

Impacts of Religious and Conspiracy Beliefs on Disease Prevention: The Case of COVID-19 in Ethiopia

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Abstract

Background: Ethiopia reported its first case of COVID-19 in early March 2020. Conspiracies and religious beliefs about the origin of COVID-19 have been prevalent and reportedly posed challenges to containing the spread of the disease worldwide. This study aimed to assess the impacts of religious and conspiracy beliefs on disease (COVID-19) prevention activities in Addis Ababa, Ethiopia.

Methods: A descriptive epidemiological and ethnographic design was used to achieve the research objective. A scheduled questionnaire was used to collect the required data. Google Forms and MAXQDA software were used to analyze the collected data.

Results: A total of 1118 adult respondents and three key informants (ethnographers) were interviewed to investigate the impacts of religious thoughts and conspiracy beliefs on COVID-19 prevention activities in Addis Ababa, Ethiopia. The data analysis revealed that 28% (n=313) of the respondents believed that the disease was of divine origin to punish the sinners, while 24.9% (n=278) believed that the virus was fabricated in the laboratory by Western countries to attack the poor living in developing countries including those in Ethiopia. Thus, a significant proportion of respondents from the “divine origin” group did not believe that the spread of COVID-19 could be stopped by preventive measures because the disease was a curse. Respondents in the “laboratory origin” group also thought that preventive measures were ridiculous since the virus is deliberately produced in Western laboratories to stop population growth in developing countries. Both groups exhibited a comparatively higher proportion of Orthodox Church followers when compared to adherents of other religions. On the other hand, the ethnographers reported to the researcher that many Addis Ababa residents rejected hand washing, the use of disinfectants, and the preventive counseling they offered free of charge, citing false religious and conspiratorial beliefs.

Conclusions: This study identified wrong religious thoughts and conspiracy beliefs as real challenges to COVID-19 prevention in Ethiopia. Wrong conspiracy and religious beliefs about the origin of COVID-19 prevented people from adhering to prevention measures recommended by health experts and authorities in Ethiopia. Surely, the disease is now under control worldwide, with no exception in Ethiopia. Nevertheless, health authorities and policymakers need to learn lessons from the COVID-19 outbreak regarding the deleterious effects of religious and conspiracy beliefs in disease prevention.

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Abbreviations: MAXQDA: Max Qualitative Data Analysis; COVID-19: CoronaVirus Disease of 2019

Background

One of the most critical challenges in combating the COVID-19 pandemic was ensuring adherence to disease prevention measures advocated by health professionals and authorities [1]. However, the widespread proliferation of conspiracy beliefs surrounding the origin of the coronavirus has emerged as a significant obstacle in containing the spread of the disease [2]. Conspiracy beliefs entail explanations of significant events involving secretive plots by influential and deceitful groups, and they can vary greatly in their subject matter [3]. These beliefs encompass both political and health-related conspiracies. Studies have indicated that people's resistance to COVID-19-related restrictions serves as a driving force behind the widespread acceptance of pandemic-related conspiracy theories worldwide [2,3]. Misguided conspiracy and religious beliefs have primarily revolved around theories concerning the origin of the coronavirus. Some conspiracy theorists propagated the idea that the virus was intentionally created in Western laboratories to undermine other nations both economically and politically [4]. They accused Western countries of selfishness, domination, and an insatiable quest for global power and control. Alternatively, some claimed that the virus was purposely engineered to curtail population growth in developing countries, thus reducing immigration to developed Western nations [5]. Conspiracy theories have also exhibited connections with religious perspectives. Religious individuals' intolerance towards the pandemic-related restrictions has been a primary reason for non-compliance with preventive measures [6]. The prohibitions on gatherings and close contact within a two-meter radius were frequently cited as the main reasons for non-compliance among religious adherents [7]. The perception of the disease as a divine punishment among religious individuals further complicated compliance with preventive measures from a religious standpoint [8]. Consequently, the religious aspect posed more significant challenges than COVID-19 conspiracy theories in implementing disease prevention policies, particularly as restrictions hindered attendance at religious gatherings [9].

Religious fundamentalism played a crucial role in linking COVID-19 conspiracy beliefs with religious attitudes [7,8]. Many places of worship disregarded epidemiological recommendations, with congregants believing that they were immune to the virus within the confines of the church [10]. In certain cases, law enforcement had to intervene when worshippers defied epidemiological restrictions and flocked to their places of worship [11]. Such religious attitudes were primarily associated with a specific form of religiosity known as religious fundamentalism, characterized by an unwavering conviction that the rules of one's own religion

are absolute and should take precedence in the hierarchy of values [12]. The popularity of conspiracy theories dates back to the seventeenth and eighteenth centuries, although the term "conspiracy theory" likely originated in the early twentieth century [13]. In the current era of social media, fake news, and misinformation, conspiracy theories continue to be a subject of considerable research interest [8]. Conspiracy ideas tend to gain prominence during times of social crisis and impending loss of control and are frequently intertwined with erroneous religious beliefs, as witnessed during the COVID-19 pandemic [1]. Major crises throughout history, such as economic recessions, revolutions, natural disasters, terrorist attacks, wars, and pandemics, have consistently given rise to conspiracy theories [14,15]. For example, the COVID-19 pandemic spawned numerous conspiracy theories and religious delusions that questioned the virus's origin and purpose, including suggestions of it being man-made, a divine curse, or a tool for political gain [15]. These conspiracy beliefs have presented significant challenges to global prevention efforts [9].

