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Risk Perception and Public Effort to Cope Covid-19 in Nepal

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ABSTRACT

An infectious disease: pandemic of 21st century, Covid-19 is posing risk and threat to people, countries and world. Nepal is affected through waves of Covid-19. This study aims to assess risk perception; threat felt by public and public's effort to cope Covid-19. Online survey has been used for conducting this survey assessing demographic information, risk perception and threat along with public support regarding Covid-19. Likert scale from scale 1 which is very unlikely to scale 10 which is very likely is used for risk perception and threat analysis. Information has been taken from newspaper as secondary sources. Public support non pharmaceutical measure for epidemic control and there is lack of testing kits and data collection in Nepal. Public have knowledge of Covid-19 symptoms but are not familiar with strain of Covid-19. Public are aware of transmission of Covid-19 and familiar about prevention of Covid-19 but do not know about specific set of treatment of Covid-19. Moderate level of threat is felt by maximum respondents and high level of threat is posed to elderly and people with compromised immune system by Covid-19. Likeliness of risk is more for health care workers whereas people are more scared due to Covid-19 outbreak. People are self-conscious about Covid-19, PCR test should be increased in Nepal. Focus should be given to health workers as they are carrying high risk from Covid-19. Information about prevention, symptoms and transmission of Covid-19 needs to communicate through means of social media, mass media and visual arts.

Keywords: Covid-19, awareness, knowledge, threat, risk perception

Covid-19: Introduction

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Coronavirus disease 2019 (Covid-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) as stated by China-WHO Joint Mission, 2020. The disease was first identified in 2019 in Wuhan, the capital of Hubei China, and has since spread globally, resulting in the 2019–20 coronavirus pandemic (Hui *et al.*, 2020). On 31st December 2019 it was reported to the World Health Organization (WHO). Within weeks, the cause of Covid-19 disease was identified as Sars-CoV-2 through scientific investigation (Chan *et al.*, 2020; in Gronvall, 2020). On 20th February, 2020, a young patient in the Lombardy region of Italy was admitted with an atypical pneumonia which proved to be Covid-19. In the next 24 hours in Italy there were 36 more cases: to prove the matter worst they did not have any contact with the first patient or with any suspected one who were infected with Covid-19. It shows the beginning of one of the largest and most serious clusters of Covid-19 in the world (Livingston & Bucher, 2020). World Health Organization (WHO) has declared the 2019–20 Covid-19 outbreak as 'Public Health Emergency of International Concern' (PHEIC) on 30th January 2020 and 'pandemic' on 11thMarch 2020(WHO,2020). As on 12th June, 2020, world has seen 7,410,510 confirmed cases of Covid-19, including 418,294 deaths, reported to WHO (WHO, 2020).

Timeline of Covid-19 in Nepal: From zero cases to death of people

Nepal cannot remain even untouched by waves of Covid-19. The country had announced "Visit Nepal 2020" as being a country known for tourism and there was tourist inflow recorded in Nepal despite Covid-19 outbreak seen in China. The event was canceled with increasing threat of pandemic on March 22nd2020. Kedar Bahadur Adhikari, secretary at the Tourism Ministry said that as per the cabinet decision on March 22nd,Visit Nepal Year-2020 has been cancelled (Xinhua, 2020). First confirmed case of Covid-19 outbreak in Nepal was a native student, who was studying in Wuhan, with symptom onset on 3rd January 2020. The infected 32- year-old male had returned on 9thJanuary 2020 to spend winter holidays in Nepal. He visited Sukraraj Tropical and Infectious Disease Hospital (STIDH) in Kathmandu on 13th January 2020 (Shrestha *et al.*, 2020). He was isolated and was given supportive treatment with broad-spectrum antibiotics. The throat swab sample of the person was sent to the WHO Collaborating Center, Hong Kong and was tested positive. He was requested to remain under self-quarantine. Negative results for Covid-19 were given by consecutive follow-up tests on 29th and 31st January (Shrestha *et al.*, 2020). However, the second case of Covid-19 infection in Nepal did not only impose immediate lockdown in 24th March, 2020 but even threat was felt by public. It took more than one month for Nepal to confirm the second case of Covid-19 and result was seen on 23rd March 2020 and the patient was a 19-year-old Nepali girl returning from France.

In the initial phase, most of the confirmed cases of Covid-19 were imported from other countries. It was in 4th of April, 2020 that Covid-19 was traced among relatives of the victims in Kailali district (MoHP, HEDMU & HEOC, 2020) and people have seen influx of people coming in Nepal from different borders. After then, on 14th May 2020, first death of patient infected with Covid-19 was recorded

in Nepal who was a 29-year-old woman from Sindhupalchok district who had recently given birth in a Kathmandu Hospital. In Nepal, 5,062 people are infected from Covid-19 and 877 people have recovered from Covid-19 whereas 16 death are recorded and 158,050 people are in quarantine till 12th June, 2020 (MoHP, 2020). Covid-19 is a pandemic that results as a fire indeed a wildfire resulting in crisis, giving form as serious cluster, and it infects not only people but even affects system of country along with world. The data regarding Covid-19 as per Ministry of Health and Population (MoHP) are:

Table 1: Data regarding Covid-19 in Nepal

39,460 **Total Cases**	30,854 **Male**	8,606 **Female**	0 **Others**	693,472 **PCR tested**	228 **Death**
7,337 **In Quarantine**				17,822 **Isolation**	21,410 **Recovered**

Source: MoHP, (2020, August31)

Public's knowledge, perception, precautionary behavior including active social participation have been found to be important in the control of epidemics, as learned in epidemic such as SARS, Ebola, and H1N1 (Bell, 2004; Dorfan& Woody, 2011; Yang & Chu, 2018; Li *et al.,* 2020; in Serwaa*et al.,* 2020: 2). For development and prevention of an epidemic, practice studies, knowledge, behaviour and attitude are used to study the patterns of community responses (Lau *et al.,* 2003). In case of Nepal, Singh *et al.,* (2020) has published research paper regarding knowledge and perception towards safety precaution regarding Covid-19 and Hussain *et al.,* (2020) has published research article on knowledge, attitude and practices towards Covid-19 in context of Nepal. Both studies are conducted in early phase of lockdown that has its own importance in the research of pandemic "Covid-19" focusing Nepal. Nepalese supported decision of lockdown as it was added from time to time.

Research on Covid-19 has been conducted throughout the world and Nepal seems no exception following the trend. This study aims to assess the risk perception, threat felt by public and public's concern to cope Covid-19 including

public awareness and knowledge of Covid-19 in the time of pandemic when level of risk and threat seems to be important as death is the final result by Covid-19.

