

The challenges in control COVID-19 in Injibera, Awi Zone, North East Amhara, Ethiopia

Alemayehu Amsalu (✉ alexso21a@gmail.com)

Woldia University

Research Article

Keywords: Coronavirus, COVID-19, Pandemic, Ordinal logistic regression, Injibera, Ethiopia

Posted Date: May 17th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-379838/v3>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Background: In the globe, on April 2021, 130 million coronavirus cases, around 2.8 million were deaths, 102 million were recovered and 105.2 million were closed cases of COVID-19 reported. On April 2021, the world population were 7.9 billion of which United Nations estimates were 1.65% COVID-19 cases included the Ethiopia in report. The main objective of the study was identify the challenges of in control COVID-19.

Methods: The cross-sectional study design was used November to February 2021 in Injibera from Ethiopia. The total 385 respondents using simple random sampling were interviewed. The chi-square test of association and ordinal logistic regression was applied to identify the effect of predictor variables on challenges in control COVID-19.

Results: Out of 385 respondents 277(71.95%) were high challenges in control COVID-19 in Injibera. There was a significant relationship with social media and challenges of in control virus (p-value = 0.047). The variables considered social media, housing status and influence were significant relationship with challenges of in control virus (p-value < 5%). Facebook users were the responsible causes of challenges in control COVID-19 (p-value = 0.023). The more social media followed, decreased the occurrence of challenges in control virus. In addition, a unit increase rented, the challenges in control virus decreased by 0.60 times (p-value = 0.009).

Conclusion: Winning against the coronavirus together with world couldn't be a marathon. COVID-19 couldn't be won without collective global and local effort. It would also need serious thinking, discipline and war against the only virus. COVID-19 war needs in control, the globe should be faced free, coordination and discover scientific methods together.

1. Background

Fighting coronavirus in a globe and local levels is very much light a fighting a war in which every human being is a potential victim, mentally and physically capable human must be a warrior making a contribution to the fight[1]. Sadly, COVID-19 war against an invisible enemy and who does operates without any rules of combat and who has no capacity whatsoever to reason therefore one who will not listen to the pleas of the enemy to cease fire[2]. Novel coronavirus disease 2019 (COVID-19) is spreading rapidly and creating a huge economic, social and public health challenge worldwide[3]. In the worldwide, there was financial, material, social, cultural, behavioral, religious, capacity, logistical, education and understanding challenges to control the enemy of human beings the novel coronavirus diseases COVID-19[4]. Wuhan was the city where the virus originated in central China, with a population of over 11 million people. On January 30, the World Health Organization declared the coronavirus outbreak a global public health emergency[5].

In Africa, the impact is huge and increasing in low and middle-income countries, especially in Nigeria with over 202 million population[6]. Potential challenges in managing the corona virus pandemic in developing countries[7].

The virus was confirmed to have reached [Ethiopia](#) on 13 March 2020[8]. The national government, Prime Minister [Abiy Ahmed](#), declared five-month [state of emergency](#) in April 2020 but has allowed economic activities to continue during the public health crisis[9]. On 15 March, the infected persons, one Ethiopian and two Japanese nationals, had contact with the individual who was reported to be infected by the virus on 13 March[10].

The first COVID-19 was occurred in Bahirdar Amhara regional state from the merchant traveled Saudi-Arabia when she was come soon and Injibera was the first COVID-19 existed from the individuals come from foreign, even there was psychological impact from COVID-19[11].

The reduction of challenges of COVID-19 given the consultancy in each aspects of daily human activities[12]. The Injibera was selected for this study. This study were designed to the challenges of in control COVID-19 and to know the relationship between in control COVID-19 and predictor variables and to identify significant effects in control COVID-19. The researcher wants to insure challenges of in control COVID-19 using ordinal logistic regression model.

2. Methods

Study design and period

This study was questionnaire based cross-sectional study carried out November to February 2021.

Study Area

Injibera was the administrative center of Agew Awi Zone, which is located 447 km from Addis Ababa and 113km Bahir Dar City in Amhara regional state Ethiopia. Formerly the name Injibera was the name of small village towns around Kosober meaning "Koso tree" the name given by Emperor Haile Selassie during the Italian attack on Ethiopia. Today, Injibera was dominated the name of Kosober and Capital City of Agew nations Awi Zone in Amhara regional state. Injibera was the richest in cultural heritage and tourism specially Horse ride in cultural celebration during December to the end of March and the Agew Horse Association in 1933E.C, 81th celebration was conducted in Injibera on January 30 yearly before one month Adwa victory celebration in Ethiopia.

