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Preventive Practice and Associated Factors towards COVID-19 among Medical Visitors in Hospitals of South Gondar Zone, Northwest Ethiopia

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Short Title:	Preventive practice of COVID-19 among medical visitors
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Keywords:	knowledge, attitude, practice visitors, COVID-19
Abstract:	<p>Background : Coronavirus 2019 (COVID-19) is a rapidly expanding respiratory disease of the world. The first case of the disease was reported in Wuhan city, Hubei province, China at the end of late December. Healthcare facilities are the most vulnerable area for the transmission of the disease and medical visitors are members of it.</p> <p>Objective: To assess preventive practice and associated factors towards COVID-19 among medical visitors in hospitals of South Gondar Zone, Northwest Ethiopia in August 2020.</p> <p>Methods: A facility-based cross-sectional study design was applied from August 1 to 30, 2020 among 404 medical visitors using a systematic random sampling technique. Data were collected using a pre-tested face-to-face administered questionnaire. Data were cleaned and entered into Epi data version 3.1 and exported to SPSS Version.25 for statistical analysis. Bivariate logistic regression analysis was done to determine the presence and degree of association between preventive practice and socio-demographic variables. Odds Ratio (OR) with 95% confidence intervals (CI) with p values of less than 0.25 was selected as candidate variables for multivariable logistic regression. Multivariable logistic regression analysis was applied for preventive practice and a statistical significance test was declared at P-value <0.05 and adjusted Odd Ratio (AOR) with 95% CI.</p> <p>Results: A total of 404 participants completed the survey questionnaire. Of the participants, 280 (69.3%), 253 (62.6%), 205 (49.3%) have had good knowledge, positive attitude, and good practice respectively towards the prevention of COVID-19. Multivariable logistic regression indicated that educational status of reading and write (AOR=2.78; 95% CI: 1.18, 6.56); college and above (AOR=6.15; 95% CI: 2.18-17.40), and use of social media (AOR=2.96; 95% CI: 1.46, 6.01) were significantly associated with knowledge of COVID-19. Educational status of primary (AOR=6.49; 95% CI: 1.52-27.78) college and above (AOR=6.91; 95% CI: 2.59-14.50) presence of chronic illness (AOR=5.00; 95% CI: 1.71-14.67), training (AOR=3.91; 95% CI: 1.96-7.70), and peer as a source of information (AOR=2.45; 95% CI: 1.06-5.63) were significantly associated with attitude of COVID-19. Occupation of being a student (AOR=7.70; 95% CI: 1.15-15.86) and being good knowledge (AOR=4.49; 95% CI: 2.41-8.39) was significantly associated with prevention practice of COVID-19.</p> <p>Conclusion: The findings of this study showed that relatively good knowledge and attitude, however, there was a problem in prevention practice. Most of the participants had reckless practices in the keeping physical distance and the problem of staying at home. Therefore, information dissemination should be conducted on regular basis by health care professionals, and the use of mass media at the entrance of each institution towards the prevention practice of the pandemic.</p>
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Ethical clearance was obtained from the ethical review committee of Debre Tabor University, research, and community service coordinator office. Afterward, consent was obtained from the respective hospital managers of the study site. Informed consent was obtained from each participant after explaining the objective of the study.

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1 **COVID-19 Preventive Practice and Associated Factors**
2 **among Visitors in Hospitals of South Gondar Zone,**
3 **Northwest Ethiopia**

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5
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21 **Abstract**

22 **Background:** Coronavirus 2019 (COVID-19) is currently the critical health problem of the
23 globe, including Ethiopia. The first case of the disease was reported in Wuhan city, Hubei
24 province, China, in late December 2019. Visitors of healthcare facilities are the high-risk groups
25 due to the presence of suspected and confirmed cases of COVID-19. Even if many trials were
26 conducted on the vaccine and treatment of the disease, still there is no effective treatment and
27 vaccine. Therefore, prevention is the most effective method of reducing the transmission of the
28 disease.

29 **Objective:** To assess COVID-19 preventive practice and associated factors among visitors in
30 hospitals of South Gondar Zone, Northwest Ethiopia

31 **Methods:** A facility-based cross-sectional study design was applied in August 2020 in visitors
32 of hospitals of South Gondar zone, Northwest Ethiopia. A total of 404 visitors participated in the
33 study and were selected using a systematic random sampling technique. The questionnaire was
34 pre-tested in 5% of the final sample size to establish the validity of the data collection
35 instrument. The data were collected using face-to-face interviews by considering physical
36 distancing and wearing of face masks. The data was entered in Epi-data version 3.1 and exported
37 to Statistical Package for Social Science (SPSS) Version 25 for analysis. Bi-variate Crude Odd
38 **Ration** (COR) with 95% confidence intervals (CI) and p-values of less than 0.25 were applied to
39 select candidate variables for multi-variable analysis. Then, multi-variable Adjusted Odd Ratio
40 (AOR) using binary logistic regression analysis at a p-value of less than 0.05 at 95% CI was

41 statistically significance with the preventive practice of COVID-19 in visitors of hospitals
42 of South Gondar zone Northwest Ethiopia.

43 **Results:** A total of 404 participants completed the survey questionnaire with a response rate of
44 95.7%. About 280 (69.3%) had good knowledge, 253 (62.6%) had a positive attitude, and 205
45 (49.3%) had good preventive practice towards COVID-19. Multi-variable (AOR) logistic
46 regression analysis indicated that educational status who can read and write (AOR=2.78; 95%
47 CI: 1.18, 6.56); college and above (AOR=6.15; 95% CI: 2.18-17.40), and use of social media
48 (AOR=2.96; 95% CI: 1.46, 6.01) were significantly associated with knowledge of COVID-19.
49 Educational status of primary (AOR=6.49; 95% CI: 1.52-27.78) college and above (AOR=6.91;
50 95% CI 2.59-14.50), presence of chronic illness (AOR=5.00; 95% CI; 1.71-14.67), training on
51 COVID-19 (AOR=3.91; 95% CI: 1.96-7.70), and peer/family as a source of information
52 (AOR=2.45; 95% CI: 1.06-5.63) were significantly associated with attitude of COVID-19. Being
53 a student (AOR=7.70; 95% CI: 1.15-15.86) and good knowledge on COVID-19 (AOR=4.49;
54 95% CI: 2.41-8.39) were significantly associated with prevention practice of COVID-19.