The COVID-19 pandemic first emerged in China and became a global catastrophe that spread across the globe. The outbreak, first seen in Africa in Algeria, quickly spread to almost the entire continent including Ethiopia. Ethiopia also reported the first case in early March 2020. The objective of the present study was to assess the impact of religious and conspiracy beliefs on COVID-19 prevention efforts in Addis Ababa, Ethiopia. The results of this study can be viewed by policymakers and public health officials around the world as a lesson to be better prepared for a possible future outbreak.

Methods

Research design

Descriptive epidemiological and ethnographic approaches were used to assess the impact of religious and conspiracy-based beliefs on disease prevention (the case of COVID-19) among residents in Addis Ababa, Ethiopia.

Sample and setting

In addition to the randomly selected respondents (Addis Ababa residents) who participated in the study, the researcher adopted the technique of purposive sampling to select three key informants (ethnographers) who can provide meaningful information for data analysis. The sample size of respondents was determined using a formula for calculating sample size for categorical data. The study was conducted in Addis Ababa, the capital of Ethiopia. The city is a diplomatic hub with numerous embassies and international organizations. The total population of the city is estimated at 5.5 million.

Inclusion criteria

Addis Ababa residents who could be reached in a quiet environment to avoid environmental distractions and who

speak Amharic were included in the study.

Data collection method

Using the Google Forms software application, a questionnaire was produced electronically and used to collect the necessary data on the mobile phones on which the software was installed. The questionnaire consisted of demographic information and basic disease awareness and behavioural changes, measuring closed-ended typed questions. After answering the demographic questions, the study participants were asked about their thoughts on the origin of the virus. Respondents were presented with a multiple-choice question consisting of four possible answers to choose from as a source of the virus, such as divine (curse), laboratory, animal, and other sources. This question was pre-empted to investigate whether false religious perceptions and conspiracy beliefs exist and are entertained among the study participants. Of note, assertions of the respondents that the virus originated from God (curse) and laboratories were interpreted in this study as indicators of wrong religious or conspiracy beliefs. The study participants then asked whether the preventive measures advocated by health experts and affiliated organizations are useful in limiting the spread of the disease. This question was also a multiple-choice question with yes or no answers to choose from and was used to determine the impact of erroneous religious beliefs and conspiracy beliefs on COVID-19 prevention initiatives in Ethiopia. The question that followed was open-ended but guided. In this question, they were asked to explain why they thought the measures were not helpful.

Furthermore, ethnographers were also asked to report whether they learned anything about people's perceptions of the origin of the virus and methods of disease prevention during their volunteer work in the city. Accordingly, they were asked to rate what they experienced, i.e., how many in ten people refused to take voluntary health services because of false religious beliefs and conspiracies. The services offered by the ethnographers included hand washing with soap, hand sanitizing with disinfectants, advice on the use of face masks, and social distancing. The ethnographer provided these services free of charge on various main roads in Addis Ababa.

Data analysis

The MAXQDA program was used to tag or index, categorize, code, and organize the data obtained from the scheduled interview. Google Forms software was used to quantitatively analyze the organized data. The data obtained by the ethnographers were triangulated with the data from the interview in order to obtain conclusive evidence.

Results

A total of 1118 respondents (56.7% and 43.3% were

men and women, respectively) and three key informants (ethnographers) were interviewed to assess the effects of religious and conspiracy beliefs on COVID-19 prevention activities in Addis Ababa, Ethiopia. Orthodox followers made up the largest proportion at 64.8% (n=725), followed by Muslims and Protestants at 17.2% (n=193) and 15.7% (n=176), respectively.

Findings Related to the Origin of Coronavirus

A significant proportion of respondents were well-informed about COVID-19. However, 28% (n=313) of the respondents believed that the disease was of divine origin to punish the sinners, while 24.9% (n=278) believed that the virus was fabricated in the laboratory by Western countries to attack the poor in developing countries including those in Ethiopia. In other words, 52.9% of the study participants misperceived the origin of the disease, which led them not to take the disease prevention approaches seriously. 37.2% of respondents believed the statements of health professionals and authorities about the origin of the virus, i.e., animals as the original source of coronavirus (Table 1). While 8.3% did not know the origin of the virus at all. The remaining 1.6% mentioned soil, oceans, and plants as sources of the virus.

