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Impact of the COVID-19 pandemic on the cost of chronic diseases treatment and care at public hospitals in Wallaga zones, Oromia Regional State, Ethiopia: a hospital-based, cross-sectional study

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ABSTRACT

Objective Globally, around one-third of the population has at least one long-term health condition that could be affected by the COVID-19 pandemic. Despite the fact that studies have revealed the direct impact of COVID-19 on healthcare provision and utilisation, the impact of the pandemic on the cost of chronic disease treatment and care from a patient perspective was scanty. So, the study aimed to determine the impact of the COVID-19 pandemic on cost of chronic diseases treatment and care at public hospitals in Wallaga zones, Oromia Regional State, Ethiopia, from 1 August to 31 August 2020.

Methods An institutional-based cross-sectional study design was used, and the sample size for the study (n=642) was determined using a single population mean formula. Data were collected using interviews and analysed using SPSS V.25. Descriptive statistics were performed, and the cost of follow-up care before and after the pandemic was compared using a related-samples Wilcoxon signed-rank test, declaring the level of significance of the median cost difference at p<0.05.

Results A total of 642 patients were included in the study, of whom 605 (94.2%) responded to the interviews. There was a significant median cost difference (n=593, Z=5.05, p=0.001) between the cost of chronic diseases among follow-up patients during the pandemic and the costs incurred by these patients before the pandemic.

Conclusion The cost of follow-up care among chronic disease patients during the COVID-19 pandemic was significantly higher compared with before the pandemic era. Therefore, healthcare providers should arrange special fee waiver mechanisms for chronic disease healthcare costs during such types of pandemics and provide the services at proximal health facilities.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ A less costly and time-consuming retrospective costing approach was used.
⇒ The cost of illness analysis in this study was limited to the patients' perspective.
⇒ The study did not include the costs experienced by patients who were employed before the pandemic but then lost their jobs.
⇒ Children less than 15 years of age and the elderly greater than 65 years of age were not included in the valuation of lost work days in the cost estimation.
⇒ There might also be a recall bias.

BACKGROUND

Chronic diseases (CDs) are the major public health problems that account for 60% of all deaths (35% in low-income and middle-income countries, LMICs),[1–3] including Ethiopia, many LMICs are undergoing a gradual epidemiologic transition as the disease burden shifts from infectious to non-communicable diseases (NCDs).[4–6] Healthcare systems in these countries are mostly unprepared to handle the increasing burden of these diseases, resulting in no or limited access to affordable prevention and diagnosis of NCDs.[7] These challenges add up to higher NCD treatment costs, whose financing mostly comes from households' out-of-pocket spending.[8]

The COVID-19 pandemic was also another challenge that disrupted entire societies, including the routine healthcare systems in Ethiopia. The comprehensive effort to contain the pandemic and minimise the subsequent morbidity and mortality has affected both the continuity and quality of care.[9] During the pandemic, most global healthcare resources were focused on COVID-19 prevention and control. This resource reallocation could disrupt the continuum of care for patients

with CDs in this era. Diabetes, chronic obstructive pulmonary disease, hypertension (HTN), heart disease, asthma, cancer and depression were some of the conditions reported to be most impacted by the reduction in healthcare resources due to the pandemic.[10] Resources at all levels have shifted away from CDs management and prevention during the outbreak, and the lockdown of many services has translated into reduced access, a decrease in referrals and reduced hospitalisations of patients with non-COVID-19 pathology.[11] As the pandemic continues to rapidly spread, attention often focuses on the numbers of confirmed and probable cases, hospitalisations and deaths, which can be called the 'direct' effects of the pandemic. However, these numbers do not capture the full extent of the pandemic because it has also generated important spillover (indirect) effects by decreasing the supply of and altering patient demand for non-COVID-19-related medical care.[12]

In Ethiopia, the government declared a state of emergency, labelling the pandemic a national threat and launching overall preventive measures, including advising the community to stay at home, practising strict and frequent hand washing and wearing a face mask. Also, it restricted the movement of its people from place to place and laid temporary restrictions on market places, restaurants, shops, cinema houses, religious institutions and cities.[13] During this time, the number of hospital visits dropped sharply to utilise health services, including CD follow-up.[14] Many studies have revealed the direct impact of COVID-19 on healthcare provision and utilisation. But there has been little emphasis on the impact of the pandemic on the costs of CD follow-up care from a patient perspective. So, the study aimed to determine the impact of the COVID-19 pandemic on the cost of follow-up care among CD patients at public hospitals.