55 **Conclusion:** we concluded that only half of the visitors had a good preventive practice of
56 COVID-19. Most of the participants reported that do not comply with the recommended physical
57 distance and staying at home. Therefore, the zonal health office should focus on collaboration
58 with other concerned stakeholders to enhance awareness, attitude, and prevention practice of
59 COVID-19. Furthermore, the prevention and control strategy should be incorporated with health
60 extension programs to address all members of the community mainly rural areas.

61 **Keywords:** knowledge, attitude, practice, COVID-19

62

63 **Introduction**



64 COVID-19 is a rapidly emerging pandemic respiratory disease caused by a novel Coronavirus of
65 Severe Acute Respiratory Syndrome COV-2. Initially, the disease was reported in Wuhan city,
66 Hubei Province, China at the end of December 2019 (1–3). Later on, at the end of January 2020,
67 World Health Organization (WHO) announces the disease as a public health emergency of
68 international concern and then declared it as a global pandemic on March 11 (4–6). Two days
69 later, the government of Ethiopia reported the first confirmed case of COVID -19 (7,8).

70 COVID-19 transmits mainly through droplets, airborne transmission, and contact between
71 humans (6,9–11). The major sign and symptoms of COVID-19 cases are fever, dry cough,
72 fatigue, myalgia, shortness of breath, and dyspnoea (4–6). The Severe cases of COVID-19 can
73 lead to cardiac injury, respiratory failure, acute respiratory distress syndrome, and death. Elders
74 and patients with chronic medical illnesses like hypertension, cardiac disease, lung disease,
75 cancer, or diabetes have been identified as potential risk factors for disease severity and
76 mortality. Even though the disease has no effective cure, but early recognition of symptoms and
77 timely seeking of supportive care enhance recovery from the illness. The case fatality rate of the
78 disease is approximately 3.4% (6,11).

79 According to the Worldometer report, as of October 6, 2020, 9:54 am, COVID-19 spreads to
80 more than 214 countries across the world. A total of 35,707,844 confirmed cases were reported.
81 Of them, 26,907,997 recovered and 1,049,700 died of the pandemic (12). The total confirmed
82 cases of COVID-19 in Ethiopia were 79,437; 1,230 died, and 34,016 recovered (13). The
83 pandemic of COVID-19 terrifies the whole population of the entire continent. It disrupts the
84 communities physical, mental health, political, economic, and social stability of countries. The

85 pandemic also threatened the countries economic growth, sense of security, health care system,
86 trade relations, tourism, employment, and global interactions (14).

87 Due to the absence of cure (6,11) prevention is recommended as the only strategy to protect
88 against the spread of the pandemic. Universal source control, respiratory hygiene, early
89 identification and isolation of patients with suspected disease, hand washing, social distancing,
90 use of Personal Protective Equipment (PPE), and environmental disinfection are the most
91 common prevention methods of COVID-19 (6,15–18). As a result, the WHO designed different
92 guidelines and online training programs to alleviate the problems (19). But still, there is a
93 deficiency of information on its distribution, transmission, treatment, and prevention of the
94 pandemic (6,18).

95 The government of Ethiopia has also implemented different prevention measures since the first
96 case of COVID-19. Later on, the country declares and enforces a state of emergency for about
97 six months starting from early March 2020 (20). However, COVID-19 cases are increasing at an
98 alarming rate. Therefore, assessing knowledge is important in identifying gaps and strengthening
99 ongoing prevention methods of the pandemic (4). Even though there are strong initiatives and
100 recognition of the public health importance of COVID-19, it needs strong reinforcements on
101 community prevention practice (11).

102 The state of emergency towards COVID-19 prevention was terminated at the end of September
103 2020. As a result, most populations perceived as the disease was eliminated during the
104 termination of a state of emergency. As a result, COVID-19 prevention measures being
105 neglected and confirmed cases of COVID-19 increased from time to time. Even if many studies
106 were conducted on different aspects of the COVID-19 pandemic in Ethiopia, but scientific

107 evidence on prevention practice of COVID-19 is rare among visitors of healthcare settings.
108 Therefore, the study was designed to assess COVID-19 prevention practice and associated
109 factors among visitors in hospitals of South Gondar Zone, Northwest Ethiopia.

110 **Methods and Materials**

111 **Study design, period, and setting**

112 A facility-based cross-sectional study design was applied among visitors in hospitals of South
113 Gondar zone, Northwest Ethiopia from August 1 to 30, 2020. South Gondar zone is one of the 15
114 administrative zones in the Amhara regional state of Ethiopia. Debre Tabor is its capital town
115 which is located at 597 km to the North of Addis Ababa and 105 km from Bahir Dar which is the
116 capital city of Amhara regional state. According to the population projection of 2014, the total
117 population of the study area was 2,364,603 of which 1,196,318 were males while 1,168,285 were
118 females (population projection 2014). South Gondar zone has a total of eight hospitals of which
119 seven are district hospitals while Debre Tabor hospital is a general hospital (23).

120 **Source population and inclusion criteria**

121 All visitors in hospitals of the South Gondar zone were the source population while all visitors
122 in two randomly selected hospitals (Debre Tabor and Mekane Eyesus) were the study population.
123 Visitors who were less than 18 years old and those who were unable to respond due to illness
124 during data collection were excluded from the study.

125 **Sample size estimation and sampling methods**

126 The sample size was determined using the single population proportion formula by taking the
127 following assumptions.

