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COMPLIANCE OF THE PREGNANT MOTHERS TO THE PRENATAL CARE SERVICES DURING THE COVID-19 PANDEMIC

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Abstract
The world was shuttered by the emergence of the corona virus disease (CoViD-19). The COVID-19 pandemic has disrupted family planning and maternal and newborn health services globally, and in the Philippines to these indirect effects may significantly increase the annual maternal deaths and unintended pregnancies for 2020 compared with the pre-COVID years, a study by the University of the Philippines Population Institute (UPPI) and the United Nations Population Fund (UNFPA) revealed.
Descriptive-correlational research design is used to describe and find the correlation of the phenomena under study-compliance to ANC during CoViD-19 pandemic This study aims to determine compliance of pregnant mothers to address this timely Maternal and Child Health concerns during this pandemic period. The researchers concluded that the respondents have low socio-economic status. During CoViD 19- pandemic they received good ANC services and their compliance was also good however, one third of them did not comply with ANC, thus, there is a need to strengthen compliance to specific ANC services not complied well. They strongly believed that that praying will spare them and their fetus from COVID 19. Their compliance to ANC did not differ significantly by with each socio-demographic factors. As their knowledge and beliefs about CoViD-19 increases their compliance to ANC decreases. And as their socio-demographic and obstetric-related factors increase, their compliance to ANC also increase. The findings of this study will aid policy-makers in defining a more responsive service delivery strategies for the well-being of pregnant women.
Keywords: Pregnant Mothers, Prenatal care, University of the Philippines Population Institute (UPPI), CoviD-19

Introduction

Antenatal care is also known as prenatal care is a preventive health care. Having a healthy pregnancy is one of the best ways to promote a healthy birth. The antenatal check-up compliance of pregnant mothers is of great impact towards maternal and child health that makes it empirical to determine and be able to address effectively as one of the thrust of the Department of Health during this COVID-19 pandemic health crisis (DOH,2020). In the data gathered in Municipal Health Office of Talibon, there was a COVID-19 outbreak in the month of August,2020 at

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Barangay Guindacpan at which 47 was positive of the virus, 3 among them were pregnant women. During the outbreak, the island was locked down from August 17- September 17,2020 and contained the virus spread within the island that was made as a basis in choosing the research locale . This study aims to determine the Compliance of the Pregnant Mothers to the Antenatal Care Services during the COVID-19 pandemic in Talibon, Bohol from March to September, 2020 . It sought to answer the socio-demographic profile , respondents' obstetric-related factors affecting prenatal seeking behaviors, antenatal care (ANC) services received by the respondents During CoViD 19 pandemic, and the respondents knowledge and beliefs about CoViD – 19 in relation to their pregnancy. This also determine the compliance status to ANC during CoViD 19 pandemic, significant relationship between the number of abortions to compliance in the antenatal care service, significant differences in the respondents' compliance to ANC when they are grouped by socio-demographic factors,socio-demographics, obstetric-related factors, knowledge and beliefs about covid-19 significantly correlated to their compliance to ANC and lastly, recommendations to be be proposed to improve compliance to antenatal care by pregnant mothers during COVID 19 Pandemic.

Factors affecting the prenatal seeking behavior of pregnant women and the role of health care professional is vital in maintenance of a healthy pregnancy. Studies shows an association between age and utilization of antenatal services. Socio-economic status like financial difficulties have been considered as an important barrier to antenatal care.In some studies, young age of women has been identified as a predisposing determinant for utilization of antenatal services. However, few studies suggest contrary to these studies, few studies suggest that increased age is associated with more utilization of antenatal services .Educated women tend to have a greater awareness of the existence of ANC services and the advantages of using such services. Moreover, higher levels of education tend to positively affect health-seeking behaviors, and education may increase a woman's control over her pregnancy.

Socio-economic status like financial difficulties have been considered as an important barrier to antenatal care. A study from Ethiopia identified that when women with higher incomes tend to start antenatal care early and the likelihood of utilizing antenatal decreased, as the family income gets lower. Studies have suggested that parity influences initiation of antenatal, as parity increases, the experience of timely initiation of antenatal decreases. A history of reproductive loss has proved to be a strong predictor of early antenatal initiation. The researchers concluded that women who had no support from their spouses or partners utilized antenatal services almost three weeks later than those who were given support. Similarly, the utilization of ANC was almost nine times more likely for women reported their husbands to approve antenatal care than women with those whose husbands did not approve antenatal service. **(**Sumera Aziz Ali,et,al, 2018).

