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Original Research Article

KNOWLEDGE, ATTITUDE, AND PRACTICE TOWARD COVID-19 AMONG PREGNANT WOMEN IN A TERTIARY CARE HOSPITAL DURING THE COVID-19 PANDEMIC IN RAJASTHAN

Parul Prakash[1], Km Anshu[2]

[1] Professor, Department of Obstetrics & Gynaecology, PBM Hospital Bikaner, Rajasthan.
[2] Resident, Department of Obstetrics & Gynaecology, PBM Hospital Bikaner, Rajasthan.

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Abstract

Objective: The aim of the present study is to determine the knowledge, attitudes, and preventive practice of pregnant women towards COVID-19 in a tertiary care centre.

Methods: Hospital based descriptive cross-sectional study, was carried out at ANC department of obstetrics & gynecology, PBM hospital, Bikaner b/w Oct 2020 to Feb 2021 after ethical committee clearance with sample size 500 pregnant women fulfilling Inclusion & exclusion criteria were taken.

Results: Mean age of participants was (25.40±4.39) & the gestational age (25.52±9.40), higher number of participants from middle class family (58.20%) & urban area (55.80%). All participants were aware of the COVID-19 with (83.60%) believing its real, (50.40%) aware of vaccine. Only (19.80%) of pregnant women says that they can breastfeed while infected. Low & middle socioeconomic, rural & Muslim participants had more knowledge. (77.81%) participants worn mask & followed social distancing; only (44.40%) practiced hand sanitization. (51.40%) participants had adequate knowledge, (51.20%) shown positive attitude & (55.80%) had good practice.

Conclusions: Study showed that most of the participants had adequate knowledge & exercised safe practice during this pandemic with some unclear ideas.

Keywords: Antenatal Clinic; Knowledge; Attitude; Practice

Introduction:

Coronavirus disease (COVID-19) is known as a public health emergency throughout the world. The novel Coronavirus (2019-nCoV, officially known as SARS-CoV-2 or COVID-19) was first reported in December 2019, as a cluster of acute respiratory illness in Wuhan, Hubei Province, China, from where it spread rapidly to over 198 countries. on March 11, 2020, the World Health Organization (WHO) declared the coronavirus disease (COVID-19) a global pandemic [1]. It is a newly emerging disease whose many dimensions are still unknown The pathogenesis period of coronavirus ranges between 2 and 14 days, and more than 80% of cases have mild symptoms [2]. Given that there is no definitive way to treat the disease, the only way to control the disease is to prevent it through adherence to standard precautions, increasing social distance, and washing hands [3].

Having sufficient knowledge regarding COVID-19 in heath care workers (HCWs) who are exposed to patients with COVID-19 day and night is doubly important. Low level of knowledge and negative attitude towards COVID-19 directly lead to late diagnosis, poor practice, poor adherence to infection control principles, and a faster spread of the disease [4, 5]. With due attention to the newly emerging nature of coronavirus, the huge variety of the disease symptoms, different diagnostic tests, and the lack of vaccines and definitive coronavirus treatment, having sufficient knowledge, a positive attitude, and good practice to deal with the disease are of great urgency.In order to introduce and install effective control measures, having knowledge about basic hygiene principles and modes of disease transmission, and measures in such an environment is, therefore, of vitally importance. According to the KAP theory, this is generally affected by their knowledge, attitude, and practices (KAP) concerning COVID-19 [6,7].

Furthermore, it is known that KAP studies are known to give significant information on deciding the suitable intervention programs for preventing the disease. Knowledge of the disease influences the attitude of the general population. Similarly, in pregnant women it is important to evaluate the knowledge, attitude and behaviour towards the disease in order to prevent the disease [8]

According to CDC guidelines, pregnant and breastfeeding women are subgroups that need extra precaution to avoid COVID-19 infection. They are at an increased risk for severe illness from COVID-19 compared to nonpregnant people. The cytokine storm that occurs in COVID-19 infection is likely to predispose a pregnant woman with COVID-19 to increased morbidity and even mortality [9,10]. The cumulative effect of the disease on the woman

is likely to have a detrimental effect on her and the developing fetus. It could predispose a developing fetus to intrauterine growth restriction (IUGR), preterm delivery with immediate and long-term sequelae, abortion, and stillbirth [11] .There are fears of adverse maternal and perinatal outcomes due to distinctive immunological suppression during pregnancy. In addition, there may be an increased risk of adverse pregnancy outcomes, such as preterm birth, among pregnant people with COVID-19.[12]

Materials & methods:

The present study was a descriptive cross-sectional study carried out at the antenatal clinic of the Department of Obstetrics and Gynaecology, S.P. Medical College & Associated group of Hospital, Bikaner, Rajasthan.

Objectives:

To determine the knowledge, attitudes and practices towards COVID-19 among pregnant women and to find the association of sociodemographic variables (Age, place of residence, education and etc.) with knowledge, attitude and practice.