128
$$n = \frac{(z_{\alpha/2})^2 * p(1-p)}{d^2}$$

129 $Z_{\alpha/2}$ is the standard normal variable value at (1- α)% confidence level (α is 0.05 with 95% CI, $Z_{\alpha/2}$
130 = 1.96), an estimate of the proportion of knowledge attitude and practice, was considered as 50%
131 as there was no similar studies conducted and margin of error, 5%. The sample size became 384
132 and adding 10% non-response rates so that the final sample size becomes 422.

133 Initially, two hospitals were selected using a simple random sampling technique by lottery
134 method. The patient flow data were estimated by reviewing the patients' logbook in the last three
135 months and the average number of the patient for a month was calculated to determine the
136 interval. Then, we used a systematic random sampling technique to select study participants of
137 the study. Then, the proportional allocation was carried out to determine the number of
138 participants from each hospital.

139 Outcome and explanatory variables

140 The outcome variable was the preventive practice of COVID-19 (good/poor), knowledge
141 (good/poor), and attitude (good/poor), while explanatory variables comprised of socio-
142 demographic variables, behavioral variables, pre-existing medical condition, and sources of
143 information towards COVID-19.

144 Operational definitions

145 Knowledge was measured by using 15 questions consisting of signs and symptoms, risk groups
146 and prognosis, method of transmission, and /preventive methods. Each question was responded
147 as either yes, no, and I do not know. Respondents who answered correctly were given 1 point

148 while others were given 0 points. The total knowledge score ranges from 0-15 and a cut-off level
149 of ≥ 12 (80% and above) was considered as **good knowledge** while < 12 (80%) was considered as
150 **poor knowledge** (24). The attitude section was measured by using 11 items and the response
151 was categorized based on 3 scale measurements with agree (3 points), neutral (2 points), and
152 disagree (1 point). The score of attitude varies from 11 to 33, with an overall score of ≥ 26.4
153 (80%) was considered as a **positive attitude** (27). The prevention practice was measured using
154 10 items and those who respond as yes were given 1 point while no was marked as 0. The total
155 prevention practice score ranges from 0-10 and a score with a cut-off ≥ 8 (80%) was considered
156 as **good practice** while < 8 was taken as a poor practice (25,26).

157 **Data collection, management, and quality assurance**

158 The data were collected using a structured questionnaire which was adapted from articles
159 published in different journals and the WHO guidelines (28–33). The questionnaire consists of
160 four sections including; part I: socio-demographic characteristics of the participants; part II;
161 sources of information towards COVID-19; part III: knowledge of the participants; part IV:
162 Attitude of the participants; and part V: Prevention practice of COVID-19. The tool was
163 prepared in the English version and translated to Amharic version (local language), and re-
164 translated back to English to ensure consistency. A pre-test was conducted using 5% (21) of the
165 final sample size in the Andabet district to establish the validity of the questionnaire and
166 amendment was made accordingly. The data was collected by using face-to-face-interviews by
167 considering COVID-19 prevention measures such as wearing of face-mask and keeping a 2-
168 meter distance from the respondents. The data was collected by four BSc nurse professionals and
169 supervised by two master's degree holders in public health. Two days of training was given for
170 data collectors and supervisors on the overall aim of the study, contents of the tool. Supervision

171 was carried out on daily basis, and appropriate corrections were done accordingly. Furthermore,
172 double data entry was done to control data entry errors and data cleaning was carried before
173 statistical analysis. The reliability coefficient of Cronbach's alpha was 0.76 which is an
174 acceptable range.

175 **Statistical analysis**

176 Epi-Data version 3.1 was used for data entry and exported to the Statistical Package of the Social
177 Science (SPSS) version 25.0 for statistical analysis. Bi-variate analysis with (COR) and multi-
178 variable analysis (AOR) was determined using binary logistic regression analysis with 95% CI.
179 In the bivariate analysis, variables with $p < 0.25$ were a candidate for multi-variable analysis.
180 From the multi-variable logistic regression analysis, variables with a significance level of p
181 < 0.05 were taken as statistically significant and independently associated with outcome
182 variables. The presence of multi-collinearity among independent variables was checked using
183 standard error at the cutoff value of 2 with a maximum standard error of 0.97 and model fitness
184 was checked using the Hosmer-Lemeshow test with a p -value of 0.65.

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192 **Result**

193 **Socio-demographic characteristics of the respondents**

194 A total of 404 visitors participated in the study with a response rate of 95.7%. The majority of
195 the respondents 242 (59.7%) were females, less than a quarter 92 (22.8%) were in the age of 30-
196 39, more than three fourth 331(81.9%) of the study participants were orthodox, and 295(73.1%)
197 were married. Furthermore, 66 (16.3%), 68(16.8%), and 117(29.0%) of the respondents can't
198 read and write, farmers, and live in rural areas respectively. Similarly, 137 (39.9%) of the
199 participant took training towards COVID-19 and 252 (62.4%) used social media as a source of
200 information for COVID-19. Finally, 56 (13.9%) of the participants had either or more chronic
201 medical illness history (**Table 1**).

202 **Knowledge of medical visitors towards COVID-19**

203 The finding of the study showed that 388 (96.0%) of the participants heard about COVID-19
204 from different sources of information. But a lower number of respondents 322 (79.7%) knew as
205 COVID-19 is a viral disease while 339 (83.9%) of the respondents knew the major sign and
206 symptoms of COVID-19 cases. Furthermore, 320 (79.2%) participants knew that elders, those
207 who had a chronic medical illness, and obese are more likely to have severe cases of COVID-19.
208 Similarly, 283 (70%) of the respondents knew that COVID-19 can be transmitted from one
209 person to another even in the absence of COVID-19 (**Table 1**).

210

211

212 **Attitude of visitors towards COVID-19**

213 The finding of the study also showed that almost half of 203(50.2%) of the participants agree
214 that the black race is not protective against COVID-19. Similarly, 180 (44.6%) of the
215 participants agreed that Ethiopia is in a good position to contain the spread of the COVID-19.
216 Approximately, two-thirds 274 (67.8%) of the participants believed COVID-19 do not cause
217 stigma. This finding also indicated that more than half 221(54.7%) of the respondents agree that
218 they can get infected with COVID-19 if they contacted infected patients despite their good
219 immunity. On the other hand, 55 (13.6%) of the respondents believed that COVID-19 has
220 occurred as a result of our sin (**Table 3**).

