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Samir Ranjan Dash
Senior Scientist and Head, Krishi Vigyan Kendra, Malkangiri, Odisha, India

Biswa Ranjan Pattanaik
Senior Scientist and Head, Krishi Vigyan Kendra, Sonepur, Odisha, India

Sangram Paramguru
Senior Scientist and Head, Krishi Vigyan Kendra, Gajapati, Odisha, India

Kankan Kumar Biswas
Branch Manager, State Bank of India, Malkangiri, Odisha, India

Susmita Panda
Scientist, Krishi Vigyan Kendra, Jharsuguda, Odisha, India

Rosalin Das
Block Project Manager, OLM, Malkangiri Odisha, India

A cross-sectional study on a cohort of tribal groups in the Malkangiri district of Odisha, on their knowledge, attitudes and practices about COVID-19

Samir Ranjan Dash, Biswa Ranjan Pattanaik, Sangram Paramguru, Kankan Kumar Biswas, Susmita Panda and Rosalin Das

Abstract
A cross-sectional study was conducted during the month of Nov – Dec,2021 among the tribal communities, in Malkangiri district taking, a total sample of 120 tribal people through a multi-stage random sampling method. Respondents were chosen at random from four tribal villages, comprising two blocks of the Malkangiri district to assess their knowledge, attitudes and practices (KAP) regarding the new pandemic disease COVID 19. By gender, pluralities of the participants were aware about COVID 19 (F 92.5%, M 90.2%). The study revealed that majority of the respondents (94.2%) had sufficient knowledge and they were aware about COVID 19 as "a virus that can cause disease". Most of the respondents were aware about the most common perceived mode of transmission of this disease and almost (68.9%) respondents selected "contact with droplets from an infected person by sneezing or coughing" as a mean of transmitting the virus. It was revealed from study that, male respondents had a greater knowledge gap about isolation of the affected patient (35.3%) than female respondents (27.3%) and female participants had a higher inclination (96.0%) than male respondents to wash hands regularly with alcohol-based sanitiser or soap/water as a preventive step against becoming infected with COVID 19. The study discovered no significant differences in the practice of keeping social distance between the two groups of illiterate and literate participants. It is worth to highlight that the practice of wearing a mask, practicing of social distancing was high among female participants. Degree of acceptance and practicing of all preventative measures to contain COVID 19 by female respondents was greater than male respondents. The relationship between literacy level and the participants' willingness to adopt immunization measures was determined to be non-significant. About maintaining isolation and social distancing, more proportion of female respondents (16.0%) shown positive responses compared to male respondents (7.1%). The study found that the participants' knowledge levels were satisfactory, but that their practice of COVID 19-appropriate activities might be improved by careful behavioral adjustments through successful communication and understanding and adopting proper initiatives to contain the deadly COVID 19 pandemic disease.

Keywords: COVID 19, COVID appropriate behaviors, knowledge, infection prevention, social distancing, isolation, media exposure

Introduction
Corona virus disease 2019 (COVID -19) is a new pandemic disease. A novel corona virus, now named as SARS-CoV-2, caused a series of acute atypical respiratory diseases in Wuhan, Hubei Province, China as recorded by (Zhang Y.Z. A. *et al*. 2020) [25]. The disease was caused by the virus was termed COVID -19. [5]. In December 2019, China informed the WHO of an outbreak of a new disease, similar to pneumonia and this disease transmitted by the new corona virus was named COVID 19 (Wu *et al*. 2020) [22]. The virus is transmittable between humans and has caused pandemic worldwide. The number of death tolls continues to rise and a large number of countries have been forced to do social distancing and lockdown. Epidemiological studies showed that elder patients were more susceptible to severe diseases, while children tend to have milder symptoms. The disease originated in Wuhan, China and has since spread globally reported by (Yoki *et al*.) [24]. On March 11, 2020, the World Health Organization (WHO) declared the COVID 19 to be a global pandemic [18]. The WHO emphasized to its member countries the best ways to slow down the transmission is by persistently sharing the knowledge on the causes of COVID 19 and how it spreads so that one can protect themselves and others from getting infected through following appropriate behaviors (WHO, 2015) [18].

