Knowledge and Practice to Prevent Against Corona Virus Disease (COVID-19) and Its Associated Factors Among Pregnant Women in Debre Tabor Town Northwest Ethiopia: a Community Based Cross-Sectional Study.

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Abstract

Background: The current corona virus disease (COVID-19) is now become the global concerns and declared as a pandemic by World Health Organization on March 2020. To date, no antiviral treatment or vaccine has been explicitly recommended for COVID-19. So, applying preventive measures to control COVID-19 infection is the most critical intervention. Pregnant women are particularly susceptible to respiratory pathogens and severe pneumonia, because they are at immunosuppressive state and physiological adaptive change during pregnancy. As the same time the determinants of knowledge and practice to prevent COVID-19 among pregnant women, who constitute vulnerable groups, are yet to be evaluated. This study was therefore designed to assess knowledge and practice of preventive measures against corona virus disease and its associated factors among pregnant women in Debre Tabor Town.

Methods: A community based cross-sectional study was conducted among 422 pregnant women from May 25-June 15, 2020. Simple random sampling technique was employed. Data was collected by face to face interview using structured and pre-tested questionnaire. Data analysis was done using SPSS version 23. Bivariable and multivariable logistic regression analysis was carried out and p-value < 0.05 at 95% CI were considered as statistically significant.

Result: A total of 422 participants were included with response rate of 95.9%. The mean age was 27.15 (SD± 4.719) years. About 46.8% and 47.6 % of women were knowledgeable and had good practice against corona virus respectively. The predictor for knowledge were age(15-24)(AOR=4.85, 95% CI: 1.34-5.42), educational status(AOR:3.70; 95% CI: 1.16-5.40) being civil servant (AOR:2.84; 95% CI: 1.55-5.21), wanted pregnancy(AOR:3.37; 95% CI: 1.20-9.45), antenatal care follow-up(AOR:2.07; 95% CI: 1.03-4.13), whereas educational status (AOR:3.78; 95% CI: 1.19-5.11), number of children (AOR:2.89; 95% CI: 1.29-6.45) and knowledge (AOR:8.42;95% CI: 4.50-15.85), were also the predictors for practice.

Conclusion: This study showed that most of the participants had poor knowledge and inappropriate practice. As per finding increasing health education program via different medias, coordinated and combined efforts of authorities and all individuals will be needed to battles the spread of the pandemic.

Background

COVID-19 is caused by a virus that belongs to the corona viruses is an emerging respiratory disease that is caused by a novel corona virus, which are single-stranded RNA viruses[1]. Corona virus, SARS-CoV-1, the cause of the Severe Acute Respiratory Syndrome (SARS) outbreak in 2020[2]. Corona viruses contain the largest genomes of all RNA viruses and the disease is highly infectious, and its main clinical symptoms include fever, dry cough, fatigue, myalgia, and dyspnea[3-5].

The first human cases of COVID-19, the disease caused by the novel corona virus causing COVID-19, subsequently named SARS-CoV-2 were first reported by officials in Wuhan City, China, in December 2019[6]. The World Health Organization (WHO) declared the 2019–20 corona virus outbreaks a Public

Health Emergency of International Concern (PHEIC) on 30 January 2020 and a pandemic on 11 March 2020[1].

It is a zoonotic pathogen that can be transmitted through respiratory droplet, physical contact, feco-oral, and has an incubation period of 2-14 days but infected persons can transmit the virus via close contact and respiratory droplets perhaps even before they become symptomatic[7-9].

Poor hand hygiene practice, overcrowding, and close physical contacts like hand shaking contributes for the fast spread of the virus with in very short period of time[10].The COVID-19 is causing huge stress both socially and economically on the health care system of all countries in the world[11].

Globally according to European Centre for Disease Prevention and Control report since 31 December 2019 up to 28 June 2020, there were a total of 9, 952, 507 cases of COVID-19 have been reported, including 498,519 deaths. According to the report 371,448 cases and 9480 deaths were from Africa and the top five countries reporting most cases are South Africa 131 800, Egypt 63 923, Nigeria 24 077, Ghana 16 431 and Algeria 12 968[12]

Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV), have the case fatality rate appeared higher in pregnant women as compared with non-pregnant women[13]. Currently, more than 100 million women are pregnant worldwide, and virtually all of them are at a risk of contracting COVID-19[14].

Pregnant women are particularly susceptible to respiratory pathogens and severe pneumonia, because they are at an immunosuppressive state, and physiological adaptive changes during pregnancy can render them intolerant to hypoxia[15]. Pregnancy is also a state of partial immune suppression which makes pregnant women more vulnerable to viral infections, and the morbidity is higher even with seasonal influenza. Therefore, the COVID19 epidemic may have serious consequences for pregnant women[16].

Experts have worried about COVID-19 spreading to Africa, because many of the healthcare systems on the continent are inadequate, having problems such as lack of equipment and funding, insufficient training of healthcare workers, and inefficient data transmission as well as high population density. It was feared that the pandemic could be difficult to keep under control and could cause huge economic problems if it spread widely[17, 18].

Ethiopia is among African countries with limited trained human and material resources that have been expected to hit by the global COVID-19 pandemic[19]. Despite the government is currently showing high commitment to contain the epidemic before it causes significant damage to the community the spread of the disease were increases in each day. Notably, in Ethiopia, as of June 28, 2020, there were a total of 5689 cases, of which 98 deaths, 33 critical cases, 3459 active cases, and 2132 recovered cases reported by the Ministry of Health and the Ethiopian Public Health Institute[20].

To date, in the world there is no antiviral treatment or vaccine that has been used for the treatment and prevention of COVID-19. So, increasing the level of knowledge and applying preventive measures to control COVID-19 infection is the most critical intervention and the only weapon to minimize and control the multidimensional consequence of the pandemic.

To the best of our knowledge the determinants of knowledge and practice to prevent COVID-19 among pregnant women, who constitute vulnerable groups, are yet to be evaluated in Ethiopia. Therefore, this study was aimed to investigate knowledge and practice of COVID-19 preventive measures against COVID-19 and its associated factor among pregnant women in Debre Tabor Town Northwest Ethiopia. And it will contribute to the design of effective preventive strategies to tackle the rising burden of the diseases all over the population and in particular to the pregnant population.