Study Population and sample

All Injibera males and females was investigated in the study. All those who meet the inclusion criteria were included.

Inclusion criteria

All Injibera males and females in Injibera during the study period with simple random sampling was included.

Exclusion criteria

All males and females not meeting the inclusion criteria were excluded.

Data collection

Since, primary source of data collection used to collect raw data from respondents through personal interview and closed ended questionnaires in Injibera.

Variables

The dependent variable was challenges in control COVID-19 (low, medium and high).

Operational definitions

Low: The challenging knowledge, motivation, capability and controls are in place to prevent virus or at least significantly tangible solutions to prevent COVID-19 from being very good.

Medium: The Average knowledge, motivation and capability were good, but in control in place that may needs successful exercise to prevent COVID-19.

High: The knowledge, motivation and capability were highly poor and in control to prevent the COVID-19 were not enough and no idea about COVID-19.

The predictor variables were Education level (Illiteracy, Student, Diploma and Degree and above), Social media (Facebook, Television, Community, Radio, SMS, Twitter and Others), Racism (In color, In Language, In Country and In Continent), Job types (Agriculture, Merchant , Civil servant, Teacher, Banker, Driver, Politician and Others), Housing status (rented, owned, others), Residence (Urban, Rural), Religion (Orthodox, Muslim, Protestant, Others), Influence (Health status, Political, Social, Economical), Households size(Zero, 1-5, 5), Awareness (Poor, low, medium, high, very high) and Access (No, Yes).

Sampling Design and Techniques

The sampling method used in this study was simple random sampling procedure. The study used the cross-sectional sample design to determine the challenges of in control COVID-19 in Injibera.

Sample size determination

According to the 2007 national census conducted by the central statistical agency of Ethiopia, Injibera has an estimated total population of 21,065 of whom 10,596 are males and 10,469 are females. The sample size for this study was determined based on simple random sampling at 95% confidence level. The sample size formula is given by[13]

$$n = \frac{n_0}{1 + \frac{n_0}{N}}, \text{ where } n_0 = \frac{Z_{\alpha}^2 pq}{d^2}$$

Assume the margin of the error $d = 5\%$, the probability of success (p) and failure (q) was 0.50 in this study.

$$n_0 = \frac{1.96^2 \cdot 196 \cdot 0.50 \cdot 0.50}{0.05^2} = 384.16 \cong 385. \text{ And, } \frac{n_0}{N} = \frac{385}{21065} = 0.0183 < 5\%.$$

So that, the initial sample size, $n_0 = n$. Therefore, the required sample size in this study was 385.

Data entry and Analysis

After the data collected, the next step is edited, analyzed and summarized the data in appropriate manner and the available data would be transformed in to reliable and useful information with the help of statistical analysis procedure by using statistical package for social science (SPSS) version 25. Descriptive statistics was used information by frequency, percentage and table. Inferential statistics was making inference or conclusion about population, chi-square test and ordinal logistic regression model were used.

Chi-square test of association

The chi-square can't be negative, then the curve don't extended to the left of zero[14]. The variables in chi-square distribution must be nominal or ordinal scale[15]. The significance in chi-square test is right tailed areas of the distribution[15]. In this statistical procedure there is relationship between categorical variables or not[15].

Ordinal logistic regression

The outcome variable can be grouped into ordinal, in this case, ordinal logistic regression models have been used to analyze ordinal response variables. Moreover, when there is a need to consider several factors, special multivariate analysis for ordinal data is the natural alternative. Ordinal logistic regression models have been widely applied in most investigation. The commonly used ordinal logistic regression model is the constrained cumulative logit model[16].

Cumulative logit model

Ordinal logistic regression refers to the case where the dependent variable has an order[16]. The most common ordinal logistic model is the proportional odds model, also called cumulative probabilities of the response categories[17]. If we pretend that the dependent variable is recorded as ordinal having categories, then the application of ordinal logistic model is the appropriate method. An attempt to extend the logistic regression model for binary responses to allow for ordinal responses has often involved modeling the cumulative logit[17].

3. Results

The study was conducted on 385 samples from Injibera. From which 36(9.35%) were low, 72(18.70%) were medium and 277(71.95%) were highest challenges in control Nobel corona virus diseases (COVID-19). Out of 385 samples, 116(30.13%) of them students and 109(28.31%) were diploma educational levels challenged. In addition, 117(30.39%) Facebook users, 143(37.14%) television followers and 106(27.5%) community higher challenges of social media. Besides, on family size 143(37.14%) were zero and 217(56.37%) were between 1-5 high challenges. Furthermore, the racism in language differences 98(25.45%) and country to country 118(30.65%) were more challenges to in control over spread in worldwide. Similarly, the merchant 178(46.23%) and civil servant 64(16.62%) job types were challenged. The housing status rented 198(51.43%), owned 165(42.86%) and others 22(5.71%) were challenge to in control COVID-19. Finally, the more was challenging problem the more was fight to stop COVID-19 (**Table 1**).