Duration of study: October 2020 to Feb 2021

Study design: A descriptive cross-sectional study

Study population: The study population consisted of pregnant women that presented to the antenatal clinic for their routine antenatal care.

Inclusion criteria

- All pregnant women irrespective of gestational age were included in the study
- Women willing to provide informed consent form

Exclusion criteria

- Women came for gynaecological consultation
- Nonpregnant women
- Post-natal patients
- Women who did not accept to participate the study

Operational definition The knowledge part of the questionnaire contained seventeen questions (K17). The questions were given an option of yes/no with an additional "Not sure option in questions. A scoring system is applied to assess the level of KAP of each participant: 1 point for each correct answer and 0 point for an incorrect/not sure answer. With a total of score 17 for knowledge, the respondents are grouped into two categories - adequate and inadequate knowledge. Attitude toward COVID 19 were measured by twenty-one questions (A21), with a total score of 21 for attitude; the respondents will be grouped as having a positive or negative attitude. The practices will be assessed by six questions (P6), with a total score of 6 for practices; the respondents will be classified into two categories – good or poor practices.

Statistical methods -Data were presented as absolute numbers, mean, and standard deviation, or percentages. The values of continuous variables were expressed as a mean ± standard deviation (SD). Categorical variables are represented as frequency distributions and single percentages. Normally distributed continuous variables were compared using a Student t-test, non-normally distributed continuous variables using the Mann-Whitney U test, and categorical variables were compared by $\chi 2$ and Fisher's exact test where appropriate. Results were considered statistically significant at a level of p less than 0.05. All analyses were performed using Minitab® 19.

The participants were selected based on inclusion and exclusion criteria. Informed consent was obtained from all the patients and this study was approved by Ethics scientific committee.

Results:

Demographic information

In the present study, 500 filled questionnaires were received from the participants. The mean age of participants was 25.40±4.39 (figure 2) and the gestational age 25.52±9.40. The socioeconomic status showed higher number of participants from middle class family 291 (58.20%) & urban area 279 (55.80%). Illiterate are (39.80%) and 99.40% are home makers. Past history shows 16.00% of participants are anaemic, 6.40% had thyroid problem (table 1).

Knowledge of COVID-19 -

A set of 18 questions regarding the knowledge of the participants about COVID-19 were recorded. All the participants 100% are aware of the COVID-19 and 83.60% participants are believing that it is real (table 2). 75.80 participants thinking that it is dangerous. 89.80% of the participants have knowledge on spread of virus via respiratory droplets of infected individuals. 50% of the participants told the virus spread can occur by mosquitoes/ticks, 25.20% of participants are not sure and 24.40% are not aware of this. Only 50.40% of participants are aware of the COVID 19 vaccines, 25.20% are not sure and 24.40% doesn't know about the vaccine. 77.2% participants have knowledge that the agents of COVID-19. 84.00% of the participants have knowledge that isolation and treatment is the effective way treatment to reduce the spread. 19.80% of the pregnant women says that they can give the breast feed with proper hygiene whereas 36.40% are not sure about it and 43.80% doesn't have any knowledge about it (table 2).

Attitude towards COVID-19-

Attitude of all participants was collected and analysed (table 3). 87.00% of participants shown their concern about taking preventive measures and 70% recorded that their households are concerned about taking preventive measures. 58.80% of the participants considered that they are at risk and 61.00 % are anxious. 61.80% worried about

being infected with COVID-19 during delivery or postpartum hospital stay. 64.00% expressed that COVID-19 outbreak would negatively affect their new-born's exclusive breastfeeding duration. 77.20% participants received emotional support from their households and social networks. Home quarantine and social distancing also did not affect the Quality and quantity of their life (table 3).

Practice to prevent COVID-19-

In this study the participants were asked what should be done to prevent against COVID-19. Most of the participants had not gone out (49.00%) and worn a mask and followed social distancing while going outside (77.81%). Only 41.40% practiced hand sanitization and 52.40% have not practised. Most of the participants are following good eating and healthy life style and avoided touching their faces (table 4).

Table 1: Demographic characteristics of the participants-

Variable	Unit	Frequency	Percentage
Age (yrs)	mean±SD	25.40±4.39	
Gestational age (weeks)	mean±SD	25.52±9.40	
Socioeconomic status	High	37	7.40
	Low	172	34.40
	Middle	291	58.20
Religion	Hindu	406	81.20
	Muslim	94	18.80
Number of ANC visits	Booked	263	52.60
	Not booked	237	47.40
Area	Rural	221	44.20
	Urban	279	55.80
Occupation	Employed	3	0.60
	Home maker	497	99.40
Education	Illiterate	199	39.80
	Below high school	195	39.00
	High school	96	19.20
	Univeristy Degree	10	2.00
Past history	Anaemia	80	16.00
	Asthma	5	1.00
	DM	6	1.20
	DM II	6	1.20
	Epilepsy	2	0.40
	HTN	16	3.20
	Thyroid	32	6.40
	Nil	353	70.60