Literature Review

The true risk from Covid-19 virus cannot be measured but it is even important to know about the perception of risk among people. Covid-19 has got attention in media and is a topic of discussion in social media, which may induce the perception of risk among people and even might determine behaviors of public (Sjoberg, 2000; Weinstein, 1988; in Huynh, 2020). It is a fact that people's behavior can fundamentally influence and alter the spread of a pandemic (Epstein *et al.,* 2008; Funk *et al.,* 2009; Reluga, 2010; Van Bavel*et al.,* 2020; in Dryhurst*et al.,* 2020). To respond the pandemic in today's century, knowledge,risk perceptions and preparedness by public is necessary to contain the diseases at the community level (Li *et al.,* 2020; Srichan*et al.,* 2020; in Serwaa*et al.,* 2020). The features of protection-motivation theory are threat appraisal and risk perception (Floyd, Prentice-Dunn, and Rogers 2000; Rogers 1975; in Dryhurst*et al.,* 2020). Threat appraisal and risk perception are determinants of 'public's willingness for cooperation' and 'public's willingness for adopting health-protective behaviors during pandemics, such as frequent hand washing, physical distancing, avoiding public places, and wearing face masks' (Bish and Michie, 2010; Leppin and Aro, 2009; Poletti, Ajelli, and Merler, 2011; Rubin *et al.,* 2009; Rudisill 2013; van der Weerd*et al.,* 2011; in Dryhurst*et al.,* 2020).

"Optimistic people might be under volitional control, while the pessimistic ones will be led by mass panic which leads to ineffective implementation of the health policy to halt the epidemic and might even become uncontrollable" (Slovic, 1987; Weinstein, 1988; in Huynh, 2020). However, public acceptance of quarantine and isolation is must for flattening the curve. "According to the European Center for Disease Control and Prevention (ECDC), 'quarantine' or 'self-isolation' is supported by evidence from previous pandemics, in which isolation of exposed individuals contributed to delay the peak of the epidemic curve" (ECDC, 2020; in Peres *et al.,* 2020: 436).

The targeted groups of threats and risk posed by Covid-19 are older people and people having medical problems. "Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness" (WHO, 2020). Elderly people are the most vulnerable to Covid-19, resulting in severe complications and even death and it is shown by the studies (Pun *et al.,* 2020).

Direct human-to-human infection results in rapid transmission of Covid-19 globally, which increases the challenges in informing the public about the risks involved and precautions needed (Huynh, 2020). World is seeing mass death by Covid-19 and with the increment in death of people every day, importance of understanding public risk perception is even increasing (Van Bavel*et al.,* 2020; in Dryhurst*et al.,*

2020).

Human perception and behavioral responses can be studied for knowing about spreading disease along with increasing risk of epidemic. Timely intervention, closure of school and workplace, social distancing, further research for epidemics, pandemic planning along with needs of vaccines development are to be thought about in times of pandemic (Halloran *et al.,* 2008). In the absence of established pharmaceutical measures for treatment of disease, suspected individuals, infected individuals or vaccines to halt infections, most countries implement strategies, that requires public's support as they have to follow non pharmaceutical measures which limits personal freedom and whether public will follow such measures depends on public's risk perception (Sheeran, Harris, &Epton, 2014; Neipel*et al.,* 2020). Testing and tracing(aggressive in nature), restriction on mass gatherings, school and university closures, international and domestic mobility restrictions and physical isolation, lockdowns of regions and countries(Oliver *et al.,* 2020) are included in non-pharmaceutical measures which have been proved for delaying and containing the spread of the virus (Chinazzi*et al.,* 2020; Ferguson *et al.,* 2020; Tian *et al.,* 2020, Zhang *et al.,* 2020; Di Domenico *et al.,* 2020; in Oliver *et al.,* 2020).

The research articles are being published in case of Nepal related with Covid-19 and it depicts the challenges which may increase the threat and risk faced by public. In 2020, research articles are being published in context of Covid-19 and Nepal. Singh *et al.,* (2020) has published research paper entitled "Knowledge and Perception Towards Universal Safety Precautions During Early Phase of the COVID-19 Outbreak in Nepal" where the study shows 92.5% of the participants knew about the three major symptoms of Covid-19 (fever, dry cough, and shortness of breath). 79.3% have correct knowledge on the incubation period (2–14 days) and 68.5% know about unavailability of COVID-19 treatment among 871 respondents.

As per the study the median score of Covid-19 knowledge of participants was 10.0 (± 3.0 IQR) and 96.1% agreed that maintaining good personal hygiene, washing hands frequently, staying home, following social distancing, and avoiding crowds would prevent the spread of Covid-19(Singh *et al.,* 2020). Hussain *et al.,* (2020) has published research article entitled "Knowledge, attitudes, and practices towards COVID-19 among Nepalese Residents: A quick online cross-sectional survey" focusing on knowledge, attitude and perception of Covid-19 on Nepalese residents that has been conducted in Nepal that comprised 760 participants and the range of correct answer for knowledge related questions were from 60 to 98.7% with the question on the risk of Covid-19 infection by eating or contacting domestic animals with least correct answers. 78.4% of participants were confident that Covid-19 could be controlled successfully and almost 80% (77.9%) were convinced that Nepal could win the battle against Covid-19 (Hussain *et al.,* 2020).

Similarly, Paudel*et al.,* (2020) has conducted study on knowledge, attitude and perception of Covid-19 in Nepal that comprised 766 participants and the correct

answer range for knowledge was between 30-99% with the least correct answer on the same question. 71.5% of participants were confident that COVID-19 could be controlled successfully and 80% were convinced that Nepal could win the battle against Covid-19 (Paudel*et al.,* 2020).

Research article entitled "Nepal's First Case of COVID-19 and Public Health Response" is published by Shrestha *et al.,* in 2020 which depicts the first case of Covid-19 infection in Nepal: 32-year-old male returned from Wuhan, China and depicts the response of Government of Nepal for Covid-19. Research article entitled "COVID-19 Pandemic: Public Health Implications in Nepal" is published by Asim *et al.,* in 2020 that depicts the challenges to contain Covid-19 spread in Nepal referring to first five cases of Covid-19 infection in Nepal. Sharma and Bhatta have published "Public health challenges during the COVID-19 outbreak in Nepal: a commentary" that depicts the current scenario of coronavirus diseases 2019 (Covid-19) in Nepal, government's effort in tackling Covid-19 and public health challenges that Nepal is facing and might face in the future.