METHODS AND MATERIALS

Study design and setting

An institutional-based cross-sectional study design was used to conduct this study. It was conducted from 1 August to 31 August 2020, in the three Wallaga zones, namely, East Wallaga, West Wallaga and Horro Guduru Wallaga zones, of Oromia Regional State, Ethiopia. These three Wallaga zones are among the 21 zones of the Oromia region and were found in the western direction of the region, Oromia. The capital towns of east Wallaga zone, Nekemte town; west Wallaga zone, Gimbi town and Horro Guduru Wallaga zone, Shambu town, were located 333 km, 441 km, and 314 km west of Addis Ababa, the capital city of Ethiopia, respectively.

Study participants

All CD patients who visited public hospitals in the Wallaga zones were the source population, and all patients who visited the three Wallaga zones' selected study hospitals during the study period were the study population.

Inclusion and exclusion criteria

All patients from the selected CDs in the study area who visited the study hospitals were included in the study. Patients whose age was less than 15 years old and without accompanying parents who were seriously ill and unable to respond to the interviews were excluded from the study.

Sample size and sampling methods

The sample size was determined by using the single population mean formula, applying the following assumptions: two-sided alpha error (ϵ) set at 0.05, 95% confidence level, mean cost of diabetes mellitus (DM) (μ) = 48.99 Ethiopian Birr (ETB) and SD=30.89 ETB,[15] adding a 5% non-response rate.

Using the formula, $n = \frac{\left(z-\frac{\alpha}{2}\right)2*\sigma 2}{\epsilon 2\mu 2}$, n=642.[16]

Among 13 public hospitals in the study area, data were collected from the selected CDs of follow-up care patients from Nekemte specialised hospitals, Sire hospital, Gida hospital, Arjo hospital, Shambu hospital, Guduru hospital, Gimbi hospital and Nedjo hospital, which were selected using a simple random sampling technique.

The determined sample size was allocated to each study hospital proportionally based on the proportion of CD patients who attended follow-up care. Wallaga University referral hospital was purposely excluded from the study, which was an isolation and treatment centre for COVID-19 during the study period, and four other hospitals were excluded due to their low CD patient flow.

Finally, a simple random sampling technique was used from the registration book to sample patients at each study hospital as per their proportion to select 642 participants.

Data collection

The structured questionnaire was developed in English after reviewing relevant literature, and it was translated into Afan Oromo. Data collection and supervision were carried out by eight data collectors, with four supervisors assigned. These data collectors and supervisors were trained before the pretest and actual data collection started. The questionnaires were pretested in Bedele Hospital using 32 (5%) of the determined sample size. It was collected through a face-to-face interview. Patients who completed their chronic outpatient services and returned to leave the study hospitals were interviewed.

Study variables

Sociodemographic and economic characteristics, health service costs (non-medical costs; transportation, food, accommodation, and income lost and medical costs; registration, consultation, laboratory, radiology and drugs) were assessed and determined.

Operational definitions

Before COVID-19: the period before 13 March 2020, when Ethiopia had the first confirmed COVID-19 positive case.
Chronic disease follow-up patients: a patient visited the study hospital for the follow-up care of one of the following: hypertension (HTN), diabetes mellitus (DM), heart failure (HF), mental illness, HIV, stroke, epilepsy and asthma.
Chronic disease: any of the following illnesses that persist over time, can gradually progress, do not resolve spontaneously and may not be cured: HTN, DM, HF, mental illness, HIV, stroke, epilepsy and asthma.[14]
Direct costs: the expenditures in ETB spent by chronic disease patients and their families on the diagnosis and treatment of chronic illness per prescription of physicians in the study hospitals.
During COVID-19: the period after 13 March 2020, when Ethiopia had the first confirmed COVID-19 positive case.
Indirect costs: the number of productive days lost by patients and their families as a result of chronic illness treatment and care.
Medical cost: the cost component of chronic disease patients' follow-up visits at study hospitals that includes registration, laboratory, radiology and drug costs.
Non-medical cost: the cost component that includes transportation, food, accommodation and income lost among chronic disease patients during follow-up visits at study hospitals.
ETB, Ethiopian Birr.

