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Psychological impact of COVID-19 pandemic on chronic disease patients in Dessie town government and private hospitals, Northeast Ethiopia

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ABSTRACT

Background and aims: The novel corona virus disease which was first detected in China, December 2019 is caused by severe acute respiratory syndrome corona virus 2. In Ethiopia, the number of infected peoples has been increased from day to day, despite government mitigation measures. But in our country the psychological impact of COVID-19 on patients with chronic diseases was unknown. Hence, this study was aimed to assess the psychological impact of COVID-19 and its associated factors among chronic disease patients.

Methods: A facility based cross-sectional study design was conducted among 413 chronic disease patients in Dessie town government and private hospitals from July 20 to August 5, 2020. Impact of event scale revised questionnaire was used for data collection. Both binary and multivariable logistic regression analyses were utilized to show the association between outcomes and independent variables. In multivariable analysis, significant association was declared at p-value of <0.05.

Results: Overall, COVID-19 had abnormal psychological impact on 22.8% (95% CI: 18.6–27.1) of chronic disease patients. Age, sex, duration of chronic disease, respiratory symptoms and having no social support were factors for abnormal psychological impact.

Conclusion: COVID-19 had abnormal psychological impact on one-fourth of chronic disease patients. Therefore, the government, health professionals and researchers should contribute to prevent the psychological impact of COVID-19 on chronic disease patients.

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1. Introduction

Corona virus disease 2019 (COVID-19) is an illness caused by a novel corona virus called Severe Acute Respiratory Syndrome Corona virus 2 (SARS-CoV-2; formerly said to be 2019-nCoV). COVID-19 is an emerging public health problem which was discovered in December 2019, in Wuhan city, China [1]. SARS-CoV-2 belongs to the family of Ribonucleic Acid (RNA) viruses that causes infections from simple common cold to more serious diseases [2]. The most important symptoms of COVID-19 have been identified as fever, dry cough, fatigue, myalgia, shortness of breath, dyspnoea, headache, sore throat and chills [3–6]. COVID-19 illness

is more severe in chronic disease patients like hypertension, diabetes mellitus, diseases of respiratory and cardiovascular systems [7].

On January 30, 2020, WHO declared COVID-19 as a “public health emergency of international concern” due to the rapid spread of the virus to many different countries and on March 11, 2020, it was declared as a global pandemic disease [8].

SARS-CoV-2 is transmitted from person-to-person by close contact with an infected individual via the respiratory secretions during coughing, sneezing or indirectly by touching contaminated surfaces and materials. Old age and pre-existence of chronic illnesses have been identified as potential risk factors for severe disease and mortality [9–12].

COVID-19 has been increasing, spread and affects many people throughout the world. As of August 30, 2020 (at the time of writing

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this article) 25 million people have been infected and 800,000 deaths were recorded at global level. Specifically in Ethiopia, 50,000 peoples have been infected with the virus and about 770 deaths were reported [13].

In Ethiopia, the first confirmed case of COVID-19 was reported on March 13, 2020. Even though different interventions had been performed to prevent the spread of the virus in Ethiopia; in July and August the number of people infected with the virus was increased significantly, and high number of death was also reported. In Ethiopia, the number of cases is expected to be high in the community due to limited availability of COVID-19 testing sites in the country. Overall, case underestimation was a common problem in African countries in which lack of resources and infrastructure were the main determinant factors [14,15].

This pandemic disease was not only affecting human health, but it also shocked the financial sectors, social and political issue of the world [16–22]. A study conducted in Addis Ababa on assessment of food security during the pandemic showed that only 10.3% of households can meet their food for more than one month [23]. Moreover, COVID-19 brings a considerable impact on health care system of Africa including Ethiopia [24–26].

There were studies conducted to assess the psychological impact of COVID-19 on general population and health care workers in China, Indian and Saudi Arabia [27–30]. But as of our knowledge, there was no study on the psychological impact of COVID-19 among patients with chronic disease in Ethiopia. Therefore, this study represents the first psychological impact of COVID-19 on the most severely affected group of population in our country. Thus, this study was aimed to determine the psychological impact of COVID-19 pandemic and its associated factors among chronic disease patients in Dessie town government and private hospitals. The result of the study will help policy makers in formulating comprehensive interventions to prevent psychological problems of chronic disease clients related to COVID-19.