Journal of Nepal Health Research Council have published articles related to Covid-19 in 2020. Pun *et al.,* (2020) has published research article under 'short communication' entitled "Understanding COVID-19 in Nepal" in 2020 which describes their experience of Covid-19 patients in Nepal and includes characteristics of 9 cases of Covid-19 patients in Nepal. Quarantine and social distancing are the easiest and effective methods to break chain of transmission of COVID-19 in Nepal (Pun *et al.,* 2020). Piryani*et al.,* (2020) has published research article under 'short communication' entitled "Nepal's Response to Contain COVID-19 Infection" in 2020 which covers summary of global status, South Asian Association of Regional Cooperation (SAARC) status and Nepal's response to contain COVID-19 infection. Non-Pharmacological methods includes 'adopting personal hygiene habits such as hand washing, coughing into tissue or elbow' and 'avoiding touching eyes, nose and mouth are being followed', 'social distancing' and 'adopting quarantine of contacts of infected cases' are in practice (Piryani*et al.,* 2020). Paudel*et al.,* (2020) has published research article entitled "The Coronavirus Pandemic: What Does the Evidence Show?" which suggests, suspected person infected with Covid-19 should be kept in quarantine and patients should be kept in isolation assuring proper symptomatic treatment and has supportive care. The medical personnel involved in the management of COVID-19 patients or suspected cases must follow airborne precautions, hand hygiene and usage of personal protective equipment (PPE) (Cheung *et al.,* 2020; in Paudel*et al.,* 2020) along with usage of use of N95 masks, goggles, face visor and protective gowns during the outbreak (Chang *et al.,* 2020; in Paudel*et al.,* 2020). Hamal, Dangal, Gyanwali and Jha have published editorial in 2020 entitled "Let Us Fight Together against COVID-19 Pandemic" which states challenge in all health facilities is noted as there is struggle seen in providing adequate quality ensured testing kits and separate facilities of critical care services for fulminant cases is seen. Similarly, "state of panic may ensue within a community with false data interpretation, poor media coverage as well as when the appropriate measures and equipment's are halted or diverted at time of confusion"

(Hamal *et al.,* 2020: I). "The first and most challenging aspect is the availability of testing kits, medical supplies, Personal Protective Equipment and its timely distribution. Although there are qualified doctors, paramedics and nurses, they are not well equipped to prepare for and respond to the pandemic. Similarly, the hospitals in Nepal lack Intensive Care Unit facilities, isolation wards and medicines to treat Covid-19" (Sharma & Bhatta, 2020: 375). Healthcare workers (HCWs) includes doctors, nurses, laboratory staffs and general services staffs who are integral to respond pandemic effectively (Draper *et al.,* 2008; in Acharya *et al.,* 2020: 32).

Bhattarai *et al.,* (2020) states about the concern of medical fraternities in Nepal regarding preparation to cope with Covid-19 by Government of Nepal with respect to public health strategies and hospital readiness. The unclear strategies around "molecular testing, contact tracing, medical procurement, resource allocation, infection prevention measures, human resources and training, risk communication, and management of suspected or confirmed cases" (Shrestha *et al.,* 2020: in Bhattarai *et al.,* 2020). was matter of concern for medical fraternities. Bhattarai *et al.,* (2020) shed the light on lack of specimen collection, laboratory services, isolation of COVID-19 suspects or cases,ICU bed, proper disinfection, waste disposal mechanism, human resource for Covid-19 in small, medium and large hospitals of Nepal including Government's support related to Covid-19 pandemic.

In an interview taken by Kamal Dev Bhattarai dated 25th April 2020, Dr. Sushil Nath Pyakurel, states, independent research for tacking outbreak of disease along with health ministries, well equipped labs, management of health-related information and centralized system of public health is lacking in Nepal which has resulted in system not working as a whole in Nepal. Paudel(2020) states the closure of hospital in Nepal when patient gets detected with Covid-19 admitted for other form of treatment is putting burden on other operating hospitals affecting health infrastructure of the country. Bhattarai(2020) states along with lockdown, refusal of private hospitals to admit patients affected with Covid-19 for treatment is adding risk to right of basic health services given to people by Constitution of Nepal which has raised voices of nationalizing private hospitals in Nepal.Khagaraj Adhikari, former health minister thinks about revisiting health policies in Nepal 'as private hospitals are accountable to public and state when it suits them, but not when there is need of them in the response to coronavirus pandemic'. Research related to Ayurveda treatment for Covid-19 is even conducted in Nepal. "Ayurveda and Alternative Medicine Guidelines of Preventive Measures and Management Protocol for Covid-19 in Nepal quotes that like in "modern medicine, direct description of Covid-19 disease is not available in Ayurveda literatures"(Pandit & Singh, 2020: 73) as Ayurveda has own philosophies and principal. However, Government of Nepal (GoN), Department of Ayurveda and Alternative Medicine in collaboration with Nepal Ayurvedic Medical Council (NAMC) and Ayurveda Campus and Teaching Hospital (ACTH) released 'Ayurveda and Alternative Medicine

Guidelines of Preventive Measures and Management Protocol for COVID-19' on 26th April 2020 (DoAaAM, 2020; in Pandit & Singh, 2020: 74).

Gyawali*et al.,* (2020) on their review article states about traditional herbs have scope of bringing alternative for Covid-19 when the suitable drug for Covid-19 is unavailable. "Herbal medicines and purified natural products provide a resource for novel antiviral drug development and immunomodulatory herbal remedies" (Lin *et al.,* 2020; in Gyawali*et al.,* 2020).Tinospora, Licorice, Chirata, Basil, Ginger, Turmeric, Garlic, '*Ashawagandha'*, Moringa, Nepalese Pepper, Cinnamon and Indian Gooseberry has been listed as traditional herbs as these are known to be "broad-spectrum antivirals and protease inhibitors as well as they also boost the immunity to fight against flu-like diseased live Covid-19" if consumed either in single or combining form are in good result till date when subjected to rigorous scientific investigation(Gyawali*et al.,* 2020). "The invention of immunomodulatory of Tinosporacordifolia (*Gurjo*), Nobel conceptual combination of Piper nigrum, Piper longum, and Zingiber officinale (Ginger) to form Trikatu, Curcumin longa (*Besar*), Ocimum sanctum (*Tulsi*), Withaniasomnifera (*Ashwagandha*) for antiviral drugs is the gift of Ayurveda" (Regmi, 2020).

Research Methodology

Online survey has been used as main method for conducting this survey. The number of respondents is 174. Survey form has been designed using closed end questions and open-ended questions. Survey form was provided to respondents through social media and email. The research has been conducted from 1st April 2020 to 12th June 2020. The survey form has been classified into 3 section. Consent has been taken from respondents for filling form. In 1st section, 7 questions related to information of respondents has been designed to create respondent's demographic profile in result section. In 2nd section, 16 structured questions have been designed that assess opinion of respondents on current situation of pandemic in Nepal. In 3rd section, 13 structured questions have been designed that assess opinion of respondents related to awareness that focus about Covid-19 in Nepal.

Information of Covid-19 in case of Nepal has been collected from secondary sources such as research articles, newspapers and websites of MoHP focused about Covid-19 in this pandemic crisis. Likert scale from scale 1 which is very unlikely to scale 10 which is very likely is used along with multichoice question for assessing the perception, knowledge and awareness of respondents.

Assessment of the public general knowledge about Covid-19 on various places in Nepal is crucial for developing effective control measures. This research has been conducted to understand what Nepalese do and do not know about the Covid-19 to measure the level of public knowledge and understanding on Covid-19. The research is focused on public and their perception on risk and threat, knowledge and interest on Covid-19.

