Psychological impact of COVID-19 pandemic among communities living in Dilla town, Ethiopia

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Abstract: The COVID-19 pandemic is the global public health emergency concern and had an impact on the day to day life of individuals. Its effect on an individual's mental health is significant to the extent of suicide. This study aimed to assess the magnitude of psychological problems and its associated factor among communities living in Dilla town in response to the pandemic. From Apr 1- Apr 15, 2020, a community-based cross-sectional study was conducted using multi-stage sampling techniques. Self-administered the questioner related to Depression, Anxiety and Stress Scale (DASS-21), and logistic regression analysis (95% CI, p-value <0.05) was used. This study included 445 respondents who were living in Dilla town. In total, 34.4% of respondents had a psychological problem (11.4 % mild and 23% moderate level of the psychological problem). Female, Greater secondary level of education, monthly income below 500 ETB, more than three family size, and wearing face mask were variables associated with the outcome variable (p < 0.05). Nearly one-third of the respondents had mild to moderate psychological among communities living in Dilla town. There is a need for mental health support for those identified groups of people to enhance their resilience in response to the pandemic.

Keywords: Anxiety, depression, stress, corona virus, Dilla, Ethiopia.

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I. INTRODUCTION

The first onset of the 2019 coronavirus disease (COVID-19) pandemic was in Wuhan city, china, and it killed more than half a million people in the world so far, which is much higher than the 2012 Saudi Arabia severe acute respiratory syndrome epidemic[1-3]. Globally 10 021 401 confirmed cases and 499 913 deaths and in Africa from 52 countries 288 347 confirmed cases, 5 879 deaths, 9 532 recoveries, and in Ethiopia 5 689 confirmed cases and 98 deaths were recorded as of 29th June 2020 [4]. COVID19 causing SARS-CoV-2 virus is most contagious and transmits to humans through respiratory droplets as main mode transmission from humans and symptoms were fever, cough, fatigue, breathing difficulty [5]. The incubation period of the virus is 6 days ranging from 2 to 11 days and this helps for a quarantine period of duration for suspected cases [6]. Age greater than 65 years and chronic medical comorbidities has a greater chance to get infected, with bad outcomes [7]. After the onset fourth confirmed cases of coronavirus in Addis Ababa, the capital city of Ethiopia, Ethiopian ministry of health approved it as epidemic and started to look for different measures including closing all schools and universities for one month, transmitting information through different social media about the different prevention strategies of the virus such wearing face masks, distributing hand washing facilities including soaps, sanitizers, alcohol and water [8].

Previous studies done showed infection outbreaks had a psychological impact on individuals including the feeling of anxiety about contacting the illness, hopelessness, and fear of stigma at the international level [9]. The ongoing COVID-19 epidemic has a significant psychological impact on patients, professionals, and communities around the world and in China, a country in which the first epidemic has occurred, they were started online mental health service following a few days of the outbreak [10]. Almost half of the respondents had the fear and worry of contracting influenza during 2010 swine flu outbreak [11]. During the 2007 Singapore severe acute respiratory syndrome outbreak, almost half of non-infected communities had psychiatry problems such as anxiety, depression, and post-traumatic stress disorder. The predictor variables associated with psychiatry problems were younger age, female, older, highly educated [12- 13].

A study done in Iran showed that there should be immediate psychological intervention including supportive individual and group therapy, outpatient and inpatient mental health service for the confirmed and suspected case, family members, and the community [14]. Nearly more than half (53%) of Chinese communities were reported moderate to severe psychological problems, including 16.5% depressive symptom, 28.8% anxiety symptoms, and 8.1% stress symptom [15]. There is no sufficient study done on the psychological and mental health impacts on the COVID-19 pandemic, especially low and middle-level countries. Therefore, the purpose of this study was to determine the magnitude of psychological symptoms and its associated factor related to the pandemic situation in Dilla town, Ethiopia. This study result might be used for generating appropriate mental health crisis management guidelines for the promotion of the psychosocial wellbeing of the community in response to the epidemic.