Table 2: Knowledge of COVID-19

Variable	Unit	Frequency	Percentage
K1] Are you aware of the COVID-19 outbreak?	No	0	0.00
	Yes	500	100.00
K2] Is COVID 19 real?	No	50	10.00
	Not sure	32	6.40
	Yes	418	83.60
K3] Do you think coronavirus disease is dangerous?	No	26	5.20
	Not sure	95	19.00
	Yes	379	75.80
K5] COVID-19 virus spreads via respiratory droplets of infected individuals?	No	4	0.80
	Not	47	9.40

	sure		
	Yes	449	89.80
K6] Can mosquito/ticks spread the virus?	No	122	24.40
	Not sure	126	25.20
	Yes	252	50.40
K7] Can be frozen packed or refrigerated food spread the virus?	No	43	8.60
	Not sure	216	43.20
	Yes	241	48.20
K8] Aware of COVID 19 vaccine trials	No	122	24.40
	Not sure	126	25.20
	Yes	252	50.40
K9] Agents of COVID 19	Bacteria	9	1.80
	Not sure	105	21.00
	Virus	386	77.2
K12] Does COVID 19 has a cure?	No	166	33.20
	Not sure	236	47.20
	Yes	98	19.60
K14] To prevent infection with COVID-19, individuals should avoid going to crowded places as train/stations and avoid public transportation	No	13	2.60
	Not sure	14	2.80
	Yes	473	94.60
K15] Do you think hand hygiene is important in controlling the spread of the virus?	No	33	6.60
	Not sure	21	4.20
	Yes	446	89.20
K16] Isolation and treatment of people who are infected with COVID-19 are effective ways to reduce the spread	No	27	5.40
	Not sure	53	10.60
	Yes	420	84.00
K17] Can women with COVID-19 breastfeed the baby with proper hygiene?	No	219	43.80
	Not sure	182	36.40
	Yes	99	19.80

Table 3: Attitude towards COVID-19

Variable	Unit	Frequency	Percentage
A1] You are concerned about taking preventive measures against COVID19	No	45	9.00
	Not sure	20	4.00
	Yes	435	87.00
A2] Your households are concerned about taking preventive measures against COVID-19	No	67	13.40
	Not sure	83	16.60
	Yes	350	70.00
A3] You consider yourself at risk of COVID-19	No	31	6.20
	Not sure	175	35.00
	Yes	294	58.80

A4] You are anxious about being infected withCOVID-19	No	92	18.40
	Not sure	103	20.60
	Yes	305	61.00
A5] You are worried about being infected with COVID-19 during delivery or postpartum hospital stay	No	96	19.20
	Not sure	95	19.00
	Yes	305	61.80
A6] You are worried about your new born being infected with COVID-19	No	147	29.40
	Not sure	141	28.20
	Yes	212	42.40
A7] You are anxious about your new-born's mortality by COVID-19	No	260	52.00
	Not sure	171	34.20
	Yes	69	13.80
A8] Your routine prenatal care (physical and para-clinic examinations) has been reduced or discontinued due to closure of antenatal clinics	No	151	30.20
	Not sure	81	16.20
	Yes	268	53.60
A9] Stress regarding being infected with COVID-19 makes you reduce or discontinue your routine prenatal care (physical and para-clinic examinations)	No	154	30.80
	Not sure	89	17.80
	Yes	257	51.40
A10] COVID-19 outbreak will affect your type of delivery (natural, i.e., vaginal delivery or caesarean section)	No	77	15.40
	Not sure	359	71.80
	Yes	64	12.80
A11] COVID-19 outbreak will negatively affect your new-born's exclusive breastfeeding duration	No	55	11.00
	Not sure	124	24.00
	Yes	321	64.20
A12] Concerns about being infected with COVID-19 have reduced your face-to face communications with others	No	36	7.20
	Not sure	29	5.80
	Yes	435	87.00
A13] You receive emotional support from your households and your social networks	No	73	14.60
	Not sure	41	8.20
	Yes	386	77.20
A14] You follow the news about COVID-19 on social media	No	209	41.80
	Not sure	24	4.80
	Yes	267	53.80
A15] Following news regarding COVID-19 makes you anxious and upset	No	221	44.20
	Not sure	27	5.40
	Yes	252	50.40
A16] COVID-19 has negatively affected your routine daily chores	No	201	40.20
	Not sure	41	8.20
	Yes	258	51.60
A17] You are dealing with rumination regarding COVID-19 consequences	No	277	55.40