Data analysis

Data were entered into Epi-data V.3.1 and exported to SPSS V.25 software for analysis. Descriptive statistics were performed for all study variables based on their characteristics. The bottom-up costing approach was used to estimate the direct cost of the follow-up visit with respect to the patient's perspective, and the indirect costs (income lost due to productive time lost) were estimated using earnings lost both before and during the COVID-19 pandemic.[17] The time foregone and productive time lost were converted into indirect costs based on the daily wage rate and then multiplied by the number of working days lost. The daily wage rate for patients was estimated by dividing their monthly income by 30 days for both patients and caregivers.[17] All costs included in the analysis were measured in terms of ETB and were converted to US$ (US dollar) during the analysis, and the average currency exchange rate was (August 2020; US$1 = 35.99 ETB). The cost data were converted to real terms by adjusting market prices to reflect true costs using Ethiopian inflation data.

Finally, the normality distribution of treatment cost data was checked, and it was not normally distributed. As a result, non-parametric tests were used to analyse the median cost for each cost category, as well as a two-paired sample Wilcoxon sign rank test to compare the costs incurred before and during the pandemic lockdown, with the level of significance of the median cost difference set at $p<0.05$.

Ethical consideration

An appropriate research ethical approval was obtained from the ethical review board of Wallaga University, Institute of Health Sciences (Reference number: IRB/233/2020). The study was conducted in accordance with the Declaration of Helsinki. The questionnaire was designed to be anonymous, and the result did not identify the personalities of the respondents; rather, it was presented in the aggregated statistics. Written consent was obtained from the study participants. The data were kept in protected and safe locations. Paper-based data were kept in a locked cabinet, and computer-based data were password-secured. Data sharing was enacted based on the ethical and legal rules of data sharing, and it was not accessed by a third party except the research teams.

Patient and public involvement

None

RESULTS

Sociodemographic characteristics

A total of 642 patients were included in the study, among whom 605 responded to the interview, yielding a 94.2% response rate. An almost equal number of males and females participated in the study. More than half of the participants, 352 (58.2%), were from urban areas, and the majority of them, 421 (69.6%), were married.

Regarding the educational status of the participants, 137 (22.6%) were illiterates (table 1).The average participant's age was 43.29 (SD=16.5) years, the average monthly income was US$84.32 (SD=70.65) and the average household size was 4.46 (SD=3.43).

The overall cost of CD follow-up care before and during the pandemic

The total cost for the treatment of CDs before the COVID-19 pandemic among patients who incurred any one or more types of cost was on average US$10.41 (SD=10.19), with the median cost of US$9.76 (IQR=8.64) among 600 patients before the pandemic. The total cost of the treatment of the diseases per follow-up visit during the pandemic among 593 patients was US$13.02 (SD=11.22), and the median cost was US$12.27 (IQR=10.40).

The median income lost due to productivity time lost for the treatment of CDs before the pandemic was US$1.48 (IQR=2.71) among the 501 participants who had income, which was almost similar to the income lost when visiting the study hospitals during the pandemic, which was US$1.40 (IQR=2.85).

The total median non-medical cost incurred for the follow-up care was US$6.05 (IQR=5.55) before the pandemic among 463 patients and US$7.98 (IQR=7.50) among the same number of patients during the pandemic.

The total median transportation cost to travel to hospitals and travel back to their homes was US$1.141 (IQR=1.94) before the pandemic and US$2.29 (IQR=3.05) during the pandemic among the 430 patients who paid for transportation.

The total median cost incurred for the accommodation and food during the follow-up visit was US$3.43

Table 1 Sociodemographic characteristics and classification of study participants by chronic diseases conditions in the public hospitals of the three Wallaga zones, Oromia National Regional State, Ethiopia 2020 (n=605)

Characteristics (n=605)		Frequency (n)	Percentage (%)
Sex	Male	302	49.9
	Female	303	50.1
Residence place	Urban	352	58.2
	Rural	253	41.8
Marital status	Single	130	21.5
	Married	421	69.6
	Separated	7	1.2
	Divorced	2	0.3
	Widowed	45	7.4
Religion	Orthodox	165	27.3
	Muslim	59	9.8
	Protestant	373	61.7
	Others	8	1.3
Ethnic group	Oromo	552	91.2
	Amhara	48	7.9
	Gurage	4	0.7
	Tigre	1	0.2
Educational status	Illiterate	137	22.6
	Read and write	102	16.9
	Grades 1–8	99	16.4
	Grades 9–8	151	25.0
	Diploma and above	116	19.2
Employment status	Government employee	93	15.4
	NGO* employee	89	14.7
	Merchant	100	16.5
	Housewife	114	18.8
	Farmer	107	17.7
	Others†	102	16.9
Types of chronic diseases	Hypertension	214	35.4
	Diabetic mellitus	173	28.6
	Heart failure	62	10.2
	Mental disease	51	8.4
	HIV/AIDS	50	8.3
	Asthma	29	4.8
	Epilepsy	18	3.0
	Stroke	3	0.5

