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Why has COVID-19 not hit the countries like Nepal yet?

Krishna P. Pathak

Tara Gaire

Mu-Hsing Ho

University of Wollongong, mhh838@uowmail.edu.au

H.C. Chang

University of Wollongong, hchang@uow.edu.au

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Publication Details Citation

Pathak, K. P., Gaire, T., Ho, M., & Chang, H. (2020). Why has COVID-19 not hit the countries like Nepal yet?. Faculty of Science, Medicine and Health - Papers: Part B. Retrieved from <https://ro.uow.edu.au/smhpapers1/1658>

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Why has COVID-19 not hit the countries like Nepal yet?

Abstract

Noble CORONA Virus (COVID-19) is an infectious disease similar form of pneumonia/ SARS-CoV-2- impacting globally. The fear of coronavirus looks pandemic, but its severity is uncertain. Nepal was one of the first nine countries outside of China to report a COVID-19 case. Also, its unpredictability of mode or range of surface, the lifespan of the virus, objects of transmission (a distance of air/air currents, living duration in air, humidity, duration on objects, surface). The first case was found in Wuhan in December 2019 in China. The purpose is to summarize the current information about COVID-19 and to explore in terms of why Nepal is not hitting severely, while other countries are on death toll? We summarized the published articles form the web sources and news, Academic Journals, Ministry of health and population Nepal, WHO/CDC update reports/guidelines, Google search engine. Thematic analysis is made to explore the situation. Although, Nepal has a lack of health services, testing kits, advance lab and protecting equipment (PPE), why COVID-19 does not hit Nepal than China, Europe and North America, it still tremendous uncertainty. Is lockdown, isolation, social distance and quarantine the best ways of prevention? The hypothesis is floating globally – do BCG vaccinated countries are safer than non-user OR due to not having enough kits to screen populations at risk for the virus – while lack of testing a big cause for missing case OR Nepalese have better immune systems? It has attracted global attention. We believe that the COVID-19 is still evolving and it is too early to predict of an outbreak in Nepal. The government needs to increase funding for local health departments, begin planning for future epidemics and be prepared to bolster the economy by supporting consumer spending the midst of a serious outbreak. COVID-19 is a serious health challenge for Nepal, but so far the number of death has been lower than was foretell. It is, therefore essential to carry out more scientific evidence to explore results. Nepalese health services need to maintain up than today and follow lockdown, isolation, social distance and an advance screening test kit through the country.

Keywords

nepal, like, countries, hit, not, yet?, covid-19, why, has

Publication Details

Pathak, K. P., Gaire, T., Ho, M. & Chang, H. C. (2020). Why has COVID-19 not hit the countries like Nepal yet?. *Reviews on Environmental Health*, online first 1-7.

Review

Krishna Prasad Pathak, Tara Gaire, Mu-Hsing Ho and Hui chen (Rita) Chang*

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<https://doi.org/10.1515/reveh-2020-0085>

Received June 30, 2020; accepted July 27, 2020; published online August 31, 2020

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Keywords: COVID-19; lockdown; Nepal; pandemic; South Asian.

Introduction

COVID-19 is an infectious disease, similar to pneumonia. It is a rapidly, evolving situation that is emerging globally [1]. On 11th February, 2020, WHO renamed the disease as coronavirus disease 2019 (COVID-19). The virus has spread worldwide, turning into, a global pandemic, but its severity is uncertain. WHO announced the first case of COVID-19 on 13th December, 2019, in Wuhan city, Hubei province of China. At the time of detection of the disease, its etiology was unknown. The outbreak was as a public health emergency by the WHO for every nation [1]. The outbreak of COVID-19 occurred in January 2020, and by 1st February 2020 there were 12,307 new cases and 259 deaths reported worldwide, including in countries like as of Nepal and other Asian countries [2]. By 25th January, 2020, the epidemic had a doubling time of 6 days [2]. The first infection (13th January, 2020) in Nepal was suspected to be caught by a 32 years' old male who returned from China, Wuhan city on 5th January, 2020. He was among one of the nine infected people during the early days of the spread in Nepal. Since then, the government of Nepal started to screen individuals who came from abroad, especially from Wuhan China [3]. Nepal was one of the first nine countries beside of China to report a COVID-19 case.

