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# Perceptions of Risks and Impacts of COVID-19 among the public in Ethiopia:

Findings from a telephone-survey

May 25, 2020



*PERCEPTIONS OF RISKS AND IMPACTS  
OF COVID-19 AMONG THE PUBLIC IN  
ETHIOPIA:*

Findings From a Telephone-Survey in Ethiopia

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# 1. BACKGROUND

The Novel Coronavirus, which was first reported in China in December 2019, is currently spreading rapidly throughout the world. As of May 20, 2020, more than five million cases and 330,768 deaths of people have been reported worldwide (GHP, 2020). In the initial stage of the pandemic, Sub-Saharan Africa reported some of the lowest infection rates of COVID-19. Numbers began to rise starting late March 2020, with confirmed cases increasing across the continent (John Hopkins Coronavirus Resource Center, 2020). Global health experts and African governments have expressed concern about the huge potential social and economic impacts if no action is taken (Walker et al, 2020; Timothy et al, 2020).

The Ethiopian Federal Ministry of Health reported that the virus is increasingly becoming a major threat to the country since the time the first case was reported (March 13, 2020). As of May 20, 2020, the Ministry reported a total confirmed case of 389 people, of which 123 have recovered. To reduce the potential adverse impacts of the pandemic, the Government of Ethiopia (GoE) took several preventive measures, including shutting down schools, suspending sporting events and public gatherings, suspending flights to several countries affected by the Coronavirus, and introduced a mandatory self-quarantine for 14 days for those entering the country. Individual level preventive measures against the COVID-19 are generally suggested to be handwashing, avoiding contact with others, social distancing, respiratory hygiene, wearing of masks for health workers

and infected groups, and isolation after infection or suspicion for infection. However, studies indicate that the relevance and feasibility of both individual and community level measures heavily depends on how the public perceives the risks and impacts of being infected with the virus (Sarah et al, 2020; Khosravi, 2020).

Risk perception is a central element in the Health Belief Model which asserts that assessing whether people will engage in healthy behavior is related to how they evaluate the health threat, sometimes defined as risk perception, and how they evaluate the recommended behavior (Rosenstock, 2004). Thus, in the evaluation of a health problem, two psychological variables are important: The perceived susceptibility is the perception of the risk the individual has that he or she will contract the disease (Brewer et al, 2007). The second is perceived severity which can be defined as the belief of the individual on how serious contracting the illness would be for himself (Brewer et al, 2007). Rogers has developed the Protection Motivation Theory which believes that threat appraisal and risk perception as key determinants of the public's willingness to cooperate and adopt health-protective behaviors during pandemics (Rogers, 1974; Rogers, 1983).

Therefore, for promotion of adequate precautionary behavior among the different communities in Ethiopia, public health authorities need to be continuously informed about how people perceive risks, how they perceive the effectiveness and acceptance of interventions. Frontieri took the initiative to undertake this snapshot cross sectional study to determine the current level of risk and impact perceptions of the public: their level of worry and concern related to contracting the virus, whether it is affecting their daily routine or existing plans, how prepared they feel to handle the pandemic. We believe that understanding risk/ impact perceptions of the public is critical for risk communication for more promising behavioral changes.

## II. METHODS

This cross-sectional survey was conducted in about a month immediately after the first COVID-19 case was reported in Ethiopia, March 13, 2020. The study covered the nine regional states of Ethiopia (Afar, Amhara, Benishangul-Gumuz, Gambella, Harari, Oromia, SNNP, Somali, and Tigray) and two city administrations (Addis Ababa and Dire Dawa). Because it was not feasible to do in person interview during this especial period, Frontieri decided to collect the data through a rapid phone-based survey of individuals aged 18 and above. A sample size of 1050 respondents was estimated for the national eligible population based on a 3% margin of error (at 95% confidence level). Selection of the respondents was made using stratified random sampling technique where the regional states/city administrations constitute our strata. The survey was conducted between April 9-25, 2020.