Methods

Study design and setting

Community based cross-sectional study design was conducted from May 25-June 15,2020 in Debre Tabor Town , which is the capital city of South Gondar Zone, Amhara region, Northwest Ethiopia. Debre Tabor Town is located 665 kilometers Northwest of Addis Ababa (the capital city of Ethiopia), and 103 kilometers Northwest of Bahir Dar. The town has six small administrative units called kebeles with a total population of 85,727 of whom 49.6% (42,521) and 50.4% (43,206) were men and women respectively and 19,936 households (HH) based on 2019 information obtained from the town health office[21]. From those women, 20.96% (17,968) were found in reproductive age group (i.e., 15–49years) and there were 1230 pregnant women residing in the town during the study period. The source populations were all pregnant women in Debre Tabor Town with the study population comprised of all pregnant women residing in the town during the study period. Pregnant women who gave informed consent to participate in the study were included whereas pregnant women who were critically ill (bed reddened) and live less than 6 months during data collection period in Debre Tabor Town were excluded from the study.

Sample size and Sampling procedure

A Sample of 422 participants were selected using the single proportion formula with the following assumptions: proportion of knowledge and practice of preventive measures against COVID-19 is 50 % since there is no related study in Ethiopia, confidence interval of (CI) 95%, margin of error (d) 5%, and considering none response rate of 10%. Simple random sampling technique was employed to select 422 pregnant women of 1230 pregnant women residing in the town. Households were sampling unit and samples were selected and proportionally allocated to each kebeles based on their total numbers of households. The numbers of pregnant women with their house hold number in each kebeles were got from family folder of health extension workers (HEWs). Then study households were selected from each kebeles through simple random sampling technique by using table of random numbers starting from kebele one from a random start point. The first household was selected in each kebele by using lottery method. One pregnant woman per household was interviewed. When two or more eligible pregnant

women were found in one house hold, only one was interviewed by using lottery method and if no eligible men were identified in the selected household, the next eligible household located in the clockwise direction was visited and included until we got the desired sample size.

Data collection tool and quality management

Data was collected via face to face interview techniques using a structured and pretested questionnaire by applying all the possible strict preventive measures of the pandemic. The questionnaire was first prepared in English language then translated to local language Amharic for simplicity and back to English for its consistency by two different language expert individuals who speak both English and Amharic fluently. The questionnaire was adapted from WHO guide line and literature in different parts of the world and modified according to the local context. The questionnaire has four parts socio-demographics, obstetrics, knowledge related, and attitude related characteristics which were used. Pretesting of the questionnaire was done on 10% of the total participants (42 pregnant women) in Woreta Town near to the study setting. During the pre-test, the questionnaire was assessed for its clarity, accuracy and comprehensiveness, readability and the optimal time for completing the interview. Modifications and corrections like; wording, logical sequence and skip patterns were done immediately based on the result.

The data was collected by six diploma health professionals and supervised by two trained health professionals who had BSc. Data collectors and supervisors were trained for one day on aim of the study, method of data collection, contents of the questionnaire, how to keep confidentiality, responders' right, and informed consent before they start the data collection. The completeness and consistency of the collected data was cross-cheeked, cleaned and compiled on a daily basis by supervisors and principal investigator. The overall activity was supervised by the principal investigator of the study.

Operational definitions

The knowledge level of the study participants was determined using 15 knowledge assessing questions. A value of 1 and 0 was given for each correct and incorrect answer respectively and labeled as good and poor knowledge based on mean score. Those participants who scored greater than or equals to the mean score were considered as having a good knowledge whereas those who score less than the mean score labeled as poor knowledge.

Practice of participant was also determined based on 6 preventive measures. A value of 1 and 0 was given for each practiced and unpracticed preventive measures respectively and labeled as good and poor practice based on mean score. Pregnant women who scored greater than or equals to the mean score were considered as having good practice; while those who scored less than the mean score were considered as poor practice.

Variables: Knowledge and practice to prevent against COVID-19 were the outcomes of interests and independent variables were socio-demographic characteristics (age, religion, educational status,

occupational status, husband educational, occupational status), Reproductive characteristics (gravidity, parity, number of children, history of abortion, ANC follow up and condition of pregnancy), knowledge related as well as practice related factors.

Data Processing, analysis and interpretation

The collected data were coded and entered in to Epi-Data version 4.2 and then exported to SPSS version 23 for analysis. Descriptive analysis was carried out and frequency tables and percentages were used to present the descriptive results.

Bivariable logistic regression analysis was done to examine the crude association of predictors on knowledge of COVID-19 and practice to prevent against COVID-19 by computing odds ratio (OR) with 95% CI and then p-value≤0.2 was entered in to multivariable logistic regression model for further analysis by controlling confounding factors to see the effect of predictors on the outcome variables and finally significant association was declared based on $p<0.05$ and adjusted odds ratio (AOR) with 95% CI.

Ethical consideration

Ethical clearance was obtained from the institutional Ethics Review Committee of Debre Tabor University. In addition a support letter was granted from Debre Tabor Zonal Health Office and administrative office of the town. Written informed consent was obtained from each study participants. Personal identifiers were excluded during the data collection to assure confidentiality.

Results

Socio-demographic characteristics

A total of 422 pregnant women were participated in this study with response rate of 95.9%. Of those participants about more than half of the women 230 (56.8%) were belonged to the age group of 25-34 years and range from 20-38 years. The mean age of the participant was 27.15 (SD± 4.719) years. The study participants were predominantly Amhara 396(97.8%) and Orthodox Christian followers 370 (91.4%) by ethnicity and religion respectively. Majority of the participants 398(98.3%) were married and 173(42.7%) were house wife by occupation. From the total respondents, about half of them 202(49.9%) and 215(54%) of participants husbands had college and above education (Table 1).