Historically, key features of an influenza pandemics in the past hundred years is considered as frequently of the pandemic and frightening sequences at different time

*Corresponding author: **Hui chen (Rita) Chang**, Faculty of Science, Medicine and Health, University of Wollongong, Wollongong, NSW, Australia; and Illawarra Health and Medical Research Institute (IHMRI), Wollongong, NSW 2522, Australia, E-mail: hchang@uow.edu.au
Krishna Prasad Pathak, Faculty of Social Science, Nepal Open University, Lalitpur, Bagmati, Nepal
Tara Gaire, Department Nursing, Tribhuvan University, Kathmandu, Nepal
Mu-Hsing Ho, Faculty of Science, Medicine and Health, University of Wollongong, Wollongong, NSW, Australia

series [4]. The Asian flu H2N2, originating in China (1957–1958) had an approximate death toll of 1–2 million, Hong Kong flu (1968–1970), H3N2, also originated from China and was projected to have caused 50,000 million deaths. The Swine Flu (H1N1) during 2009–2010 spread in Mexico and the death toll reported up to 575,000 deaths [5]. However, Nepal was not affected by Swine Flu. Since 2009–2010, such pandemics have been erupting globally with associated seasonal outbreaks [6]. In 2009, Influenza A H1N1 pandemic: globally infected 700 million–1.4 billion, people and resulted in 150,000–600,000 global deaths; Nepal reported 173 infected and three deaths. In 2003 SARS outbreak: globally infected 8,000, people and led to 770, global deaths, Nepal reported no infection [7].

Comparisons and situation of COVID-19 in South Asian countries

Till February 2020, China was the worst affected country by Covid-19. However, starting March, the disease began to spread rapidly to South Korea and during the second week of March, cases began to increase rapidly in Italy and Spain and other European countries as well. By the third week, the disease had reached the United States [8]. On 11th March, 2020, WHO declared COVID-19 a pandemic [8]. As of 26th June, 2020, there were more than 95,753,789 cases confirmed of COVID-19 in the world with 492,652 deaths and more than 5 million recoveries [9]. Eventually, the disease spread to the, South Asian countries, with India being the most affected in terms of number of COVID-19 confirmed cases and deaths, followed by Pakistan, Bangladesh, Afghanistan, Sri Lanka, and the Maldives.

The first case of COVID-19 in this region was detected on 24th January, 2020, in Nepal in a Nepali student returned from Wuhan, China [10]. The Second South Asian Second country to report COVID-19 was Sri Lanka on 27th January, 2020 (6) and the third country was India on 30th January 2020 [11], both countries imported the first cases case of COVID-19 from China. Similarly, Afghanistan detected the first COVID-19 case on 24th February, 2020 [12] and Pakistan reported its first case on 26th February, 2020 [13]; both countries imported from Iran. Bhutan first confirmed its COVID-19 case on 6th March, 2020, in a U.S. tourist [14]. Maldives and Bangladesh [15] reported their first confirmed first case of COVID-19 on 7th March, 2020, which was imported from Italy. It shows that in the initial phase most of the confirmed cases of COVID-19 were imported from other countries (China, western countries Europe and Arabian) but not by south Asian countries. As of 12th May, 2020, nearly

12,576 COVID-19 death were reported in their territories [12, 13]. Although COVID-19 was confirmed in Nepal, Sri Lanka and India as early as the third week or fourth week of January, but the government activities were not very proactive in dealing with this disease. As the COVID-19 cases started to spread rapidly in European countries in the middle of March, the governments of South Asia countries started to worry as they also had many people returning from these countries. To control the spread of COVID-19, India and Nepal announced lockdown effective from 24th March, 2020 [14] followed by other South Asian and later other countries also imposing a lockdown. Afghanistan, Bangladesh, Pakistan and Maldives implemented partial lockdowns and, Sri Lanka responded with quarantine curfews. Countries have also instituted various levels of restrictions on international travel, some countries have completely sealed off their land borders and grounded most international flights. South Asian countries are not resuming operations for international flight and country land borders. Countries of this regions host nearly 21 per cent of the world's population with a high population density when compared to western countries [16].