Corresponding Author:
Samir Ranjan Dash
Senior Scientist and Head, Krishi Vigyan Kendra, Malkangiri, Odisha, India

Two years has been passed since the first case of novel corona virus infections was detected in China's Wuhan province. During the initial period of the disease, the efforts were concentrated on preventing and slowing down transmission (Kumar, 2021) [9]. There are very less studies available in India on knowledge, attitude, and practice (KAP) among public on COVID 19, transmission and individual healthy behaviors in prevention and control of transmitting COVID 19. Poor knowledge level led to risky behaviors and in a pandemic situation like COVID 19, it is more essential that everyone has a correct knowledge and information to protect themselves from getting affected. Malkangiri district is a tribal district of Odisha (57.8% ST population as per the Census 2011) and sex ratio (925) with very low socioeconomic growth owing to a variety of problems such as geographical and cultural isolation, a lack of good health facilities, an inability to meet basic necessities, a lack of control over resources and assets, Lack of education (literacy rate 48.545%), health and medical treatment, housing, and water supply, so on malnutrition, a lack of shelter and lack of access to competent medical care and Infrastructure and technological capabilities. Hence, the study was conducted among tribal communities in Malkangiri distinct of Odisha with an objective to assess the knowledge and practice of COVID 19 appropriate behaviors.

Objective
The public knowledge about the cause of the disease, its mode of spread, symptoms and preventive measures forms their attitudes and drives their action. An understanding of the attitude of the public towards COVID 19 can help to predict the response of government measures also. The overarching objective is to assess the knowledge, attitude and practice levels of people in the tribal communities about Coved 19 and acceptance of COVID appropriate behaviors. Since its discovery in 2019, the COVID 19 seems to have become one of the largest pandemics in the world involving more than 200 countries (Mohamad *et al*. 2021) [13]. This study was set out to assess the knowledge, attitudes and practices (KAP) of the tribal people about COVID 19 during the incidence of second wave of the pandemic lockdown period. Such knowledge can help to contain the pandemic by adopting right precautionary measures, which will invariably boost both the physical and mental health of the individual. This study was conducted among tribal group, most of them are having poor literacy level, agricultural farmers, seasonal workers, having very poor socio-economic condition.

Materials and Methods
In four villages, Jharapali and Padmagiri in Malkangiri block and Udrugunda and Koimetla in Kalimela block, a cross-sectional quantitative survey was done among the tribal population and village level agricultural workers. The blocks were chosen because the fatality rate from COVID 19 was higher in these areas and the majority of the communities were dominated by tribal people. The study participants were chosen using a multi-stage random sampling method. A simple random sampling procedure was used to select 30 villagers from each selected village. As a result, the sample consisted of 120 respondents from the four selected villages, including 50 male and 70 female respondents as sub-groups. The factors for the study were age, education, occupation,

social and mass media exposure, annual income. Again the sample was classified according to their education and literacy level, illiterate 38 and literate 82. Taking all possible combinations of sample, their opinions were examined in the context of knowledge, attitude about COVID 19 and acceptance of COVID appropriate behaviors as per the objective of the study. Data collection was done by Pre tested interview scheduled regarding information on socio demographic situations, knowledge and attitude towards COVID 19 situation and infection preventive practices domains. The responses were obtained on two continuum scale in case of prospects (Agreed, Disagreed) and scores were given as 2 and 1, respectively. Similarly the risk and degree of seriousness of this disease perceived by the respondents were measured on three continuum scale (very dangerous, mild dangerous and no dangerous) and scores were assigned as 3, 2 and 1 respectively. After that frequency was multiplied with the score (3, 2 or 1) and total weighted score was obtained and total weighted score was divided by total respondents (120) for weighted mean score. The data were analyzed with frequency, weighted frequency and weighted mean score and rank order. Respondent's socio-demographic characteristics and understanding of COVID 19, descriptive statistics were used. The number of respondents per response was used to compute response percentages. IBM SPSS software version 20.0 was used to conduct descriptive statistical analysis. In this study, categorical variables such as gender and education level were compared using statistical tools such as percentage, mean score, Standard deviation, Gap percent, co-efficient of variation, t –test and Chi-square test, (Cochran and Cox 1977) [4]. Statistical significance was set at $p<0.05$.