*NGO=non-governmental organisation.
†Daily labourer, students.

(IQR=4.91) before the pandemic and US$4.29 (IQR=633) during the pandemic among 199 participants.

The total median medical cost was US$3.71 (IQR=5.22) before the pandemic, whereas it was US$4.29 (IQR=5.91) during the pandemic hospital visit among the 425 participants who paid for the prescribed drugs (table 2).

Cost difference based on COVID-19 pandemic

There was a significant median cost difference (n=593, Z=5.05, p=0.001) between the cost of follow-up care during the COVID-19 pandemic lockdown and the costs incurred before the pandemic (table 3). This showed that 348 out of 593 (58.7%) patients incurred significantly higher costs during the pandemic compared with before the pandemic. The median cost of follow-up care during the pandemic was US$12.27 (IQR=10.40), compared with US$9.76 (IQR=8.64) before the COVID-19 pandemic.

The study showed that there was no significant median difference in income lost among patients who had income during and before the pandemic (n=501, Z=1.780, p=0.075). The median income lost during the pandemic was US$1.48 (IQR=2.71) compared with the income lost before the pandemic, which was US$1.40 (IQR=2.85).

There was a significant median cost difference in non-medical costs per patient during and before the pandemic (n=463, Z=4.903, p=0.001). This showed significantly higher costs were incurred by more than half of the patients, 276 (59.61%), during the pandemic compared with before the pandemic. The median non-medical cost observed among the patients was US$7.98 (IQR=7.50) and US$6.05 (IQR=5.55) per follow-up visit during and before the pandemic, respectively.

The study revealed that there was no statistical significance in the median cost difference of food and accommodation incurred during and before the pandemic (n=199, Z=1.189, p=0.169), and the median of this cost category was US$4.29 (IQR=6.33) and US$3.13 (IQR=4.91) during and before the pandemic lockdown, respectively.

The majority of the patients, 289 (67.2%), paid higher transportation fees when they visited hospitals during the pandemic compared with before the pandemic. There was a significant median cost difference in transportation costs during and before the pandemic (n=430, Z=8.028, p=0.00), which was explained by the fact that the median transportation cost was US$1.14 (IQR=1.94) and US$2.29 (IQR=3.05) during and before the pandemic, respectively.

More than half of the patients, 236 (55.5%), incurred higher costs for medical services during the pandemic compared with before the pandemic. There was a significant median cost difference during and before the pandemic (n=425, Z=2.382, p=0.017), in which the median cost was US$4.29 (IQR=5.91) and US$3.71 (IQR=5.22) during and before the pandemic lockdown.

The study showed that the majority of the HTN patients, 128 (60.7%), paid a high amount of money during the pandemic compared with before the pandemic among the 211 patients who paid for the services. There was a significant median cost difference per visit during and before the pandemic (n=211, Z=3.632, p=0.00). The median cost observed among these patients was US$7.58 (IQR=7.53) and US$10.14 (IQR=8.74) per follow-up visit before and during the pandemic, respectively.

Table 2 The overall cost of chronic diseases follow-up treatment and care before and during the pandemic among chronic diseases patients at public hospitals in the three Wallaga zones, Oromia National Regional state, Ethiopia 2020 (n=605)