2. Methods and materials

2.1. Study design, area and period

A facility based cross-sectional study was conducted in Dessie town government and private hospitals from July 20 to August 5, 2020. Dessie town is found in South Wollo zone, Amhara region, Ethiopia. It is situated 401 km North of Addis Ababa in a mountainous landscape and it is far from Bahirdar 480 km which is the capital city of Amhara regional state. In Dessie town, two government and three private hospitals are available that have been serving populations of Dessie town and surrounding zones.

2.2. Population

All chronic disease patients who attended the outpatient clinics and inpatient units of Dessie town government and private hospitals were the sources population. Whereas, all patients with chronic diseases who attended outpatient clinics and inpatient units of selected hospitals during data collection period were the study population. In this study, all patients with chronic disease whose age was ≥ 18 years were included and those critical ill and hearing impairment patients were excluded from the study.

2.3. Sample size determination

A single population proportion formula [$n = (Z \alpha/2)^2 P(1-P)/d^2$] was used to determine the required sample size. The assumptions used to calculate the sample size were: 95% level of confidence interval ($Z \alpha/2 = 1.96$), 5% margin of error. Since there were no

published data in Ethiopia about the psychological impact of COVID-19 on chronic diseases patients up to the date of data collection we used 50% prevalence to get the maximum sample size. Then by adding 10% non-response rate the final sample size was 422.

2.4. Sampling technique and procedure

In Dessie town, there are two government hospitals (Dessie referral and Borumeda hospitals) and three private hospitals (Baty, Ethio and Selam hospitals). From those five hospitals, Dessie referral hospital, Ethio and Selam general hospitals were selected using lottery methods. Then, the daily average chronic disease patients attended those hospitals at both out-patient clinics and inpatient units were estimated. Finally, based on their patients load, sample was allocated proportionally in the selected hospitals: DRH = 295, EGH = 67, SGH = 60. Finally, data was collected from eligible patients by using systematic random sampling technique.

2.5. Data collection tools

A pre-tested, structured interviewer administered questionnaires were used for data collection which contains three sections.

1. Socio demographic variables: Age, sex, educational level, occupation, religion, ethnicity, residency, marital status, family size, number of house room and type of health care facility.
2. Clinical characteristics: Type of chronic diseases, duration of chronic disease, presence co-morbidities, presence of respiratory symptoms in the past 14 days, travel history to other areas, contact history with a known COVID-19 case, having social support, member of community health insurance, use of face mask and sanitizer.

3. Impact of Event Scale-Revised (IES-R): The psychological impact of COVID-19 on chronic disease patients was measured by using the IES-R. The IES-R questionnaire has been well validated in the Chinese population for determining the extent of psychological impact after exposure to a public health crisis. This 22-item questionnaire is composed of three subscales and aims to measure the mean avoidance, intrusion and hyper-arousal. Among this scale, the intrusion subscale is mean item response of items 1, 2, 3, 6, 9, 14, 16, 20. The avoidance subscale is the mean item response of items 5, 7, 8, 11, 12, 13, 17, 22. The hyper-arousal subscale is the mean item response of items 4, 10, 15, 18, 19, 21. For all questions, scores could range from 0 through 4 (0 = not at all, 1 = a little bit, 2 = moderately, 3 = quite a bit, 4 = extremely). The total IES-R score was divided into 0–23 (normal or minimal), 24–32 (mild psychological impact), 33–36 (moderate psychological impact), and >36 (severe psychological impact) [28,31–35].

2.6. Data collection procedure and quality control

The data were collected under regular supervision after giving training for enumerators about objective of the study, ethical issues, procedures, techniques and ways of collecting the data. They were also trained about the epidemiology, risk factors, symptoms, prevention and controlling methods of COVID-19 by the principal investigator. Data quality was insured by translating the questionnaire from English to Amharic by considering the culture and norms of the society and then back to English to check the consistency. In addition to ensure the quality of data, pretest was conducted by taking 10% of the total sample size prior to the actual data collection period in the non-selected hospital (Baty hospital). Moreover, data collectors were used COVID-19 preventive

measures by wearing face mask, hand sanitizers and by maintaining their physical distance during data collection.