221 **Preventive practice of COVID-19**

222 This finding showed that 378 (93.6%) of the participants washed their hands with water and soap
223 for at least 20 seconds and three-fourth of the participants used alcohol-based hand rub sanitizers
224 which contain at least 60% alcohol during the absence of handwashing facilities like water and
225 soap. Furthermore, almost nine out of ten respondents avoid handshaking practice after the
226 emergent of COVID-19. But a relatively lower number of 338 (83.7%) participants used
227 facemasks when they leave their home and 333 (82.4%) practiced respiratory hygiene while
228 coughing and sneezing. Keeping social distancing was one of the major problems faced by the
229 respondents and only 177(43.8%) respondents practiced it. Staying at home after the emergent of
230 COVID-19 was also another challenge and only less than one-third 121(30%) of the participants
231 applied it as a means of COVID-19 prevention measures (**Table 4**).

232

233

234 **Status of Knowledge, attitude, and preventive practice of COVID-19**

235 The finding of the study revealed seven out of ten 280 (69.3%) respondents had good
236 knowledge towards COVID-19 while 253 (62.6%) had a positive attitude towards COVID-19.

237 The finding of the study showed the pillar of prevention practice was much lower and only half
238 199(49.3%) of the participants had a score of good prevention practice of COVID-19 (**Figure 1**).

239 **Predictors of Knowledge, Attitude, and preventive practice towards** 240 **COVID-19**

241 The multi-variable analysis indicated that educational status and use of social media as a source
242 of information were statistically significant with the knowledge of COVID-19. The finding
243 revealed that those who can read and write were 2.78 times more likely to have good knowledge
244 than those who can't read and write. Similarly, those who have college and above educational
245 level were 6.15 (2.18-17.40) times more likely to have good knowledge than those who can't
246 read and write. Additionally, respondents who used social media as a source of information was
247 2.96 (1.46-6.01) times more likely to have good knowledge than the corresponding group of
248 those who did not use social media (**Table 5**).

249 The multi-variable analysis revealed that those who had primary education were 6.49 (1.52-
250 27.78) times more likely to have a positive attitude than those who can't read and write while
251 college above was 6.91 (2.58-14.5) times more likely to have a positive attitude than the
252 corresponding reference group. Medical visitors who had chronic medical illnesses were 5.00
253 (1.71-14.67) more likely to have a positive attitude than those who don't have a chronic illness.
254 Respondents who took training on COVID-19 were 3.9 (1.96-7.70) more likely to have a
255 positive attitude than those who didn't take the training.

256 Additionally, participants who used peer and family as a source of information were 2.45 (1.06-
257 5.63) times more likely to have a positive attitude than those who didn't exchange information
258 from their peers and families (**Table 6**).

259 The finding also indicates that being a student was 7.70 (1.15-51.86) more likely to have a good
260 prevention practice as compared to farmers. Similarly, having good knowledge was 4.49 (2.41-
261 8.39) times more likely to have a good prevention practice than those who had poor knowledge
262 (**Table 7**).

263

264 **Discussion**

265 The pandemic of COVID-19 is still the critical concern of the globe including our country
266 Ethiopia. But up to date, there is no confirmed treatment for the pandemic. Therefore prevention
267 is the single most important method of alleviating the spread of the pandemic.

268 In this finding, about 81.67% of the knowledge questions were correctly replied to by the
269 respondents. This finding was in line with the study conducted in Saudi Arabia (80.5%) (4) and
270 in Nigeria (77.36) (35). The finding of this study was lower than the study conducted in China
271 (90%) (36). This discrepancy may be due to variation in the study population's characteristics,
272 government commitment, and health care system quality on awareness creation. On the contrary,
273 this study result was higher than in the Egyptian population (71.26%) (37). This discrepancy
274 might be due to Spatio-temporal variation.

275 The finding of this study revealed that 69.3 % (CI; 65.1-73.8) of the participants had good
276 knowledge of COVID-19 which was consistent with a finding in India (70 %) (38). On the other

277 hand, the finding of this study was lower than a multicenter study conducted among health care
278 workers in Ethiopia with 88.2% (16) and Nigerian residents in an urban setting (99.7%) (39).
279 This deviation may be due to the change in the study population (health care professionals vs.
280 general population) and residents of the study population.

281 This finding showed that almost all (96%) of the respondents heard about COVID-19 by using
282 different sources of information. About two-thirds (62.4%) of the participants used social media as
283 a source of information of COVID-19 which was slightly higher than the study conducted in
284 Nigeria 55% (39). This deviation may be due to a change in the study period and setting, socio-
285 demographic characteristics of the study population. On the contrary, this finding was lower than
286 the study conducted in Ethiopia (73.6%) (16). This deviation may be due to a change in the
287 heterogeneity of the study population (general population vs. health care professionals), and
288 variation of participants resident. Furthermore, this study also indicated that about 80% of
289 participants knew that the elderly, those who had chronic medical illnesses, and obese are more
290 likely to develop severe cases of COVID-19. This finding was slightly higher than the study
291 conducted in Ethiopia (72.5%) (11). This variation may be due to the change in Spatio-temporal
292 variation, socio-demographic characteristics of the study population, and coverage of awareness
293 creation towards COVID-19. Even though children and young adults are vulnerable groups,
294 only 83.4% of the participants knew that these groups need to take preventive measures towards
295 COVID-19. Neglecting such types of the population may wide-spreading the transmission of the
296 pandemic (11).