Chi-square test of independence

The proportion of challenges to in control in social media Television (37.14%) was greater than all other media. There was a significant relationship between social media and challenges of in control COVID-19(p -value = 0.047). The variables considered in this study were racism, housing status, influence, household size, and access were significant relationship with challenges of in control COVID-19(p -value < 5%) (**Table 2**).

Ordinal logistic regression

Univariate analysis

In this case, the Facebook users increased by a unit, the chance of in control was decreased by 0.94 times and this is also one of the significant predictors for social media (p -value = 0.001). Increasing a unit television followers invite to reduce in control. A unit increment caused to reduce in control by 0.43 times (p -value = 0.009). Similarly, when the housing status rented increased by a unit, the probability to be involved in in control over spread of the pandemic was decreased by 0.64 times (p -value = 0.002) and owned a unit increment was decreased in 0.19 times (p -value = 0.000). Racism, was insignificant predictor variables (p -value more than 5%) (**Table 3**).

Multivariable analysis

When the Facebook users was increased by a unit, the possibilities to be involved in the challenges in control virus were decreased by 0.93 times and it is one of the predictors of challenges in control virus(p -value = 0.023). A unit increase on the Television information the occurrence of challenges in control virus decreased by 0.86 times (p -value = 0.004). In community was increased by a number, the occurrence of challenges in control virus was decreased by 0.52 times (p -value = 0.011). The risk in challenges in control virus in racism was in significant (p -value more than 5%). Among housing status, most of them were occurred on the rented compared to owned and others (p -value = 0.005). Influence had been played

a crucial role in challenges in control virus. In other words, influence whose political status were the most responsible factor for challenges in control virus. A unit increase political status, increase challenges in control virus by 2.33 times (p-value = 0.006) as compared to health status, social and economic influence. The access information was in significant predictors of the occurrence of challenges in control virus (**Table 3**).

4. Discussions

The papers on previous study, most important and wide-spread mass gatherings were religious mass gatherings around sacred religious sites. Despite pressure from religious groups, the government banned travel around these restricted areas to slow the spread of the disease. Such behaviors in a society highlight the need to pay attention to cultural challenges in controlling the epidemic of infectious diseases[1, 8, 18].

Policymakers at the National COVID-19 Control Headquarters should use a community-based approach to epidemic control. The use of religious leaders to articulate approved policies is one of the most effective strategies in such situations. Such behaviors are a sign of a lack of education and, as a result, a low risk. The capacity of religious organizations themselves must be used to increase people's understanding of the dangers of religious gatherings. In order to control the epidemic of infectious diseases in developing and less-developed countries, was necessary to pay attention to cultural differences. Different strategies for engaging religious groups to be studied, and programs are only effective if they take a community-centered approach[9, 18].

This study was conducted in Injibera factors that determined the challenges of in control virus. According to the results, 36(9.35%) low, 72(18.70%) medium and 277(71.95%) were high challenges in control virus COVID-19. In this case most of respondents were high challenges in control virus distribution (**Table 1**).

5. Conclusions

The study strongly suggests that more should be done and more reduction of challenges in control COVID-19. A one virus world fight. The main objective of this study was to study factors affecting the challenges in control COVID-19. The chi-square test of association social media, racism, housing status, influence and access results were significant effect on challenges in control virus (**Table 2**). The ordinal logistic regression showed that social media, housing status and influence were the major factors that affect the challenges in control virus (**Table 3**). The researcher was recommend for all concerned bodies couldn't disturbed and give attention COVID-19.

Declarations

Funding

This research received no external funding.

Ethical approval

This study used primary data from self-administered closed questionnaire. The data handled from respondents with strong responsibility and confidentiality.

Conflicts of Interest

The authors declare no conflicts of interest.

Author contributions

All internal activities were done by Alemayehu Amsalu.

Acknowledgements

The author would say thanks Injibera communities for monitoring the data collection process. The author also thanks in University of Gondar lecturers Kasim Mohamad (associate prof.) and Gashu Workenh for comments and editing the manuscript. Finally, great thanks my wife Alemtsehaye Asires her support all activities of Luel and Barcon Alemayehu Amsalu during the time of data collection up to analyzed.