Score gap
It is the difference between maximum obtainable score and obtained score value for a given variable and when expressed in percentage called as gap percentage.

$$\text{Score gap (\%)} = \frac{\text{Maximum score} - \text{Obtained score}}{\text{Maximum score}} \times 100$$

Chi square test for independence
The test has been employed to know the significant association between two or more subgroups.

$$\chi^2 = \sum \frac{(Observed - Expected)^2}{Expected} = \sum \frac{(O-E)^2}{E} \cdot df = k - 1$$

Results and Discussion
Socio-demographic characteristics of the study participants
Acquiring knowledge and acceptance of any idea or practice are the multiple functions of personal, social, psychological and economic attributes associated with the tribal people. Homogeneity in these attributes can accelerate the knowledge and competency for effective acceptance of the practices to combat the Pandemic disease like COVID 19.

Table 1: Socio demographic characteristics of the respondents (n-120)

Variables	No. of participants	
Age (in years)	Frequency (F)	Percentage (%)
Up to 35 years	37	30.8
36 to 55 years	62	51.7
55 years and above	21	17.5
Education		
Illiterate	38	31.7
Primary level	35	29.1
Middle level	18	15.0
High School	12	10.0
College and above	17	14.2
Occupation		
Agriculture and allied sector	95	79.2
Skilled workers	8	6.7
Unskilled and Daily wages	12	10.0
Students	5	4.2
Social contact and Mass media exposure		
Low	24	20.0
Medium	58	48.3
High	38	31.7
Average annual income(Rs.)		
Up to 25000/-	14	11.8
25001/- to 50000/-	73	60.8
50000 /- to 100000/-	28	23.3
Above 1.0 lakh	5	4.1

The socio-demographic details of the study participants are given in Table 1. The majority of the respondents were in the age group of 36-55 years in the range of minimum of 15 years and a maximum of 78 years. Majority of the respondents were illiterate (31.7%) followed by primary level educated (29.1%). This was due to that the selected study area was tribal villages and the respondents don't have awareness about education and most of the population did not have access to education with very poor economic status. Most of the respondents (79.2%) were farmer followed by unskilled daily wages laborers (10.0%), skilled workers (6.7%). More than two third (60.8%) of the population were found to have annual income within the range 25001 to 50000 as they were mostly small and marginal farmers and their primary occupation was agriculture and allied sectors only without any other source of family income.

Table 2: Extent of consistency in socio-economic attributes (n=192)

Variable	Total		
	Mean	SD	CV%
Age (X_1)	2.26	0.58	25.83
Education (X_2)	3.09	1.28	41.57
Occupation (X_3)	1.32	0.47	35.44
Social contact and Mass media exposure (X_4)	5.88	2.03	34.58
Annual income (X_5)	10.18	3.40	33.44

The (Table-2) revealed that there was no consistency in any of the socio-economic attributes of the respondents indicating that the respondents differed in their socio-economic attributes in the study area. The variability was more in education level (41.57%) followed by occupation (35.44%) and social / mass media exposure (34.58%).