The data collection has focused on wide range of issues pertaining to COVID-19. The preparation of the survey questions followed best practices for the design of assessments for use among persons with lower literacy level. A total of 16 well trained data collectors participated in the phone-based data collection. Each survey took 20-25 minutes and was conducted by phone with Frontieri research assistants. Verbal consent was obtained from all participants before administering the questionnaire. Perceived risks for COVID-19 was assessed by asking participants to rate, on a scale of 1 to 4 (high, medium, low and no risk at all), another question asked participants to report their perceived impacts of the coronavirus based on a list of 10 (ten) possible socioeconomic impacts. We then constructed a perceived impact score based on the ten dummy responses.

Descriptive statistics (percentage and frequencies) was used to measure prevalence of perceptions and Pearson's chi square was used to assess the bivariate association between selected sociodemographic characteristics and reported risk/impact perceptions, and rural-urban differentials in the impact perceptions.

### III. RESULT AND DISCUSSION

A total of 1037 participants completed the survey questionnaire who were drawn from nine regions and two city administrations of Ethiopia. Most of the respondents resided in urban areas (63%). Large majority of the respondents (66.8%) were males. About 75% of them were married, 19% single and the remaining small proportions represent separated, widowed, and divorced. It is worthy to note that more than two-thirds of the respondents were between age of 25-50, and the youth population constituted 12.4 % of the total sample. Those in the old age group (64+) account only 4% of the total respondents. The average age was 33.0 years (standard deviation [SD]: 10.7, range: 16-87). Two thirds of the study participants have reported to live in medium sized households (4-7 members) and 11% in large households (7+). Overall, most of the participants were Orthodox Christians (55.2%), followed by Muslims (29.4%) and Protestant Christians (14.4%). Finally, in terms of literacy level, about 87% had at least primary level education.

The study indicated that more than two thirds of the respondents did not consider Coronavirus as a threat. Likewise, the reported perceived chance of contracting the disease was too low where only less than 9.4% of them felt high probability of contracting the disease. Those stating high chance of contracting the disease provided a number of reasons including the nature of work they are engaged in, lack of knowledge, lack of protective materials (hand gloves, mask, and disinfectant), poor

practice of social/physical distancing, not frequently washing hands and other reasons. Those saying medium probability of contracting the disease accounted for 27% of the total respondents. Large majority of the study participants (56.4%) had either little or no concern at all regarding the possibility of contracting the disease. Study participants were also asked what they exactly feel at the present moment regarding the fast expanding pandemic. About 38% reported that they were more worried about the health of their immediate family members while another 38% were more concerned either about the length of the duration of the pandemic or the circumstance in general. Only 6% were concerned about their personal wellbeing. The self-reported actual risk indicated that about 10% of the survey respondent had chronic disease (such as diabetes and 3% smoke cigarettes.

**Table III.1.** Distribution of risk perceptions among respondents

<b>Characteristics</b>	<b>n (%)</b>
Perceived risk of Coronavirus	
Yes	323 (31.1)
No	714 (68.9)
Perceived chance of contracting the Virus	
High	97 (9.4)
Medium	280 (27.0)
Low	437 (42.1)
No risk at all	148 (14.3)
I don't know	75 (7.2)
Reported reasons for high risk for COVID 19 (n=97)	
Nature of work engaged in	44 (4.2)
Lack of knowledge	28 (2.7)
Lack of protective materials i.e. hand gloves, mask, and disinfectant	16 (1.5)
Do not practice social/physical distancing	47 (4.5)
Not frequently washing hands	4 (0.4)
Other reasons	8 (0.8)
Current experience of the respondent	
I am nervous when I think of the circumstances	192 (18.5)
I am calm and relaxed	82 (7.9)
I am worried about my health	57 (5.5)
I am worried about the health of my family members	396 (38.2)
I am worried about my job and income	91 (8.8)
I am worried about the length of duration the pandemic	199 (19.2)
Nothing changed due to Corona Virus	18 (1.7)
Other	1 (0.2)
Exacerbating risk factors	
Have chronic disease	109 (10.5)
Smoke cigarettes	31 (3.0)

Source: Own construction based on the survey data



Table III.2 presents risk perception by selected respondents' characteristics using the Pearson's Chi2 to assess the association. It is noted that about 32% of urban respondents and 30.5% of rural respondents considered the virus as a threat. The association between the two variables was statistically significant at  $p < 0.05$ . More males (33%) than females perceived the

risk of the virus, and the corresponding Pearson Chi2 value was significant at  $p < 0.05$ . In terms of age, youth (18-24) had slightly higher risk perception of the virus compared to other groups, and those in the age group of 64+ had relatively lower concerns about the increasing threat of the virus. However, the association was not statistically significant ( $p > 0.05$ ).