Table below shows the demographic profile of 174 respondents along with disease and travel history:

Table 2: Demographic Profile of respondents (n =174)

Gender	**Percentage**	**Number of respondents**
Male	76.44 %	133
Female	22.99 %	40
Prefer not to say	0.57 %	1
Age Group		**Number of respondents**
15-25	50 %	87
26-35	40.80 %	71
36-45	5.17 %	9
46-55	1.15 %	2
56-65	0.57 %	1
More than 66	2.30 %	4
Economy		**Number of respondents**
Middle Class	95.40 %	166
Lower class	4.60 %	8
Education		**Number of Respondents**
School	1.15 %	2
Intermediate	12.64 %	22
Bachelors	57.47 %	100
Masters	23.56%	41
Above masters	5.17 %	9
Marital Status		**Number of respondents**
Unmarried	71.26 %	124
Married	28.16 %	49
Widow	0.57 %	1
Disease History		**Number of respondents**
Infected with respiratory and heart disease	9.20 %	16
Are not infected with respiratory and heart disease	90.80 %	158
Travel History		**Number of respondents**
Travelled outside Nepal before 6 months after lockdown has been implemented in Nepal	14.37 %	25

Have not travelled outside Nepal before 6 months after lockdown has been implemented in Nepal	85.63 %	149

The table above shows 76.44% are male respondent followed by 22.99% female respondent and 0.57% respondent who has not preferred to say gender. 50% of respondent fall under age group 15-25, followed by 40.80% belonging to age group 26-35, 5.17% belonging to age group 36-45, 1.15% belonging to age group 46-55, 0.57% under age group 56-65 and 2.30% under age group 66 above. As per economy, 95.40% respondent fall under middle class and 4.60 % fall under lower class. As per education level, 57.47% respondents are in bachelor level, followed by 23.56% in master's level, 12.64% in intermediate level, 5.17% above master's level and 1.15% in school level. About disease history, 90.80% respondents believe that they are not infected with respiratory and heart disease and 9.20% believe that they are infected with respiratory and heart disease. Focusing on travel history, 85.63% respondent have not travelled outside Nepal before 6 months after lockdown has been implemented in Nepal and 14.37% have travelled outside Nepal. Lockdown has been implemented in Nepal on 24th March, 2020.

Perception of Covid-19 in Nepal: Respondents Voice

55 respondents have seen, read and heard about the COVID-19 (coronavirus) first detected in Wuhan, China in great deal. 98 respondents have seen, read and heard about the COVID-19 (coronavirus) first detected in Wuhan, China in fair amount. 21 respondents have seen, read and heard about the COVID-19 (coronavirus) first detected in Wuhan, China not very much. 6 respondents have seen, read and heard about the COVID-19 (coronavirus) first detected in Wuhan, China not at all. Working class family, Nepalese citizen working in foreign countries, people coming from India and people who came to Nepal from country with high number of Covid-19 outbreak cases has been affected by Covid-19 in Nepal as per respondents and the numbers will even affect the response to Covid-19 in country. Respondents even think both citizen and government are acting irresponsibly and country along with them are being affected by Covid-19. Lack of resources in Nepal and hospitals has even affected the response to Covid-19 in Nepal. Furthermore, media's role in pandemic is even to be thought about.

Analysis of respondent's perception about Covid-19 threat and risk with respect to Nepal

Analysis of respondent's view on Nepal being affected by Covid-19 outbreak, Nepal's preparation for Covid-19 outbreak, healthcare workers being in risk from Covid-19 outbreak in Nepal and people being scared regarding the outbreak and spread of Covid-19 in Nepal is presented in bar chart below. 10-point Likert Scale has been used for data collection among respondents which shows the respondent's

thinking of likeliness from point(scale)1 which is very unlikely to point (scale) 10 which is very likely being analyzed in numerical form.

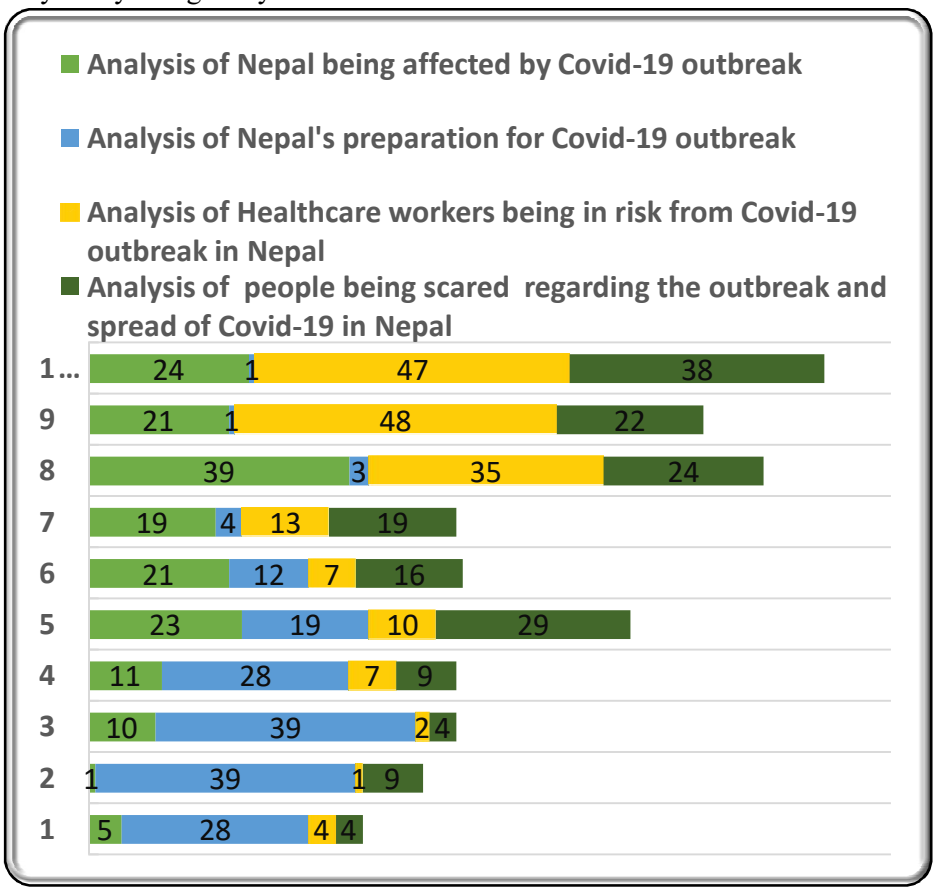


Figure 1: Analysis of respondent's perception about Covid-19 threat and risk with respect to Nepal

To illustrate further, the study has found out the median of likeliness of Nepal being affected by Covid-19 outbreak is 20. The median of likeliness of Nepal's preparation for Covid-19 outbreak is 15.5. The median of likeliness of healthcare workers being in risk from Covid-19 outbreak in Nepal is 8.5 and the median of likeliness of people being scared regarding the outbreak and spread of Covid-19 in Nepal is 17.5.