Knowledge about COVID 19among the study participants by Gender

Table 3: Knowledge about COVID 19among the study participants (n = 120), (M– 70, F-50)

Knowledge score		Male (F)	Male (%)	Female (F)	Female (%)
What do you know about COVID 19?	I don't know	6	8.6	2	4.3
	It's a virus that can cause disease	58	82.9	44	94.2
	It's a TV/Radio campaign which seems fake	4	5.7	2	2.2
	It is biological weapon developed by China	2	2.9	1	0.2
How COVID 19 spreads?	Droplets from infected and diseased Person	45	66.4	45	68.9
	Touching contaminated objects/surface	25	17.9	5	16.06
Who are at risk?	Pregnant Mothers	12	42.6	15	48.5
	Health Care Workers	16	13.4	5	15.8
	People with diabetes/ Chronic Conditions	18	48.2	2	58.2
	People who don't follow any preventive measures for COVID	24	38.6	28	42.5
People who have contact with someone infected with the COVID 19 virus should be immediately isolated in a proper place	Yes	45	86.5	35	90.5
	No	19	11.5	12	7.5
	Don't Know	6	2.0	3	2.0

The study revealed that most of most of the respondents (94.2%) had knowledge that COVID 19 is "a virus that can cause disease". Majority of the respondents had knowledge about the most common perceived mode of transmission, almost (68.9%) respondents selected "contact with droplets from an infected person by sneezing, or coughing" as a mean of transmitting the virus. The overall knowledge level of the female respondents was higher as compared to male respondents about the cause and the preventive measure of this COVID 19 pandemic disease.
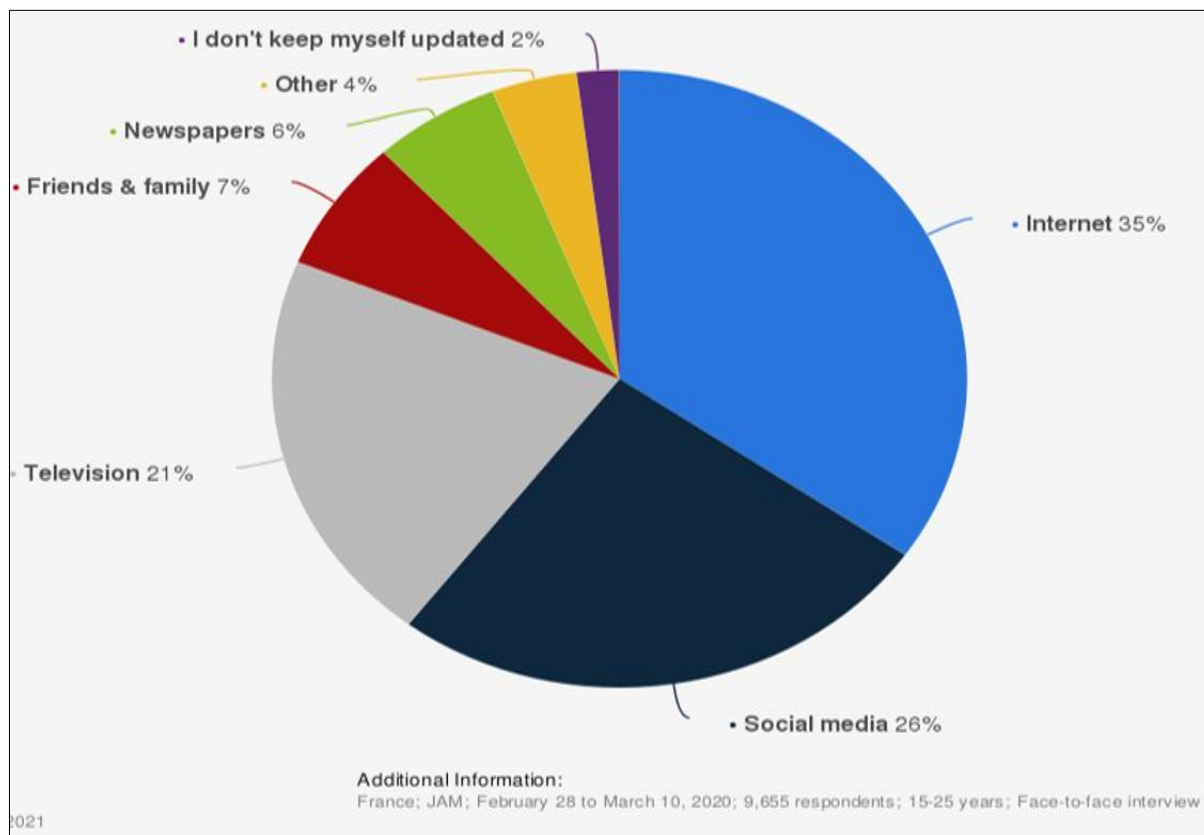
(Source - Statista Research Department 2021, [17] Statista)