Findings on the Impact of False Religious and Conspiracy Beliefs on COVID-19 Prevention

Thus, respondents who believed in the divine origin of the virus did not accept that the spread of COVID-19 could be stopped by preventive measures because the disease was a curse.

Summary of beliefs from respondents who believe that the divine is the source of the virus.

Covid-19 is a curse on our sins. All we have to do is wait for God Himself to stop it and end the curse. We should pray to him not to delay his punishment for too long. The disease is stopped when God has finished his punishment. Until then, we just wait; it doesn't help whether or not we adhere to human-recommended safety measures. If we are lucky, we will survive; we do not want to expose ourselves to the unimportant pressure of limiting our lifestyle, particularly to be told not to go church is unacceptable. We must pray together to curb the curse. Some did not comply with the

Table 1: Respondents' beliefs about the origin of coronavirus.

Origin of Coronavirus	The proportion of respondents by percent
Animals	37.2
Divine	28
Western laboratories	24.9
Respondents with no idea about the source of the virus	8.3
Other sources (soil, ocean, and plants)	1.6

recommendation to stay home to contain Covid-19 because they believed they could not be infected in churches. Some said that religion was above everything and claimed that they did not mind losing their lives for this cause.

Respondents who believed the COVID-19 virus originated in Western laboratories also thought preventive measures were ridiculous because the virus is intentionally produced in Western laboratories to stop population growth in developing countries.

Summary of perceptions from respondents who believe the Western laboratory is the source of the virus.

The Westerners make the virus themselves to attack us. Now they're telling us what to do to protect ourselves from the disease. It doesn't make sense. Who can believe them? If you do it, it's up to you. But we're not stupid. We don't follow their safety recommendations.

Again, it can be said that 52.9% of the study participants did not adhere to the prevention protocols recommended by health experts and authorities. Therefore, it is logical to assume that these false religious and conspiracy beliefs could negatively impact the COVID-19 prevention efforts initiated to curb the spread of the disease in Addis Ababa, Ethiopia.

Findings in Relation to Religions

Orthodox believers made up the largest proportion in both groups, 81.1% (n=254) in the divine thought group and 65.8% (n=183) in the laboratory thought group, while, protestant Christianity followers constituted the lowest proportion in both scenarios. Muslims and protestant Christianity followers constituted 13.7% (n=43) and 5.1% (n=16) of the respondents in the divine origin thought group. Whereas, 29.1% (n=81) and 5% (n=14) of the respondents in the laboratory origin thought the group were Muslims and protestant Christianity followers, respectively. In other words, proportionally more orthodox Christianity followers were found to believe in wrong religious thoughts and conspiracy beliefs, while the protestant Christianity followers remained proportionally less biased by wrong religious thoughts and conspiracy theories.

Findings Pertaining to Ethnographers' Reports

The ethnographers reported to the researcher that many Addis Ababa residents refused hand washing, the use of disinfectants, and the preventive advice they offered for free (e.g., advice to wear a face mask and keep their distance), citing false religious and conspiratorial beliefs. According to the ethnographers, an average of 4 in 10 and 3.5 in 10, respectively, invoked false religious and conspiratorial beliefs to reject their services.

Discussion

Previous research conducted in the United States has

revealed a correlation between Christian nationalism and disregard for epidemiological recommendations [16]. Adherents of liberal parties in the United States were more likely to comply with COVID-19-related restrictions, while followers of right-leaning religious groups exhibited a higher tendency to disregard these restrictions compared to other groups [17]. Religious affiliation was associated with a lower likelihood of home confinement orders and was linked to increased COVID-19 infections and deaths due to attendance at religious services [18].

In extremely rigid and intense forms, religious beliefs share similarities with delusions. An example of a health-related conspiracy belief pertains to COVID-19 and the global pandemic of 2020 [17-19]. COVID-19 conspiracy beliefs vary in nature but may posit, for instance, that mask-wearing serves as a test of compliance or that the pandemic is directly connected to the 2020 U.S. presidential election, aimed at creating chaos and undermining the incumbent president [6, 20]. These conspiracy beliefs also include exaggerations about the virus's lethality, skepticism regarding its origin, or outright denial of its existence [21]. COVID-19 conspiracy beliefs have gained significant traction worldwide, spreading rapidly and amplified through online misinformation [6]. In the United States, a recent survey indicated that one-third of respondents endorsed at least one COVID-19 conspiracy theory [4]. Similarly, in Canada, 25% of participants partially believed the claim that COVID-19 originated from a laboratory, and 20% believed it was intentionally created [11]. In the current study conducted in Addis Ababa, Ethiopia, 28% of survey respondents believed the disease was of divine origin to punish sinners, while 24.9% believed it was fabricated in Western laboratories to target the poor in developing countries, including Ethiopia.