**Table III.2:** Risk perception by selected background characteristics

Characteristics	Yes, n (%)	No, n (%)	$\chi^2$ (p-value)
Residence			
Urban	207 (31.8)	444 (68.2)	3.26 (0.001)
Rural	116 (30.2)	268 (69.8)	
Sex of the respondent			
Male	228 (32.9)	465 (67.1)	3.04 (0.047)
Female	95 (27.6)	249 (72.4)	
Age of the respondent			
18-24	45 (34.9)	84 (65.1)	1.37 (0.850)
25-34	112 (31.6)	242 (68.4)	
35-50	120 (29.9)	282 (70.1)	
50-64	34 (31.8)	73 (68.2)	
64+	11 (28.2)	28 (71.8)	

Source: Own construction based on the survey data

Study participants were asked to report the potential impacts/ effects of the COVID-19 on their own personal life. Most of them said they are particularly concerned about travel restrictions (47%), restrictions on religious gatherings (37%) and restrictions on social gathering (36.5%). Only smaller proportion of them considered the fact of personally being sick (14%).

The results of the Pearson's Chi2 test clearly indicated statistically significant rural-urban differences in the way people perceive the potential impacts of the pandemic. More importantly, significant urban-rural differences were observed in the fear of dying, travel restriction, restriction on social gathering and restriction on religious gathering.

**Table III.3.** Rural-Urban difference in risk and impact perceptions, n=1037

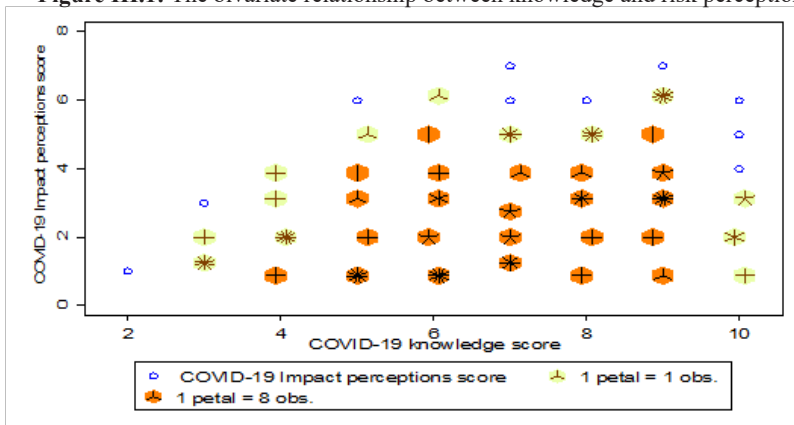
Perceived impacts	Yes, n (%)	Urban	Rural	$\chi^2$ (p-value)
Being sick or fear of getting sick	146(14.1)	63.7	36.3	0.04 (0.844)
Fear of dying	35(3.4)	45.7	54.3	4.63 (0.031)
Travel restriction	486(46.9)	55.3	44.7	22.78 (0.000)
Restriction on social gathering	421(40.6)	56.1	43.9	14.53 (0.000)
Restriction on religious gathering	379(36.5)	54.9	45.1	16.76 (0.000)
Shops being closed	204(19.7)	63.2	36.8	0.01 (0.930)
Shortages in food supply	193(18.6)	68.4	31.6	2.99 (0.084)
Unemployment/ loss of income	285(27.5)	67.4	32.6	3.26 (0.071)
Quarantine or self-quarantine	176(17.0)	68.8	31.2	3.04 (0.087)
No impact	173(16.7)	71.7	28.3	6.75 (0.009)

Source: Own construction based on the survey data

Further, it was noted that there was a strong bivariate relationship between knowledge and impact perceptions among the participants (see figure III.1). We created a comprehensive knowledge score from a linear combination of a set of knowledge questions (i.e. knowledge about means of transmission and symptoms)\*(Nigatu et al, 2020) The minimum and maximum values were 2 and 10 out of eleven knowledge questions, respectively, with an overall mean and Standard Deviation (SD) of 6.9 and 1.65, respectively.