Cost categories	Era of COVID-19 pandemic	Observation-on (N)	Mean (SD)	Median (IQR)	Significance level of median cost difference (during–before COVID-19)
Income lost (a)	Before	501	2.27 (2.75)	1.48 (2.71)	Z=1.780, p=0.075
	During	501	2.25 (2.72)	1.40 (2.85)	
Transportation (b)	Before	430	1.91 (2.13)	1.14 (1.94)	Z=8.028, p=0.001
	During	430	3.43 (4.42)	2.29 (3.05)	
Food and accommodation (c)	Before	199	4.67 (5.05)	3.43 (4.91)	Z=1.189, p=0.169
	During	199	5.6 (5.94)	4.29 (6.33)	
Total non-medical cost (a+b+c) = (d)	Before	463	4.58 (5.35)	6.05 (5.55)	Z=4.903, p=0.001
	During	463	6.81 (7.58)	7.98 (7.50)	
Total medical cost (e)	Before	425	5.51 (8.43)	3.71 (5.22)	Z=2.382, p=0.017
	During	425	5.93 (7.81)	4.29 (5.91)	
Total cost per patient per visit (d+e)	Before	600	10.41 (10.19)	9.76 (8.64)	Z=5.05, p=0.001
	During	593	13.02 (11.22)	12.27 (10.40)	

1US$ = 35.99 ETB, August, 2020.
ETB, Ethiopian Birr.

More than half of DM patients (59.17%) paid higher costs for services during the pandemic compared with before the pandemic. The total cost incurred by these patients was significantly higher during the pandemic compared with before the pandemic (n=169, Z=3.095, p=0.002). The median cost was US$11.39 (IQR=10.87) and US$8.11 (IQR=9.26) during and before the pandemic lockdown, respectively.

The study revealed that there was no statistical significance in the median difference in total cost incurred by heart failure (HF) patients during and before the pandemic era (n=61, Z=–0.055, p=0.956). Among 61

Table 3 Cost of chronic diseases follow-up treatment and care by disease types among chronic disease patients at public hospitals in the three Wallaga zones, Oromia National Regional State, Ethiopia 2020 (n=605)

Types of CDs	Era of COVID-19 pandemic	Observation (N)	Mean (SD)	Median (IQR)	Significance level of median cost difference (during–before COVID-19)
HTN	Before	211	10.03 (11.86)	7.58 (7.53)	Z=3.632, p=0.001
	During	211	12.65 (10.42)	10.14 (8.74)	
DM	Before	169	10.64 (8.42)	8.12 (9.26)	Z=3.095, p=0.002
	During	169	13.56 (10.49)	11.39 (10.87)	
HF	Before	61	12.64 (12.85)	9.06 (8.53)	Z=–0.055, p=0.956
	During	61	12.51 (11.34)	8.2 (12.52)	
Mental disease	Before	49	13.08 (8.97)	11.63 (10.10)	Z=–1.497, p=0.134
	During	49	10.91 (8.45)	8.86 (10.24)	
HIV	Before	49	7.37 (6.65)	6.12 (6.76)	Z=3.356, p=0.000
	During	49	16.58 (18.32)	12.24 (14.25)	
Asthma	Before	28	8.95 (6.40)	7.33 (10.68)	Z=1.731, p=0.184
	During	28	12.92 (12.34)	10.34 (8.18)	
Epilepsy	Before	18	7.70 (7.01)	5.70 (11.18)	Z=1.328, p=0.184
	During	18	10.44 (5.74)	10.00 (9.84)	

1US$ = 35.99 ETB, August, 2020.
CD, chronic disease; DM, diabetes mellitus; ETB, Ethiopian Birr ; HF, heart failure; HTN, hypertension.

HF patients, only 31 (50.82%) paid a higher amount of money during the pandemic compared with before the pandemic.

Similarly, there was no statistical significance in the median difference in total cost incurred by patients who visited the hospitals for mental health follow-up for the treatment of diseases during and before the pandemic era (n=41, Z=−1.497, p=0.134). Among 41 patients, only 20 (40.82%) paid a higher amount of money during the pandemic.

The study also showed that there was a statistically significant median difference in total cost incurred by HIV patients during and before the pandemic lockdown (n=49, Z=3.356, p=0.00). Among 49 patients, the majority of them, 34 (69.39%) incurred a higher cost per visit during the pandemic compared with before the pandemic lockdown.

There was no statistical significance in the median difference in total cost incurred by asthma patients during and before the pandemic era (n=28, Z=1.731, p=0.184). Similarly, there was no statistically significant median difference in total cost incurred by epilepsy patients during and before the pandemic lockdown (n=18, Z=1.328, p=0.184) (table 3).

DISCUSSION

This study was aimed at determining the impact of the COVID-19 pandemic on the cost of CD treatment and care at public hospitals in Wallaga zones, Oromia Regional State, Ethiopia. The study found that the cost of follow-up treatment and care among CD patients during the COVID-19 pandemic was significantly higher compared with before the pandemic era.

