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Letter to the Editor

Demystifying the myths about COVID-19 infection and its societal importance

1. Introduction

Myth is commonly considered as a folklore genre consisting of narratives/stories that play a fundamental role in human beings’ everyday lives. These are often endorsed by leaders/rulers/religious preachers and explain to a great extent the functioning of a society and shape the beliefs of people. There is a potential role of cultural and religious beliefs/traditions/customs/rituals, which add a flavor to the public’s mindset in a particular region/country and influence the propagation or acceptance of a myth (Morales, 2013). Myths related to various infections have been prevalent from time to time, and it takes a long battle to demystify the existing myths by providing a realistic evidence-based approach. In recent times, some of the common infections, which have been associated with myths, include Leprosy, Tuberculosis, and Flu (CDC, 2018; Haldimand-Norfolk Health and Social Sciences, 2018; World Health Organisation, 2019). In recent times, the World is facing COVID-19 infection, which has created havoc in the entire World and has affected all aspects of human lives. With the exponential rise in the number of confirmed cases and deaths per day across the World, the health care system has been affected the most. With no potential medication or vaccine developed (to date) against the virus, it is expected that the morbidity and mortality associated with COVID-19 infection is going to increase in the near future.

Despite creating awareness and providing adequate information to the general public through telecommunication (radio, television advertisements, public health messages by prominent celebrities and national leaders) and distributing pamphlets/signboards at public places about infection control measures and mode of spread of the infection, still, there are a large number of myths associated with the spread and cure/treatment of COVID-19 infection in the society. These myths are traveling from one person to the other, through social media platforms. These myths can be very dangerous, as these can lead to over-complacency and lead to a reduction in actually needed practices, or following some of these myths can lead to other health hazards. In this regard, the various health authorities (World Health Organization (WHO), Centre for Disease Control and Prevention (CDC), Ministry of Health and Family Welfare, India etc.) have listed some of the prevailing myths to increase awareness about the infection and have provided factual information about COVID-19 in their websites (Boston, 2020; CDC, 2020; Ministry of Health and Family Welfare, 2020; Myth busters n.d., 2020). Additionally, some of the claims made by other ‘pathies’ in terms of improvement or boosting of immunity against COVID-19 infection, are being challenged (Boston, 2020; Ministry of AYUSH, 2020). All these had led to further confusion in the mind of the common man.

While the healthcare systems are unable to find a solution/cure to the COVID-19 infection, various facts have emerged, which have low validity and are gradually turning into potential myths related to COVID-19 (Boston, 2020; Carbone et al., 2020; Myth busters n.d., 2020). We need to understand that, when we consider something as useful or efficacious in managing or preventing a health condition, the intervention, should undergo a well-designed, adequately powered double-blind randomized controlled trial (DB-RCT). Further, as per the levels of evidence even a cohort or case-control study or any degree of evidence based on case series/case reports or expert opinions can be considered to be a trial to render an intervention to be propagated as justifiable or for the need to be tested (Burns et al., 2011; “CEBM: The Centre for Evidence Based Medicine,” 2020; Sackett, 1989). Till the time any intervention has been unequivocally proved to be efficacious by any of the above-mentioned types of studies, the same should not be claimed as efficacious. In this background, if we look at the various claims made for improving the immunity and resultant prevention of COVID-19, many of these have not been subjected to the rigorous evaluation. Hence, all such claims can be questioned. However, if these are propagated as efficacious or useful, these will also boarder on to be labeled as myths.

Currently, prevailing myths related to COVID-19 infection can be categorized into those related to the spread of infection, source of spread of infection, preventive measures, and cure. Some of the commonly prevalent myths related to COVID-19 infection are listed in Table 1.

The myths listed in the table have been discussed so as to disseminate knowledge and information with regard to COVID-19 (Tandon, 2020) as these are being circulated on various social media platforms and can be regarded as a potential source of anxiety related to COVID-19. Those myths related to spreading/transmission of COVID-19 have been bothering the public to think twice before using newspapers/vegetables etc. and many are avoiding non-vegetarian foods with the fear of being infected. Further, many have hoarded or stockpiled antibiotics, essential oils, Vitamin C tablets, masks, sanitizers, etc. to protect themselves from running out of stock of these commodities. These myths can also lead to a false sense of security of being immune to the infection and resultant exposure to high-risk situations.

Harboring such myths can be detrimental to society as all these create a hue and cry and chaos among the people. People need to understand that spreading such information can be punishable. In this regard, the Cyber Police/Cyber cell has been active (“WhatsApp Admin Warned For Fake Coronavirus Post, 2020) and have traced all those persons circulating wrong messages and tried to demystify many myths through telecommunication awareness programs (DelhiMarch 20., I.G.N., March 20, 2020). There have been instances of persons being heavily fined or being arrested when found to be spreading false claims of treating/curing COVID-19 (Bhandari, 2020a).