Methods

The researchers used non-probability sampling method specifically Convenience sampling. The study respondents were pregnant women
who were in their 1^{st}, 2^{nd} and 3^{rd} trimesters covering from March 2020 to September 2020 in the selected barangays of the Talibon, Bohol. There were a total of 204 pregnant women in the selected municipality where we only took 118 (58%) as our actual respondents. The barangays

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were selected based (inclusion criteria) on most number of pregnancies, most number of pregnancy complications like low BMI, anemia, neonatal mortality rate, and number of referred cases in 2019 and 2020. There were 204 pregnant women from March to September, 2020 including those who delivered during this time who were taken as respondents. The respondents were given notice for prenatal consult and immunization and those who came were taken as respondents. The total 118 respondents are distributed as: 45 for barangay 1, 27 for barangay 2, 26 for barangay 3 and 20 for barangay 4.

The researcher made use of a self-made questionnaire formulated based on the theory used and the review of literature and DOH MNCHN Manual (2009). The questionnaire consist of five parts, namely: Part 1 on the respondents' demographic factors such as age, education, occupation and family income. Part 2 are the obstetric-related factors Part 3 are on the ANC services. Part 4 are items on the respondents' knowledge and beliefs about CoViD-19 and part five are items on compliance to ANC. Items in each part were properly thought and selected based on the statement of the problems.A 5-point Likert Scale was used. A Likert scale is a psychometric scale. When answering to a Likert questionnaire item, respondents specify their level of agreement to a statement (Wuensch, 2005). Each column heads has a corresponding scale (1= Strongly Disagree, 2= Disagree, 3=Neither Agree or Disagree,4= Agree, 5= Strongly Agree) on which a subject indicates her response by checking tick-marks. This instrument is convenient in the part of both the interviewers and the respondents because it saves the survey takers some time especially when they are busy people.

Pilot testing was done to help fine-tune usability leading to more reliable results.Face validity was also done. Furthermore, after the pilot testing, the data was subjected to a Cronbach alpha test using a Cronbach alpha calculator. To analyze the data, descriptive and inferential statistics were used. To find the significant differences of the variables, The Kruskal Wallis was used, its one-way analysis of variance is a statistical hypothesis test to compare the medians among more than two groups. he Pearson product-moment correlation, often shortened to Pearson correlation or Pearson's correlation, is used to assess the strength and direction of association between two continuous variables that are linearly related.

Results and Discussion

Table 1. The Respondents' Socio-Demographic Profile (n=118)

1. Age	**Count**	%
13-20	26	22
21-27	41	35
28-34	29	25
35-41	15	13
42-49	7	5
2. Educational attainment		

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None	2	2
Elementary	19	16
High school	61	52
College	24	20
Post College	12	10
3. Occupational status		
Student	19	16
Self-employed	60	51
Temporarily Not working	27	23
Private employee	6	5
Government employee	6	5
4. Family Income		
Less than P5,000	87	74
P 5,001- 15,000	21	17
P15,001-20,000	3	3
P20,001-25,000	6	5
P25,001- and above	1	1

Table 1 shows that more than majority (60%) of the respondents are in the early adult stage 21-34 years old , 22 % are adolescents, and 18% of the respondents have age range of 35 to 49 years old. Older mother may be at increased risk for things such as: miscarriage, birth defects, twins, high blood pressure, gestational diabetes and difficult labor. Some studies show that while there is a higher risk of pregnancy problems in older women, their babies may not have more problems than babies of younger women.

The socio- demographic profile of the respondents shows that more than majority (60%) of the respondents are in the early adult stage 21-34 years old , 22 % are adolescents, and 5% of the respondents have age range of 42 to49 years old. Half of the respondents have attained high school education while 30% have college college and post college education. On the other hand, 16 % of the respondents are students. 51% are self-employed and 23% are temporarily not working. Seventy four percent of the respondents have family income of less than P5,000 and half are in high school (52%) and 51% are self-employed. The socio-demographic characteristics of the great majority of the respondents indicate low socio-economic class.