2.7. Data processing and analysis

Data was coded and entered using Epidata 3.1 and then exported to SPSS (statistical package software for social science) version 23.0 for statistical analysis. Descriptive statistics of continuous variables presented by using median or mean, and discrete variables presented by using percentages, tables and graphs. Binary logistic regression analysis with odds ratio along with 95% confidence interval was used to assess the degree of association between dependent and independent variables. In bivariable analysis, variables which had significant association with the dependent variables with p-value of less than 0.2 were entered into multivariable analysis model. Multivariable analysis model by using adjusted odd ratio (AOR) was applied to identify associated factors for dependent variables and level of significance below 0.05 was considered to determine the association between dependent and independent variables. Strength of association between factors and the dependent variables were determined using AOR with 95% confidence level.

3. Results

3.1. Socio-demographic characteristics of study participants

From the total of 422 sample size, 413 chronic disease patients were participated in the study with response rate of 97.9%. The minimum, maximum and mean age of the participants was 18, 80 and 48.2 years ($SD \pm 15.829$ years), respectively. Of all participants, 215(52.1%) were females and nearly two-third of participants (64.9%) were urban residents. Majority of participants (94.7%) were Amhara in ethnicity; 234(56.7%) were Muslims in religion; 287(69.5%) were married; 191(46.2%) had no formal education, and 159(38.5%) were housewives by occupation (Table 1).

3.2. Clinical characteristics and risk assessment of study participants

Of all study participants, 94(22.8%), 86(20.8%) and 76(18.4%) were hypertensive, diabetes mellitus and chronic heart disease patients, respectively. Among participants, 42(10.2%) patients have been living with their disease for more than ten years. Majority of participants; 350 (84.7%) had no other co-morbidities and 303(73.4%) did not use hand sanitizer. Regarding risk assessment to the current pandemic, no one had contact history with a known confirmed COVID-19 cases; however, 41(9.9%) clients had reported respiratory symptoms and 16(3.9%) had travel history to other areas in the last two weeks. Moreover, 194(47%) participants were members of community health insurance, and 81(19.6%) clients would have no social support if they were isolated or quarantined due to COVID-19 (Table 2) (see Table 3).

3.3. Psychological impact of COVID-19 pandemic on chronic disease patients

The psychological impact of COVID-19 pandemic on chronic disease patients, measured by IES-R scale, revealed a mean score of 16.59($SD \pm 7.77$). From all respondents, 319(77.2%) had minimal (Normal) psychological impact, and 62(15.0%) participants had mild psychological impact. However, 23(5.6%) and 9(2.2%) patients had moderate and severe psychological impact, respectively. Overall, COVID-19 was resulted abnormal psychological impact in 22.8%(95% CI: 18.6–27.1) of chronic disease patients. Furthermore,

Table 1

Socio-demographic characteristics of chronic disease patients in Dessie town government and private hospitals, Northeast Ethiopia, 2020 (n = 413).

| Variables | Category | Frequency | Percentage |
|-----------------------|---------------------|-----------|------------|
| Age in year | 18–34 | 139 | 33.7 |
| | 35–54 | 128 | 31.0 |
| | ≥55 | 146 | 35.3 |
| Sex | Female | 215 | 52.1 |
| | Male | 198 | 47.9 |
| Residence | Urban | 268 | 64.9 |
| | Rural | 145 | 35.1 |
| Marital status | Single | 86 | 20.8 |
| | Married | 287 | 69.5 |
| | Divorced | 15 | 3.6 |
| | Widowed | 25 | 6.1 |
| Occupation | Housewives | 159 | 38.5 |
| | Employed | 85 | 20.6 |
| | Students | 61 | 14.8 |
| | Farmer | 60 | 14.5 |
| | Unemployed | 27 | 5.1 |
| | Merchant | 21 | 6.5 |
| Religion | Muslim | 234 | 56.7 |
| | Orthodox | 168 | 40.7 |
| | Others ^a | 11 | 2.6 |
| Ethnicity | Amhara | 391 | 94.7 |
| | Others** | 22 | 5.3 |
| Educational status | No formal education | 191 | 46.2 |
| | Primary school | 91 | 22.0 |
| | Secondary school | 87 | 21.1 |
| | Tertiary and above | 44 | 10.7 |
| Type of hospital | Government | 292 | 70.7 |
| | Private | 121 | 29.3 |
| Household family size | 1–3 | 167 | 40.4 |
| | ≥4 | 246 | 59.6 |
| Household room number | 1 | 83 | 20.1 |
| | 2 | 98 | 23.7 |
| | ≥3 | 232 | 56.2 |

^a Protestant, Catholic; **Tigre, Afar, Oromo.

with regard to the subscales of psychological impact; the mean scores of intrusion, avoidance and hyper-arousal were 5.98($SD \pm 4.781$), 7.40 ($SD \pm 4.817$) and 3.71 ($SD \pm 3.990$), respectively (Table 4).