Fig 1: Different sources of corona virus diseases information (year 2021)

Infants and young children are typically at high risk for admission to hospitals due to respiratory tract infection with viruses as respiratory virus and influenza virus (Zhang Y.Z.A. (2020)[26]. In contrast, pediatric COVID 19 patients have relatively milder symptoms in general compared to elder patients. The reason for this difference between children and adults remains elusive. Because the recent report suggested the correlation between the severity of COVID 19 and the amount of viral loads (or the duration of virus-shedding period) children may have less virus loads even if they get COVID 19. (Liu et al. 2020) [11]. Majority of the respondents (58.2%) opined that people with diabetes/ chronic conditions arte at more risk followed by Pregnant Mothers (48.5%). In terms of the COVID -19 transmission, participant knowledge on the three important aspects of spread i.e., droplet from the infected person, direct contact with diseased person and touching of contaminated objects and surfaces was higher

among the female participants. These findings were in accordance with the findings of (Williams et al. 2021) [19]. A similar study by (Qutob and Awartani 2021) [15], has found that (55.6%) of participants were knowledgeable of the symptoms exhibited by an infected individual while our study showed that (85.0%) of the study participants are knowledgeable of the symptoms that COVID 19 disease caused by virus and its mode of infection and this might be due to exposure of the participants to different mass media and massive campaigning programmes by Government and non government sectors in this area. The study participants have exhibited a good knowledge towards COVID 19, while another study conducted in China has also shown that overall knowledge levels on COVID 19 was 90.0% (Dar et al. 2020) [6] and (Zhong et al. 2021) [2]. The findings of this study was in consonance with the results reported by (Amalakanti et al. 2020) [16] in South India.

Table 4: Respondents knowledge regarding Isolation of COVID 19 patient

People who have contact with someone infected with the COVID 19 virus should be immediately isolated in a proper place	Gender	Yes	No	Don't know	Mean score	Gap (%)
	Male	45	19	9	1.94	35.3
	Female	35	12	3	2.18	27.3

It was revealed from the above table that knowledge about isolation of the affected patient, gap percentage was more in male respondents (35.3%) as compared to female respondents (27.3%). Significant gaps were also observed among male and

female respondents. These findings were in consonance with previous studies conducted by (Hussain 2012) [8]. He reported that one's level of knowledge about an infectious disease can make one to behave in ways that can prevent infection.

Consequently, individuals need to be informed about the potential risk of infection (COVID 19) in order to adopt the right precautionary measures. (Ahmed *et al*. 2020) [1]. Findings from this study indicated that a large proportion of the study participants were aware and knowledgeable about the COVID 19 and its presence in tribal district Malkangiri. Results obtained from this research questions regarding respondents' knowledge of the source of COVID 19, its transmission and symptoms, preventive behavior towards COVID 19, fatality and risk rate of the disease were similar with the findings of)Olapegba *et al*. 2020) [14.] Similarly, (Bezerra *et al*. 2020) [2] reported that the perception about social isolation as a pandemic mitigation action varies by income, education, age, and gender. Even in the face of the social vulnerability produced by the pandemic, a key point to be addressed is the lower level of people's mobility on the streets and collective public spaces. To contain the pandemic, people need to know how infections spread and what safeguards to take and it was predicted that having enough