Reason for Increment in Covid-19 in Nepal: Respondent's Voice

Covid-19 is a crisis: pandemic that has now resulted in loss of life, health, economy, production and to conclude failure of system in whole world. 158 respondents think that there is not enough test being conducted in Nepal whereas 13 respondents believed that Nepalese are immune to such viruses. Remaining 3 respondents think there is no such increment of cases in real. However, some respondents on stating

their voice said the cases of infection by Covid-19 in Nepal is not seen as people are following lockdown so they are being less exposed to infected people and people are afraid of check-up (RDT and PCR). Respondents even said that there is lack of test kit in Nepal so many cases are not seen till present. Respondents even said that data collection process are lacking in Nepal so many cases are not seen either.

Attitude, risk perception and non-pharmaceutical measure regarding Covid-19 among respondents.

Following table analyses the attitude, risk perception and non-pharmaceutical measures regarding Covid-19 among respondents. The table below shows level of agreement of respondents.

Table 3: Attitude, risk perception and non-pharmaceutical measure regarding Covid-19 among respondents.

o.	Questions	Strongly agree	agree	Strongly disagree	Disagree
.	**Respondents are likely to get Covid-19**	3%	9%	20%	48%
.	**Respondents feel confident that they can prevent themselves and their family from becoming infected with the coronavirus if it becomes more widespread in Nepal**	26%	0%	3%	21%
.	**Respondents on getting worried about Covid-19**	15%	67%	1%	17%
.	**Respondents having knowledge about actions to take to prevent themselves and their family from becoming infected with the coronavirus**	40%	5%	1%	5%
.	**Respondents on supporting a Nepal government-imposed mandatory quarantine for those who are infected with the coronavirus**	79%	9%	1%	1%
.	**Respondents on supporting voluntary home quarantine for those people who have been in contact with infected people**	74%	8%	3%	5%

.	**Respondents on supporting postponing or canceling mass gatherings such as concerts, festivals, or sporting events**	91%	%	1%	0%
.	**Respondents on supporting an up to 2-week closure of schools if any student, staff member, or teacher is found to have the coronavirus**	79%	6%	1%	4%
.	**Respondents on supporting workplaces and businesses temporarily closing to keep their employees safe from the coronavirus**	81%	4%	2%	3%

Maximum respondents disagree on likeliness of being infected with Covid-19. Maximum respondents agree on feeling confident that they can prevent themselves and their family from Covid-19 infection. Maximum respondents agree on being worried about Covid-19 and having knowledge about actions for prevention from Covid-19. Maximum respondents strongly agree on supporting mandatory quarantine for infected people and voluntary quarantine for suspected people. Maximum respondents strongly agree on supporting closure of schools and workplaces in case of infection or for safety precaution from Covid-19 and postponing or canceling mass gathering.

Perception of respondents about recovery, death and infection including Covid-19 myth

Following table analyses the perception of respondents regarding Covid-19 about recovery, death and infection among respondents including Covid-19 myth:

Table 4: Perception of respondents regarding Covid-19 about recovery, death and infection among respondents including Covid-19 myth

o.	**Questions about Covid-19 myth**	**rue**	**alse**	**Do not know about it**
.	**Most people who are infected with the coronavirus recover from it**	8%	2%	10%

.	**Most people who are infected with the coronavirus die from it**	%	6%	7%
.	**People of all racial and ethnic groups can become infected with the coronavirus**	4%	%	2%
.	**People of all ages can become infected with the coronavirus**	7%	%	1%
.	**Antibiotics can be used to prevent infection from the Coronavirus**	7%	1%	32%
.	**Antibiotics can be used to treat the coronavirus**	3%	6%	31%
.	**Eating garlic can lower your chances of getting infected with the coronavirus**	6%	6%	38%

The perception of respondent regarding Covid-19 is assessed through recovery, death and infection from Coronavirus which shows maximum respondent believe most people recover from coronavirus from infection is true, die from coronavirus is false. However, there is difference seen in percentage of respondents who believe most of people's recovery from Covid-19 as truth and most of people's death from Covid-19 is false. In case of infection, maximum respondent believe people of all racial and ethnic group can be infected with coronavirus and people of all ages can be infected with coronavirus. While development of vaccine is observed in world, maximum respondent believe antibiotics cannot be used in treatment in coronavirus. Maximum respondents believe eating garlic can lower the chance of infection from coronavirus is false.

Symptoms of Covid-19: Understanding of Respondents

As per general understanding of respondents, 167 respondents agreed on infected people facing through cough, high fever, congestion in nose and throat. Few respondents stated other symptoms as shortness of breath, weakness, dry throat, fatigue, sore throat, body ache, and muscle pain. Two respondents stated infected one have to face headache in some cases and severe pneumonia in "advanced cases". One respondent stated the symptoms are anosmia, sore throat, tastelessness, dysphonea, anorexia and malaise. Four respondents do not have any idea on symptoms of Covid-19. However, loss of smell and taste was not stated by any respondents.

Modes of Transmission for Covid-19: Understanding of Respondents

158 respondents among 174 respondents agree on direct transmission of Covid-19 through droplets produced through coughing or sneezing whereas remaining do not agree. 154 respondents among 174 respondents agree on transmission of Covid-19 by touching surfaces and devices contaminated by virus whereas remaining do not agree. 156 respondents among 174 respondents agree on transmission of Covid-19 through direct contact with infected patients whereas remaining do not agree. However, 46 respondents think Covid-19 is transmitted through infected camels and bats and 128 respondents do not think Covid-19 is transmitted through infected camels and bats.

Preventive measures of Covid-19: Understanding of Respondent

As per general understanding of respondents, 164 respondents agreed on washing hands with soap and water, avoid touching eyes, nose and mouth, putting on face mask if one is sick, sticking to hygiene and following proper dab when one is coughing or sneezing. 164 respondents even agreed on paying attention to healthy habits, eating healthy foods, using alcohol-based sanitizers and following self-isolation even falls under preventive measures of Covid-19. Doing health checkup RDT and PCR, maintaining social distancing, avoiding mass gathering and hugging also falls under preventive measures of Covid-19 as per few respondents. 164 respondents agreed on social awareness being important for preventing one from Covid-19. One respondent stated that handkerchief should be used when one is coughing and sneezing and attention should be paid to other health habits as well and 4 respondents do not have any knowledge on preventive measures of Covid-19.98 % of the respondents believe on preventing other from the infection if they were infected and 2% however did not believe it. 98% stated that" if they were exposed to and could possibly be infected with the COVID-19 (coronavirus), they would be willing to prevent others from getting the COVID-19 (coronavirus) from them".