3.4. Factors associated with psychological impact of COVID-19 pandemic on chronic disease patients

Age, sex, educational level, occupation, residency, marital status, family size, number of house room, type of chronic diseases, duration of chronic diseases, presence of co-morbidity, presence of respiratory symptoms in the past 2 weeks, travel history to other areas in the last 2 weeks, social support, member of community health insurance, use of face mask and use of hand sanitizer were tested in bivariable analysis. Variables with a p-value less than 0.2 in bivariable analysis (11 variables) were entered to multivariable analysis and five variables were found to be significantly associated with the impact of COVID-19 pandemic at P-value <0.05.

In multivariable logistic regression; age from 35 to 54 years (AOR = 2.424; 95% CI: 1.161–5.061; P-value: 0.018) and ≥55 years (AOR = 2.954; 95% CI: 1.450–6.019; P-value: 0.003), female sex (AOR = 1.897; 95% CI: 1.094–3.291; P-value: 0.023), longer duration of illness (AOR = 2.886; 95% CI: 1.270–6.560; P-value: 0.011), presence of respiratory symptoms in the last 2 weeks (AOR = 2.548; 95% CI: 1.030–6.304; P-value: 0.043) and had no social support (AOR = 3.619; 95% CI: 1.935–6.768; P-value: 0.000) were significantly associated with abnormal psychological impact on patients with chronic disease (Table 5).

Table 2
Clinical characteristics and risk assessment of chronic disease patients in Dessie town government and private hospitals, Northeast Ethiopia, 2020 (n = 413).

| Variables | Category | Frequency | Percentage (%) |
|---|---------------------------|-----------|----------------|
| Type of chronic disease | Hypertension | 94 | 22.8 |
| | Diabetes mellitus | 86 | 20.8 |
| | Chronic Heart disease | 76 | 18.4 |
| | Chronic kidney disease | 35 | 8.5 |
| | Chronic lung disease | 30 | 7.3 |
| | HIV/AIDS | 22 | 5.3 |
| | Co-morbidity ^a | 63 | 15.3 |
| | Others ^b | 7 | 1.7 |
| Duration of chronic disease in year | <5 | 307 | 74.3 |
| | 5–10 | 64 | 15.5 |
| | >10 | 42 | 10.2 |
| Member of community health insurance | Yes | 194 | 47.0 |
| | No | 219 | 53.0 |
| Presence of other co-morbidity | Yes | 63 | 15.3 |
| | No | 350 | 84.7 |
| Presence of respiratory symptoms in the last 2 weeks | Yes | 41 | 9.9 |
| | No | 372 | 90.1 |
| Travel history to other areas in the last 2 weeks | Yes | 16 | 3.9 |
| | No | 397 | 96.1 |
| Having social support if isolated/quarantined due to COVID-19 | Yes | 332 | 80.4 |
| | No | 81 | 19.6 |
| Face mask utilization | Yes | 261 | 63.2 |
| | No | 152 | 36.8 |
| Hand sanitizer use | Yes | 110 | 26.6 |
| | No | 303 | 73.4 |

^a Patients having more than one chronic diseases.

^b Nerve disease, cancer.

Table 3
Psychological impact of COVID-19 pandemic on chronic disease patients in Dessie town government and private hospitals, Northeast Ethiopia, 2020 (n = 413).