information would encourage people to make decisions that will help to prevent and control epidemics. Regular hand washing, the use of hand sanitizers, the use of face masks, respiratory etiquette, social distancing, and self-seclusion while sick, were all important in preventing widespread infection as stated by)Leppin and Aro, 2009) [10]. As a result, persons may need to be informed about the dangers of infection in order to take the appropriate precautions. The high rate of isolation adherence among responders could be due to a fear of infection, which could result in much more serious health and financial consequences. To fight the Coved 19 pandemic, precautionary steps and successful treatment methods, such as vaccination were considered to be the most suitable strategies (Mohammed *et al*. 2021) [13]. Participants in prior studies on epidemic outbreaks that necessitated isolation expressed concerns about their health and the possibility of infecting others, particularly their family members (Bezerra *et al*. 2020) [2].

Table 5: Practicing social distancing with respect to education (n=120) (M =70, F =50)

Literacy type	Highly Required			Partially Required			Not at all required		
	M	F	p value	M	F	p value	M	F	p value
Illiterate (n=38)	17	11	(x^2,1.35) (p=0.0.234) Non-significant	3	4	(x^2,1.65) (p=0.197) Non-significant	2	1	(x^2,0.8) (p=0.371) Non-significant
Literate (n=82)	22	25		18	8		8	1	

While practicing social distancing have become a norm across the globe due to the pandemic, it is critical that one should adhere to such norms. Our study revealed that 73.3% of the participants practice social distancing during the pandemic situation, in similarity a study in US also records that more social distancing was followed (65%) compared to before the COVID 19 outbreak reported by)Masters *et al*. 2020) [12]. These findings were in consonance with previous study by (Williams *et al*. 2021) [19]. Practicing of social distancing was widely observed among female respondents (44.7%, 39.8%) compared to male respondents. Practicing of social distancing was widely observed among literate participants as compared to illiterate participants.

It was also observed that practice of maintaining social distancing at similar levels of difference found among the two groups both illiterate and literate participants with no significant difference. The proportion of subjects did not differ by level of education. A chi –square test of independence was performed to examine the relation between literacy type and accepting social distancing measures adopted by the participants. The relation between these variables was non significant as (*p>.05*). Similar findings were reported by)Bezeraa *et al*. 2020) [2] that social interaction was the most affected aspect among people with

higher education and income (45.8%) and financial problems caused a more significant impact (35%) among people with low income and education.

Attitude of the tribal's towards Vaccination to prevent COVID -19
The information on attitude includes assessing participants attitude in sourcing the reliable information on COVID 19, people's perception towards stigma associated with the disease and discrimination practices attached with it (Dar *et al*. 2020)[6]. The practice includes COVID appropriate behaviors such as preventive steps taken as wearing of mask, hand washing and maintaining social distancing. The purpose of this study was to highlight the overall crux of the vaccination strategies that were implemented during a pandemic in tribal populated area. This report can be viewed as a baseline document for future pandemic preparedness and to effectively tailor and refine the strategies that will help the population at large (Wolemonwu *et al*. 2020) [20]. Free vaccination against COVID 19 commenced in India on January 16, 2021, and the government is urging all of its citizens to be immunized, in what is expected to be the largest vaccination program in the world.