297 Regarding the attitudes, 62.6% (95% CI; 57.2-67.6) of respondents had a positive attitude
298 towards COVID-19 which was lower than the study conducted in Ethiopia (94.7%) (16), Nigeria
299 79.5% (39), and Pakistan (82.16%) (40). This discrepancy may be due to a change in the study

300 population (health professionals vs general population), government commitment towards
301 COVID-19. On the other hand, less than half (44.6%) of the participants believed that the
302 government of Ethiopia can control the spread of COVID-19 within a short time. This finding
303 was lower than the study conducted in china 97.1% (24) and India at 87.2% (41). This deviation
304 may be due to the variation in the quality of the health system, socio-demographic characteristics
305 of the study population, and government preparedness to respond to the control of the pandemic.
306 The report of WHO showed that the government's of Ethiopia scored only 52% towards
307 COVID-19 preparedness response (21) which supports the finding of this study. Furthermore,
308 this study also indicated that almost two-thirds of the respondents believed that the pandemic of
309 COVID-19 leads to the development of social stigma which was lower than a study conducted in
310 Ethiopia at 77% (16) and 83.8% (11). This deviation may be due to differences in Spatio-
311 temporal variation, socio-demographic characteristics of the study population. On the contrary,
312 this finding was higher than the study conducted in the Peruvian population 59.1% (42). This
313 variation may be due to a change in the socio-demographic characteristics of the study
314 population and time, awareness creation towards COVID-19, and the burden of the pandemic.
315 The social stigma may be developed due to fear of its mortality and high communicability. The
316 history of social stigma due to pandemic was not a new phenomenon (43,44).

317 Regarding the prevention practice of COVID-19, the overall practice score of the respondents
318 was 73.2% which was higher than the study conducted in Ethiopia (26). The finding of this study
319 showed that only half 49.3% of the participants had a good preventive practice of COVID-19.
320 But this finding was lower than other studies conducted in Ethiopia (16,26) and China (45). This
321 variation may be due to the change in the study setting, socio-demographic characteristics of the
322 study population, and occupation of the participant (being a health professional vs. general

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323 population). This finding also indicated that 93.6% of the respondents wash their hands with
324 water and soap for at least 20 seconds which was consistent with the study conducted in Nigeria
325 96.4% (39). On the contrary, this finding was lower than a study conducted in Nigeria 87.9 %
326 (35). This deviation may be to a variation in access and proper utilization of handwashing
327 facilities in health care facilities. Additionally, 83.7% of the participants used face masks which
328 were consistent with the study conducted in Nigeria 84.4% (35), and 82.3% (39). On the other
329 hand, less than half (43.8%) of the respondents applied in Keeping physical distance when they
330 go to public areas. This finding was lower than the study conducted in Nigeria 83% (35) and
331 92.7%, (39). This variation may be due to a difference in the study population, the burden of the
332 disease, awareness of the community towards the pandemic, and population way of life. The
333 finding also revealed that more than two-thirds of 70% of the respondents avoid going to
334 crowded places after the emergence of COVID-19 which was higher than the finding in Nigeria
335 58.9% (35). Additionally, 82.4% of the respondents practiced respiratory hygiene which was
336 lower than the finding in India with a value of (97.7%) (46) which may be due to the variation in
337 a study setting, heterogeneity of population perception of the community, Knowledge towards
338 COVID-19, and burden of confirmed COVID-19 cases. Above all, the most common challenge
339 of COVOD-19 prevention practice was staying at home after the occurrence of COVID-19.
340 Based on this finding, less than one-third (30%) of the respondents apply it. The possible
341 justification for this problem may be the stay of the pandemic for a long period of time andmost
342 Ethiopian population depends on subsistence way of life.

343 **Conclusion**

344 In conclusion, the finding of this study showed 70 % of the medical visitors had good knowledge
345 while 62.4% had a positive attitude towards COVID1-19. But there was a problem in applying to
346 practice what they know and perceive towards COVID-19. As a result, only half of the
347 participants had good prevention practices of COVID-19. Seventy percent and above
348 respondents had practiced most prevention measures of COVID-19 except for keeping of
349 physical distance and staying at home. Therefore, the zonal health bureau should work in
350 collaboration with other stakeholders to improve the awareness towards COVID-19 prevention
351 practice mainly in public gathering areas like markets, schools, healthcare facilities, religious
352 institutions, and bus stations. Furthermore, the Ethiopian Ministry of Health should link COVID-
353 19 prevention with health extension programs mainly in rural parts of the country.

354 **Abbreviations**

355 COVID-19:Coronavirus disease 2019; 2019-novel coronavirus: 2019-novel coronavirus; AOR:
356 Adjusted Odds Ratio; ARDS:Acute Respiratory Distress Syndrome; CDC: Communicable
357 disease control; CI: Confidence Interval; COR: Crude Odds Ratio; COVID_19: Corona Virus
358 Disease-2019; CSA: Central Statistical Agency; HCP: Health Care Professionals; HCWs: Health
359 Care Workers; PHEIC: Public Health Emergency of International Concern; PPE: Personal
360 Protective Equipment; LMC: Low and Middle-Income Countries; SARAS_COV-1: Severe
361 Acute Respiratory Syndrome- Corona Virus-1; SARS-COV-2: Severe Acute Respiratory
362 Syndrome- Corona Virus-2; SPSS: Statistical Package for Social Science; WHO: World Health
363 Organization;

364 **Declarations**

365 **Ethics approval and consent to participate**

366 The study was approved by the ethical review committee of Debre Tabor University. Permission
367 to conduct the study was obtained from the respective hospital managers of the study site. Before
368 the data collection, the purpose of the study was explained and verbal consent was obtained from
369 each participant. Individuals who were volunteer to participate in the study were also told as they
370 have the right to withdraw from the study at any stage of the interview. The confidentiality of the
371 study participants was ensured by avoiding possible identifiers. Data collectors wear a facemask
372 and keep a physical distancing of two feet. Facemask was provided for the study participants
373 who did not wear it during the data collection.