II.   RESULTS & DISCUSSION

### Sociodemographic characteristics result of the respondents

The response rate of this study was 94%. The mean age onset of the respondents 35 years of age, nearly two-thirds of respondents had more than three family sizes and the average mean monthly income was 500 ETB (Table 1).

Table 1: Socio-demographic characteristics results of respondents living in Dilla town Ethiopia 2020 (N = 445).

Variable	Category	Frequency	Percentage
Sex	Male	200	45%
	Female	245	55%
Marital status	Single	95	21.4%
	Married	229	51.4%
	Divorced	89	20%
	Widowed	32	7.12 %
Educational status	No-formal education	82	18.4%
	Primary	44	9.88%
	Secondary	110	24.7%
	More-than secondary	209	47%
Occupation	Private job	206	46.4%
	Government job	239	53.5 %
Family size	1	40	9.04 %
	2	111	25%
	>3	294	65.9%

More than two third of the respondents avoid to go crowded place and only one third of wearing mask for

protecting Covid-19 (Table 2). Nearly one -thirds of the respondents (34%) were reported as mild to moderate level of a psychological problem symptom (figure 1).
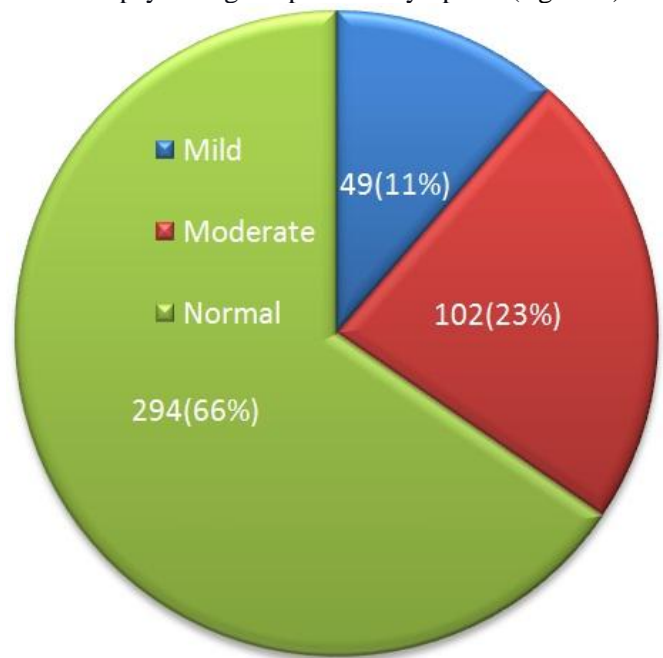
Figure 1: Current mental health status of respondents in response to corona virus who were living in Dilla town, Ethiopia (N=445).

Factors associated with psychological problem

Variables associated with the outcome variable during bivariate and multi variant logistic regression at 95% CI were female gender, greater than secondary level of educational status, less 500 ETB monthly incomes, more than three family size and those who wear face mask for prevention. The odds of being a female gender impacted by psychological problems 2.52 times more likely, whereas having low educational status (≤ primary) 0.13 times less likely to develop psychological symptoms. Monthly income less than 500 ETB 2.12 times more likely to experience psychological problems whereas having less than one family size 0. 40 times less likely to develop a psychological problem in response to the pandemic (Table 3). This study found 33.4% of the respondents were experienced mild to moderate psychological problems including stress, anxiety, and depression symptoms in response to COVID 19 global epidemic. This result was high as since there is no confirmed case identified in city and implicated as there is a need for immediate mental health crisis intervention in response to the epidemic in city. This study finding was lower than the study done in China in response to the COVID-19 epidemic which was 53.8% [15]. It might be due to the difference in literacy about the coronavirus and due to the difference in literacy about the coronavirus and no reported confirmed case found in this study area.