Obstetric and reproductive health characteristics

This study revealed that about 253(62.5%) and 162(40%) of participants were multigravida and multipara respectively. Concerning to condition of pregnancy Three hundred thirty (81.5%) of current pregnancy were wanted and planned. More than three-fourth of the participants 324(80.0%) had ANC follow up in current pregnancy. Among pregnant women's who attended ANC for current pregnancy 167(51.5%) were attended 3 and more times; while 157(48.8) were attended 1-2 times. On the subject of number of children two hundred eight-five (70.4%) women had less than or equals to three alive children. In addition

majority of the study participants, 329(81%) and 374(92.3%) had no previous history of adverse pregnancy outcomes and chronic health problems respectively (Table 2).

Knowledge of study participants about COVID-19

All the participants 405 (100%) reported that they had ever heard about COVID-19. Among those participants who had ever heard about COVID-19 mass media 308(76.0%), health worker 95(23.5%) and social media 49 (12.1%) were the main source of information. Fever 296(73.1%) and dry cough 233(57.5% were the two most common symptoms of COVID-19 mentioned by the pregnant women (Table 3). This study identified that, only 48.6% with 95% CI of (43.5-53.8) participants had good knowledge about COVID-19 (Figure 1).

Practice of study participant to prevent against COVID-19

In this study the participants were asked what should be done to prevent against COVID-19. Majority of the participants 309(76.3%) were practiced at least one preventive measure against COVID-19 while 96(23.7%) were not practiced any of the preventive measures against COVID-19 infection. Among respondents who had practiced preventive measure washing hand with water and soap 271(87.7%) and cover mouth and nose during coughing or sneezing 238(77%) were the most common practiced preventive measures to combat the spread of the pandemic(Table 4).

According to this study, only 147(47.6%) with 95% CI of (42.1-54.4) participants had good level of practice to prevent against COVID-19 preventive measures (Figure 2).

In this study 96 (23.7%) of participants were never practiced any of preventive measures against COVID-19.Among these believing by God is enough 40(41.7%) was the major reason followed by negligence 34 (35.4%) (Figure 3).

Predictors of participant's knowledge about COVID-19

In binary logistic regression age, level of educational , occupation, husband level of education , husband occupation, parity, condition of current pregnancy, and having ANC follow up in current pregnancy had association with level of knowledge about COVID-19. Through multivariable logistic regression analysis after adjusting other co-variables by using backward likelihood stepwise method; age, level of education, occupation, condition of current pregnancy and having ANC follow up in current pregnancy were found to have significant statistical association with knowledge of COVID-19.

Participants whose age group were between 15-24 years were nearly five times more likely to have good level of knowledge about COVID-19 (AOR: 4.85; 95% CI: 1.34-5.42) as compared to participants whose age were greater than or equals to 35 years. Pregnant women who had attended college and above were nearly four times higher the odds of having good level of knowledge toward COVID-19 (AOR: 3.70; 95% CI: 1.16-5.40) as compared to those who did not attended formal education.

A pregnant women who had regular employment was almost three times more likely to had good level of knowledge of COVID-19 (AOR:2.84; 95% CI: 1.55-5.21) than housewives. Similarly, the odds of having good knowledge of COVID-19 were nearly two times higher among pregnant women who had private business (AOR:1.73; 95% CI: 1.06-2.84) as compared to housewives.

Moreover pregnant women whose pregnancy was wanted were three times more likely to have good level of knowledge about COVID-19(AOR: 3.37; 95% CI: 1.20-9.45) as compared to whose pregnancies were unwanted. Pregnant women who had ANC follow up in current pregnancy were two times higher the odds of having good knowledge towards COVID-19 (AOR: 2.07; 95% CI: 1.03-4.13) compared to their counterparts (Table 5).

Predictors of participant's practice to prevent against COVID-19

This study also tries to see the predictors of good practice to prevent against the COVID-19 pandemic and the result of binary logistic regression analysis showed that educational status, participants husband level of educational status and occupational status, number of alive children, having ANC follow up in current pregnancy and knowledge of COVID-19, were significantly associated with participant's level of practice to prevent against COVID-19. In multivariable binary logistic regression analysis, only educational status, number of children and knowledge were remained statistically significant with participants' level of practice to prevent against COVID-19 infection.

Participants who had completed college and above were nearly three times more likely to have good level of practice to prevent against COVID-19 (AOR: 3.78; 95% CI: 1.19-5.11.93) as compared to those who did not attained formal education.

Pregnant women who had less than or equals to 3 alive children were three times higher the odds of good practice to prevent against COVID-19 (AOR: 2.89; 95% CI: 1.29-6.45) compared to women who had more than three alive children.

In addition study participants who had good knowledge of COVID-19 had eight times higher odds of practicing the preventive measures against COVID-19(AOR: 8.42; 95% CI: 4.50-15.85) when compared to their counter parts (Table 6).

Discussion

Identifying level of knowledge and practice of preventive measures is critical for African countries (low resources countries) including Ethiopia which novel corona virus rapidly spreading throughout the country. However, knowledge and practices of preventive measures are affected by different factors. Thus, this community based cross-sectional study identified level of knowledge and practice and related factors influencing knowledge and practice of preventive measure against the current coronavirus transmission among pregnant mothers in Debre Tabor Northwest Ethiopia.

Based on this study finding all of the participants have ever heard about COVID-19.This finding is in agreement with study done in Bangladesh[22]. Mass media accounts 76% was the most likely source of information. Likewise study done in Kenya showed that mass media was the main source of information about COVID-19[23].

Our study revealed high levels of knowledge of two primary COVID-19 symptoms, namely fever and dry cough but, difficulty breathing was not accurately identified as a key symptom despite, it is the one that signifies critical illness and potential need for hospitalization[24].This finding also supported by study conducted from Egypt revealed that fever and dry cough were the major symptoms[25].

The overall knowledge of COVID-19 by pregnant women in this study was 48.6% which is higher than study done in Egypt (16.39)[25].This might be due to variation in educational status of respondents since nearly 60% of the participants were complete college and above while 52% of participants complete college and above in comparable study. Study setting difference may be another reason; our study was entirely done in urban setting when there is high mass media and social media exposure whereas, in Egypt 20.8% of the participants were rural in residency.