374

375 **Consent for publication**

376 Not applicable

377 **Availability of data and material**

378 Data and all the materials will be available from the corresponding author upon request.

379 **Conflicts of interest**

380 The authors declare that they have no conflicts of interest.

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383 **Authors' contributions**

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385 **Data curation:** Gete Berihun, Awoke Keleb, Ayechew Ademas

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398

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542 **Table 1: Socio-demographic characteristics of medical visitors in hospitals of South Gondar**
543 **zone Northwestern Ethiopia, in August 2020 (n=404)**

Variable	Category	Frequency	Percentage
Sex	Male	163	40.3

	Female	241	59.7
Age(years)	<20	24	5.9
	20-29	92	22.8
	30-39	111	27.5
	40-49	94	23.3
	50-59	48	11.9
	≥60	35	8.7
Religion	Muslim	30	7.4
	Orthodox	331	81.9
	Protestant	43	10.6
Marital status	Single	83	20.5
	Married	295	73.1
	Divorced	26	6.5
Educational status	Cannot read and write	66	16.3
	Read and write	95	23.5
	Primary (1-8) grade	36	8.9
	Secondary (9-12)grade	29	7.2
	College and above	178	44.1
Occupation	Farmer	68	16.8
	Student	45	11.1
	Unemployed	55	13.6
	Government employer	129	31.9
	Private business worker	107	26.5
Resident	Urban	287	71.0
	Rural	117	29.0
Monthly income(ETB)	≤499	127	31.4
	500-2000	101	25
	≥2001	176	43.6
History of chronic medical illness	Yes	56	13.9
	No	348	86.1
Training on COVID 19	Yes	137	33.9
	No	267	64.1
Use social media	Yes	252	62.4
	No	152	37.6
Peer as a source of information of COVID19	Yes	345	85.4
	No	59	14.6
Use TV/radio as a source of information	Yes	321	79.5
	No	83	20.5
Use religious institution as source of information	Yes	130	32.2
	No	274	67.8

544

545 **Table 2: Knowledge of medical visitors towards COVID-19 in hospitals of South Gondar**
546 **zone, Northwestern Ethiopia, in August 2020 (n=404)**

Item	Yes		No		I do not know	
	Frequency	%	Frequency	%	Frequency	%

Did you hear about COVID-19?	388	96.0	16	4.0		
COVID-19 is a viral disease.	322	79.7	40	9.9	42	10.4
The major sign and symptoms of COVID-19 are dry cough, fever, and shortness of breathing.	339	83.9	33	8.2	32	7.9
Runny nose and sneezing are less common symptoms of COVID-19.	275	68.1	88	21.8	41	10.1
Elder, those who have a chronic medical illness and obese are more likely to sever the case of COVID-19.	320	79.2	57	14.1	27	6.7
Currently, there is no effective cure for COVID-19.	331	81.9	50	12.4	23	5.7
COVID-19 virus can spread via respiratory droplets.	375	92.8	29	7.2		
Eating and contacting wild animals would result COVID-19 infection	308	76.2	53	13.1	43	10.6
Persons with COVID 19 virus can transmit the virus to others when a fever is not present	283	70.0	71	17.6	50	12.4
Proper washing hand with soap and water is one method of preventing COVID-19.	375	92.8	18	4.5	11	2.7
Wearing general masks can prevent one from acquiring infection by the COVID 19 virus	354	87.6	35	8.7	15	3.7
Children and young adults must take measures to prevent the infection by Covid 19 virus	337	83.4	45	11.1	22	5.4
To prevent the infection by COVID 19 virus individuals should avoid going to crowded places such as bus parks and avoid public transportation	352	87.1	50	12.4	2	.5
People who have contact with someone infected with COVID 19 virus should be	273	67.6	95	23.5	36	8.9

immediately isolated in a proper place in general the observation period is 14 days						
Isolation and treatment of people who are infected with the COVID 19 virus are effective ways to reduce the spread of the virus	295	73.0	80	19.8	29	7.2
Mean± standard deviation	12.25±2.45					
Minimum	2.00					
Maximum	15					

547

548 **Table 3:-Attitude of medical visitors towards COVID-19 in hospitals ofSouth Gondar zone,**
549 **Northwest Ethiopia, in August 2020 (n=404)**

Item	Agree		Neutral		Disagree	
Black races are not protected from COVID 19 disease.	203	50.2%	146	36.1%	55	13.6%
Wearing a well-fitting face mask are effective in preventing COVID 19 virus	268	66.3%	81	20.0%	55	13.6%
Hand wash can prevent you from COVID 19 virus	321	79.5	77	19.1	6	1.5
Ethiopia is in a good position to contain COVID 19 virus	180	44.6	144	35.6	80	19.8
COVID 19 is not stigma and I should not hide my infection	274	67.8	90	22.3	40	9.9
If I get infected with COVID 19, I will go to the hospital as advised.	221	54.7	141	34.9	42	10.4
I can get infected with COVID 19 if I contacted an infected patient despite my good immunity.	230	56.9	100	24.8	74	18.3
COVID 19 is fatal	215	53.2	105	26.0	84	20.8
During the outbreak of COVID 19 eating well cooked and safely handled meat is safe.	249	61.6	96	23.8	59	14.6
COVID 19 patients should share their recent travel history with a health care provider.	256	63.4	85	21.0	63	15.6
Do you think that the cause of Covid-19 is not spiritual/	262	64.9	87	21.5	55	13.6

is it happened because of our sin?			
Mean \pm standard deviation	27.11\pm4.08		
Minimum	17		
Maximum	33		

550

551 **Table 4:-Preventive practice of medical visitors towards COVID-19 in hospitals ofSouth**
552 **Gondar zone, Northwest Ethiopia, in August 2020 (n=404)**