| S.No | Psychological impact questions | Responses ^a | | | | |
|------|---|------------------------|--------------------------|-------------------|-------------------------|--------------------|
| | | Not at all N(%) | A little bit N (%) | Moderately (%) | Quite a bit N (%) | Extremely N (%) |
| 1 | Any reminder brought back feelings about it | 167(40.4) | 78(18.9) | 37(9.0) | 15(3.6) | 116(20.1) |
| 2 | I had trouble staying asleep. | 349(84.5) | 23(5.6) | 21(5.1) | 10(2.4) | 10(2.4) |
| 3 | Other things kept making me think about it. | 208(50.4) | 163(39.5) | 18(4.4) | 19(4.6) | 5(1.2) |
| 4 | I felt irritable and angry. | 322(78.0) | 57(13.8) | 25(6.1) | 3(0.7) | 6(1.5) |
| 5 | I avoided letting myself get upset when I thought about it or was reminded of it. | 99(24.0) | 91(22.0) | 102(24.7) | 80(19.4) | 41(9.9) |
| 6 | I thought about it when I didn't mean to. | 316(76.5) | 62(15.0) | 20(4.8) | 8(1.9) | 7(1.7) |
| 7 | I felt as if it hadn't happened or wasn't real. | 374(90.6) | 15(3.6) | 14(3.4) | 6(1.5) | 4(1.0) |
| 8 | I stayed away from reminders of it. | 142(34.4) | 148(35.8) | 58(14.0) | 51(12.3) | 14(3.4) |
| 9 | Pictures about it popped into my mind. | 377(91.3) | 17(4.1) | 11(2.7) | 5(1.2) | 3(0.7) |
| 10 | I was jumpy and easily startled. | 349(84.5) | 38(9.2) | 12(2.9) | 8(1.9) | 6(1.5) |
| 11 | I tried not to think about it. | 150(36.3) | 148(35.8) | 36(8.7) | 72(17.4) | 7(1.7) |
| 12 | I was aware that I still had a lot of feelings about it, but I didn't deal with them. | 309(74.8) | 56(13.6) | 14(3.4) | 28(6.8) | 6(1.5) |
| 13 | My feelings about it were kind of numb. | 190(46.0) | 69(16.7) | 54(13.1) | 55(13.3) | 45(10.9) |
| 14 | I found myself acting or feeling like I was back at that time. | 207(50.1) | 41(9.9) | 49(11.9) | 56(13.6) | 60(14.5) |
| 15 | I had trouble falling asleep. | 367(88.9) | 12(2.9) | 18(4.4) | 9(2.2) | 7(1.7) |
| 16 | I had waves of strong feelings about it. | 133(32.2) | 85(20.6) | 68(16.5) | 63(15.3) | 64(15.5) |
| 17 | I tried to remove it from my memory. | 175(42.4) | 74(17.9) | 53(12.8) | 56(13.6) | 55(13.3) |
| 18 | I had trouble concentrating. | 372(90.1) | 11(2.7) | 14(3.4) | 9(2.2) | 7(1.7) |
| 19 | Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart. | 387(93.7) | 12(2.9) | 3(0.7) | 3(0.7) | 8(1.9) |
| 20 | I had dreams about it. | 370(89.6) | 18(4.4) | 17(4.1) | 7(1.7) | 1(0.2) |
| 21 | I felt watching and on-guard. | 160(38.7) | 63(15.3) | 65(15.7) | 80(19.4) | 45(10.9) |
| 22 | I tried not to talk about it. | 349(84.5) | 11(2.7) | 23(5.6) | 22(5.3) | 8(1.9) |

4. Discussion

Currently COVID-19 pandemic is a major public issue in the world including Ethiopia. In Ethiopia, peoples infected with SARS-CoV-2 have been increasing significantly from day to day despite government mitigation measures. Studies revealed that severity of COVID-19 was found to be high in patients who had chronic disease concomitantly than the general population. The current study

investigated the psychological impact of COVID-19 among high-risk groups, chronic disease patients.

In our study, COVID-19 had caused abnormal psychological impact in 22.8%(95 CI: 18.6–27.1) of chronic disease patients. This finding was lower than a study conducted in India (33.2%) and China (75.5%) [27,28]. This discrepancy might be due to difference in the study period: our study was conducted after the global distribution of COVID-19, whereas the studies in India and China were

Table 4

Overall psychological impact of COVID-19 pandemic on chronic disease patients in Dessie town government and private hospitals, Northeast Ethiopia, 2020 (n = 413). Factors associated with psychological impact of COVID-19 pandemic on chronic disease patients.

| Scale derived values | Categories | Frequency | Percentage | 95% CI |
|--|--|-------------|------------|-----------|
| Impact of Event Scale (n = 413) | Normal or minimal (0–23) | 319 | 77.2 | 72.9–81.4 |
| | Mild(24–32) | 62 | 15.0 | 11.6–18.6 |
| | Moderate(33–36) | 23 | 5.6 | 3.4–7.7 |
| | Severe(>36) | 9 | 2.2 | 1.0–3.9 |
| | Total impact from mild to severe (>23) | 94 | 22.8 | 18.6–27.1 |
| Subscales (Range of score) | Items | Mean | SD | |
| Intrusion subscale(0–32) | Q 1,2, 3, 6, 9, 14, 16, 20 | 5.98 | 4.781 | |
| Avoidance subscale(0–32) | Q 5, 7, 8, 11, 12, 13,17, 22 | 7.40 | 4.817 | |
| Hyper-arousal subscale(0–24) | Q 4, 10, 15, 18,19,21 | 3.71 | 3.990 | |