However, it is significantly lower than the finding from Iran (90%)[26], Pakistan,(93.2%)[27] China,90%[28] and Tanzania (84.4%)[29]. The discrepancy may be due to difference in socio-demographic characteristics, study setting, study participants and health care system of the countries to create awareness regarding to the pandemic.

This study also tries to assess participants practice to prevent against COVID-19. As mentioned by the respondents the most commonly practiced preventive measures were frequent hand washing with water and soap (87.7%), use of face masks in crowded areas (77%) and covering mouths and nose when coughing or sneezing (77%). This finding is supported by study done in Saud Arabia showed that (94%), (74.9%) and (90.7%) of participants were frequently washing their hand, use face mask in crowed area and cover mouth and nose during coughing or sneezing respectively[30].

According to our finding, 47.6 % of the respondents had good level practice to prevent against COVID-19. The finding is higher than study conducted in Nigeria (30.3%)[31]. The possible explanation might be difference in level of education of the respondents; only 28.5% had tertiary level of education while 59.4% of our study respondents had completed college and above. But our study finding is lower than study done in Pakistan revealed that 88.7% of participant had good level of practice to prevent against COVID-19[27]. The difference might be due to variation in study participants since only pregnant women were our participants where as health care worker which were front line regarding the knowledge and prevention of the pandemic were the participants in comparable study.

The result of this study revealed that being in the age category of 15-24 years had an increased level of knowledge towards COVID-19 as compare to age category of greater than or equals to 35 years. This finding is not consistent with study done in China which showed that age ≥50 years had good level of knowledge [28] but, it is in lined with study done in Egypt [25]. Participants in this age category (15-24)

might have easy access of information towards the pandemic via mass media and social media since they are highly social media user. In addition younger women may have higher educational attainment then older once, which positively affect, the knowledge of women regarding to COVID-19 which might also scale up in the same fashion.

In this study, the odds of having good knowledge COVID 19 was higher among women who had college and above education as compared to their counter parts that had no formal education. Likewise study done in Iran revealed that educational status was the main positive predictor factor for knowledge towards COVID-19[26]. The finding of this result is also supported by study done in China[28]. Another study from Egypt is also consistent to our finding [25]. The reason for this might be educated women are more likely to be exposed to different mass media and social media including internet, face book and telegram to get information about COVID-19.They are also more likely to comprehend the information they obtained.

According to our study finding occupation status was another predictor variable for knowledge as it stated that being civil servant had good knowledge index. The finding is supported by study done in china[28]. The possible explanation may be due that regular employed women may have higher education attainment which influences their knowledge level positively. Similarly participants who had private business also had good knowledge level towards COVID-19.These segment of the participants may face with many individuals and have communication with various individuals then by feed with different information regarding to COVID-19 outbreak.

The study identified that current condition of pregnancy as a predictor of knowledge. Women with wanted pregnancy had good knowledge level towards COVID-19. To date this is the only study revealed condition of pregnancy as a determinant factor of knowledge of COVID-19.The reason may be women with wanted and planed pregnancy may have increased health care seeking behavior as early as possible including antenatal care follow-up which leads to get information from health care providers about the diseases. In addition unwanted pregnancy may have psychological impact which negatively affects the whole health of the individual.

The result of this study also showed that there was a positive relationship between ANC follow up and knowledge of women. Pregnant women who had ANC follow up in current pregnancy had good level of knowledge towards COVID-19. To the best of our knowledge this is also the first finding. The possible explanation may be in addition to routine obstetric care pregnant women who had ANC follow up can get information about COVID-19 and counseled regarding to the contagiously of the pandemic, its multidimensional consequences and possible prevention methods by health care provider.

Regarding to the practice of pregnant women to prevent the spread of corona virus infection, women who learned college and above had good level of practice to prevent the outbreak of COVID-19. The finding of this study was in agreement with study finding from Iran [26] .Study from Nigeria also showed that having no formal education contributes for poor practice of preventive measures[31]. This might be due to educated women can access information easily and discuss more sensitive issues openly and freely

since they become closer and familiarized with each other. In addition, women with some basic level of education had better understand the complications and consequences associated with not to use preventive measures to prevent COVID-19.

Our study finding also indicated that significant association was noted between number of children and practice of COVID-19 prevention. Women having less than or equals to three children had good practice. Study from Nigeria also revealed that grand multiparous (having 5 or above children) women had poor practice[31]. The possible explanation might be due as the number of children increase the family size may become crowded makes difficult to maintain the recommended distance. In addition increase number of children may negatively affect the economy of the family thus less affordable for some preventive measures like soap, alcohol based hand sanitizer and face mask that used to prevent the spread of COVID-19 from person to person.

Lastly pregnant women who had good knowledge of COVID-19 had also good practice to prevent against it. Study from china also consistent with this study finding [28]. This might be due to an in-depth knowledge of COVID-19 may increase women's understanding and awareness of the burden and consequence of COVID-19 pandemic, and thus, helpful for maintaining safe practices to prevent against the pandemic.

Limitation

As this study is the first stud try to determine the predictor of knowledge and practice of pregnant women to prevent against COVID-19 and there is scarcity of study literatures on these specific participants the researchers try discuss with other related studies.

Conclusions

In conclusion, this study showed that most of the participants had poor knowledge and inappropriate practice to prevent against COVID-19. Age (15-24) years, educational status, occupational status, condition of pregnancy and having ANC follow up were significantly associated with knowledge of participants towards COVID-19 outbreak. Practice to prevent against COVID-19 was also significantly associated with educational status, number of children and knowledge of COVID-19. As per finding increasing health education program regarding to the pandemic via different mass medias and social medias, coordinated and combined efforts of Ethiopian authorities and all individuals will be needed to battles the multidimensional consequences of the pandemic.

It is also recommended that mixed methods research, program evaluations, and longitudinal research efforts be undertaken to explore and address effect of COVID-19 on pregnancy and pregnancy outcome.