	Not sure	37	7.40
	Yes	186	37.20
A18] You feel obsessed with washing hands and disinfecting objects	No	276	55.20
	Not sure	44	8.80
	Yes	180	36.00
A19] Home quarantine and social distancing have negatively affected your mood	No	288	57.60
	Not sure	48	9.60
	Yes	164	32.80
A20] Quality and quantity of your sleep have been negatively affected by COVID-19	No	320	64.00
	Not sure	40	8.00
	Yes	140	28.00
A21] You have been successful to control your stress about COVID-19	No	98	19.60
	Not sure	95	19.00
	Yes	307	61.4

Table 4: Practice of pregnant women

Variable	Unit	Frequency	Percentage
P1] In recent days, have you gone to any crowded places?	No	250	50.00
	Not sure	5	1.00
	Yes	245	49.00
P2] In recent days, have you worn a mask and follow social distancing while going outside?	No	96	19.20
	Not sure	15	3.00
	Yes	389	77.80
P3] In recent days, do you practice hand sanitization?	No	262	52.40
	Not sure	31	6.20
	Yes	207	41.40
P4] How often do you practise social distancing in this current pandemic?	No	109	21.80
	Not sure	95	19.00
	Yes	296	59.20
P5] How often do you stay home for social distancing?	No	69	13.80
	Not sure	27	5.40
	Yes	404	80.80
P6] Are you following good eating and healthy life style	No	25	5.00
	Not sure	181	36.20
	Yes	294	58.80
P7] are you avoiding to touch your face	No	48	9.60
	Not sure	70	14.00
	Yes	382	76.40

Table 5: Scores of KAP

	Knowledge (n=500, median=24.00)		Attitude (n=500, median =35.00)		Practice (n=500, median=9.00)	
Level	Adequate Knowledge (n=256)	Inadequate Knowledge (n=244)	Positive attitude (n=257)	Negative attitude (n=243)	Good practice (n=294)	Poor practice (n=206)
Score	51.20%	48.80%	51.40%	48.60%	58.80%	41.20%

In the given table 51.20% of the participants have adequate knowledge and 51.40% shown positive attitude and 58.80% of the participants shown good practice (table 5).

Table 6: Effect of baseline characteristics on Knowledge

Variables	Unit	Adequate knowledge (n=256)	Inadequate knowledge (n=244)	P value
Age	mean±SD	25.41±4.36	25.40±4.34	0.97
Marital status	mean±SD	1640±1214	1391±954	0.01
Gestational age	mean±SD	26.57±9.22	24.42±9.49	0.01
Socioeconomic status	High	1(2.70)	36(97.30)	0.000
	Low	121(70.35)	51(29.65)	
	Middle	134(46.05)	157(53.95)	
Religion	Hindu	180(44.33)	226(55.67)	0.000
	Muslim	76(80.85)	18(19.15)	
No of ANC booked	Booked	96(36.50)	167(63.50)	0.000
	Unbooked	160(67.51)	77(32.49)	
Referral	No	243(50.84)	235(49.16)	0.449
	Yes	13(59.09)	9(40.91)	
Area	Rural	162(73.30)	59(26.70)	0.000
	Urban	94(33.69)	185(66.31)	
Occupation	Employed	2(66.67)	1(33.33)	0.591
	Home maker	254(51.11)	243(48.89)	
Highest education	Illiterate	160(80.40)	39(19.60)	0.000
	Below high school	5(5.21)	91(94.79)	
	High school	91(46.67)	104(53.33)	
	University degree	0(0.00)	10(100.00)	

Age group (p=0.97) did not show any significant difference between the adequate and inadequate knowledge. Low and middle socioeconomic status, Muslim (80.85%) & Rural area (73.30%) of the participants have adequate knowledge (p=0.00). Employees have adequate knowledge (66.67%) than Home makers (51.11%) but did not show any significant difference between the groups (p=0.59). Illiterates (80.40%) have adequate knowledge followed by high school (46.67%) and below high school (5.21%) and showed significant difference between the groups (p=0.00).

Table 7: Effect of baseline characteristics on attitude

Variables	Unit	Negative attitude (n=243)	Positive attitude (n=257)	P value
Age	mean±SD	25.45±4.35	25.37±4.36)	0.82
Marital status (in days)	mean±SD	1385±959	1644±1209	0.008
Gestational age	mean±SD	25.22±8.90	25.81±9.86	0.48
Socioeconomic status	High	30(81.08)	7(18.92)	0.00
	Low	48(27.91)	124(72.09)	
	Middle	165(56.70)	126(43.30)	
Religion	Hindu	219(53.94)	187(46.06)	0.000
	Muslim	24(25.53)	70(74.47)	
No of ANC booked	Booked	154(58.56)	109(41.44)	0.000
	Unbooked	89(37.55)	148(62.45)	
Referral	No	236(49.37)	242(50.63)	0.107
	Yes	7(31.82)	15(68.18)	

Area	Rural	68(30.77)	153(69.23)	0.000
	Urban	175(62.72)	104(37.28)	
Occupation	Employed	3(100.0)	0(0.00)	0.07
	Home maker	240(48.29)	257(51.40)	
Highest education	Illiterate	49(24.62)	150(75.38)	0.000
	Below high school	107(54.87)	88(45.13)	
	High school	77(80.21)	19(19.79)	
	University degree	10(100.00)	0(0.00)	