Table 2: Knowledge, Attitude and Practice response of respondents living in Dilla town, Ethiopia (N=445):

Knowledge assessment tool	True	False
The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, and myalgia	334 (75%)	111 (25%)
Unlike the common cold, stuffy nose, runny nose, and sneezing are less common in persons infected with the COVID-19 virus.	191 (43%)	254 (57%)
Currently there is no effective cure for COVID-2019, but early symptomatic and supportive treatment can help most patients recover from the infection.	165 (37%)	280 (63%)
Not all persons with COVID-2019 will develop to severe cases. Only those who are elderly, have chronic illnesses, and are obese are more likely to be severe cases.	142 (32%)	303 (68%)
Eating or contacting wild animals would result in the infection by the COVID-19 virus.	114 (25.7%)	331(74.3%)
Persons with COVID-2019 cannot infect the virus to others when a fever is not present	160 (36%)	285 (64%)
The COVID-19 virus spreads via respiratory droplets of infected individuals	409 (92%)	36 (8%)
Ordinary residents can wear general medical masks to prevent the infection by the COVID-19 virus	374 (84%)	71 (16%)
It is not necessary for children and young adults to take measures to prevent the infection by the COVID-19 virus	93 (21%)	352 (79%)
To prevent the infection by COVID-19, individuals should avoid going to crowded places such as train stations and Avoid taking public transportations.	423 (95%)	22 (5%)
Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus.	390 (87.5%)	55 (12.5%)
People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 14 days	327 (73.5%)	118 (26.5%)
Attitude	**Agree**	**Disagree**
Do you agree that COVID-19 will finally be successfully controlled?	254 (57%)	191 (43%)
Do you have confidence that Ethiopia can win the battle against the COVID-19 virus	289 (65%)	156 (35%)
Practice	Yes	No
In recent days, have you gone to any crowded place?	160 (36%)	285 (64%)
In recent days, have you worn a mask when leaving home?	129 (29%)	316 (71%)

This study showed found that female was 4.21 times more likely to develop stress 4.21 [AOR= 4.21; 95%CI: (2.01-7.45)] as compared with male and this result similar to the study done china (15) and might explain females in Ethiopia were highly responsible for family and worry much about the health of family moreover, they had a high chance contact with different people for their day to day activity inside and outside the home. This study found that respondents who had no formal education 0.08 times 0.08 [AOR= 0.08; 95%CI: (0.04-0.15)]and primary level of education 0.35 times [AOR= 0.35; 95% CI: (0.50-0.80)] less likely to develop psychological problems as compared those who more than a secondary level of education and this finding was similar to the study done in china among volunteer health service providers of the epidemic [18] this might be explained not having more information and knowledge about the mortality and morbidity coronavirus among those who had low-level education might protective for not to worry much in response to the epidemic.

This study finding showed that respondents who had below 500 ETB monthly incomes were 1.80 times [AOR= 1.80; 95% CI: (1.10-3.29)] more likely to experience psychological problems and this result might be explained by those who had low income were daily labors, street market traders and farmers by their occupation and due to the government declares state of emergency due to COVID-19 and their daily income is not as previous as a result the can't afford to buy safety prevention methods including facemask, soap, alcohol and use private transport for minimizing the chance of crowdedness and contact with different people.

Table 3: Association of Sociodemographic characteristics and current mental health status of respondents living in Dilla town in response to COVID-19 epidemic, Ethiopia 2020, (N=445).

Variables	Category of variables	Psychological problem		COR	AOR
		Yes	No		
Sex	Male	84	116	1	
	Female	181	64	2.72 (1.45-3.12)*	2.52 (2.01-3.45)*
Marital status	Single	50	45	1.28 (0.05 -1.54)	
	Divorced	33	56	0.841 (0.65-1.77)	
	Widowed	21	11	1.35(0.89-1.90)	
	Married	169	60	1	1
Educational status	No-formal education (able to read&write)	48	34	0.17(0.70-0.84)*	0.13(0.40-0.48)*
	Primary	30	14	0.12(0.10 -0.78)*	0.80(0.50-0.80)*
	Secondary	80	30	0.98 (0.79-1.46)	0.83(0.34-1.35)
	More-than secondary	180	29	1	1
Occupation	Private job	86	120	1.33(1.10-2.85)	
	Government job	184	55	1	
Monthly income	Above 500 ETB	154	99	1	1
	Below 500 ETB	118	74	2.76 (2.21-3.45)**	2.12 (2.1-3.29)**
No. of family size	1	15	25	0.11(0.60-0.23)**	0.40(0.10-0.16)**
	2	70	41	0.33 (0.12-0.55)**	0.24(0.19-0.81)**
	>3	187	107	1	1
Wearing mask	Yes	122	7	1	1
	No	148	168	0.54(0.13-0.79)*	0.32(0.21-0.66)*
Avoid going into crowded place	Yes	26	134	1	
	No	111	174	0.43(0.89-1.50)	

1=Reference, for COR, * p < 0.25, and for AOR, *= p< =0.05 and, ** p < 0.01.