Opinion in Covid-19 Awareness: Respondents voice

Among 174 respondents, different questions were asked which portrayed the awareness found among respondents. This finding is presented in chart below:

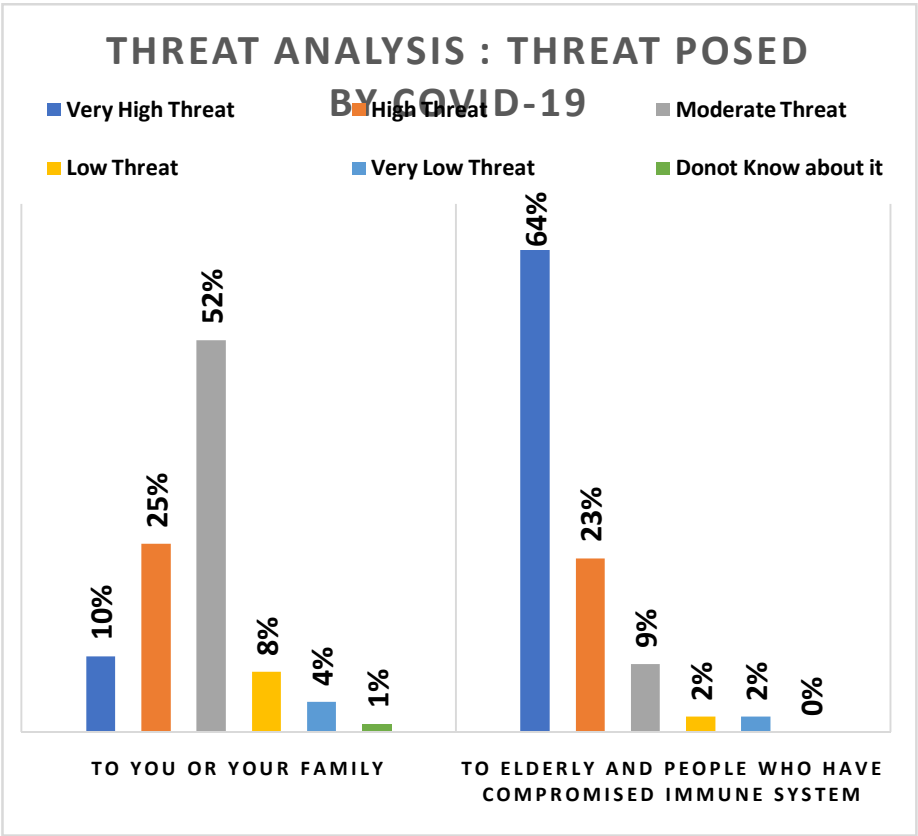
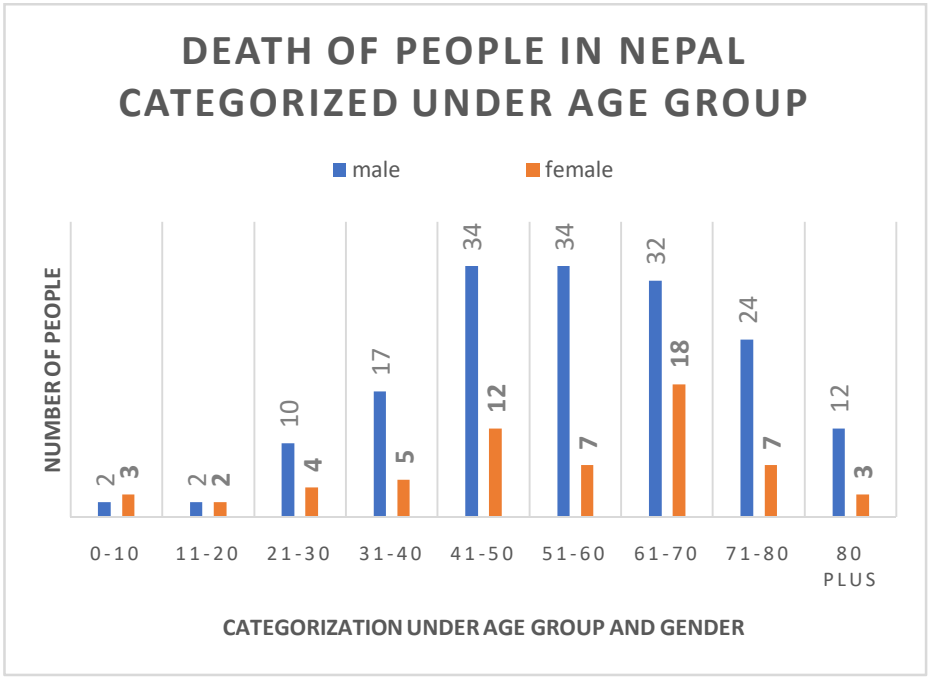


Figure 2: Threat posed by Covid-19 on people and their family, on elderly people and people who have compromised immune system

About the threat posed by Covid-19 to them and their family, 10% think Covid-19 poses very high threat, 25% think level of threat is high, 52% think is moderate, 8% think is low, 4% think is very low and 1% do not know about it. About the threat posed by Covid-19 to elderly people and people who have compromised immune system, 64% think Covid-19 poses very high threat, 23% think level of threat is high, 9% think is moderate, 2% think is low and remaining 2% think is level of threat is very low.

Infection and Death by Covid-19 in Nepal: Analysis from Covid-19 Dashboard, MoHP

In Nepal, daily update and data is available in the "Covid-19 Dashboard" in the website of Ministry of Health and Population (MoHP). The analysis of data from 23rd January 2020 to 31st August 2020 shows the number of death of people in age group which is presented below:

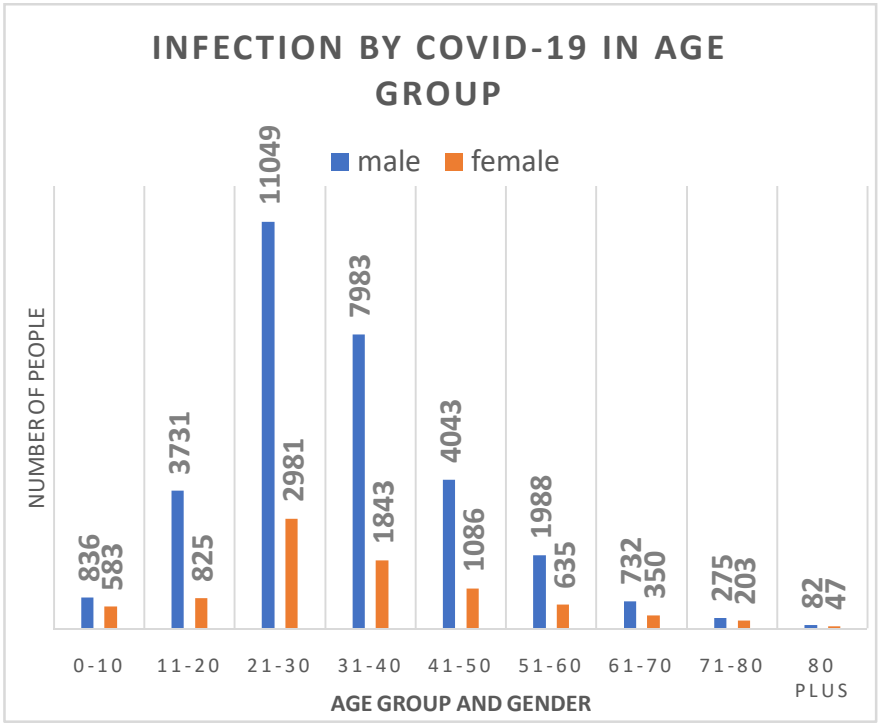


Source: (MoHP,2020; The Kathmandu Post, 2020; The Kathmandu Post, 2020)

Figure 3: Death of people in Nepal categorized under age group and gender

The data shows the number of male and female who have died from Covid-19 till 31st August 2020 are 167 and 61. 50 Covid-19 death falls under age group 61-70 followed by 46 covid-19 death under age group 41-50 and 41 covid-19 death under age group 51-60. The data shows the number of covid-19 death of people in age group which shows 96 covid-19 death falls in 'age group 61 to 80 plus' which shows the death of elder people meanwhile 123 covid-19 death falls in 'age group 21 to 60'. In Nepal, death of youth by Covid-19 is seen more.