Age group (p=0.82) and gestational age (0.48) did not show any significant difference between the negative and positive attitude. Muslims have high positive attitude (74.47%) compared with Hindus (46.06%) , p=0.00. Rural area (69.23%) participants have high positive attitude when compared with urban area (p=37.28%) participants (p=0.00). Home makers (51.00%) have high positive attitude than the employed (0.00) participants and observed slight significant difference (p=0.07). Illiterates (75.38%) have high positive attitude followed by below high school (45.13%) and high school (19.79%) participants (p=0.00).

Table 8: Effect of baseline caracteristics on practice

Variables	Unit	Good practice (n=294)	Poor practice (n=206)	P value
Age	mean±SD	25.49±4.45	25.29±4.20	0.61
Marital status	mean±SD	1573±1244	1441±853	0.15
Gestational age	mean±SD	25.82±9.28	25.10±9.58	0.40
Socioeconomic status	High	3(8.11)	34(91.89)	0.00
	Low	130(75.58)	42(24.42)	
	Middle	161(55.33)	130(44.67)	
Religion	Hindu	212(52.22)	194(47.78)	0.00
	Muslim	82(87.23)	12(12.77)	
No of ANC booked	Booked	133(50.57)	130(49.43)	0.00
	Unbooked	161(67.93)	76(32.07)	
Referral	No	280(58.58)	198(41.42)	0.63
	Yes	14(63.64)	8(36.36)	
Area	Rural	159(71.95)	62(28.05)	0.00
	Urban	135(48.39)	144(51.61)	
Occupation	Employed	0(0.00)	3(100.00)	0.03
	Home maker	294(59.15)	203(40.85)	
Highest education	Illiterate	162(55.10)	37(17.96)	0.00
	Below high school	109(37.07)	86(41.75)	
	High school	22(7.48)	74(35.92)	
	University degree	1(0.34)	9(4.37)	

Age group (p=0.61) did not show any significant difference in terms of practice. Low and middle socioeconomic status, Muslim (87.23%) & Rural area (71.95%) participants followed good practice (p=0.00). Home makers followed good practice (59.15%) than employed , p=0.03.

Table 8: Summary of studies on patterns of KAP associated factors of COVID-19

Author (year)	Country	Target participants	No of participants	K	A	
Allagoa et al (2020) [39]	Nigeria	Pregnant women	1000	80%	70.9%	58.4%
Mehran Hesaraki et al [38] (2020)	Iran	Systemic review of HCWs	16427	72.2%	70.9%	78.8%
Kamal D (2020) [22]	India	Pregnant women	506	75.3%	73.9%	92.7%
Hussain I (2020) [46]	Pakistan	HCWs	114	90.7%	90.0%	90.0%
Current study	India	Pregnant women	500	51.20%	51.40%	58.80

In the current study all the participants (100%) are aware of the COVID-19 and 83.60% participants are believing that it is real. 89.80% of the participants have knowledge on spread of virus via respiratory droplets of infected individuals. 50% of the participants told that the virus spread can occur by mosquitoes/ticks, 25.20% of participants are not sure and 24.40% are not aware of this.

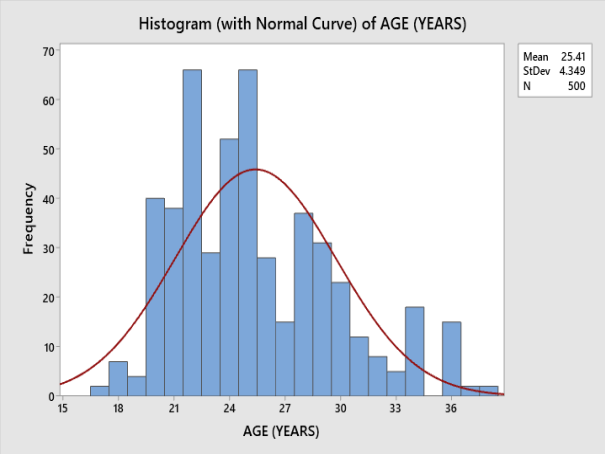

Figure 1: Histogram of the participants.

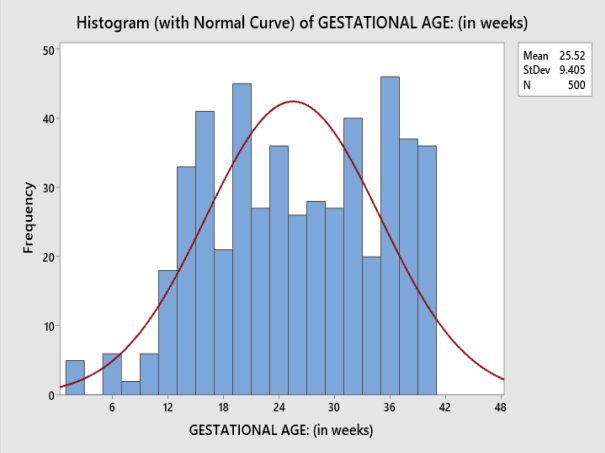

Figure 2: Histogram of the gestational age.