Abbreviations

ANC: Ante Natal Care

SARS: Sever Acute Respiratory Syndrome

WHO: World Health Organization

Declarations

Ethics approval and consent to participate

The study was approved by Debre Tabor University, Institutional Ethics Review Committee. Written informed consent was obtained from each study participants and for those participants under the age of 18 years written informed consent was granted from their legal guardians.

Consent for publication

Not applicable for this publication

Availability of data and materials

The datasets used in this study are available from the corresponding author on request.

Competing interests

The authors declare that there is no competing of interests.

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Authors' contribution

Alemu Degu, Gedefaye Nibrete, and Habtamu G/hana inception designed the study, conduct data analysis, result interpretation, manuscript drafting, wrote the paper and revised the manuscript. Adanech Getie Bekalu Getnet and Bedemariam Tadesse participate on the data collection, the editorial and data entry and analysis. All authors read and approved the final paper.

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Tables

Table 1: Socio -demographic characteristics of pregnant women in Debre Tabor Town Northwest Ethiopia, May 25 - June 15, 2020(N=405).

Variables	Frequency	Percent (%)
Age in years		
15-24	127	31.4
25-34	230	56.8
≥35	48	11.9
Ethnicity		
Amhara	396	97.8
Others *	9	2.2
Religion		
Orthodox	370	91.4
Muslim	28	6.9
Others**	7	1.7
Educational status		
No formal education	60	14.8
Primary	71	17.5
Secondary	72	17.8
College and above	202	49.9
Occupation		
House wife	173	42.7
Civil servant	115	28.4
Private business	102	25.2
Others***	15	3.8
Marital status		
Married	398	98.3
Others ****	7	1.7
Husband educational status		
No formal education	43	10.8
Primary	36	9.0
Secondary	104	26.2
College and above	215	54.0

Husband occupation(N=398)		
Civil servant	219	55.0
Private business	136	34.2
Employed at private sector	29	7.3
Daily laborer	14	3.5

*Oromo, Tigray, Gurage ** protestant, catholic *** student, job finder,****widowed, divorced.

Table 2: Obstetrics and reproductive characteristics of pregnant women in Debre Tabor Town, Northwest Ethiopia, May 25 - June 15, 2020(N=405).

Variables	Frequency	Percent (%)
Gravidity		
Primi	152	37.5
Multi	253	62.5
Parity		
Nulliparous	160	39.5
Primipara	83	20.5
Multipara	162	40.0
ANC follow up		
Yes	324	80.0
No	81	20.0
No of ANC visit (N=324)		
>3	167	51.5
≤3	157	48.5
Number of living children		
≤3 children	285	70.4
>3 children	120	29.6
Condition of pregnancy		
Unwanted	33	8.1
Wanted	330	81.5
Mistimed	42	10.4
Previous adverse pregnancy outcomes		
Yes	76	18.8
No	329	81.2
Types of adverse pregnancy outcomes(N=76)		
Abortion	28	36.8
Preterm labor	12	15.8
Low birth weights	23	30.2
Still births	13	17.2
Chronic health problem		

Yes	31	7.7
No	374	92.3
Types of chronic health problem(N=31)		
HIV/AIDIS	6	19.4
Hypertension	8	25.8
Renal stone	10	32.2
Others [a]	7	22.6

[a] other chronic health problems :anemia, diabetic mellitus and tuberculosis.

Table 3: Knowledge of pregnant women in Debre Tabor Town, Northwest Ethiopia, May 25 - June 15, 2020(N=405).

Knowledge questions	Frequency	Percent (%)
Ever heard about COVID-19		
Yes	405	100
No	0	0
COVID-19 is viral disease		
Yes	261	64.4
No	144	35.6
Respiratory droplets and close contact are the main transmission route		
Yes		
No	357	88.1
	48	11.9
Incubation period of COVID-19 is 2-14 days		
Yes	183	45.2
No	222	54.8
All peoples are generally susceptible for COVID-19		
Yes	200	49.4
No	105	50.6
Fever is a symptom of COVID-19		
Yes	296	73.1
No	109	26.9
Dry cough is a symptom of COVID-19		
Yes	233	57.5
No	172	42.5
Headache is a symptom of COVID-19		20.7
Yes	82	
No	321	79.3
Sore throat is a symptom of COVID-19		
Yes	68	16.8
No	337	83.2

Runny nose is a symptom of COVID-19		
Yes	95	23.5
No	310	76.5
Difficulty of breathing is a symptom of COVID-19		
Yes	91	22.5
No	314	77.5
Stay at home and wearing face mask can prevent transmission of COVID-19		
Yes		
No	178	44.0
	227	56.0
People with co-existing disease and smokers had poor prognostic outcomes if infected with COVID.		
Yes		
	198	48.9
No		
	207	51.1
Person with COVID-19 can transmit the virus to others without development of sign and symptoms.		
Yes		
	262	64.7
No		
	143	35.3
pregnant women are at high risk than others if infected with COVID -19		
Yes		
No	167	41.2
	238	58.8

Table 4: Practice of pregnant women to prevent against COVID-19 in Debre Tabor Town, Northwest Ethiopia, May 25 - June 15, 2020(N=309).

Practice questions	Frequency	Percent (%)
Wash hand with water and soap		
Yes	271	87.7
No	38	12.3
Avoid touching eyes and mouth with unwashed hand.		
Yes	205	66.3
No	104	33.7
Cover mouth and nose during coughing or sneezing		
Yes		
No	238	77.0
	71	23.0
Wear face mask in public		
Yes	238	77.0
No	71	23.0
Stay at home or in door		
Yes	200	64.7
No	109	35.3
Maintain 1 meter distance from others		
Yes	182	58.9
No	127	41.1

Table 5: Bivariable and multivariable analysis of factors affecting pregnant women level of knowledge about COVID-19 in Debre Tabor Town Northwest Ethiopia, May 25 - June 15, 2020(N=405).