India is leading in terms of number of COVID-19 confirmed cases and deaths, followed by Pakistan, Bangladesh, Afghanistan, Sri Lanka and the Maldives. India has reported more than 496,853 infected cases and 15,391 deaths. Likewise, Pakistan reported more than 195,554 cases and 3,962 deaths, Bangladesh reported more than 130,474 cases and 1,661 deaths, Afghanistan reported more than 30,451 cases and 683 deaths, Sri Lanka reported more than 2,010 and 11 deaths, Maldives reported more than 2,277 and eight deaths. Nepal reported more than 11,754 infected cases and 27 deaths. In Nepal, most of the cases are not in a life-threatening situation, at least 2,698 have recovered, but as there are numerous pores between Nepal and Indian border, number of cases is increasing rapidly in Nepal as people are entering from India. Currently, the most positive case is found in test those who are entering from India to Nepal. Table 1 shows a situation of South Asian countries situation and fluctuation is interesting. Table shows that these countries are in the risk zone. Like the effect of throwing a lit match onto a haystack, the effect of COVID-19 is also nonstop [17].

Nepal's prevention approach and response to the pandemic

The ways of transmission of the virus are still a myth. However, human-to-human transmission is the most

Table 1: Situation of COVID-19 in SAARC countries in four months period.

Country	First case registered	4/1/2020		5/1/2020		5/19/2020		6/22/2020	
		Cases	Death	Cases	Death	Cases	Death	Death	Cases
Afghanistan	24th February	166	4	2,171	64	7,655	177	598	29,143
Bangladesh	7th March	51	5	7,667	168	25,121	370	1,502	115,786
Bhutan	5th March	4	0	7	0	21	0	0	68
India	30th January	1,397	35	35,043	1,147	106,750	3,303	13,780	430,708
Maldives	7th March	18	0	468	1	1143	4	8	2,203
Nepal	24th January	5	0	57	0	402	2	23	9,561
Pakistan	26th February	1,865	25	16,817	385	45,030	985	3,590	181,088
Sri Lanka	27th January	143	2	665	7	1,027	9	11	1,950
Total		3,649	71	62,895	1,772	187,149	4,840	19,512	770,507

severe transmission route of the COVID-19 [18]. Water droplets in the air on sneezing, coughing or talking face-to-face without using masks to cover the mouth are the main sources of contracting the virus. The virus can travel through, droplets in the air, fomites, and aerosols but detection of the virus in blood and urine is variable [19]. A new study in China found the virus in the faeces of as many as 53 percent of the hospitalized patients (still under study) [20]. Therefore, it is believed that the Italy, Spain, France and U.S. many COVID-19 patients were admitted to the hospitals and it made the route of cause to spread the COVID-19 rapidly and lead to the more death. However, in South Asian hospitals including Nepal, COVID-19 patients were not much admitted and did not transmit as rapidly. Like the Vietnamese government, Nepal's government is also offering free of cost testing and treatment to those who test positive to COVID-19. They have made a health declaration from all domestic and international travelers and wearing facemasks in public spaces mandatory and have banned the entry of individuals who have tested positive, into Nepal [21]. In every districts of Nepal government, the health care facilities, free food, free distribution masks are appropriately managing. Nepal created and established sample collection booth own their available resources and quarantine, isolation and lockdown measures were practiced. Because quarantine and isolation were proven to be a basic approach in preventing transmission of COVID-19. The government of Nepal has appealed for voluntary quarantine, wearing masks, mandatory temperature checks application of QR codes on mobile apps to denote health status, social distancing measures, reducing the mass gatherings, canceling the sporting events, keeping educational institutions shuts schools, and mart throughout the nation. These all non-pharmacological interventions were proof of success in Wuhan, China not to be more mortality than USA. India also showed successful

results after a month nationwide lockdown. It helped slow down transmission, ramp-up testing, and prepare for dealing with the disease spreading in the future. Furthermore, preventive measures were taken it was made mandatory for the citizens to frequently update their health conditions and report suspected cases in their communities in the mobile app and identify which areas need immediate action. This might be another reason for lower death reports in Nepal and other South Asian countries [22].

Some reports suggest that the incubation period may be as long as 19–27 days for COVID-19 [23]. South Asian countries are adapting to the universal rules of staying home, social distancing, lockdown, using a mask, sanitizing and band the transportation system worldwide. Even though, such ways are quite complicated to apply as safety measures [24] and be sure not to infect. However, quarantine and isolation are the foremost ways to keep ourselves safe as it breaks the chain of infection, making it easier to undertaken contact tracing contact identification, contact listing and contact follow-up (32). Currently, Nepal is facing a high number of infections due to its open border with India as workers age population are returning from Gulf countries. According to the government's spokesperson in the health ministry, COVID-19 is primary affecting people between the age of 21 and 30 years, followed by age groups between 11 and 20 years and 31 and 40 years respectively. The cases are spreading in Terai area, which is at the Nepal border with India more than the Himalayan region which is at the Tibetan border. Although, it was considered that COVID-19 is more dangerous for the elderly population. The infection rate among the older people in Nepal is shallow. Only a single person aged over 80 years has been infected with COVID-19, while only nine people in the age group of 71–80 years have been infected. The younger can have less chance to death the older age population [25].