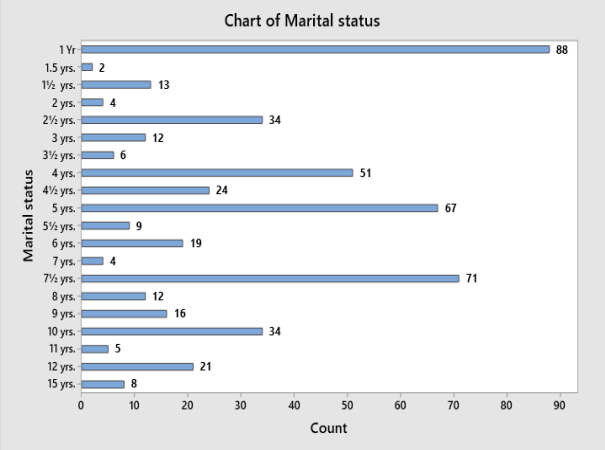

Figure 3: Chart of marital status.

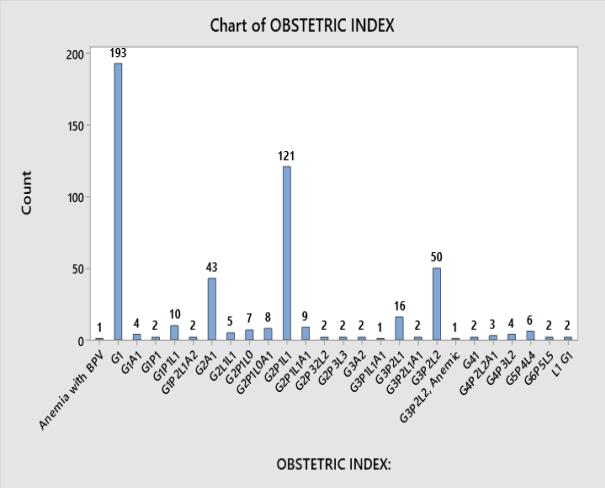

Figure 4: Obstetric index

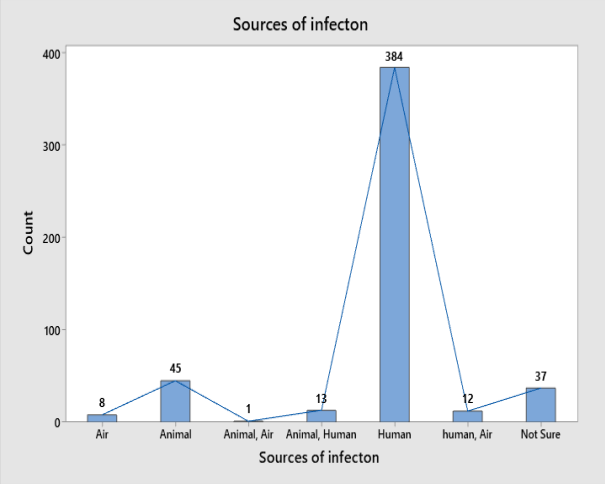

Figure 5: Knowledge on source of infection of COVID-19

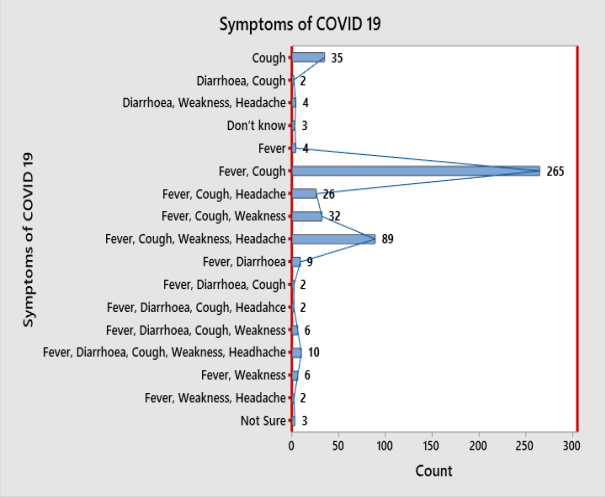

Figure 6: Knowledge on symptoms of COVID-19- Most of the participants are aware of the fever and cough .