Table 2. The Respondents' Obstetric-Related Factors (n=118)

1. Parity	**Count**	%
0 (gravid)-1 child	56	47
2-3 children	40	34
4-5 children	12	11
6-7 children	5	4
8 children and above	5	4
2. Birth Interval		

1 year	59	50
2- 3 years	34	29
4-5 years	11	9
6-7 years	4	3
8 years and above	10	9
3. Age of Gestation		
Less than 1 month	12	10
2-3 months	11	9
4-5 months	20	17
6-7 months	25	21
8- 9 months	50	43
4. No. of Abortion		
0 abortion	97	82
1-2 abortions	15	13
3-4 abortions	3	3
5-6 abortions	1	1
7 and above	2	2
5. Pregnancy Complications		
0-1 complication	108	92
2-3 out of the 9 complications	6	5
4-5 out of the 9 complications	3	3
6-7 out of the 9 complications	0	0
8 and above complications	1	1

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8 and above complications	1	1

Obstetric-related factors include parity whose number of children ranges from currently gravid to 3 (47% & 34%) while 19% have more than 4 children. Fifty percent of the respondents have a birth interval of 1 year while 29% have 2-3 years birth interval and only 21% have birth interval of more than four years. On age of gestation, 43% of the respondents are in their 8-9 months of pregnancy while 19% are in the first trimester of pregnancy. It is worthy to note that 82 percent of the respondents do not have any experience of abortion of any type. However, 18% claimed that they had had abortion before.

Meanwhile, 91% of the respondents had cited to have experienced one complication of pregnancy (before and current). While, nine percent had experienced more than one pregnancy complications. Among the common pregnancy complications agreed upon are Gestational Hypertension, Anemia, Asthma, Placenta previa, Other infections, Gestational Diabetes Mellitus, UTI, Abortions, and Abruptio Placenta.

Table 3. Antenatal Care Services Provided to the Respondents (n=118)

Antenatal Care Services	Mean	StDev	Description
1. I was instructed on the needed laboratory examinations like CBC, UA, HBSAG, RPR, HIV and blood typing during Covid 19 pandemic	4.14	1.24	Very Good
2. My midwife check my vital signs like blood pressure	4.05	1.38	Very Good

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and temperature during prenatal during Covid 19 pandemic			
3. My midwife has also been monitoring my baby's heartbeat and growth as well during Covid 19 pandemic	3.97	1.34	Very Good
4. My midwife has been monitoring my weight gain during Covid 19 pandemic	3.94	1.38	Very Good
5. I have been provided health teachings about my pregnancy during Covid 19 pandemic	3.81	1.41	Very Good
6. I have been provided health education about COVID-19 pandemic in relation to my pregnancy	3.78	1.39	Very Good
7. I was given Ferrous and Folic Acid supplements during Covid 19 pandemic	3.66	1.42	Very Good
8. Prenatal consultation services were available during Covid 19 pandemic	3.32	1.64	Good
9. I was given Calcium tablet every day during Covid 19 pandemic	3.09	1.64	Good
10. I was vaccinated with Tetanus Toxoid during Covid 19 pandemic	3.02	1.57	Good
11. I was given Vitamin A supplement during Covid 19 pandemic	2.45	1.65	Fair
12. I was dewormed during my pregnancy during Covid 19 pandemic	2.16	1.51	Fair
13. I was given Iodine supplement during Covid 19 pandemic	2.06	1.37	Fair
Over-all	**3.34**	**1.45**	**Good**

4.21 - 5.00 Strongly agree/ Excellent
3.41 - 4.20 Agree/ Very good
2.61 - 3.40 Moderately agree/Good
1.81 - 2.60 Disagree/ Fair
1.00 - 1.80 Strongly disagree/ Poor

The over-all mean of the ANC services received by the participants is Good with a mean of 3.34 and the StDev of 1.45 indicate a heterogeneous response. Among the most agreed ANC services provided are: "I was instructed on the needed laboratory examinations like CBC, UA, HBSAG, RPR, HIV and blood typing during Covid 19 pandemic (4.14), My midwife check my vital signs like blood pressure and temperature during prenatal during Covid 19 pandemic (4.05), My midwife has also been monitoring my baby's heartbeat and growth as well during Covid 19 pandemic (3.57), My midwife has been monitoring my weight gain during Covid 19 pandemic (3.94), I have been provided health teachings about my pregnancy during Covid 19 pandemic (3.81), I have been provided health education about COVID-19 pandemic in relation to my pregnancy (3.78)" . However, there were those who disagreed having received ANC services like

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Iodine supplementation (2.06), Deworming tablet (2.16) and Vitamin A supplementation (2.45) during the pandemic time (March, 2020 to September, 2020).