References

1. Brands, H. and F.J. Gavin, COVID-19 and world order: The future of conflict, competition, and cooperation. 2020: Johns Hopkins University Press.
2. Dowling, M.J. and C. Kenney, Leading through a pandemic: The Inside Story of Humanity, Innovation, and Lessons Learned During the COVID-19 Crisis. 2020: Simon and Schuster.
3. Allahverdipour, H., Global challenge of health communication: infodemia in the coronavirus disease (COVID-19) pandemic. *J Educ Community Health*, 2020. 7(2): p. 65-67.
4. Schafer, A. and D.G. Victor, The future mobility of the world population. *Transportation Research Part A: Policy and Practice*, 2000. 34(3): p. 171-205.
5. Kopecki, D., et al., World Health Organization declares the coronavirus outbreak a global pandemic, 2020, CNBC.
6. Amare, M., et al., Impacts of Covid-19 on food security: panel data evidence from Nigeria. Vol. 1956. 2020: Intl Food Policy Res Inst.
7. Ogunleye, O.O., et al., Response to the novel corona virus (COVID-19) pandemic across Africa: successes, challenges, and implications for the future. *Frontiers in pharmacology*, 2020. 11: p. 1205.
8. Baye, K., COVID-19 prevention measures in Ethiopia: Current realities and prospects. Vol. 141. 2020: Intl Food Policy Res Inst.
9. Mohammed, H., et al., Containment of COVID-19 in Ethiopia and implications for tuberculosis care and research. *Infectious Diseases of Poverty*, 2020. 9(1): p. 1-8.

10. Kassaw, C., The magnitude of psychological problem and associated factor in response to COVID-19 pandemic among communities living in Addis Ababa, Ethiopia, March 2020: a cross-sectional study design. *Psychology Research and Behavior Management*, 2020. 13: p. 631.
11. Mekonen, E., B. Shetie, and N. Muluneh, The Psychological Impact of COVID-19 Outbreak on Nurses Working in the Northwest of Amhara Regional State Referral Hospitals, Northwest Ethiopia. *Psychology Research and Behavior Management*, 2020. 13: p. 1353.
12. Holmes, E.A., et al., Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. *The Lancet Psychiatry*, 2020.
13. Cochran, W.G., *Sampling techniques*. 2007: John Wiley & Sons.
14. Sur, P., Y. Chen, and E.J. Candès, The likelihood ratio test in high-dimensional logistic regression is asymptotically a rescaled chi-square. *Probability theory and related fields*, 2019. 175(1): p. 487-558.
15. McHugh, M.L., The chi-square test of independence. *Biochemia medica*, 2013. 23(2): p. 143-149.
16. Kleinbaum, D.G. and M. Klein, Ordinal logistic regression, in *Logistic regression*. 2010, Springer. p. 463-488.
17. Lee, J., Cumulative logit modelling for ordinal response variables: applications to biomedical research. *Bioinformatics*, 1992. 8(6): p. 555-562.
18. Alimi, T., et al., *COVID-19 and Religious Ethics*, 2020, Wiley Online Library.

Tables

Table 1: Descriptive statistics of the outcomes and predictors of challenges in control COVID-19 in Injibera, Ethiopia.

Variables	Category	Frequency	Percent (%)
Responses/challenges in control COVID-19	Low	36	9.35
	Medium	72	18.70
	High	277	71.95
Education level	Illiteracy	87	22.60
	Student	116	30.13
	Diploma	109	28.31
	Degree and above	73	18.96
Social media	Facebook	117	30.39
	Television	143	37.14
	Community	106	27.50
	Radio	5	1.30
	SMS	8	2.08
	Twitter	6	1.56
	Others	0	0.00
Racism	In color	83	21.56
	In Language	98	25.45
	In Country	118	30.65
	In Continent	86	22.34
Job types	Agriculture	11	2.86
	Merchant	178	46.23
	Civil servant	64	16.62
	Teacher	51	13.25
	Banker	34	8.83
	Driver	6	1.56
	Politician	4	1.04
	Others	37	9.61
Housing status	Rented	198	51.43
	Owned	165	42.86
	Others	22	5.71
Residence	Urban	223	57.92
	Rural	162	42.08
Religion	Orthodox	327	84.94
	Muslim	17	4.42
	Protestant	29	7.53
	Others	12	3.11
Influence	Health status	92	23.90
	Political	53	13.77

	Social	119	30.91
	Economical	121	31.42
Households size	Zero	143	37.14
	Between 1-5	217	56.37
	More than 5	25	6.49
Awareness	Poor	31	8.05
	Low	103	26.75
	Medium	201	52.21
	High	37	9.61
Access	Very high	13	3.38
	No	297	77.14
	Yes	88	22.86

Table 2: Predictors associated with challenges in control COVID-19 in Injibera, Ethiopia.