Table 6: Attitude of the respondents towards Vaccination (n=120) (M =70, F =50)

Education type	Yes Required			Not Required			Don't know		
	M	F	p value	M	F	p value	M	F	p value
Illiterate)n=38)	10	14	(x^2,1.54) (p= 0.213) Non-significant	5	3	(x^2,0.03) (p=0.84) Non-significant	4	2	(x^2,1.33) (p=0.248) Non-significant
Literate (n=82)	34	26		13	4		4	1	

The contact and trust of formal information regarding willingness towards vaccinations sources had a stronger impact on vaccine cognition and vaccination willingness than that of informal information sources (Du *et al*. 2021) [7]. Based on the perspectives of communication ecology and

media psychology, explored how different media use habits effected knowledge levels and threat perception, thus further influencing the public's willingness to be vaccinated (Yu *et al*. 2021) [23]. The information sources of vaccination have different effects on the evaluation of vaccination among

students and the information about new corona virus diseases and vaccines obtained from medical personnel is related to higher self-efficacy, response efficacy and knowledge.

A chi –square test of independence was performed to examine the relation between literacy type and willingness to accept vaccination measures by the participants. The relation between these variables was found to be non-significant as ($p > .05$). The findings were corroborated with the findings of (Olapegba *et al.* 2020) [14].

Table 7: Gender based Attitude of the respondents towards Vaccination

Gender	Male)n =70)	Female(n =50)	"t" test (two tailed)	p value
Variance	0.236	0.243	"t" stat -2.14 *	
Standard Deviation	0.486	0.493	"t" stat -2.14 *	p=0.017
Standard Error	0.058	0.069	"t" critical stat-1.97, Significant as (*p*<.05).	

* Significant at 0.05 level

A two-tailed "t" test was used to investigate the relationship between gender and the participants' readiness to receive COVID -19 immunization. The relationship between these variables was determined at (*p*=.05) significant, the male and female respondents were found to have significantly different attitudes and willingness towards vaccination, which could be due to female respondents' higher knowledge level about causes and importance of vaccination to contain this viral disease COVID 19 and positive response to adopt COVID appropriate behavior such as social distancing, wearing masks in public and maintaining proper isolation to contain the COVID 19 pandemic. Similarly, (Bezerra *et al.* 2020) [2] reported that the perception about social isolation as a pandemic mitigation action varies by education, and gender.

Table 8: Practice adopted to avoid COVID 19 among the study participants (n=120) (M=70, F=50)

Practices adopted to avoid COVID infection	Male				Female				Weighted Mean Score *(WMS)*	Rank
	Agreed	%	Dis Agreed	%	Agreed	%	Dis Agreed	%		
Washing hands regularly using alcohol-based cleaner or soap / water	64	91.4	6	8.6	48	96	2	4.0	1.933	I
Covering mouth and nose when coughing or sneezing	41	58.6	29	41.4	34	68	16	32.0	1.625	VII
Avoid close contact with anyone who has a fever and cough	48	68.6	22	31.4	41	82	9	18.0	1.742	VI
Using homeopathic remedies	29	41.4	41	58.6	22	44	28	56.0	1.425	VIII
Eating garlic, ginger, lemon	47	67.2	23	32.8	44	88	6	12.0	1.758	V
Avoid unprotected direct contact with live animals and surfaces in contact with animals	51	72.9	19	27.1	41	82	9	18.0	1.767	IV
Wearing mask when going out of home	52	74.3	18	25.7	45	90	5	10.0	1.808	II
Practicing social distancing and limiting your movement outside your home	53	75.7	17	24.3	42	84	8	16.0	1.792	III

Table 8 represents the participants practice towards COVID 19 by gender. It was observed that female participants have more inclination (96%) towards washing hands regularly using alcohol-based sanitiser or soap/water as preventive step from getting infected of COVID 19. Similarly, the same group practice covering mouth and nose when coughing or sneezing as preventive steps from getting infected and this too has difference as observed in the study among male and female respondents. Respondents have accepting the practices to avoid COVID as per the SOP and they ranked the practices like washing hands regularly using alcohol-based cleaner or soap / water as first (WMS, 1.93) followed by wearing mask when going out of home as second (WMS, 1.80) followed by practicing social distancing and limiting your movement outside your home as third (WMS, 1.79). It is worth to state that the practice of wearing a mask is high (90%) among female and (74.3%) among female participants. Practicing of social distancing is high among female (84%) compared to male participants (75.7%) and the findings were in consonance with the findings of (Zhong *et al.* 2021) [26]. While practicing social distancing have become a norm across the globe due to the pandemic, it is critical that one should adhere to such norms. It was revealed from the study that degree of acceptance and practicing of all preventive measures to avoid COVID 19 by female respondents was higher than male respondents. Our study revealed that 79.1% of the participant were practicing social distancing during the pandemic situation, similar results in US also records that more social distancing was followed (65%) compared to before the COVID 19 outbreak (Master *et al.* 2020) [12].