Likewise, another reason for the low death rate in Nepal might be the efficient information disseminations approach of the government regarding COVID-19 on platforms like Facebook, Twitter, local FM Radio, clubs, posters, and innovative apps. Such platforms are being used to update the people with the knowledge of how to alter their daily activities to be safe from COVID-19 and to learn from other affected countries. Moreover, health care workers have been trained to enforce quarantine and undertake temperature screening at the National Health Training Center as per the updated WHO guidelines.

Further, the Nepal government imposed a lockdown immediately after the disease started spreading; they closed Nepal's border and grounded international flights and followed strict social distancing to avoid the spread of the virus in Nepal. Another reason is the Nepalese culture and food habit that helped with stopping the spread. It is noted that majority of people in Nepal use Ayurvedic medicine as an alternative. Most of the local dishes use traditional and natural ingredients (e.g. Golden Seal, Cinnamon, and other medicinal plants). Nepalese believe these food habits and alternative medication helped to enhance the peoples' immune system [25].

Discussion

The increasing number of infected people and the death toll has been a major threat and challenge globally. No one knows the natural history of the disease and the true nature of the virus perfectly. Recent studies conducted in China and Singapore [26] claimed the presence of COVID-19 in air samples to avoid the misleadingness and confusion, and to help scientists and the public with better communication, renaming SARS-CoV-2 as human coronavirus 2019 (HCoV-19). Such a name distinguishes the virus from SARS-CoV-2 and keeps it consistent with the WHO name of the disease it causes, COVID-19 [27]. Experience of the current outbreak lessons learned not only from Italy, Spain and the United States. Because of the delay of the precautions, underestimated disease infection rate this is already the global problems. When such a level of contagious virus travels via respiratory droplets then it has always been a disaster if we do not block the travel route of infectious agent urgently. The more humans at any given place and the more they get into contact with each other, the more infections there will be propagated infection. Preventive measures including quarantine and isolation, screening tests and contact tracing are necessary. Otherwise, in such propagated

outbreak, it will be too late, and we can just wait helplessly until the more massive peaks sweep the people [28].

A group of researchers have been puzzled why COVID-19 does not record developing countries rather than China, Europe and North America? Mostly, the low-income countries in South Asia have not recorded a lot of cases. The hypothesis is that the BCG vaccine played an active role against COVID-19. It is argued that countries that still have the vaccination program of Bacillus Calmette–Guérin (BCG) have a significantly lower death rate as compared to nations that do not use this vaccine [29]. Such findings are being publishing online on archive site medRxiv [30] but not in a scientific journal as the research is yet to be peer-reviewed. It is an intriguing thematic issue to see the fact association between BCG use and lower COVID-19 attributable mortality. Researchers are researching clinical proof for the same. It is considered that BCG vaccine is not itself an anti-virus vaccine but helps to build the body's immunity not just against tuberculosis, but also from other viral infections [31]. After other countries making policies changes and restrictions against the COVID-19, there is no action on any policy change in Nepal health care system. Despite the fact that COVID-19 cases across Nepal are low, the government of Nepal is not able to take swab tests rapidly due to lack of laboratories and skilled manpower. Till 6th June, 2020, the total cases in Nepal are approximately about 6,591, and the total number of tests conducted is 367,257, India has conducted 6,084,256 tests and Pakistan has conducted 950,782 tests. Low testing is a crucial contributing factor to the small number of COVID-19 cases in Nepal [32]. Also, Nepal has a younger population than other countries with a few larger cities that are likely to facilitate rapid spread. The population of nearly 3 million has a median age of 23 years, only four percent is over 65 years of age and 80 percent live in rural locations. These factors may at least partly explain the low rate of infections and deaths.