If we compare the myths related to COVID-19 with myths related to leprosy, tuberculosis and Flu, there are some commonalities about the major themes of myths, i.e., the myths mainly prevail around the causation, disease transmission, and cure. However, the COVID-19 infection has emerged very recently and affected almost all the countries
### Table 1: Myths related to COVID-19 infection (Compiled from various sources: WHO website, newspaper articles).

| No. | Myth                                                                 | Truth/Reality evidence                                                                 |
|-----|----------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| 1   | Eating garlic, turmeric, and lemon as home remedies for flu and cold  | No evidence that garlic or lemon (or vitamin C rich foods) can protect someone from getting COVID-19 infection. |
| 2   | Drinking warm water and getting enough sunlight to soothe a sore throat | Taking a hot bath with extremely hot water can be harmful, as it can cause burns to the body. |
| 3   | Spraying alcohol or chlorine all over your body will not kill viruses  | No evidence for the protective effect of alcohol inhalation against COVID-19 infection. |
| 4   | Sniffing/inhaling alcohol can protect from getting COVID-19          | No evidence to suggest that alcohol inhalation against COVID-19 infection.             |
| 5   | Wearing a mask or N95 mask can prevent getting COVID-19              | Only infection control measures and adequate hand hygiene can prevent the infection.   |
| 6   | Drinking alcohol can cure COVID-19                                   | Heat kills the virus. Only infection control measures and adequate hand hygiene can prevent the infection. |
| 7   | Drinking alcohol can cure COVID-19                                   | Drinking alcohol can cure COVID-19. Heat kills the virus. Only infection control measures and adequate hand hygiene can prevent the infection. |
| 8   | Vaccines against pneumonia can protect you against the COVID-19 virus | Only vaccines against COVID-19 can protect you against the COVID-19 virus. |
| 9   | Using cow dung or cow’s urine can cure the COVID-19 virus           | No evidence regarding this. Vaccines against COVID-19 virus only.                      |
| 10  | Spraying alcohol or chlorine all over your body will not kill viruses| No evidence for the protective effect of alcohol inhalation against COVID-19 infection. |
The public should be empathetic towards the patients with COVID-19 or people suspected of having COVID-19 and No need to worry. People can safely consume all types of Serial no Myths Assumptions based on the myth Truth/reality evidence Remarks/message needs to be delivered to public

3 New vegetarian food should be adopted (e.g. rice and vegetables) Most consumers had spread the COVID-19, as it was perceived by being properly cooked and vegetables are considered healthier No evidence to suggest that COVID-19 can be transmitted by food No need to worry. People can safely consume all types of food

4 Donating blood can be transmitted by blood donation No evidence that COVID-19 can be transmitted by blood donation Any healthy person can donate blood without worry as the risk of getting infected is minimal and negligible No need to panic and avoid buying newspapers/milk products/vegetables. Practice hand hygiene measures to prevent getting infected

5 COVID-19 period should not be a barrier to blood donation. Any healthy person can donate blood No evidence to suggest that COVID-19 can be transmitted by blood donation Any healthy person can donate blood without worry as the risk of getting infected is minimal and negligible No need to panic and avoid buying newspapers/milk products/vegetables. Practice hand hygiene measures to prevent getting infected

6 Ordering or buying products shipped from overseas will make a person sick No evidence of developing COVID-19 cases due to imported products Following the hand hygiene measures, while touching the milk packets, may be sufficient to avoid the development of Fomite transmission. As per the WHO, the likelihood of becoming infected with COVID-19 from a commercial package is low since it has likely traveled over several days and been exposed to different temperatures and conditions during transportation. After opening, wash your hands. Practice hand hygiene measures to prevent from getting infected

7 Newspapers, milk packets, and vegetables can transmit the infection. No evidence of newspapers being potential carriers of COVID-19 and any evidence that COVID-19 can be transmitted by food. The risk of getting infected is minimal and negligible. No need to panic and avoid buying newspapers/milk products/vegetables. Practice hand hygiene measures to prevent from getting infected

8 COVID-19 infection can be transmitted through contaminated things. Practicing adequate hand hygiene and infection control measures can help in reducing the risk of getting infected. No evidence of COVID-19 transmission through contaminated things. Practicing adequate hand hygiene and infection control measures can help in reducing the risk of getting infected. The potential risk of getting infected from overseas products is minimal and negligible. No need to panic and avoid buying newspapers/milk products/vegetables. Practice hand hygiene measures to prevent from getting infected

9 Virus remains on newspapers and milk packets for a long time. No evidence that COVID-19 can be transmitted through contaminated things. Practicing adequate hand hygiene and infection control measures can help in reducing the risk of getting infected. No need to panic and avoid buying newspapers/milk products/vegetables. Practice hand hygiene measures to prevent from getting infected