The analysis of data from 23rd January 2020 to 31st August 2020 has been even done to show the infection by Covid-19 in age group along with gender. The finding is presented below:



Source: (MoHP, 2020: Covid-19 Dashboard, Data by Age Group from 23rd January, 2020 to 31st August, 2020)

Figure 4: Infection by Covid-19 in Age Group

The analysis of infection by Covid-19 even shows 31,608 number of Covid-19 infection falls in 'age group 21 to 60' and 1,689 number of Covid-19 infection falls in 'age group 61 to 80 plus' in total. Age group 21-30 has recorded highest number of infections by Covid-19 as 11,049 number of male and 2,981 female are infected followed by age group 31-40 recording 7,983 infected male and 1,843 infected female. This analysis even shows the highest number of youths are infected by Covid-19 rather than elder one.

As studies have suggested elder people are more vulnerable which may result in severe complication and death, youth dying and infected by Covid-19 in Nepal shows the need to conduct study from demographic angle focusing Covid-19 for identification of reason. As Dr. BaburamMarasani says "Death is just not about numbers" and Dr. Madhu Devkota says "What is worrying is while the infection and death rate among the elderly is rising, working class people are too highly exposed to the virus," as working class people are more mobile than elderly people (Paudel, 2020), the study is needed to be conducted.

Measures of Treatment for Covid-19: Understanding of Respondent

Multichoice questions have been structured for assessing the measures of treatment for Covid-19. Respondents agreed that there is no specific treatment for Covid-19, Covid-19 can be cured and Covid-19 can lead to death as well. 4 respondents however have no idea related to measures of treatment for Covid-19. As per maximum respondents, drinking lot of fluids can even be added as measures for treatment and reviewing health facilities and focusing on health practitioner along with elderly person and those people who are in contact with people affected by chronic disease is must. Similarly, self-quarantine needs to be implemented for early stage and any antibiotics should not be consumed without consulting doctors. Antipyretic and painkiller medication can be added in the list. Early detection, quarantine and hospitalization is even the measure for treatment of Covid-19. Self-isolation and personal hygiene and care should be focused by person as measure for treatment for Covid-19. Traditional medicines can treat coronavirus. People with symptom should review health system as a measure of treatment. Respondents admitted of non-availability of vaccine for Covid-19.

Response for Pandemic: Covid-19 in Nepal

As the UN Secretary-General said: "More than ever before, we need solidarity, hope and the political will and cooperation to see this crisis through together" (United Nations- Nepal, 2020:2) Covid-19 could not be faced alone as it has affected entire world directly or indirectly.

From 24thMarch 2020, Nepal has seen lockdown which is increased from time to time. In 21st July, 2020, 120 days lockdown was lifted resulting in rising cases of Covid-19 infection (Awale, 2020). After 3 weeks of lifting lockdown, the districts of Nepal with more than 200 active cases are facing restriction and lockdown in necessity (Prasain and Pradhan, 2020). For Nepali migrants returning from India, municipal and local government isunable to create quarantine facilities as per WHO standard and for migrants returning by flight, 20 holding centre has been prepared (Shivakoti, 2020). For migrant Nepalese who want to return Nepal by flight, around 60 hotels including tourist-standard and star hotels have agreed to provide quarantine facilities as per their willingness to stay in hotel "as total of 51,963 Nepalese have been repatriated from foreign countries since the Government started operating repatriation flights starting June 10" (My Republica, 2020).

Sukraraj Infectious and Tropical Disease Hospital (STIDH) in Teku, Kathmandu has been designated by the Government of Nepal (GoN) as the primary hospital along with Patan Hospital and the Armed Police Forces Hospital in the Kathmandu Valley. TheMinistry of Health and Population (MoHP) has enlisted the hubs and satellite hospital network across the country for infection prevention and control measures, and critical care beds (MoHP, 2020). 116 Covid-19 clinics are enlisted as Covid-19 clinics (MoHP, HEDMU & HEOC, 2020). Hospitals are further classified as Level 1, Level 2 and Level 3. Government has asked private

hospitals to allocate 20% of the seat to Covid-19 patients(My Republica, 2020). Though Government has assured of refunding cost of treatment of Covid-19 patients, private hospitals are reluctant to abide by the government directive, saying 'they cannot treat Covid-19 patients by putting the life of general patients at risk' as said by Kumar Thapa(The Record, 2020).

World Health Organization (WHO) has inquired about the possible vaccine against COVID-19 developed at the Hetauda-based Tribhuvan University Institute of Forestry by Prof. Dr. Lalit Kumar Das in Nepal through video conference (Republica, 2020). Information, education and communication materials have been disseminated through several forums and media with regular updates regarding Covid-19. There is provision introduced for managing bodies of patients whose death has been resulted from Covid-19(MoHP, HEDMU & HEOC, 2020). Since 24th March, Nepal has stopped regular and charter flights with other countries as part of the government's plan to stem the spread of the coronavirus excluding flight for multiple repartitions, medical supplies, and special flights (Aviation Nepal, 2020) and till 31st August, the suspension is continued (Onlinekhabar, 2020). Similarly, inter district transportation is even suspended and restriction is imposed on service of restaurants and hotels(Onlinekhabar, 2020).

Nepal Preparedness and Response Plan (NPRP) has been prepared which include the preparedness actions and key response activities to be undertaken in Nepal (United Nations- Nepal, 2020). In the website of National Innovation Center(NIC), "Brief Report of the COVID-19 Campaign Run by National Innovation Center (Rastriya Awiskar Kendra) to Help Mitigate the Spread of Corona Virus in Nepal Until July 15, 2020" written by Mahabir Pun which includes all the contribution by National Innovation Center(NIC) for fighting against Covid-19(Pun, 2020).

In mid-June, groups of youth took to the streets in Kathmandu and other cities of Nepal to protest against perceived government apathy, incompetence, and corruption in health sector.Covid-19 crisis has exacerbated a number of the Nepali state's long-standing weaknesses like corruption, poor service delivery, failure to provide employment opportunities for millions of citizens who work abroad for labor jobs(Gill & Sapkota, 2020). Youth after feeling Covid-19 management by Government of Nepal has lack of urgency, transparency and accountability got involved in protest across the country which has "demanded PCR test on everyone at risk, regardless of symptoms; implementation of the four-tier triage approach for all at risk populations; protection of health workers; protection of human rights of suspect, confirmed or recovered COVID-19 patients; acknowledgement of acute vulnerability of the needy people and transparency and accountability in budget allocation and expenditures"(The Himalayan Times, 2020).