Another hypothesis arising is that primarily health care workers as a high risk of exposure. Public health experts commented that developing countries do not have enough screening equipment/kits for the virus and screening kits for COVID-19, as such the number of confirmed cases is low [33]. Similarly, the hygiene theory is also being regarded as another way to develop resistance to the new virus. It means people who grow up in lower *hygienic* environments develop strong immunity to common types of acute respiratory infections (ARI). Since COVID-19 is also a similar form of other influenza and novel coronavirus, like many other viruses, mutates regularly in Nepal in every season. Other scientists have theorized that

countries with a high rate of malaria seem to be relatively less affected and have even proposed chloroquine as a cure [34].

Another hypothesis is broadly discussing based on ecological modelling (meteorological predictors of influenza virus outbreaks) and mathematical modelling. Ecological modeling argues that transmission of viruses can be affected by the following factors: altitude, temperature and humidity of the environment, population density, age and gender. Those people who are residing at higher altitudes may have higher risks of Covid-19 infection because at high altitude, the partial pressure of oxygen declines leading to respiratory stress [35]. Both high temperatures and high humidity can successfully reduce the transmission of the virus. The arrival of summer and rainy seasons in the northern hemisphere may therefore effectively reduce the outbreak of COVID-19. In contrast, both cold and dry weather conditions weaken the human immune system, making them susceptible to viral attacks. This model further elaborates that if people stay inside for most of the time weather conditions will hardly influence virus transmission due to no chance of contact between people [34].

Likewise, according to the mathematical model, the disease can extend itself in cities and regions in a narrow east-west side of the world (about 30–50° N' latitude) having a temperature between 5 and 11 °C and low humidity levels, specific: 3–6 g/kg and absolute: 4–7 g/m³ [35]. Soon after China, the new epicenters of the disease erupted in South Korea, Japan, Iran, and Northern Italy (all roughly along 30–50° N' latitude). The disease covered Northwestern United States, Spain, and France, all along 30–50° N' latitude. However, the virus failed to spread to countries immediately north part of geographical region such as Russia and Mongolia and south of China region. The number of infections and deaths reported in Southeast Asia is still much less than those in temperate regions. Interestingly, the country Bhutan has recorded no deaths till 17th June, 2020 because all the above mentioning facts shows a strong claim that is using based on weather modelling. It is possible to predict countries most likely to be at a higher risk of COVID-19 outbreak, allowing for the concentration on surveillance and containment [36].

We believe that the COVID-19 is still evolving and it is too early to predict of an outbreak in Nepal. It may become a seasonal pathogen, like influenza, which might return every winter. Thus, Nepal needs a more robust safety net for workers, health workers with paid sick leave, universal health insurance or health care system. The government needs to expand financial capacity for local health departments, begin planning for future epidemics and be

prepared to pillow the economy by supporting consumer spending in the middle of a serious outbreak. COVID-19 is a serious health challenge for Nepal, but so far, the number of deaths has been lower than expected. COVID-19 has created an urgent need to implement multi-disciplinary coordinated system to respond to this pandemic across health sectors using digital health solutions to address this challenge rapidly by decreasing the risk rate of infection. The reason behind this is the telemedicine approach, which proved a successful health care model in primary care and at the community level in this panic situation. Digital health strategies had a significant impact on the epidemic situation and met the most strategic needs to ease the life of developing country people and health workers who stood up the forefront of the crisis. Because most of the youngsters have access to the Internet, it helped significantly to apply healthy lifestyle and behavior modification approach. This also helped to be regularly updating with fluctuating scientific guideline by the authorities and not to infections and transmit unknowingly. This is also recommended approach [37] by WHO for health system strengthening.

Conclusion

The question why Nepal has not yet been affected by COVID-19 remains largely unanswered. The most likely answer is ecological modelling or mathematical modelling or the effects of BCG vaccine. The reason could also be herd immunity or the lack of advanced screening equipment. It could also be an altogether unknown reason. Of course, the cure and the causative agent of the disease are still unknown and require a lot of research to find the answers.

The public health experts warn Nepalese health services to maintain more appropriately to tackle COVID-19. The Government of Nepal needs to fast track diagnostic services and lay down guidelines for those who need to be hospitalized, increase measures of social distancing, provide transparency and disseminate all communications, reports and data to everyone.

Research funding: None declared.

Author contribution: K.P.P. and T.G. collected the information and wrote the paper, H-C. C performed overview of the paper, provided constructive feedback and edited and wrote the paper, M-H.H reviewed and edited the paper.

Competing interests: Authors state no conflict of interest.

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