Table 4. Knowledge and Beliefs About CoViD-19 (n=118)

	Mean	StDev	Description
1. I believe that praying will spare me and my fetus from COVID 19	4.19	1.16	High
2. Practice frequent and proper handwashing often with soap and water for at least 20 seconds.	4.16	1.24	High
3. Use an alcohol-based hand sanitizer if soap and water are not available as one of the preventive measures.	4.11	1.22	High
4. Follow the advice provided by your local health authority.	3.96	1.31	High
5. COVID-19 virus infects people of all ages.	3.85	1.38	High
6. Mask should be combined with physical distancing and hand hygiene.	3.83	1.32	High
7. COVID-19 virus is mainly transmitted through droplets generated when an infected person coughs, sneezes, or exhales.	3.78	1.45	High
8. Covid-19 Most common symptoms are fever, dry cough ,tiredness, loss of taste and smell.	3.72	1.43	High
9. I can be infected by breathing in the virus if I am within close proximity of someone who has COVID-19 and by touching a contaminated surface , then to my eyes, nose or mouth	3.68	1.46	High
10. Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus.	3.66	1.45	High
11. Having regular exercises will protect me from getting infected with CoViD 19	3.66	1.30	High
12. Covid-19 Serious symptoms are difficulty of breathing or shortness of breath, chest pain , loss of speech or movement.	3.65	1.35	High
13. Eating healthy diet will protect me from getting infected with CoViD 19	3.51	1.37	High
14. If I have symptoms like cough and fever I should seek immediate consultation.	3.47	1.42	High
15. Pregnant women with COVID-19 who have pre-existing medical conditions, are more likely to suffer severe health complications due to COVID-19.	3.44	1.36	High
16. Self-isolation/7yu6 quarantine from family members is one of the management of those who are infected by COVID-19.	3.44	1.36	High

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17. Not smoking or drinking alcoholic beverages will protect me from getting infected with CoViD 19	3.44	1.45	High
18. Masks alone do not protect against COVID-19	3.33	1.40	Moderately High
19. Currently, there is no treatment specifically approved for COVID-19, and no cure for the infection	2.99	1.28	Moderately High
20. I believe that covid 19 can be remedied thru herbal and alternative medicines even if I am pregnant	2.66	1.24	Moderately High
21. If I am infected with CoviD 19, my fetus gets congenital anomaly	2.61	1.27	Moderately High
22. Me and my child will die if I am infected with Covid 19	2.60	1.36	Low
23. I believe that CoViD 19 is God's way of punishing bad people	2.45	1.36	Low
Over-all	**3.36**	**1.35**	**Moderately High**

4.21 - 5.00 Strongly agree/ Very High
3.41 - 4.20 Agree/ High
2.61 - 3.40 Moderately agree/Moderately High
1.81 - 2.60 Disagree/ Low
1-00 - 1.80 Strongly disagree/ Very Low

The respondents' knowledge and beliefs about Covid – 19 in relation to their pregnancy shows that a great majority of the respondents have good knowledge (3.36) about CoViD-19 and the health protocols against CoViD-19 in relation to their pregnancy and with an StDev of 1.35 indicates a heterogeneous response. Specifically, they have very knowledge on the practice frequent and proper hand washing often with soap and water for at least 20 seconds (4.16) ; Use an alcohol-based hand sanitizer if soap and water are not available as one of the preventive measures (4.11). The statements "Me and my child will die if I am infected with Covid 19" (2.60) and "If I am infected with CoviD 19, my fetus gets congenital anomaly (2.61) have moderate agreement by the respondents. The stDev of 1.36 and 1.24 indicate a heterogeneous response, which means their responses vary. On the other hand, they moderately agreed on the statement "I believe that covid 19 can be remedied thru herbal and alternative medicines even if I am pregnant"(2.66) and StDev of 1.24 indicate a heterogeneous response. Moreso, and they strongly believed that that praying will spare them and their fetus from COVID 19(4.19).