Nepal Health Research Council (NHRC) has started study about gene sequencing of coronavirus in Nepal, through scientists and researchers focusing on the gene sequencing of the virus in infected people (The Rising Nepal, 2020). "A private lab, Intrepid Nepal Pvt. Ltd. (INPL), has started working on the genetic

sequence of the virus through 'Next Generation Sequencing (NGS)' technology, which reads the entire genome in a short period of time" (My Republica, 2020).

Plasma Therapy has also been a ray of hope in Covid-19 era and in Nepal. The Tribhuvan University Teaching Hospital (TUTH) extracted blood plasma from a 30-year-old man from Nuwakot who had recovered, and injected it into a 60-year-old pneumonia patient who was seriously ill after being infected with SARS-CoV-2. The results were improved condition of TUTH patient's: the oxygen saturation level in his blood went up, and he is being moved out of ICU within 3 days of plasma therapy (Sapkota, 2020). 12 hospitals across Nepal are allowed to conduct treatment of COVID-19 patients through 'convalescent plasma therapy' (Paudel, 2020). According to the Ministry of Health and Population, more than 20 Covid-19 patients have been treated through 'convalescent plasma therapy' in Nepal and 42 recovered people have donated plasma (My Republica, 2020).

As, Dr Vasudev Upadhyay, Director General of DOAA, states, "we have the medicine with us and that is our immunity" and guidelines by DOAA suggest using medicines and herbs like *tulsi*, turmeric, garlic, *ashwagandha* to follow a healthy lifestyle, and to practise yoga based on Ayurveda and some other alternative medicines(Rai, 2020). Kerala, state of India, set the example by containing the spread of the virus through AYUSH medicinal systems. In Nepal, Province 5 has shown eagerness on containing the spread of the Covid-19 throughayurvedaand other provincial governments have prioritised the use of ayurveda with the aid of the Interim Protocol of Department of Ayurveda and Alternative Medicine (Regmi, 2020). Epidemic capital of Province 1 had even adopted Ayurveda for boosting immunity of local people in Nepal (Anupam, 2020).

"Experts say Covid-19 will be with us for at least a year, but this does not mean we stay in continuous lockdown. Eventually, we need to learn to live with the virus"(Shrestha, 2020). Lockdown and Covid-19 has not only affected Nepal but entire world as Pakistani Prime Minister Imran Khan recently tweeted that South Asia is "faced with the stark choice" between "a lockdown" to control the virus and "ensuring that people do not die of hunger and our economy does not collapse" (Shrestha, 2020).

Discussion

The study has been conducted about knowledge, attitude and perception focusing Nepalese in the early phase of lockdown. A timely understanding of the public's awareness, knowledge, risk, threat, perception of the COVID-19 has been focused in this study but the study about its impact on public and their preparedness is not found in Nepal. 6.44% are male respondent followed by 22.99% female respondent and 0.57% respondent who has not preferred to say gender. 50% of respondent fall under age group 15-25 and is followed by 40.80% belonging to age group 26-35. 5.40% respondent fall under middle class and 57.47% respondents are in bachelorlevel, followed by 23.56% in master's level. 90.80% respondents believe that they are not infected with respiratory and heart disease whereas 85.63%

respondent have not travelled outside Nepal before 6 months after lockdown has been implemented in Nepal. Maximum respondents support quarantine and closure of schools and workplaces along with postponement of mass gathering. However, respondents even feel there is lack of testing kits and data collection in Nepal. Maximum respondents have knowledge of Covid-19 symptoms but are not familiar with strain of Covid-19. Maximum respondents seem to be aware of transmission of Covid-19 and usage of mask is common in Nepal before Covid-19 era. However, respondents seem to be familiar about prevention of Covid-19 but yet Nepal saw youth-based movement "Enough is Enough" along with hunger strike in lockdown regarding mass PCR test in whole country, quarantine with basic facilities and contact tracing to be adopted. Similarly, many respondents do not know about specific set of treatment of Covid-19 and need awareness on same issue. The study focusing on infection and death of youth by Covid-19 needs to be conducted in Nepal.

About prevention, usage of garlic is included in the study but usage of other herbs listed in Ayurveda is not included in the study which can be a new study in case of Nepal. Majority of respondents believe moderate threat is posed by Covid-19 to them and high level of threat is posed by Covid-19 to elderly people and to the people with compromised immune system. Similarly, other forms of risk perceived by covid-19 infected people who have recovered, risk perceived by people due to lockdown, risk perceived by people due to political nature of crisis can be a new study in case of Nepal. To conclude, Covid-19 is a pandemic that has not only affected people's life but also threatened several architectures of system of country. Covid-19 even has been a learning lesson to people and to country about what we have and what we are lacking, what we need and what needs to be improvised as it has been posing risk and threat and at the same time making people aware of life as well as the challenges to live in pandemic era.

Conclusion

Covid-19 is neither the first pandemic neither it is going to be last pandemic. Lesson needs to be learnt from Covid-19 as Nepal has been affected from Covid-19 totally. Past response on pandemic and response on this pandemic need to be focused for crisis management and improvement in health system in focus and other system of country as well. With the climate change, the world may see more pandemic on rise and Nepal will not be isolated which is connected to world by land and airways. People of Nepal are resilient and supportive to government until there is no alternative announced. People are self-conscious about Covid-19. PCR test should be increased in Nepal. The number of infections in Nepal is increasing along with death of people. With the loosening of lockdown, the cases related to Covid-19 may increase or decrease is now a matter of concern. Nepal's preparation on Covid-19 has been less focused on flattening the curve. Focus should be given to health workers as they are carrying high risk from Covid-19.

People are informed about symptoms and transmission of Covid-19 but even it needs to communicate through means of social media, mass media and usage of

visual arts. Education and information flow must be ensured about symptoms, Covid-19 myths and transmission level. Contact tracing needs to be focused as lockdown is going to be loosened. Infected people are the first victim of Covid-19 but working-class family, Nepalese working in abroad and stranded Nepalese coming to country are indirect victim of Covid-19. Quarantine for people as per their accessibility and support of Government is in need as citizen needs most support in time of crisis. Guidelines for closure of offices which attract mass people including children to old aged people in case of Covid-19 infection needs to be addressed in terms of time frame along with necessary arrangement. It is the infection that makes Covid-19 a pandemic but it is the threat that is making Covid-19 a crisis that world will record and remember in future too. The infection and threat are not only affecting lives of people but even collapsing system. All people are threatened from Covid-19 and Nepal needs to respond to Covid-19 immediately as emergency response can only lead to recovery.

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There is no conflict of interest.

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