Variables	Knowledge of COVID-19				
	Good N (%)	Poor N (%)	COR (95%CI)	AOR (95%CI)	*P-value*
Age in years					
15-24	73(57.5)	54(42.5)	**2.704(1.349-5.421)**	**4.852(1.721-13.682)**	**0.003***
25-34	108(47)	122(53)	1.77(0.921-3.404)	1.663(0.704-3.928)	0.246
≥35	16(33.3)	32(66.7)	1	1	
Educational status					
No formal education	17(28.3)	43(71.7)	1	1	
Primary	33(46.5)	38(53.5)	2.197(1.059-4.558)	1.188(0.493-2.86)	0.701
Secondary	27(37.5)	45(62.5)	1.518(0.726-3.171)	0.844(0.35-2.033)	0.705
College and above	120(59.4)	82(40.6)	**3.702(1.976-6.935)**	**2.507(1.162-5.407)**	**0.019***
Occupation					
House wife	68(39.3)	105(60.7)	1	1	
Civil servant	69(60)	46(40)	**2.318(1.43-3.75)**	**2.848(1.554-5.21)**	**0.001***
Private business	54(52.9)	48(47.1)	**1.737(1.06-2.848)**	**2.883(1.506-5.517)**	**0.001***
Others	6(40.0)	9(60.0)	0.662(0.165-2.648	0.527(0.108-2.567)	0.428
Husband education					
No formal education	8(18.6)	35(81.4)	1	1	
Primary	15(41.7)	21(58.3)	**3.125(1.133-8.618)**	0.85(0.243-2.976)	0.80
Secondary	39(37.5)	65(62.5)	**2.625(1.106-6.232)**	1.525(0.529-4.397)	0.435
College and above	129(60)	86(40)	**6.562(2.905-14.82)**	2.705(0.989-7.398)	0.053
Husband occupation					
Civil servant	122(55.7)	97(44.3)	3.144(0.957-10.33)	1.036(0.2-5.35)	0.966

Private business	53(39)	83(61)	1.596(0.476-5.352)	0.354(0.066-1.889)	0.224
Worked at private sector	12(41.4)	17(58.6)	**1.765(0.446-6.979)**	0.496(0.8-3.077)	0.451
Daily laborer	4(28.6)	10(71.4)	1	1	
Gravidity					
Primi	76(50)	76(50)	1	1	
Multi	121(47.8)	132(52.2)	0.971(0.613-1.371)	**2.759(1.394-5.461)**	**0.004***
Parity					
Nulli	86(53.)	74(46.3)	1	1	
Primi	47(56.6)	36(43.4)	1.123(0.659-1.916)	0.683(0.275-1.697)	0.412
Multi	64(39.5)	98(60.5)	**0.562(0.361-0.875)**	0.616(0.295-1.286)	0.197
Condition of px					
Unwanted	9(27.3)	24(72.7)	1	1	
Wanted	183(55.5)	147(44.5)	**3.32(1.497-7.361)**	**3.372(1.202-9.456)**	**0.021***
Mistimed	5(11.9)	37(88.1)	0.36(0.108-1.206)	0.203(0.044-2.932)	0.089
ANC in current px					
Yes	176(54.3)	148(45.7%)	**3.398(1.974-5.847)**	**2.073(1.039-4.134)**	**0.039***
No	21(25.9)	60(74.1)	1	1	

** =P-value* < 0.05 considered as statistically significant

Table 6: Bivariable and multivariable analysis of factors affecting pregnant women level of practice to prevent against COVID-19 in Debre Tabor Town Northwest Ethiopia, May 25 - June 15, 2020(N=309).

Variables	Level of practice				
	Good N (%)	Poor N (%)	COR (95%CI)	AOR (95%CI)	*P-value*
Educational status					
No formal education	6(14.6)	36(85.4)	1	1	
Primary	12(22.2)	42(77.8)	**1.667(1.567-4.897)**	0.748(0.192-2.912)	0.675
Secondary	13(22.4)	45(77.6)	1.685(0.582-4.885)	0.665(0.179-2.48)	0.544
College and above	116(74.4)	40(25.6)	**6.917(6.624-23.20)**	**3.783(1.198-11.938)**	**0.023***
Husband educational status					
No formal education	6(24.0)	19(76.0)	1	1	
Primary	14(46.7)	16(53.3)	2.771(0.864-8.882)	2.076(0.351-12.281)	0.421
Secondary	33(42.3)	45(57.7)	2.322(0.836-6.452)	2.404(0.523-11.046)	0.259
College and above	88(52.1)	81(47.9)	**3.44(1.309-9.041)**	1.115(0.265-4.688)	0.882
Husband occupation					
Civil servant	91(52.6)	82(47.4)	**8.878(1.087-22.51)**	0.633(0.45-8.994)	0.736
Private business	41(43.2)	54(56.8)	6.074(0.73-30.50)	0.547(0.035-8.471)	0.66
Employed at private sector	8(32.0)	17(68.0)	3.765(0.40-22.44)	0.886(0.051-15.499)	0.934
Daily laborer	5(50.0)	5(50.0)	1	1	
Number of children					
≤ 3 children	124(54.9)	102(45.1)	**3.171(1.834-5.483)**	**2.894(1.298-6.454)**	**0.009***
> 3children	23((27.7)	60(72.3)	1	1	
Condition of pregnancy					
Unwanted	8(38.1)	13(61.9)	1	1	
Wanted	132(52.2)	121(47.8)	1.773(0.71-4.424)	1.186(0.213-6.596)	0.845
Mistimed	7(20)	28(80)			0.816

			0.406(0.121-1.361)	1.285(0.156-10.588)	
ANC in current pregnancy					
Yes	127(53.1)	112(46.9)	**2.835(1.591-5.05)**	0.993(0.381-2.59)	0.989
No	20(28.6)	50(71.4)	1	1	
Knowledge level					
Good	134(78.8)	36(21.2)	**11(8.291-23.157)**	**8.421(4.502-15.85)**	**0.000***
Poor	13(9.4)	126(90.6)	1	1	