Table 5. Compliance to Antenatal Care Services During CoViD 19 Pandemic (n=118)

	1 Count/%	**2 Count/%**	**3 Count/%**	**4 Count/%**	**5 Count/%**	**Mean**	**StDev.**	**Description**
1. Tetanus Toxoid vaccination	3/3	2/2	4/3	9/8	100/84	4.70	0.83	Very High

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2. Prenatal Consultation:	7/6	8/7	6/5	12/10	85/72	4.35	1.20	Very High
3. Health teaching	5/4	14/12	6/5	25/21	68/58	4.16	1.21	High
4. Laboratory tests	5/4	27/23	15/13	41/35	30/25	3.54	1.21	High
5. Ferrous and Folic Acid	15/13	30/24	2/2	37/31	34/30	3.38	1.45	Moderately High
6. Calcium supplement	69/58	20/17	3/3	10/8	16/14	2.01	1.47	Low
					Over-all	**3.69**	**1.22**	**Moderately High**

4.2-5.0 - Strongly agree/ Very High 1.8- 2.5- Disagree/ Low
3.4-4.1 - Agree/ High 1-0- 1.79 – Strongly disagree/ Very Low
2.6- 3.3 – Moderately agree/Moderately High

The respondents' compliance to antenatal care services during CoViD 19 pandemicover-all mean stated that 3.69 indicate a good compliance to ANC among respondents. Cumulative percent for compliance to ANC is 66%, while 5 5 % are neither agree or disagree that they comply and 29% did not comply the ANC during CoViD-19 pandemic.

Specifically, on the compliance to TT vaccination, the StDev of 0.83 for TT vaccines indicate a homogenous response of having complied with 92% while 8 % did not comply. Thus, high compliance with TT vaccination is noted. On compliance to Iron supplementation during pregnancy, this study reveals that 39% did not comply and the StDev of 1.45 indicates a more hetergenous response. On Calcium supplementation 22% complied while 78 % did not comply. Eighty two percent agreed that they had prenatal consultation while 13% did not have prenatal consultation. While on compliance to Laboratory tests, 60% complied and the 40 % did not comply. Seventy nine percent complied with the health teaching while 21% did not comply.

Inferential Analysis

Table 7. Correlation Between Socio-Demographic Factors and Compliance to ANC

Compliance	Age		Education		Occupation		Income	
	Pearson correlation (r)	P-Value	Pearson correlation (r)	P-Value	Pearson correlation (r)	P-Value	Pearson correlation (r)	P-Value
Tetanus Toxoid	0.171	0.064	0.039	0.673	0.077	0.410	-0.067	0.471

vaccination								
Ferrous and Folic Acid	0.115	0.213	0.148	0.110	0.118	0.204	0.199	0.031*
Calcium supplement	0.187	0.042*	-0.048	0.606	0.174	0.060	0.201	0.029*
Prenatal Consultation	0.221	0.016*	0.214	0.020*	0.174	0.013*	0.064	0.494
Laboratory	0.023	0.807	0.200	0.030	0.060	0.517	0.179	0.052
Attendance to health teaching	0.070	0.454	-0.008	0.931	0.014	0.884	0.135	0.145
Pvalue with * indicates significant correlation								

Table 7 shows a significant correlation between the respondents' compliance to ANC specifically, first on Age and taking Calcium supplements with the pvalue of 0.042 and prenatal consultation with the pvalue of 0.016. Second, Education and prenatal consultation with the pvalue of 0.020; third, occupation and prenatal consultation with the pvalue of 0.013 and fourth, income and taking of Ferrous and Folic acid with the pvalue of 0.031 and Calcium supplements with the pvalue of 0.029. The pvalues of 0.042 , 0.016. 0.020, 0.013, 0.031 and 0.029 are less than 0.05 at 95% confidence interval (CI) indicate significant correlations, thus the hypothesis is rejected. While the Pearson's correlation coefficient, *r* that assess the strength of the association between compliance to ANC and socio-demographic factors as seen in table 7 indicate a weak positive association for age, education, occupation and income with compliance to ANC, this means that as the socio demographic factors increase the compliance to ANC also increase. Moreover, it is noted that there is a weak negative association between income and compliance to TT vaccination with an r= - 0.067. This means that when income increases, compliance to TT vaccination decreases.