This indicated that more than half of the chronic patients, 58.7%, incurred a significantly higher total cost during the pandemic lockdown compared with before the pandemic. This finding supports the study's findings that chronic illness costs account for more than 75% of total healthcare costs in high-income countries.[18 19] However, this study was conducted during the COVID-19 pandemic and in a low-income country, but these studies were not conducted at the time of the pandemic and were also conducted in high-income countries. During the pandemic, most global healthcare resources are focused on COVID-19, and this resource reallocation could disrupt the continuum of care for patients with CDs.[9 10 20] This could be explained by the fact that the global pandemic's disruption of the healthcare system may impose additional costs on CD patients.

The study revealed that the non-medical cost during the follow-up visit per patient during the era of COVID-19 was significantly higher than the cost incurred before the pandemic era by the same patients, which was doubled during the pandemic. This significant difference might be due to a strict lockdown that could affect these patients adversely as they require regular follow-up visits that lead to further health consequences and additional costs.[21 22]

Transportation costs were one of the cost categories that doubled during the pandemic compared with before the pandemic. The median cost per patient per visit of this cost category during the pandemic era was significantly increased by twofolds. This could be due to the fact that the government restricted the movement of its people from place to place and laid a temporary restriction on public transport across regions and cities.[13 21]

The study discovered a significant median cost difference in medical costs, with the median of this cost category increasing by 15.6% during the pandemic. This finding is in line with the study report that revealed that before the pandemic, one in three Americans did not take their medications as prescribed because of high costs, but during a global pandemic, forgoing medications involves even more risks for chronic care patients and incurs even higher costs in the long run.[23] However, comparing study findings in this study setting with those in a high-resource setting is taken as a weakness of this study.

The study also evaluated the cost of each selected CD. Accordingly, for the follow-up care of HTN patients, the patients incurred significantly higher costs during the pandemic compared with before the pandemic, which were raised by 33.76% during the pandemic. The cost incurred before the COVID pandemic was almost comparable with other study reports, but the cost incurred during the pandemic was higher than the study report on the cost of HTN before the COVID-19 lockdown in Ethiopia.[24]

Again, the study showed that the cost of DM follow-up visits per patient during the pandemic lockdown was significantly higher than the cost incurred before the pandemic, which was increased by 40.53%. However, before and during the COVID-19 lockdown, the cost of DM in this study was lower than the study reported in Ethiopia.[15 25] This variation could be attributed to differences in DM complications and treatment among study participants.

Despite HIV care and treatment being an exempt service in Ethiopia, patients incurred non-medical costs. The study revealed that the cost incurred by HIV patients for follow-up treatment and care per visit per patient during the pandemic lockdown was significantly higher than the cost incurred before the pandemic, which was increased by twofold. The cost of HIV treatment and care reported in the study was higher than in other Ethiopian studies.[26 27]

However, there was no significant statistical median cost difference for the follow-up care of HF, mental illness, asthma and epilepsy during and before the pandemic; a slight median cost difference was observed during and before the pandemic.

CONCLUSION

This study revealed that the total cost of follow-up care among CD patients during the COVID-19 pandemic lockdown was significantly higher compared with before the pandemic era among the same patients. In this study, HTN patients had the greatest impact on the cost of ongoing care as a result of the COVID-19 pandemic.

A comprehensive package of CD treatment and care is demanded at different levels of health facilities in the country's health system. Therefore, healthcare providers, hospital administrators and the local government should arrange special fee waiver mechanisms for CD healthcare costs during such types of pandemics and provide the services at proximal health facilities.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting or dissemination plans of this research.

Patient consent for publication Not required.

Ethics approval This study involves human participants. An appropriate research ethical approval was obtained from the ethical review board of Wallaga University, Institute of health sciences (reference number: IRB/233/2020). The study was conducted in accordance with the Declaration of Helsinki. The questionnaire was designed to be anonymous, and the result did not identify the personalities of the respondents; rather, it was presented in the aggregated statistics. The data were kept in protected and safe locations. Paper-based data were kept in a locked cabinet, and computer-based data were password secured. Data sharing was enacted based on the consent and permission of research participants and the ethical and legal rules of data sharing, and it was not accessed by a third person, except the research teams. Participants gave informed consent to participate in the study before taking part.

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