False religious and conspiracy beliefs, similar to vaccine conspiracy beliefs, have negative implications for health behaviors and disease transmission [22]. Numerous studies have demonstrated the perilous consequences of endorsing these beliefs and disregarding COVID-19 prevention measures [11]. Individuals who place trust in conspiracy theories tend to ignore the preventive measures recommended by health experts and authorities [5]. For instance, one study revealed a negative correlation between the acceptance of COVID-19-related conspiracy beliefs and adherence to safety measures mandated by government and public health officials (Author, Year). Similarly, in the present study, participants who harbored false religious and conspiracy beliefs exhibited comparable responses, indicating resistance to health-protective behaviors [23]. Among these participants, the strongest resistance was observed among religious individuals who viewed COVID-19 as a divine curse, believing that they simply had to wait for divine intervention to end the curse [24]. A significant proportion of respondents believed that

adherence to human-recommended safety measures was inconsequential and rejected restrictions, particularly those concerning public places, such as churches [10]. Conversely, respondents who subscribed to the conspiracy theory regarding the virus's origin in Western laboratories deemed adherence to disease prevention measures as ridiculous, as they believed the West held the power to halt the disease's spread [9]. In their view, the only viable option was to wait until Western nations were satisfied with the reduction of the population in developing countries, after which they would decide how to address the disease's spread [14]. Overall, 52.9% of study participants in Addis Ababa did not comply with the prevention protocols recommended by health experts and authorities due to false religious and conspiracy beliefs. Consequently, it is reasonable to assume that these misguided beliefs have a negative impact on COVID-19 prevention efforts in Addis Ababa, Ethiopia.

Perceived powerlessness, lack of control, and feelings of insecurity are identified as primary factors contributing to the widespread adoption of conspiracy theories worldwide [25]. On the other hand, religion, particularly in its fundamental form, offers answers to fundamental existential questions and provides a framework for living that instills a sense of peace and security [26]. Belief in God is associated with perceiving the world as a place where everything is planned and controlled, prompting religious individuals to seek explanations for random or threatening events through the lens of secretive forces [27]. In fact, belief in conspiracy theories has a positive correlation with religiosity, though this relationship warrants further investigation, particularly in the context of Ethiopia.

Conclusions

COVID-19 killed about 7500 people in Ethiopia, including my beloved middle-aged cousin who was the father of a beautiful two-year-old girl with a mother with no income, and severely affected the lives of several households across the country. However, the level of ignorance and non-adherence to recommended preventive measures were significant, as reported by this author in another published paper. This level of ignorance and nonadherence may be due in part to the errant religious thoughts and conspiracy beliefs identified in the current study. The results of this study indicate that wrongful religious thoughts and conspiracy beliefs are rooted among a significant portion of Addis Ababa residents who participated in the survey. Ironically, although he was a Founder of the Modern Cell Theory of Disease, Virchow criticized the pursuit of pure or dissociated science without taking into account important societal concerns, with the conclusion: "It certainly does not detract from the dignity of science to come down off its pedestal—and from the people science gains new strength." Science and scientific medicine, Virchow said, should not be detached from the socio-political

reality. This problem should therefore be approached in the spirit of the pioneering modern cell theorist. Accordingly, policymakers and health authorities need to handle these challenges cautiously and develop a plan to anticipate similar challenges to potential future disease outbreaks. In this case, the role of media should also be seen attentively. In addition, the Ethiopian government should strive to create rational citizens through a strong education system, media campaigns, and community awareness activities. Of note, the findings of this study, which involved residents of Addis Ababa, can be extrapolated to the entire population of the country and can serve as input for national policymaking. The researcher strongly believes that other countries, including developed nations, can also learn from this experience, as the conspiracy is a global problem. Finally, I would like to dedicate this scientific paper to my beloved cousin Tesfaye Zewdie, who unfortunately passed away from COVID-19 infection.

Declarations

Ethics approval and consent to participate

Based on the ethical principles of the Belmont report, the researcher first sought the necessary grant to conduct the study from the appropriate authorities. Accordingly, ethical approval was obtained from the Addis Ababa Public Health Research and Emergency Management Directorate. Study participants were free from coercion. They were also free to interrupt or terminate the interview and were adequately and accurately informed about the nature of the research project. In general, verbal consent was obtained from each volunteer participant. All necessary safety and preventive measures were taken to reduce the risk of viral infection. The principle of social distancing was strictly followed during the survey. In addition to the data collectors, study participants were also asked to wear a mouthguard during the interview.

Authors' contributions

HGG conceived the research idea, collected the needed data, analyzed the collected data, wrote the first draft of the paper, reviewed and validated the paper, and wrote the final manuscript.

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