10 Pregnant females are a potential source of COVID-19 infection. The risk of getting infected is minimal and negligible. No need to panic and avoid buying newspapers/milk products/vegetables. Practice hand hygiene measures to prevent from getting infected

11 COVID-19 infection can be transmitted from the mother to the child during the process of birth. The risk of getting infected is minimal and negligible. No need to panic and avoid buying newspapers/milk products/vegetables. Practice hand hygiene measures to prevent from getting infected

12 Respiratory symptoms are mandatory to present to spread the virus. No evidence to suggest that COVID-19 can be transmitted by coughing or sneezing. No need to panic and avoid buying newspapers/milk products/vegetables. Practice hand hygiene measures to prevent from getting infected

13 Someone without symptoms cannot spread the virus. No evidence to suggest that COVID-19 can be transmitted by asymptomatic carriers. No need to panic and avoid buying newspapers/milk products/vegetables. Practice hand hygiene measures to prevent from getting infected

Table 1 (continued)
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| Serial no | Myths | Assumptions based on the myth | Truth/reality evidence | Remarks/message needs to be delivered to public |
|-----------|-------|------------------------------|-----------------------|-----------------------------------------------|
| 14 | About 90% of the patients with confirmed COVID-19 are asymptomatic | The COVID-19 infection gradually spread across the world since its outbreak in China to almost all countries. | The public should be made aware that those recovered from COVID-19 are susceptible to re-infection. | A steady patient with no contact history does not pose any risk of infection, however, sexual intercourse with unknown people should be avoided. Their COVID-19 status cannot be confirmed in the semen fluid of infected persons. |
| 15 | The COVID-19 infection are asymptomatic and hence are potential carriers of virus. | The public should be made aware that those recovered from COVID-19 are susceptible to re-infection. | A steady patient with no contact history does not pose any risk of infection, however, sexual intercourse with unknown people should be avoided. Their COVID-19 status cannot be confirmed in the semen fluid of infected persons. |
| 16 | The COVID-19 infection can spread the infection. | The public should be made aware that those recovered from COVID-19 are susceptible to re-infection. | A steady patient with no contact history does not pose any risk of infection, however, sexual intercourse with unknown people should be avoided. Their COVID-19 status cannot be confirmed in the semen fluid of infected persons. |
| 17 | The COVID-19 infection can spread the infection. | The public should be made aware that those recovered from COVID-19 are susceptible to re-infection. | A steady patient with no contact history does not pose any risk of infection, however, sexual intercourse with unknown people should be avoided. Their COVID-19 status cannot be confirmed in the semen fluid of infected persons. |
| 18 | The public should be made aware that those recovered from COVID-19 are susceptible to re-infection. | The public should be made aware that those recovered from COVID-19 are susceptible to re-infection. | A steady patient with no contact history does not pose any risk of infection, however, sexual intercourse with unknown people should be avoided. Their COVID-19 status cannot be confirmed in the semen fluid of infected persons. |
| 19 | The public should be made aware that those recovered from COVID-19 are susceptible to re-infection. | The public should be made aware that those recovered from COVID-19 are susceptible to re-infection. | A steady patient with no contact history does not pose any risk of infection, however, sexual intercourse with unknown people should be avoided. Their COVID-19 status cannot be confirmed in the semen fluid of infected persons. |

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Table 1 (continued)

| Serial no | Myths | Assumptions based on the myth | Truth/reality evidence | Remarks/message needs to be delivered to public |
|-----------|-------|------------------------------|------------------------|-----------------------------------------------|
| 4.        | Those immunized with BCG are more likely not to get COVID-19 infection. | BCG vaccination prevents severe forms of Tuberculosis. | There is no evidence regarding any efficacy of BCG in COVID-19, people should refrain from believing the BCG vaccine is protective against COVID-19. It can lead to a false sense of security and hence should not be believed unless proved. | The public needs to keep patience and to wait until any news about the vaccine is published by trustworthy websites/news or declared by the WHO. Refrain from believing on any random news about the vaccine being discovered. |
| 5.        | No vaccine can be developed against COVID-19 during the pandemic. | No vaccine can be developed against all infections. | Researchers are actively engaged in developing a vaccine against COVID-19. However, clinical trials on a vaccine for COVID-19 may take a long time (months) to reach definite results. | Further, they should say that these strategies are not a substitute for the proven hand hygiene measures, use of masks, and maintaining physical distancing. More awareness activities and messages should be delivered through all possible means (Telecommunication/advertisements /distributing pamphlets/ holding public webinars etc.) to counter the emerging myths. Additionally, strict legal action needs to be taken against people spreading fake news/making false claims during the pandemic. More and more stringent action and punishments must be declared by the Judiciary system to control the spread of |

of the World in a short span of time. Accordingly, the myths related to its spread, transmission are much more. This is complicated because there is social media’s availability to almost everyone in the World. Hence, these myths spread very fast and extensively across the globe. Further, lack of any potential medicine/cure/vaccine has also led to the emergence of multiple claims about the various aspects of COVID-19 infection.