* = *P-value* < 0.05 considered as statistically significant

Figures

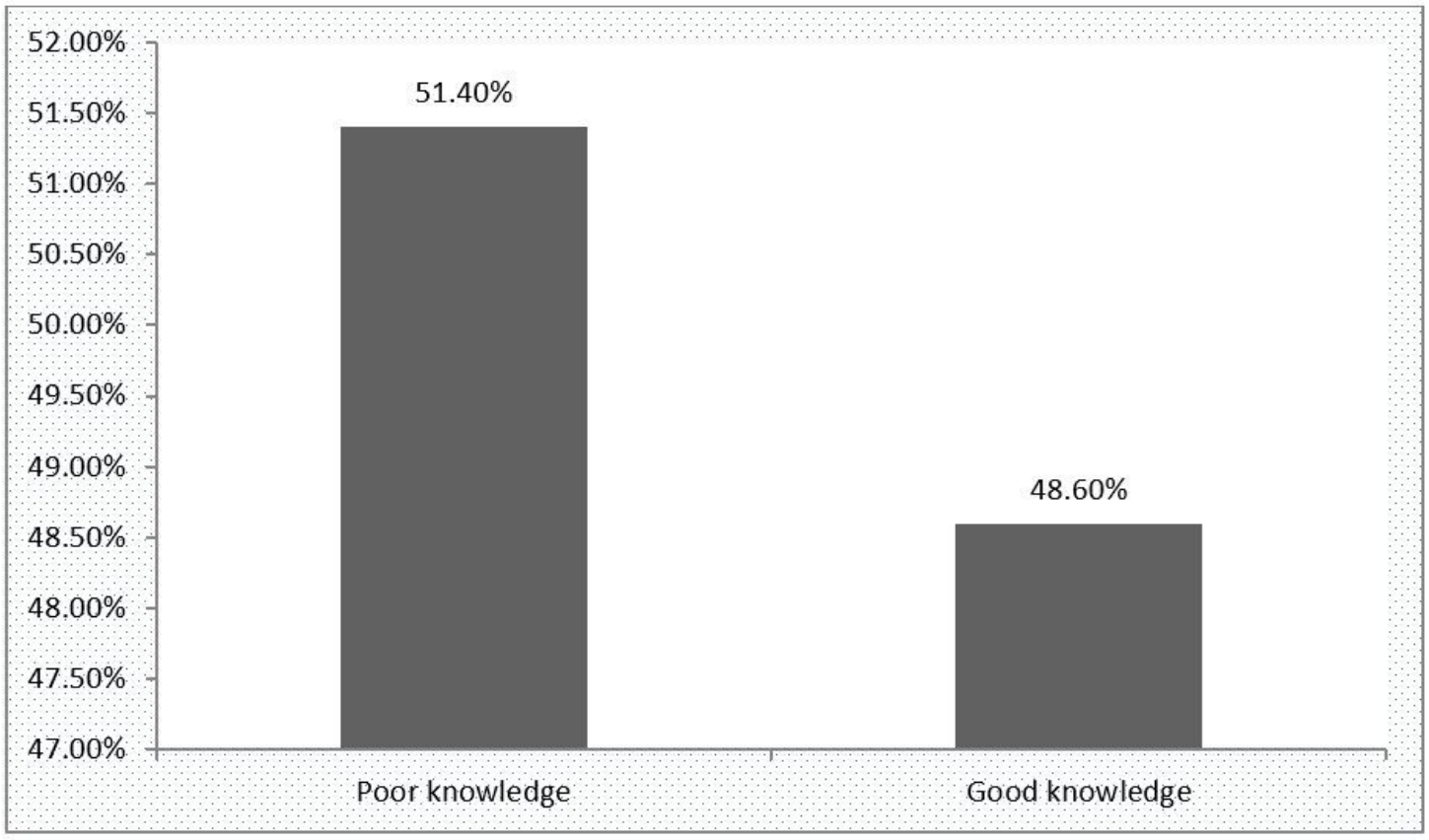

Figure 1

Level of knowledge of pregnant women about COVID-19; Debre Tabor Town Northwest Ethiopia, May 25 - June 15, 2020(N=405).