Table 5

Factors associated with psychological impact of COVID-19 pandemic on chronic disease patients in Dessie town government and private hospitals, Northeast Ethiopia, 2020 (n = 413).

| Variables | Psychological impact | | OR(95% CI) | | P-value |
|---|----------------------|-------------------|---------------------|--------------------|---------|
| | Normal N (%) | Abnormal N (%) | COR | AOR | |
| Age in years | | | | | |
| 18–34 | 124(89.2) | 15(10.8) | 1 | 1 | |
| 35–54 | 91(71.1) | 37(28.9) | 3.361(1.741–6.491) | 2.424(1.161–5.061) | 0.018 |
| ≥55 | 104(71.2) | 42(28.8) | 3.338(1.752–6.360) | 2.954(1.450–6.019) | 0.003 |
| Sex | | | | | |
| Male | 164(82.8) | 34(17.2) | 1 | 1 | |
| Female | 155(72.1) | 60(27.9) | 1.867(1.162–3.001) | 1.897(1.094–3.291) | 0.023 |
| Residence | | | | | |
| Urban | 198(73.9) | 70(26.1) | 1.782(1.064–2.986) | 1.443(0.800–2.604) | 0.224 |
| Rural | 121(83.4) | 24(16.6) | 1 | 1 | |
| Family size | | | | | |
| 1–3 | 139(83.2) | 28(16.8) | 1 | 1 | |
| ≥4 | 180(73.2) | 66(26.8) | 1.820(1.110–2.984) | 1.810(0.986–3.323) | 0.056 |
| Number of house room | | | | | |
| 1 | 58(69.9) | 25(30.1) | 1.421(0.812–2.485) | 1.523(0.795–2.918) | 0.205 |
| 2 | 83(84.7) | 15(15.3) | 0.596(0.318–1.117) | 0.518(0.244–1.099) | 0.087 |
| ≥3 | 178(76.7) | 54(23.3) | 1 | 1 | |
| Duration of living with chronic diseases in years | | | | | |
| <5 | 251(81.8) | 56(18.2) | 1 | 1 | |
| 5–10 | 45(70.3) | 19(29.7) | 1.892(1.029–3.481) | 1.529(0.764–3.061) | 0.230 |
| >10 | 23(54.8) | 19(45.2) | 3.703(1.889–7.259) | 2.886(1.270–6.560) | 0.011 |
| Presence co-morbidity | | | | | |
| Yes | 40(63.5) | 23(36.5) | 2.260(1.271–4.017) | 1.636(0.773–3.463) | 0.199 |
| No | 279(79.7) | 71(20.3) | 1 | 1 | |
| Presence of respiratory symptoms in the last 2 weeks | | | | | |
| Yes | 23(56.1) | 18(43.9) | 3.048(1.565–5.935) | 2.548(1.030–6.304) | 0.043 |
| No | 296(79.6) | 76(20.4) | 1 | 1 | |
| Travel history to other areas in the last 2 weeks | | | | | |
| Yes | 9(56.3) | 7(43.8) | 2.771(1.003–7.655) | 1.679(0.438–6.434) | 0.450 |
| No | 310(78.1) | 87(21.9) | 1 | 1 | |
| Having social support | | | | | |
| Yes | 270(81.3) | 62(18.7) | 1 | 1 | |
| No | 49(60.5) | 32(39.5) | 2.844(1.684–4.803) | 3.619(1.935–6.768) | 0.000 |
| Hand sanitizers | | | | | |
| Yes | 75(68.2) | 35(31.8) | 1.930 (1.180–3.156) | 1.670(0.930–3.000) | 0.086 |
| No | 244(80.5) | 59(19.5) | 1 | 1 | |

conducted at the beginning of the pandemic. Peoples are more susceptible to develop psychological problems at the early stage than later phase of infectious disease [36].