Table 8. Correlation Between Obstetric-Related Factors and Compliance to ANC

Compliance to	***Parity***	***Birth Interval***	***Age of Gestation***	***No. of Abortion***	***Pregnancy Complications***
Tetanus Toxoid vaccination	r = 0.140 p = 0.130	0.177 0.055	0.127 0.172	-0.137 0.138	0.074 0.426
Ferrous and Folic Acid	r = 0.052 p = 0.578	0.124 0.180	0.168 0.069	-0.084 0.363	0.363 0.228
Calcium supplement	r = -0.037 p = 0.694	-0.094 0.313	0.011 0.910	0.190 0.039*	0.075 0.422

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Prenatal Consultation	r = 0.059 p = 0.527	0.229 0.013*	0.115 0.146	0.085 0.357	0.031 0.737
Laboratory	r = -0.018 p = 0.847	0.117 0.206	0.011 0.903	-0.023 0.803	-0.050 0.594
Attendance to health teaching	r = 0.027 p = 0.770	0.101 0.274	0.143 0.123	-0.011 0.902	0.060 0.520
Cell Contents: Pearson correlation (r) P-Value (p) Pvalue with * indicates significant correlation					
Over-all:					
r = 0.1952			CI is 95%		
The p value is 0.711207			The result is not significant at p< 0.05		
The value of $R^{2,}$ the coefficient of determination , is 0.0381					

Table 8 presents the results of the Pearson product-moment correlation test between Obstetric-Related Factors and Compliance to ANC. The result of the Pearson product-moment correlation test between Obstetric-Related Factors and Compliance to ANC shows an over-all result (Table 8) of a weak positive strength of the association with an r = 0.1952 and the pvalue of 0.711207 indicates no significant correlation, thus, the null hypothesis is accepted. The weak positive strength of the association between obstetric-related factors and compliance to ANC suggest that parity, birth interval, age of gestation , number of abortions and pregnancy complications increases , compliance to ANC also increases except for those with negative weak association like parity and compliance to Calcium supplement r = = -0.037; to laboratory tests r = -0.037; birth interval and compliance to Calcium supplement r = -0.094; number of abortion and compliance to TT vaccination r = -0.137 and Iron and Folic acid supplementation r = 0.084, laboratory test r= 0.023 and attendance to health teaching r = -0.011 and lastly, number of complication and compliance to laboratory test r = 0.050. this weak negative association suggest that as these obstetric-related factors increases, compliance to the said ANC decreases.

Specifically , result for compliance to prenatal consultation and birth interval shows a weak positive association strength with an r = 0.0229 and the pvalue of 0.013 which is less than the p of 0.05 at 95 % confidence interval indicates a significant correlation. Therefore, the researchers have enough evidence to conclude that the correlation is different from 0.

Table 9. Correlation Between Knowledge and Beliefs and Compliance to ANC

	r Value	**pValue**	**Decision on H_o**
Knowledge and Beliefs and Compliance to ANC	-0.072	0.74407	Not significant at p ‹ 0.05

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Table 9 reveals the Pearson product-moment correlation test between the respondents' knowledge and beliefs about CoViD-19 and Compliance to ANC. The r value of -0.072 indicates a weak negative strength of the association, this means that as their knowledge and beliefs about CoViD-19 increases their compliance to ANC decreases. Also, the p value of 0.74407 indicates a non significant correlation, thus, the hypothesis is accepted. Therefore, the researchers do not have enough evidence to conclude that the correlation is different from 0. Thus, the respondents' knowledge and beliefs about CoViD-19 do not have a linear relationship with their compliance to ANC.

Conclusion

Based on the findings of the study, the researchers concluded that the respondents have low socio-economic status. During CoViD 19- pandemic they received good ANC services and their compliance was also good however, one third of them did not comply with ANC, thus, there is a need to strengthen compliance to specific ANC services not complied well. They strongly believed that that praying will spare them and their fetus from COVID 19. Their compliance to ANC did not differ significantly by with each socio-demographic factors. As their knowledge and beliefs about CoViD-19 increases their compliance to ANC decreases. And as their socio-demographic and obstetric-related factors increase, their compliance to ANC also increase.

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