequately aware 38(32.5%) compared to rural people and rural people were more in moderately adequate awareness, 42(62.7%) (**Table-5**)

Table-1:- Frequency and percentage distribution of subjects according to socio demographic variables   n=185

SL. No.	DEMOGRAPHIC VARIABLES	FREQUENCY (f)	PERCENTAGE (%)
1.	Age (in years)		
	a. >20	30	16.2
	b. 21-25	34	18.4
	c. 26-30	67	36.2
	d. <31	54	29.1
2.	Sex		
	a. Male	51	27.6
	b. Female	134	72.4
	c. Others	0	0
3.	Educational status		
	a. Primary	37	20
	b. Secondary	26	14.1
	c. Graduate and above	122	65.9
4.	Religion		
	a. Hindu		
	b. Islam	92	49.7
	c. Christian	10	05.4
	d. Others- Jain, Sikh, Buddhist etc.	79	42.7
		06	03.24
5.	Occupation		
	a. Student		
	b. Daily labour	59	31.9
	c. Private employee	01	0.5
	d. Govt. Employee	53	28.6
	e. Others	33	17.8
		39	21.1
6.	Place of residence		
	a. Rural		
	b. Urban	67	36.2
	c. Slum	117	63.2
		0	0

Table-2:-   Frequency   and   Percentage   Distribution   Of   Level   Of   Awareness n=185.

Level of awareness	Frequency (f)	Percentage (%)
Inadequate	39	21.1

Moderately adequate	97	52.4
Adequate	49	26.5
Total	185	100

Table 3:- State-Wise Frequency and Percentage Distribution Of Level Of Awareness   n=185

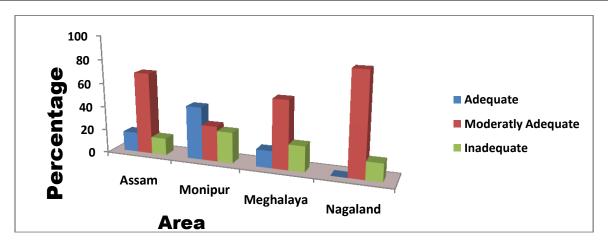| AREA	Inadequate		Moderately adequate		Adequate	
	f	%	F	%	f	%
Assam	06	14.3	29	69.0	07	16.7
Manipur	21	25.9	24	29.6	36	44.4
Meghalaya	09	21.4	27	57.1	06	14.3
Nagaland	03	15	17	85	0	0

Fig: 1:- State wise level of awareness of COVID-19.

Table 4:- Aspect Wise Frequency And Percentage Distribution Of Level Of Awareness   **n=185.**

SL.NO.	ASPECTS OF AWARENESS	f	%
GENERAL INFORMATION			
1.	What is corona virus?	75	40.5
2	Which virus causes Covid-19?	124	67.0
3	The first case of novel corona virus was identified in-	159	85.9
4	Which state of India first identifies the Covid-19?	122	65.9
5	When Covid-19 was identified?	173	93.5
6	What happens to a person suffering from Covid-19?	96	51.9
RISK FACTORS, MODE OF TRANSMISSION AND SIGN AND SYMPTOMS			
7	Who are at risk of having Covid-19?	119	64.3
8	How does Covid-19 transmit?	176	95.1
9	What do you mean by community transmission?	135	72.9
10	What are the common symptoms of Covid-19?	154	83.2
11	After how many days the symptoms of Covid-19 will appear?	164	88.6
PREVENTION OF COVID 19			
12	What do you mean by word "Quarantine"	150	81.1
13	Is there any treatment for Covid-19 patient?	81	43.8

14	How many times you should wash your hand in a day?	167	90.3
15	What is the duration of hand washing?	134	72.4
16	What is the minimum distance between one person to another person to prevent Covid-19?	160	86.5
17	Covid-19 affects any person near in your home what you will do?	165	89.2
18	How you will increase your immunity?	173	93.5
19	Which parts of the body we should avoid touching?	180	97.3
20	How we will prevent Covid-19?	176	95.1

Table 5:- Frequency and percentage distribution of level of awareness according to demographic variable   n= 185

SL. No.	DEMOGRAPHIC VARIABLES	Inadequate		Moderately adequate		Adequate	
		f	**%**	**f**	**%**	**f**	**%**
1.	Age (in years)						
	a. >20	11	36.7	11	36.7	8	26.7
	b. 21-25	6	17.6	25	73.5	3	8.8
	c. 26-30	12	17.9	34	50.7	21	31.3
	d. <31	14	25.9	27	50	13	24.0
2.	Sex						
	a. Male	10	19.6	28	54.9	13	25.4
	b. Female	27	20.1	71	51.8	36	26.8
	c. Others	0	0	0	0	0	0
3.	Educational status						
	a. Primary	6	16.2	23	62.2	8	21.6
	b. Secondary	8	30.7	13	20	5	19.3
	c. Graduate and above	24	27.9	63	51.6	35	28.7
4.	Religion						
	a. Hindu	10	10.9	45	48.9	37	40.2
	b. Islam	2	20	8	80	0	0
	c. Christian	24	30.4	44	55.7	11	13.9
	d. Others- Jain, Sikh, Buddhist etc.	1	16.7	5	83.3	0	0
5.	Occupation						
	a. Student	18	30.5	27	45.8	14	23.7
	b. Daily labour	5	100	0	0	0	0
	c. Private employee	8	15.1	27	50.9	18	33.9
	d. Govt. Employee						
	e. Others	6	18.2	17	60.7	5	15.2
		6	15.4	25	75.8	8	24.2
6.	Place of residence						
	a. Rural	15	22.4	42	62.7	10	14.9
	b. Urban	23	19.7	56	47.8	38	32.5
	c. Slum	0	0	0	0	0	0