This study finding has two implications; first, it needs immediate attention of concerned bodies to reduce the psychological impact of COVID-19 in chronic disease patients. Therefore, providing psychological counseling is essential to reduce the psychological problems and promoting adaptive coping strategies [37]. Second, the proportion of chronic disease patients who have developed psychological problems due to the current pandemic was lower when compare with other studies. This may indicate the ignorance of COVID-19 by chronic disease patient which leads to the spread of the disease in the community.

In multivariable analysis, older age, female sex, longer duration of illness, presence of respiratory symptoms and no social support were significantly associated with abnormal psychological impact of COVID-19 on patients with chronic disease. Patients older than 34 years were more likely developed psychological problems due to the current pandemic than young adults. This finding contradicts with a study done in Indian in which young adults had higher psychological problem due to COVID-19 than elders [28]. This variation might be due to the wrong belief that corona virus is not as much as serious in adolescents and young adults. So, in our setting many youngsters did not worry about COVID-19 as compared to older people. In our study, COVID-19 had more psychological impact on females than males which is in line with

studies carried out in China and India where females suffered more due to corona virus outbreak [27, 28, 38].

Patients who had respiratory symptoms in the last two weeks were significantly associated with abnormal psychological impact. This is consistent with a study carried out in China where, presence of physical symptom was significantly associated with greater psychological impact of the pandemic [27]. In India, presence of physical symptoms were predicted higher psychological impact but not statistically significant [28]. This implies the need of identifying psychological problems of chronic disease clients presenting with respiratory symptoms. Chronic disease patients with complain of respiratory symptoms should be quarantined or admitted in hospitals for further investigation. Furthermore, health care workers should take the opportunity to provide psychological support for those who presented with the symptoms. To assess the risk of COVID-19 in the family, health care professionals should also investigate clients' family members.

In our study, patients with longer duration of chronic disease were more likely to had psychological problems than patients with shorter duration of illness. Similarly, those who had no social support were more likely to had psychological problems compared to those who had social support. This could be related to, those who had no social supporters during this pandemic become more susceptible to psychological problems as his/her social health is compromised. To prevent COVID-19 impact on those who had no social support, behavioral therapy like relaxation exercises and entertainment are beneficial.

4.1. Limitations

Since cross sectional study design was used, the direction of relationship between variables can't always be determined. This study was based on quantitative method only that lacked triangulation with other methods like focus group discussion and in-depth interview. In addition, this study was conducted among patients with chronic disease and we compared the psychological impact of COVID-19 with other study done on general population in discussion part.

5. Conclusion

In this study, nearly one-fourth of chronic disease patients had psychological problem due to COVID-19. Older age, female gender, longer duration of illness, presence of respiratory symptoms and had no social supports were significantly associated with COVID-19 psychological impact. Our finding suggests formulating interventions to improve the psychological impact of COVID-19 pandemic in chronic disease patients. Therefore, the government, health professionals, non-governmental organizations and researchers should contribute to prevent the psychological impact of COVID-19 on chronic disease patients.

Declaration of competing interest

The authors declare that they have no competing interests.

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Abbreviations

| | |
|------------|---|
| AOR | Adjusted Odds Ratio |
| CI | Confidence Interval |
| COR | Crude Odds Ratio |
| COVID-19 | Corona Virus Disease 2019 |
| DRH | Dessie Referral Hospital |
| EGH | Ethio General Hospital |
| IES-R | Impact of Event Scale-Revised |
| SARS-CoV-2 | Severe Acute Respiratory Syndrome Coronavirus-2 |
| SD | Standard Deviation |
| SGH | Selam General Hospital |
| SPSS | Statistical Package for Social Sciences |
| WHO | World Health Organization |

Ethics approval and consent to participate

Ethical clearance was obtained from Wollo University, College of medicine and health science research review committee. The ethical clearance letter reference number is WU/324/T-01/2020. Communications with administrators of Dessie town selected hospitals were held through formal letter (reference number: WU/325/T-01/2020). Written consent was obtained from all study participants after information is provided about the purpose of the study, non-invasiveness of the data collection procedure and confidentiality of the information.

Credit author statement

Sisay Gedamu Addis: initiated the idea, develop the proposal, data entry, statistical analysis, interpretation of the data and writing the manuscript. Abebe Dires Nega: edit the proposal, gave constructive comments to increase quality of the study, data entry and statistical analysis. Debrnesh Goshiye Miretu: data entry, statistical analysis and recruitment of data collectors.

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