Some of the facts that are not yet clear, but there is some evidence to support the same. Accordingly, these facts cannot be labeled as myths. Emerging evidence suggests that there could be the faeco-oral transmission of COVID-19 infection or SARS-nCoV-2. Recent studies indicate that prolonged viral shedding in feces is seen in symptomatic patients with COVID-19 as well as in those recovered from COVID-19 (more so in children) (Wu et al., 2020; Xu et al., 2020; Yeo et al., 2020). Therefore, as the research evidence is growing at a faster rate about different aspects of COVID-19, we need to be aware of the potential facts about the illness and not to believe in any facts which have no authentic evidence or not claimed by any International Health body (like WHO).

2. Interaction between myths related to COVID-19 and public stigma

The very nature of the myth is that it gets publicized widely in a very short time, and people tend to follow a myth without questioning its authenticity or evidence for/against a myth. Moreover, during a pandemic, crowd psychology plays a major driving force in believing and practicing a ritual/procedure to find a solution. Certain acts/beliefs can enhance public stigma related to COVID-19. Both myths and public stigma get combined, shaping society’s behavior toward disease and those infected by the same. Many myths related to the spread of infection are compounded with the stigma associated with patients recovered from COVID-19 infection and the health care workers (HCWs), working in COVID-19 wards/hospitals. These are leading to a social boycott of people such as debarring HCWs to stay in the same housing society (Bhandari, 2020b; COVID-19: Doctors, beaten and harassed plan, 2020), asking them to stay away from the public, avoiding interaction with the persons recovered from COVID-19 infection or those suspected of having COVID-19 infection, etc.

Therefore, a proper and planned awareness program taking into account all the stakeholders is the need of the hour, which can help change society’s outlook from following the unhealthy/un-acceptable norms/myths to acceptable/healthy evidence-based norms.

The Government and the media have a significant role in dealing with the prevailing and emerging myths related to COVID-19 infection. One of the main responsibilities of the Government and the health care authorities is to deal with the widely prevalent and rapidly spreading new misconceptions/myths related to COVID-19. If these are not curtailed, then these can be very detrimental. Leaders/health officials should look at the evidence before endorsing anything related to spreading, prevention and treatment of COVID-19 infection, and leaders/health officials should look at the evidence, rather than blindly supporting the same. Additionally, if something is found to be of use, for example, some of the things, which are claimed to improve the immunity, and then the leaders/health officials should clearly state that the evidence of generic nature, rather than specific for COVID-19 and the strategy has not been evaluated specifically for COVID-19.

Further, they should say that these strategies are not a substitute for the proven hand hygiene measures, use of masks, and maintaining physical distancing. More awareness activities and messages should be delivered through all possible means (Telecommunication/advertisements /distributing pamphlets/ holding public webinars etc.) to counter the emerging myths. Additionally, strict legal action needs to be taken against people spreading fake news/making false claims during the pandemic. More and more stringent action and punishments must be declared by the Judiciary system to control the spread of
myths/fake claims. The mainstream media should also be very cautious in presenting the different information about the COVID-19 infection. Media, in its enthusiasm, should not try to discuss the studies evaluating the scientific evidence for various issues related to COVID-19 infection, until and unless these have some public message and have been proved unequivocally.

The public should be made aware that they should always follow authentic websites such as WHO website, CDC website or Ministry of Health and Family Welfare website of India (mohfw.in) to gain knowledge and stay updated regarding COVID-19. The public should be made aware of questioning the authenticity or level of evidence of a publicized treatment or strategy being circulated or advocated by any person or group of persons before believing any fact blindly. Further, awareness should be raised to follow the evidence-based preventive measures such as hand hygiene, social distancing, and infection control measures to safeguard against getting infected.

3. Conclusions

Myths have been widely prevalent about various diseases since time immemorial. Myths have a cultural influence and can have a varying degree of impact over the society. Many myths have been related to other infections (Leprosy, Tuberculosis, Flu/Influenza), but with time and evidence-based approaches, these have proved to be wrong. The current COVID-19 pandemic and its uncertainty had given rise to various myths. Some of these myths are leading to widespread stigma in society. Additionally, these myths have the potential of making people over-complacent and resultantly more at risk of developing the infection.

All these myths are having a widespread impact on public viewpoint and disease transmission. Therefore, possible and prompt steps should be taken by appropriate authorities to demystify the myths in due time. Considering the current status of COVID-19 infection to be so dynamic, people should evaluate things properly, before considering them to be useful.

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