Predictor Variables	Category	Chi-square test			Chi-square	P-value
		Challenges in control COVID-19				
		Low	Medium	High		
Social media	Facebook	11(9.4%)	23(19.7%)	83(7.1%)	36.74	0.047*
	Television	17(11.9%)	18(12.6%)	108(75.5%)		
	Community	6(5.7%)	19(17.9%)	81(76.4%)		
	Radio	2(40.0%)	3(60.0%)	0(0.0%)		
	SMS	0(0.0%)	5(62.5%)	3(37.5%)		
	Twitter	0(0.0%)	4(66.7%)	2(33.3%)		
	Others	0(0.0%)	0(0.0%)	0(0.0%)		
Racism	In color	9(10.9%)	44(53.0%)	30(36.1%)	7.92	0.021*
	In Language	12(12.2%)	14(14.3%)	72(73.5)		
	In Country	7(5.9%)	10(8.5%)	101(85.6%)		
	In Continent	8(9.3%)	4(4.7%)	74(86.0%)		
Housing status	Rented	19(9.6%)	46(23.2%)	133(67.2%)	21.31	0.009*
	Owned	13(78.8)	14(8.5%)	138(83.7%)		
	Others	4(18.2%)	12(54.5%)	6(27.3%)		
Influence	Health status	21(22.8%)	45(48.9%)	26(28.3)	5.83	0.018*
	Political	4(7.5%)	13(24.5%)	36(67.9%)		
	Social	6(5.0%)	8(6.7%)	105(88.3%)		
	Economical	5(4.1%)	6(5.0%)	110(90.9%)		
Household size	Zero	24(16.8%)	37(25.9%)	82(57.3%)	3.29	0.036*
	Between 1-5	9(4.1%)	21(9.7%)	187(86.2%)		
	More than 5	3(12.0%)	14(56.0%)	8(32.0%)		
Access	No	27(9.1%)	65(21.9%)	205(69.0%)	9.17	0.001*
	Yes	9(10.2%)	7(8.0%)	72(81.8%)		

Table 3: The Crude odd ratio and adjusted odd ratio (COR, AOR) of ordinal logistic regression in Injibera, Ethiopia.

Explanatory variables	Category	Ordinal logistic regression analysis			
		Univariate analysis		Multivariate analysis	
		COR((95%CI)	P-value	AOR((95%CI)	P-value
Social media	Facebook	0.89(0.87,0.96)	0.001*	0.93(0.89,0.97)	0.023*
	Television	0.72(0.71,0.90)	0.005*	0.86(0.83,0.90)	0.004*
	Community	0.43(0.41,0.62)	0.009*	0.52(0.49,0.56)	0.011*
	Radio	0.91(0.89,0.97)	0.000*	0.79(0.73,0.87)	0.000*
	SMS	0.38(0.36,0.48)	0.002*	0.46(0.43,0.52)	0.012*
	Twitter	0.67(0.64,0.79)	0.000*	0.71(0.69,0.86)	0.000*
	Others	0.16(0.14,0.34)	0.000*	0.27(0.23,0.35)	0.000*
Racism	In color	0.93(0.90,0.98)	0.671	0.90(0.87,0.94)	0.700
	In Language	0.81(0.79,0.91)	0.523	0.75(0.72,0.90)	0.472
	In Country	0.49(0.46,0.60)	0.412	0.52(0.50,0.57)	0.450
	In Continent	0.57(0.53,0.67)	0.701	0.61(0.59,0.68)	0.671
Housing status	Rented	0.64(0.61,0.71)	0.002*	0.60(0.55,0.73)	0.005*
	Owned	0.19(0.17,0.28)	0.000*	0.17(0.12,0.29)	0.001*
	Others	0.23(0.20,0.30)	0.009*	0.27(0.24,0.31)	0.004*
Influence	Health status	1.27(1.22,1.37)	0.049*	1.31(1.21,1.73)	0.034*
	Political	2.38(2.32,4.24)	0.001*	2.33(2.01,4.91)	0.006*
	Social	1.93(1.87,5.91)	0.003*	1.90(1.81,5.32)	0.000*
	Economical	1.87(1.81,4.19)	0.001*	1.83(1.65,4.11)	0.002*
Access	No	0.59(0.54,0.74)	0.72	0.62(0.53,0.70)	0.69
	Yes	0.71(0.67,0.92)	0.81	0.74(0.65,0.91)	0.84