Table 9: Attitude of the respondents toward COVID 19 and its seriousness (n=120) (M =70, F =50)

How dangerous do you think the new COVID 19 risk is?	Very dangerous		Mild dangerous		Not dangerous		Weighted mean score (WMS)	Mean score expressed (%)	Rank
	f	%	f	%	f	%			
Male	25	35.7	35	50.0	10	14.3	2.21	73.8	II
Female	30	60.0	18	36.0	2	4.0	2.56	85.33	I

It was observed from Table 9 that, of all the key questions of the survey, female respondents had more knowledge compared to male respondents. Among female 60.0% perceived COVID 19 as a more dangerous diseases where as 35.7% male viewed COVID 19 as a dangerous disease. Female respondents considered the COVID 19 as more dangerous (WMS, 2.56) followed by male respondents with (WMS, 2.21) and mean score expressed% was 85.83 and 73.8 respectively in male and female respondents. As the female respondents were having more knowledge and information

about the cause and transmission of this disease outbreak, its seriousness and death risk attached with it and they had perceived it as a very dangerous viral disease, highly fatal and that was the reason they were practicing the COVID appropriate individual healthy behaviors like washing hand with sanitizers, practicing social distancing, wearing of mask in public and maintaining proper isolation to contain the COVID 19 pandemic. Similar finding had been reported by individuals' level of knowledge about an infectious disease can cause them to behave in ways that may prevent infection (Choi and Yang 2010) [3].

Table 10: Attitude of the respondents towards medical treatments under COVID 19 symptoms

Variables		Male	(%)	Female	(%)
What to do if you or someone from your family has symptoms of this COVID 19 disease?	Go to hospital	15	21.4	25	50.0
	See a nurse	15	21.4	5	8.0
	Get medicines	25	35.7	10	20.0
	Will isolate myself	5	7.1	8	16.0
	Look for Traditional healer	10	14.3	2	4.0

It was depicted in Table -10 the attitude of the respondents to opt for medical treatment for COVID 19 symptoms and it was revealed that majority (50.0%) of the female respondents followed by male respondents only (21.4%) has mentioned the option to go to hospital when someone has shown the symptoms of the disease. More proportion (16.0%) of female respondents shown positive responses towards maintaining isolation, as compared to male respondents (7.1%) Similar findings have been reported by (Wolemonwu V.C. 2020) [20] and (Worldometers, Corona virus live, 2022) [21] that majority of the respondents (more than 90%) agreed that COVID 19 has highly fatal and needs immediate medical treatments.

Conclusion
The study states that the knowledge levels are adequate in terms of the COVID 19 pandemic among the study participants, however practicing COVID appropriate behaviors needs to be improved. It was also observed that practice of maintaining social distancing at similar levels of difference found among different gender perspective and both illiterate and literate participants with no significant difference. It was concluded that relation between literacy type and willingness to accept vaccination measures by the subgroup male and female participants were not significant. It is suggested that behavior change communication materials with customized messages, innovative social media campaigns, mass media awareness programs emphasizing the message on, not to stigmatize people who are affected by COVID -19 can be developed involving the local communities and non-governmental organizations. Evidence-based campaign should be intensified to remove misconceptions and promote precautionary measures.

Conflict of Interest Statement
The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Acknowledgments

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