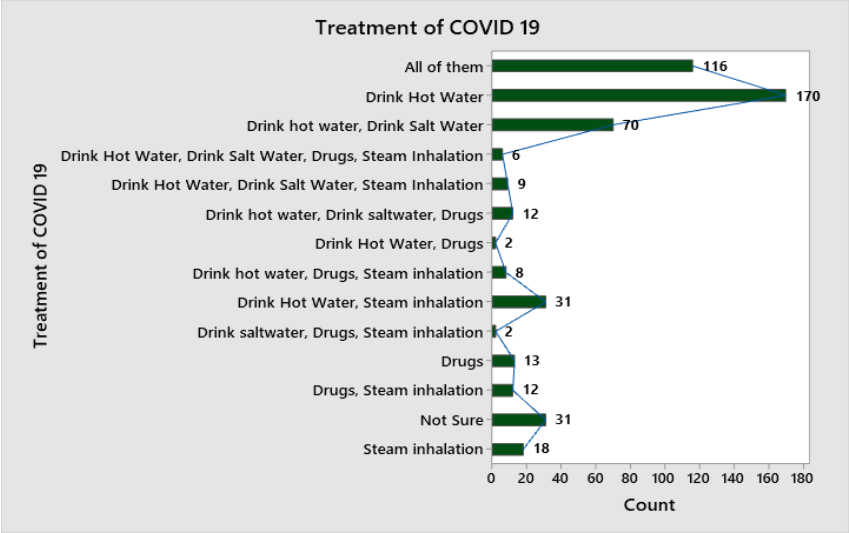

Figure 7: Knowledge on treatment of COVID-19-Many of the participants opined that drinking hot water is the treatment and several others considered taking drugs, drinking hot water, steam inhalation as treatment

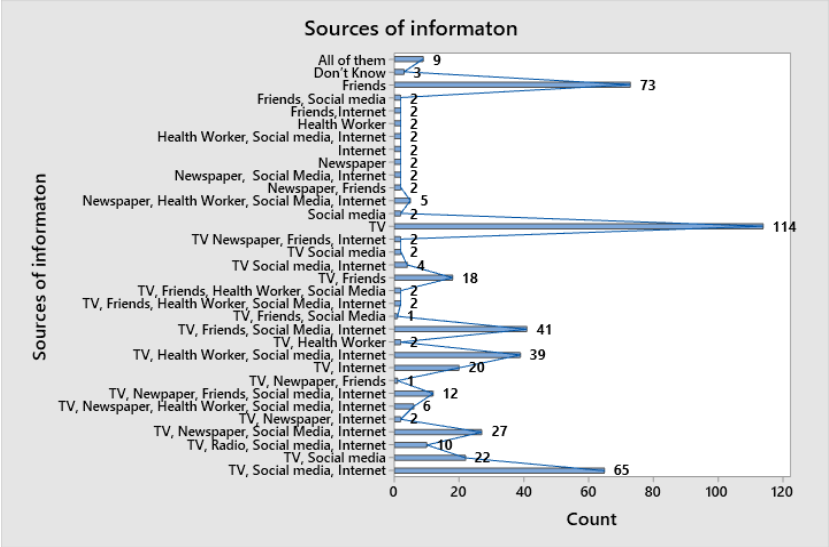

Figure 8: Sources of information – Television is the source of information for most of the participants followed by friends and social media and internet.