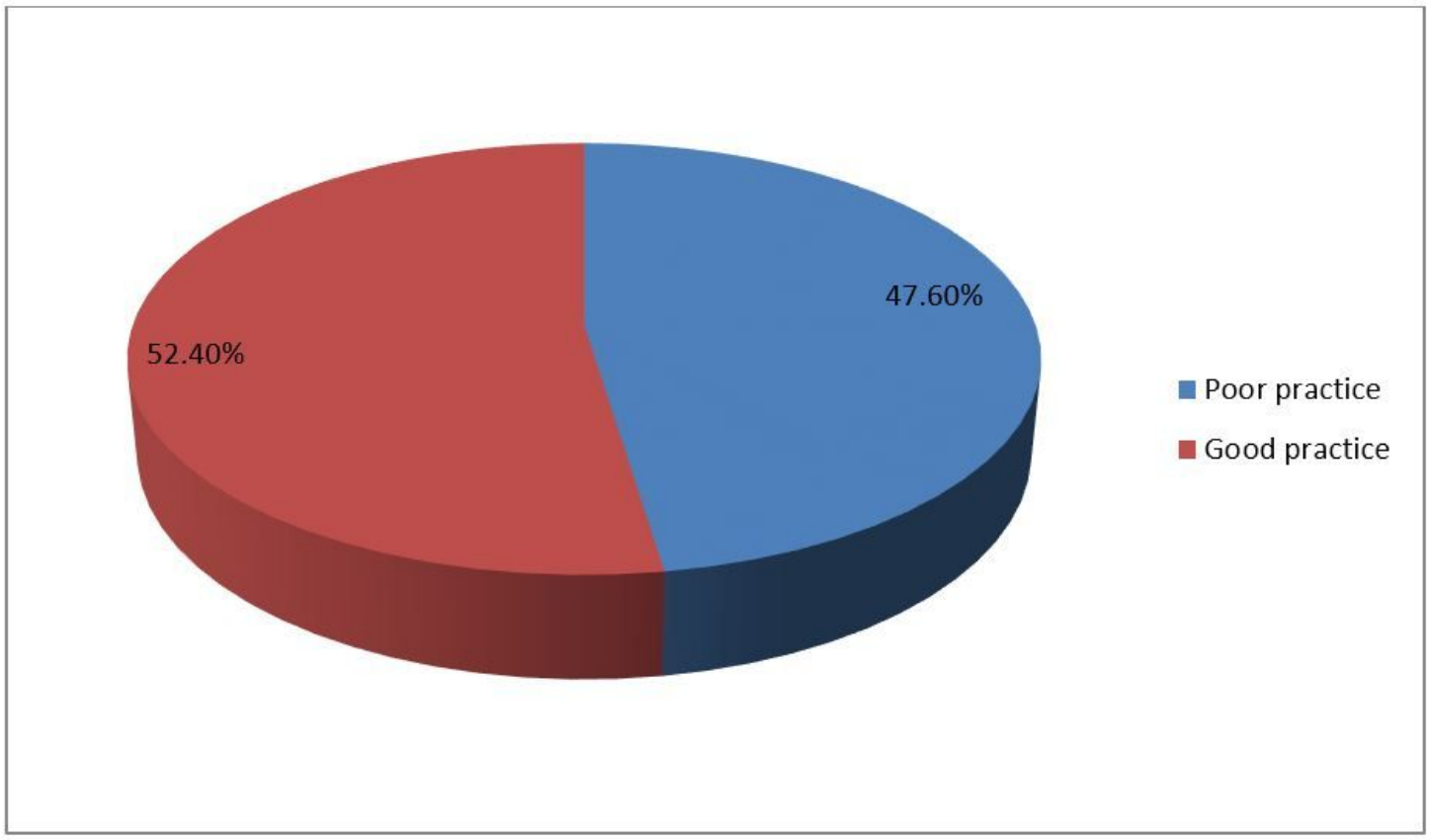

Figure 2

Level of practice of pregnant women to prevent against COVID-19; Debre Tabor Town Northwest Ethiopia, May 25 - June 15, 2020(N=405).

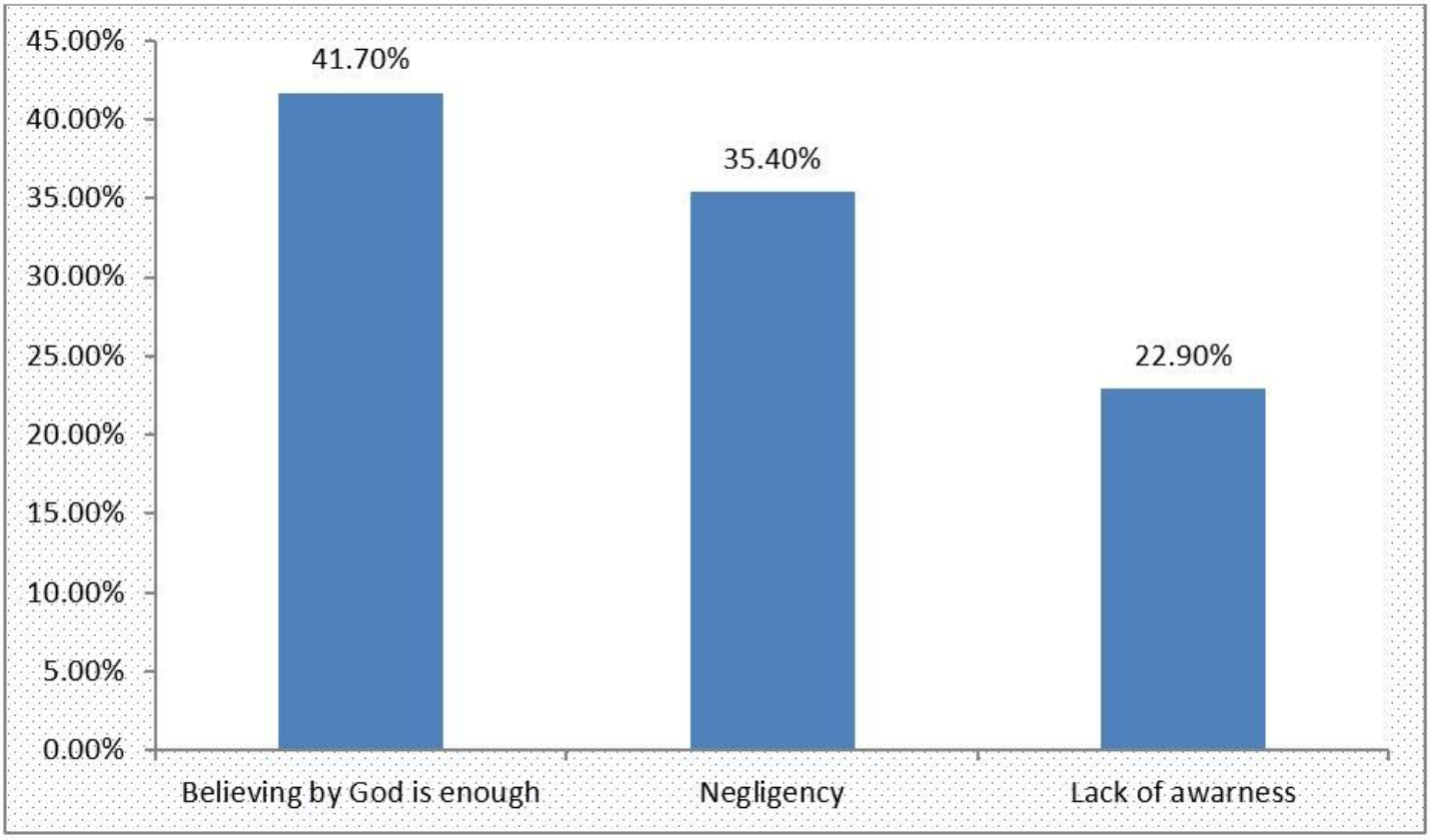

Figure 3

Reasons of pregnant women for not practicing preventive measures against COVID-19; Debre Tabor Town Northwest Ethiopia, May 25 - June 15, 2020(N=96).

Supplementary Files

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