The perceived risk and impact perceptions score was constructed by aggregating the

10 dichotomous variables presented in Table III.3 above. The minimum and maximum values reported were 1 and 7, respectively, with an overall mean and SD of 2.43 and 1.35. Higher values indicate good knowledge/impact perceptions and lower values indicate otherwise. Figure III.1 portrays profound linear increase in impact perception scores with increase in knowledge scores. This finding is consistent with recent studies on COVID-19 around the world which consistently reported the positive relationship between knowledge and risk perceptions (Sarah et al, 2020; Khosravi, 2020).

**Figure III.1:** The bivariate relationship between knowledge and risk perceptions



In the study of any disease perception, the correct responses (more precisely, favorable responses) are those agreeing with the actual disease risk, and the incorrect responses are those that either overestimated or underestimated risk. Combining the percentages reported in Table 1-3, it appears that the level of public risk perception is worrisome at any standard as most respondents never considered the fast spreading virus as major threat to their own health and survival. Amazingly, the small proportions of correct responses are concerns about their families and fear of restrictions such as travel restrictions, religious gatherings etc. Although the government has already established the pandemic to be an objective threat to public health (i.e. ringing the alarm bell loud and clear), having such large proportion of people with unfavorable concerns about the fast encroaching risk will significantly affect the likelihood of properly implementing the prevention measures at individual/household level. Recent studies conducted around the world (e.g. Khosravi, 2020) reported that considerable risk perceptions (which usually starts with some worry, an affective emotional response to a threat) can predict protective behaviors independent of the risk severity. A large body of research over the last decades have shown that risk perception is a subjective psychological construct that is influenced by cognitive, emotional, social, cultural, and individual variation both between individuals and (2020). Further, the reported association between knowledge and impact perceptions clearly implies that risk communication and continued public education could significantly enhance expression of the actual risk accurately so that the public takes precautionary measures. between different

communities (Sarah et al, Finally, this study is not without limitations. Given the study is telephone-based survey and was predominantly urban biased, we acknowledge that some of the findings should be cautiously interpreted. For instance, we may have overestimated correct risk perception and other proportions on COVID-19 public concerns. This limits the generalizability of the findings for the predominantly non-literate rural population.

## IV. CONCLUSION

This risk and impact perception survey could be the first population level study assessing the risk and impact perceptions of COVID-19 in Ethiopia. It was designed as a snapshot survey to quickly capture how the public perceives the risks and possible impacts of the emerging pandemic. Studies of this type are indispensable to learn how different risks are ranked by the individuals and how impacts are perceived that could adversely affect the current efforts of fighting against the pandemic. The findings indicate that two thirds of the study participants did not perceive the fast expanding pandemic as a major risk. There is also a significant rural-urban difference in the way people perceive possible impacts. Those residing in urban areas are more concerned about most of the impact indicators such as travel restriction, shortages in food supply, unemployment/ loss of income, getting sick and even death. Given the very low level of risk and impact perceptions of the pandemic at this very critical period, it is important to improve

the risk communication strategies at all levels that leads to realistic perceptions of risk. Engaging social influencers such as religious leaders on prompting reflections, stories and images of local people who have experienced COVID-19 and have recently recovered. Media reporting should be contextualized and should always consider experiential, social, and cultural factors that drive COVID-19 risk/ impact perceptions in our society.

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## *ACKNOWLEDGMENT*

This insight paper is developed by team of researchers of Frontieri Consult as part of the output of ‘Preliminary assessment of COVID-19 pandemic in Ethiopia’ project. The authors would like to thank survey team of Frontieri Mr. Alene Matsentu, Mr. Bemnet Woldu, Mr. Amcha Ademe, and Mr. Daniel Aklilu for managing and coordinating the telephone survey. We also would like to extend our sincere thanks to team of telephone interviewers of this study as well for Mr. Temesgen Zelalem for formatting the insight paper. Any error remains the authors’.



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