This study found that respondents who had one family size were 0.31 times [AOR= 0.31; 95% CI:(0.10-0.66)] less likely to develop the psychological problem as compared to those who had more than three and above family size and this result might be explained since each family member was contacting daily with different people for a different purpose and the virus was high contagious through contact their worry becomes significant about the chance of getting a disease. This study found that respondents who were not using a face mask for prevention 3.32 times [AOR=3.32; 95% CI: (1.21-6.66)] more likely to develop the psychological problem than those who were not using a face mask and this might be explained face mask use decrease the worry and stress related to contacting the virus.

Limitation of the study

As the study used a cross-sectional study design, no conclusions can be drawn regarding causality and alternative explanations of the findings and cannot be ruled out.

III.   CONCLUSION

This study found that a 34 % magnitude of psychological problem such as anxiety, stress and depression. The negative independent predictors were being female, secondary and above level of education, monthly income below 500 ETB, more than three family size and use face mask.

Recommendations:

All communities of the city especially government and private health sector organizations were highly responsible for preventing and controlling mental health crisis of the epidemic through transmitting Up-to-date and specific information through different social media about the prevention of the virus and how to cope with the psychological stress of the pandemic about disease severity, social and economic crisis. There should be a continuous supply of precautionary preventive equipment including, facemask, water, soap, alcohol, and sanitizer for those who had more than three family members and low income. The mental health professional should work hard by giving attention to the impact of

respondents with severe economic and social crises. Moreover, work with the integration of stakeholders through teaching how to handle stress in response to the epidemic through different social media is vital to lower the psychological impact of the epidemic. There is a need to formulate a local-based emergency mental health intervention guide for improving the mental health and psychological resilience of a community in response to the pandemic.

IV.   MATERIALS & METHODS

Study area, study period and study design

It was a community-based cross-sectional study conducted from April 1- 15, 2020, in Dilla town. It is located in the southern part Ethiopia, and 359 km far from Addis Ababa (the capital city of Ethiopia, the main road from Addis Ababa to Kenya crosses), currently, 79,892 peoples are living in the city.

Eligibility criteria

The inclusion criteria of this study were respondent's age 18+ and able to read and write either of the local languages, Amharic, or Gedeoffa local languages. The exclusion criteria of this study were those who weren't able to fill the self-administered questioner due to different reasons (not in the house during the data collection period, acutely or severely ill).

Sample Size calculation

To calculate the sample size, we used the previous study done in China in the same epidemic which was 53.8 % (15) and by using a single proportion formula of cross-sectional study design. It was calculated by using a single proportion formula from the study was done in china P= 0.54%.

Where, n = required sample size

$$n = Z(\alpha/2)^2 \, pq / d^2, \, p = 0.54$$

$$= (1.96)(1.96)(0.54)(0.46) / (0.05)(0.05)$$

$$= 382$$

Where z is the reliability coefficient at a 95% confidence interval (1.96)

W (margin of error) =0.05 and

N= non-response rate 15% =63

The final total sample size was, 382+ 63 = 445

Sampling technique and procedure

The sampling technique of this study was a multi-stage random sampling. Dilla town has 03 kifle ketemas/sub-cities listed as Haro Wabalabu, Sessa, and Beddecha, and 09 kebeles (each sub-city has three kebeles). The dilla town has 18,307 households (K1= 2069 HH, K2= 2220 HH, K3= 2110 HH, K4= 2131 HH, K5=2564 HH, K6= 1982 HH, K7=2021 HH, K8=2131