Discussion:-

This web-based cross-sectional survey showed that overall awareness of COVID-19, majority of respondents, 97(52.4%) had Moderately Adequate awareness, 49(26.5%) of respondents had Adequate awareness and 39(21.1%) had Inadequate awareness. These findings indicate that people are not much adequately aware about the COVID-19 in the northeast region. Although no similar studies found in northeast region, a study in Maharashtra, conducted on awareness of COVID-19 among the general people, suggested that though the overall knowledge on COVID-19 was good enough among the general public of India, still there is a need for education to avoid false beliefs especially among the people who are elderly, having a low level of education, and non-professional workers.[12] The other related studies in neighbouring countries, i.e. in Pakistan[13] (with Mean scores were 10.12 ± 2.20 ,good, moderate

and poor knowledge in 50.2%, 42.8% and 7.0% of participants, respectively); Nepal[14] (60.0-98.7% of Knowledge level) and Bangladesh[15] (10% of Good Knowledge) reported similar findings.

State wise it reported that in Manipur, 36(44.4%) was Adequate, 24(29.6%) Moderately Adequate and 21(25.9%) was Inadequate. In Assam, 07(16.7%) was Adequate, 29(69.0%) Moderately Adequate and 06(14.3%) Inadequate awareness. In Meghalaya, 06(14.3%) was Adequate, 27(57.1%) Moderately Adequate and 09(21.4%) Inadequate awareness.(**Table-3**)

More than half, 102(67.45%) respondents were aware about the general information of COVID-19. The present study showed that majority of respondents were aware about the risk factors, mode of transmission, community transmission, common symptoms of Covid-19, and about incubation periods of Covid-19. This findings are supported by a study which was conducted by Puvvada R K et al.,[11] reported similar awareness level regarding the risk factors of COVID-19, common sign and symptoms and mode of transmission. In contrast we have seen in a study among US adults, nearly one third people (28.3%) could not correctly answered about the sign and symptoms of COVID-19 and One in 4 adults (24.6%) believed that they were "not at all likely" to get the virus, and 21.9% reported that COVID-19 had little or no effect on their daily routine.[16]

An average of 154 (83.24%) respondents out of total were aware regarding prevention of COVID-19. 150(81.1%) of respondents were aware the meaning of "Quarantine". Regarding frequency and duration of hand washing, 167(90.3%) and 134(72.4%) of respondents have correct concept respectively. 160(89.2%) of total respondents reported correct answer regarding the minimum distance. 176(95.1%) were aware about the wearing mask and gloves, maintaining social distancing and cover nose and mouth while sneezing.

In regards of age, it was observed that majority of respondents i.c. 21(31.3 %) were adequately aware at the age of 26-30 years and at the age group of 21-25 years 25(73.5 %). had highest moderately adequate awareness. Highest inadequate awareness was found in the age group of <20 years. The findings showed that awareness level was different in different age group which is supported by the studies of Paul, A(2020)[15] and Puvvada R K et al.[11] Regarding gender, male and female both were almost same in all levels of awareness although slightly female were higher than male in adequate, 36(26.8%) and male were higher than female in moderately adequate awareness, 13(25.4%). This finding is consistent by a study in Malaysia reported similar level of awareness in both male (91%) and female (87%).[17] Highest percentage of adequate awareness, 35(28.7%) found at graduate level or above and otherwise highest percentage of moderately adequate awareness have seen among the respondents of primary and high school level of education, 23(62.2%). This finding is supported by Azlan AA et. al[17] and Labban L et. al [18] which reported that the level of awareness increased with the higher level of education.

This study is the first to assess the awareness of COVID-19 among general people of northeast so that it will provide baseline for further study. We believe that the findings of the study will be provided as a pillar of formulating strategies for prevention of community transmission of COVID-19 by increasing awareness among general population.

We acknowledge that the study has some limitations, including depending on technology for collecting information instead of direct contract with respondents. Another limitation is that the small sample size within a short period of time which limits the generalization of the results.

Conclusion:-
The findings of this study revealed that overall awareness of northeast people was not satisfactory, though aspects wise awareness was good. People were more aware in aspect of preventive measures compared to other aspects. Awareness was high in higher educational level. Male and female were almost equally aware about COVID-19. The awareness of general public regarding COVID-19 plays a major role in preventing of community transmission. This study would be helpful to provide baseline information to determine the type of intervention that may be required to increase the level of awareness in order to prevent further COVID-19 pandemic.

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