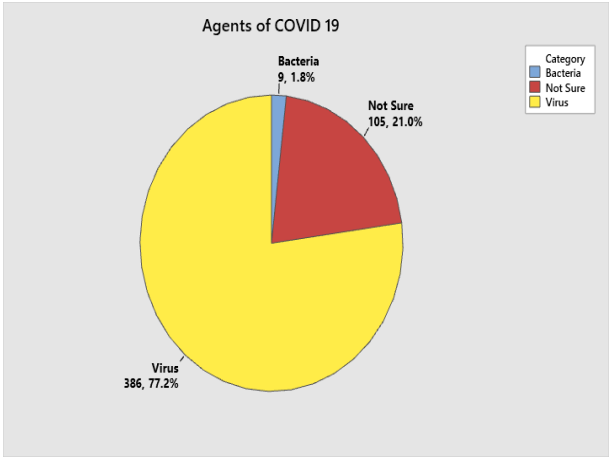

Figure 9: Agents of COVID 19

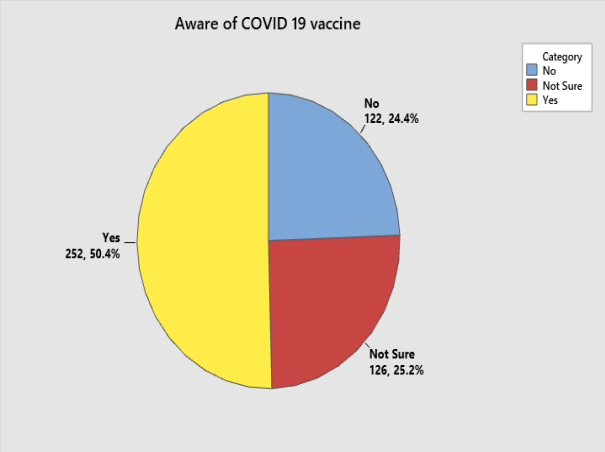

Figure 10: Aware of COVID 19 vaccine

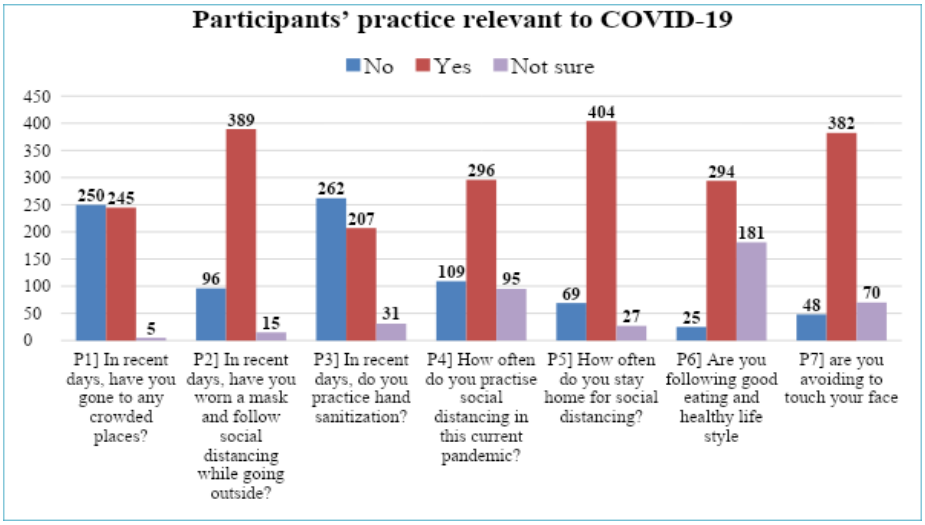

Figure 11: Participants practice relevant to COVID-19

Discussion:

This study provides an insight to the level of knowledge and practice of preventive measures against person-to-person transmission of coronavirus infection among pregnant mothers in Bikaner at the time of the COVID-19 infection outbreak in India. The level of knowledge about preventive measures against coronavirus disease among the participants was high. This is probably because since the onset of the first confirmed case of the disease, Indian government has embarked on aggressive media campaign to educate the populace on the preventive measures to curtail person-to-person transmission of the disease. Therefore, it is not surprising that television and friends and relatives were the sources of information on the preventive measures for the majority of the study participants.

Although, case reports from advanced countries about the outcome of coronavirus disease in pregnancy appear to be good and these outcomes were achieved with intensive, active management that might be absent in most developing countries due to poor healthcare system prevalent in resource-constrained settings. Therefore, pregnant women require special attention in relation to prevention, diagnosis, and management.

In the study a total 500 pregnant mothers participated. Most of them were illiterate and home makers. It is not surprising that most of the study participated acquired their preliminary knowledges regarding COVID-19 from their husbands and health care workers of their localities. It was observed that all the mothers were well aware of the mode of transmission of the disease. They also had a correct knowledge about the spread of the disease from person to person. The knowledge about signs/symptoms of clinical presentation of COVID-19 was appropriate in most of the participants as evident in this study. These finding probably reflects to some extent the efficient public awareness programmes and activities of the local healthcare workers in the form of timely dispersion of essential information on COVID-19 through their respective field activities.

Similar findings were evident in an earlier study in India conducted by Kamal D et al.[13] Other countries like

Bangladesh, Nigeria who have done similar studies found acceptable level of knowledge of COVID-19 among pregnant women. [14,15]

Furthermore, this study showed that higher knowledge score regarding COVID-19 was significantly associated with a higher likelihood of having positive attitude and good practice at the time of COVID-19 pandemic

The attitude and practice of a person towards the disease are dependent on their knowledge of the disease. Zhong et al.[16] and Zhou et al.[17] reported the existence of a positive correlation between attitudes/practice of COVID-19 and level of knowledge among the individuals they studied in China. The majority of the women in the present study have adequate knowledge concerning the strategies outlined for the containment of the spread of the disease.

Our findings (table 12) on the participants' knowledge on symptoms of COVID-19 and transmission is similar to findings by Giao et al and Saqlain et al who reported good knowledge on the symptoms and transmission of the disease (89.5% and 93.2% respectively) [18,19,20]. A study done in North Central Nigeria had a similar finding where up to 99.2% had knowledge on the transmission on the major symptoms of COVID-19 (breathing difficulties, dry cough, high fever) [21].

Limitations: It is a single centre study which limits the generalization of the study findings to the study area. A multicentre study would have been ideal.

Conclusions: In conclusion, this study showed that most of the participants had adequate knowledge of preventive measures against COVID-19 infection, positive attitude and exercised safe practice during this pandemic with some unclear ideas. The current study, in fact exposes the need for more extensive mass education programmes required for vulnerable population like pregnancy, giving attention to consistency of information from the healthcare authority.

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