Item	Yes		No	
	Frequency	%	Frequency	%
Do you avoid handshaking to prevent covid 19?	363	89.9	41	10.1
Have you washed your hands often with soap and water for at least 20 seconds especially after you have been in a public place or after blowing your nose, coughing, or sneezing?	378	93.6	26	6.4
If soap and water are not readily available, are you applying a hand sanitizer that contains at least 60% alcohol?	309	76.5	95	23.5
Do you wear face masks repeatedly when you leave your home?	338	83.7	66	16.3
Do you coughing and sneezing into the elbow or within clothing?	333	82.4	71	17.6
In recent days have you avoid going to any crowded place?	281	69.6	123	30.4
Do you avoid eating raw animal products to prevent the COVID 19 virus?	336	83.2	68	16.8
Do you avoid touching your mouth nose and eyes with unwashed hands?	323	80.0	81	20.0
Do you keep your self 2m away from the others when you got to the public area?	177	43.8	227	56.2
Do you stay at your home after the emergent of covid 19?	121	30.0	283	70.0
Mean \pm standard deviation	7.32\pm1.60			

Minimum	1.00				
Maximum	10				

553

554 **Table 5:-Predictors of knowledge towards COVID-19 among medical visitors in hospitals**
555 **of South Gondar zone, Northwest Ethiopia, August 2020 (n = 404).**

Variable	Knowledge		COR(95% CI)	AOR(95% CI)	P-value
	Poor	Good			
Age					
<20	12	12	1	1	
20-29	22	70	3.182(1.252-8.085)	1.98(0.54-7.29)	0.31
30-39	29	82	2.828(1.144-6.992)	1.08(0.30-3.87)	.091
40-49	39	58	1.611(.654-3.970)	1.06(0.31-3.68)	0.92
50-59	15	33	2.200(.804-6.018)	1.21(0.30-4.82)	0.79
≥60	10	25	2.500(.844-7.401)	0.69(0.16-2.95)	0.61
Marital status					
Single	22	61	1	1	
Married	90	205	0.821(0.48-1.42)	0.88(0.42-1.82)	0.72
Divorced	12	14	0.42(0.17-1.05)	0.92(0.29-2.98)	0.89
Education					
cannot read and write	41	25	1	1	
Read and write	41	54	2.16(1.14-4.12)	2.78(1.18-6.56)*	0.02*
Primary	10	26	4.26(1.76-10.31)	2.42(0.56-10.44)	0.24
Secondary	8	21	4.31(1.66-11.18)	1.54(0.25-9.56)	0.65
College and above	24	154	10.52(10.52-5.45)	6.15(2.18-17.40)*	0.001*
Occupation					
Farmer	45	23	1	1	
Student	12	33	5.38(2.35-12.34)	1.64(0.28-9.72)	0.59
Currently unemployed	17	38	4.37(2.04-9.36)	1.50(0.49-4.58)	0.48
Gov't worker	18	111	12.07(5.95-24.48)	0.83(0.16-4.19)	0.82


Private business	32	75	4.59(2.39-8.80)	0.91(0.25-3.30)	0.89
Resident					
Urban	71	216	2.52(1.60-3.96)	1.427(0.75-2.71)	0.28
Rural	53	64	1	1	
Monthly income					
<499	54	73	1	1	
500-2000	34	67	1.46(0.85-2.51)	1.272(0.52-3.09)	0.60
>2000	36	140	2.88(1.73-4.78)	1.291(0.46-3.60)	0.63
Training					
Yes	24	113	2.82(1.70-4.67)	1.74(0.89-3.42)	0.11
No	100	167	1	1	
Use social media					
Yes	48	204	4.25(2.72-6.65)	2.96(1.46-6.01)*	0.003*
No	76	76	1	1	
Peer					
Yes	93	252	3.00(1.71-5.27)	1.09(0.48-2.51)	0.84
No	31	28	1	1	
TV/radio					
Yes	78	243	3.87(2.34-6.40)	1.07(0.43-2.65)	0.88
No	46	37	1	1	
Religious institution					
Yes	32	98	1.55(0.97-2.48)	0.93(0.50-1.73)	0.83
No	92	182	1	1	

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559 **~~Predictors of Attitude towards COVID-19~~** 

560 **Table 6:-Predictors**  of attitude towards COVID-19 among medical visitors in hospitals
561 of South Gondar zone, Northwest Ethiopia, August 2020 (n = 404).

Variable	Attitude		COR(CI)	AOR(CI)	P-value
	Negative	Positive			
Age					
<20	12	12	1	1	
20-29	35	57	1.63(0.66-4.02)	0.42(0.12-1.46)	0.17
30-39	45	66	1.47(0.61-3.56)	0.51(0.14-1.82)	0.30
40-49	37	57	1.54(0.63-3.79)	0.94(0.28-3.21)	0.93
50-59	16	32	2.00(0.74-5.44)	1.10(0.28-4.27)	0.89
≥60	6	29	4.83(1.47-15.87)	1.65(0.33-8.42)	0.55
Religion					
Muslim	5	25	3.27(1.05-10.20)	2.18(0.50-9.58)	0.30
Orthodox	129	202	1.02(0.53-1.96)	1.49(0.64-3.48)	0.36
Protestant	17	26	1	1	
Education					
cannot read and write	44	22	1	1	
Read and write	48	47	1.96(1.02-3.76)	2.39(0.99-5.79)	.053
Primary	9	27	6.00(2.41-14.93)	6.49(1.52-27.78)*	0.012*
secondary	8	21	5.25(2.01-13.74)	2.32(0.39-13.74)	.35
College and above	42	136	6.48(3.49-12.01)	6.91(2.58-14.50)*	0.0001* [^]
Occupation					
Farmer	46	22	1	1	
Student	9	36	8.36(3.44-20.36)	1.87(0.33-10.72)	0.48
Currently unemployed	22	33	3.14(1.50-6.58)	.54(0.18-1.68)	0.29
Gov't worker	24	105	9.15(4.66-17.96)	.61(0.12-3.05)	0.55
Private business	50	57	2.38(1.26-4.50)	.29(0.07-1.12)	0.07
Resident					
Urban	94	193	1.95(1.26-3.02)	1.23(0.66-2.23)	0.51
Rural	57	60	1	1	
Monthly income					
<499	55	72	1	1	
500-2000	40	61	1.17(0.69-1.98)	.893(0.33-2.38)	0.82
>2000	56	120	1.64(1.02-2.63)	.569(0.19-1.70)	0.31
History of chronic illness					
Yes	8	48	4.19(1.92-9.12)	5.00(1.71-14.67)*	0.003*
No	143	205	1	1	
Training					
Yes	24	113	4.27(2.59-7.05)	3.9(1.96-7.70)*	0.0001*
No	127	140	1	1	
Use social					