HH, and K9 = 1079 HH), The numbers samples were proportionally allocated to each sub-city using the formula of proportionate stratification formula, nk = (Nk / N) * n (nk = a required number of households for each kebele, Nk = total household of each kebele, N= total population size in each sub-cities, n= total number of households assigned for each sub-cities), then to every three kebeles of the sub-city. Finally, the respondents were sampled at the household level using simple random sampling after the first a household was selected by the lottery method (figure 2).
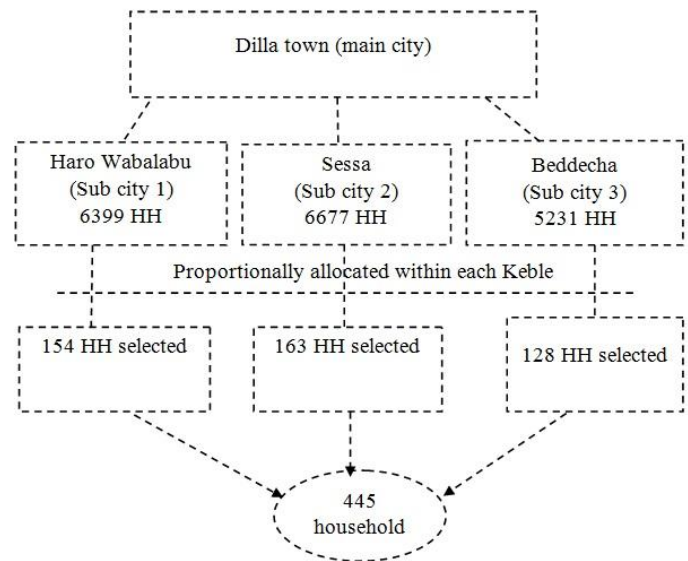
Figure 2: Schematic representation of sampling procedure **(**HH= house hold) (n=445).

Data collection tools

All questionnaires were adopted from the previous literatures done on the similar topic. The first part of the questioner is about the socio-demographic characteristics of respondents adopted from the previous study done on the similar topic [12-15]. The second part of the questioner was Depression, Anxiety and Stress Scale (DASS-21) a 21- item Likert scale and the total score of each subcomponent added and if the score was < 30 (Normal), 30-43 (mild) and 43-59 (moderate) > 60 (severe) psychological problem [16]. The final part of the questioner was about the current knowledge, attitude, and practice of coronavirus (KAP) assessed by a 16 item questioner adopted from the world health organization COVID-19 training manual. The 12 items for knowledge, two questions for each attitude, and practice. The higher score is Good knowledge, and the lowest score is poor knowledge. [17].

Variables

Dependent variable - Psychological problem. Independent variables- The list of independent variables was Age, sex, educational status, occupational status,

family size, and monthly income, and KAP about COVID-19.

Data collection procedures

After we prepare carefully designed questioner and training manual we give training for supervisors for three days on the aims of the study, format questionnaire, how to gather house to house from the respondents by considering the value of privacy and confidentiality, then we administer self-administered questioner to each respondent of the household then fill within one day of duration for complete and basic information and on the next day we collect all the required number of samples by checking the completeness of questioner.

Data quality control

The pretest was done for 5% of the respondents before two weeks of the actual data collection period and not included in the main study. The questioner translated into the Amharic and Gedeoffa language and back-translated to English to check the consistency. The Amharic and Gedeoffa version questioner used for data collection.

Data processing and Analysis

Data was entered into the Epi-Data 3.4 software package and exported to the Statistical Package for Social Science version 22. Descriptive statistics (frequencies and percentages) and cross-tabulation calculated to see the distribution of study variables among study participants. Bivariate and multivariable logistic regression was conducted to determine the associated variable of outcome variable at (95 CI and p-value < 0.05). Finally, the results of the study were summarized by frequency tables, graphs, and narrative descriptions.

Ethics approval and consent to participate

286 Ethical clearances were obtained from the ethical review board of Dilla University and written 287 consent was obtained from the study participants. The confidentiality of information obtained from 288 respondents was ensured.

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