media					
Yes	73	179	2.59(1.70-3.93)	1.20(0.59-2.44)	0.63
No	78	74	1	1	
Peer					
Yes	114	231	3.41(1.92-60.5)	2.45(1.06-5.63)*	0.04*
No	37	22	1	1	
Tv/radio					
Yes	100	221	3.52(2.13-5.81)	2.091(0.85-5.16)	0.11
No	51	32	1	1	
Religious institution					
Yes	30	100	2.64(1.64-4.23)	1.725(0.93-3.21)	0.09
No	121	153	1	1	

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563 ~~**Predictors of preventive practice towards COVID-19**~~

564 **Table 7: Predictors of preventive practice towards COVID-19 among medical visitors in**
 565 **hospitals of South Gondar zone, Northwest Ethiopia, August 2020 (n = 404).**

Variable	poor practice	good practice	COR(CI)	AOR(CI)	P-value
Age					
<20	15	9	1	1	
20-29	44	48	1.82(0.72-4.57)	.87(0.24-3.38)	0.84
30-39	62	49	1.32(0.53-3.26)	.43(0.12-1.67)	0.22
40-49	53	41	1.29(0.51-3.24)	.75(0.20-2.56)	0.67
50-59	21	27	2.14(0.79-5.85)	.99(0.23-4.24)	0.98
≥60	10	25	4.17(1.38-12.58)	1.31(0.28-6.11)	0.73
Education					
cannot read and write	49	17	1	1	
Read and write	70	25	1.03(0.50-2.11)	.93(0.36-2.43)	0.88
primary	20	16	2.31(0.98-5.44)	.39(0.08-1.80)	0.23
secondary	12	17	4.08(1.62-10.27)	.82(0.16-4.19)	0.82
College and above	54	124	6.62(3.50-12.52)	1.90(0.67-5.17)	0.21
Occupation					
Farmer	62	6	1	1	
Student	21	24	11.81(4.25-32.83)	7.70(1.15-15.86)*	0.04*
Currently unemployed	35	20	5.91(2.17-16.08)	2.35(0.58-9.57)	0.23
Gov't worker	36	93	26.70(10.62-67.12)	2.49(0.42-14.61)	0.31
Private business	51	56	11.35(4.52-28.47)	2.15(0.45-10.2)	0.34

Resident					
Urban	121	166	3.49(2.19-5.56)	1.54(0.79-3.00)	0.21
Rural	84	33	1	1	
Monthly income					
<499	88	39	1	1	
500-2000	51	50	2.21(1.29-3.81)	2.05(0.71-5.93)	0.19
>2000	66	110	3.76(2.32-6.12)	1.99(0.62-6.39)	0.25
Training					
Yes	51	86	2.30(1.51-3.51)	0.88(0.47-1.64)	0.68
No	154	113	1	1	
Use social media					
Yes	92	160	5.04(3.23-7.87)	1.54(0.76-3.10)	0.23
No	113	39	1	1	
Peer					
Yes	161	184	3.35(1.80-6.25)	0.78(0.31-1.97)	0.61
No	44	15	1	1	
Tv/radio					
Yes	136	185	6.70(3.62-12.41)	1.45(0.53-3.96)	0.46
No	69	14	1	1	
Knowledge					
Poor knowledge	102	22	1	1	
Good knowledge	103	177	7.97(4.73-13.41)	4.49(2.41-8.39)*	0.0001*
attitude					
Negative attitude	107	44	1	1	
Positive attitude	98	155	3.85(2.50-5.93)	1.04(0.58-1.86)	.068

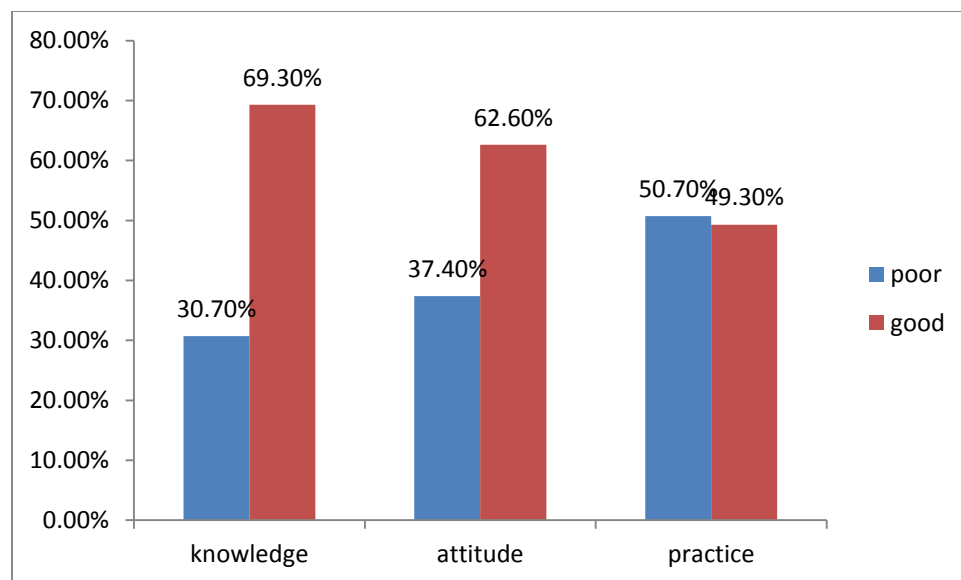


Fig1:-Status of Knowledge Attitude and Practice among Medical visitors in hospitals of South Gondar Zone, Northwest Ethiopia, in August 2020



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