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# Risk Perception and Protective Health Measure Regarding COVID-19 among Nepali Labour Migrants' Returnee from India

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**Abstract**

Thousands of Nepali migrant workers returned home from India due to the impact of the COVID-19 pandemic. This cross-sectional study examines the association between risk perception and protective behaviour regarding COVID-19 in returnee migrant workers. The study used opportunistic sampling and 384 participants, based in a quarantine center on return from India, volunteered. Using the health belief model (HBM) as a theoretical framework, a structured interview questionnaire was designed and applied as the key data collection tool. Three health workers were interviewed face-to-face. The study showed that the perceived risk of COVID-19 among participants was medium to low. Participants perceived few barriers and had low self-efficacy levels compared to other constructs. This study further showed that participants were more likely to follow a range of protective health behaviours, but not found all. The

study revealed a significant association between all risk perception constructs and protective behaviours (p=< 0.05). This study accordingly highlighted a significant relationship between the respondents' risk perception level and protective health behaviours. The study envisaged that public awareness of risk to the people who returned from India is essential to increase risk perception during the outbreak.

***Keywords:*** Pandemic, migrant worker, preventive behaviour, relationship, risk perception

## Introduction

There is still a lot of misunderstanding about COVID-19 (Semple & Cherrie, 2020). The pandemic first appeared in late 2019 in Wuhan China, followed by various variants across the globe. For example, a variant was discovered in southeast England in September 2020 and has since spread to at least 114 countries (Davies et al., 2021). On May 4th, 2021, there were 19,346,442 confirmed active cases worldwide and 343,418 cases in Nepal (Worldometer, may 4 2021) later was in its second wave, and the third initial stage of COVID-19 in varied form.

Public awareness campaigns aimed at changing the public's view of health and safety threats (Gaube et al., 2019). The perception of a health hazard is the most evident pre-requisite motivation to change risk behaviours (Renner et al., 2008). Perceived risk is a complex and multifaceted concept that influences a wide range of health behaviours and decisions, but it is often misunderstood (Waters et al., 2013). A person's ability to determine his or her level of risk is referred as risk perception. Higher risk-taking can result from an inability to accurately perceive risk. Studies of risk perception look at what people say when they're asked to describe and rate dangerous behaviours in a variety of ways (Slovic et al., 1982). It refers to people's reactions, logic, reasoning and scientific thought on the subject of danger and risk management (Slovic & Peters, 2006). Many health behaviour change theories include risk perceptions as a threat, and health behaviour change strategies often target risk perceptions as a threat (Ferrer & Klein, 2015).

Health Protective Behaviour (HPB) is an activity that is related to lowering risk factors and negative health effects as well as promoting a healthier lifestyle. HPB explains people's behaviours to protect from COVID-19 (Harris & Guten, 1979). Physical separation, wearing a mask, keeping rooms well-ventilated, avoiding crowds, washing face, and coughing into a bent elbow or tissue are PHB-related to COVID-19 (WHO, 2019) for maintaining health and preventing disease (Krick & Sobal, 1990).

Thousands of Nepalese manual workers are throughout India (Kansakar et al., 2021). Among them, more than 20 thousand people suffered from COVID-19 (Kayakairan (6 pm), may 5, 2021). After the second wave of COVID-19, most

Nepalese people got back home from several parts of India (My Republica, April 3, 2021). The safe rescue of these people was impossible due to the high prevalence of COVID-19 in the region. The rapid increase in the number of cases and the seriousness of the disease are all signs of a pandemic sweeping India (Kansakar et al., 2021). Nepal is facing a similar increase to India (Basnet, 2021). Migrant workers were more likely vulnerable to the infection than other job holders, as a result, the disease is dreadfully speeding in the community (ILO, 2020; Singh et al., 2020). A remarkable number of Nepalese people have migrated to India in search of jobs from Karnali Province has a higher proportion (CBS & ILO, 2019) and the most susceptible to a pandemic (Chalise, 2020). So, it's crucial to assess and make authentic data on people's understanding and perceptions of safety precautions during the pandemic (Singh et al., 2020).

The lower the degree of protective health behaviour displayed, the lower the perception of risk associated with COVID-19. Thus an individual's risk of infection in a pandemic is affected by both their behaviour and their perception of risk (Barrios & Hochberg, 2020). Awareness and protective actions were positively correlated with risk perception. To encourage protective behaviours, proper risk communication is essential (Asefa et al., 2020). The Government of Nepal (GoN) has taken several preventive measures in response to the danger of COVID-19 transmission (Asim et al., 2020). But these are not sufficient to control the pandemic.

Numerous studies have shown that as the second wave of COVID-19 spreads around the globe. Thousands of Nepali migrant workers in India returned home as a result of the lockdown in both India and Nepal, making them one of the most vulnerable groups to spread COVID-19. Migrants are particularly vulnerable, and many of them are spreading diseases back to their home towns, resulting in a rise in cases in specific areas. To our knowledge, no studies have been found on migrant populations' risk perception and protective health behaviour. This paper intends to examine the risk perceptions and protective behaviours of migrant workers who have recently returned from India and residing in a quarantine centre in Nepal.

## Methods and Procedures

### Research Design and Sample Population

A cross-sectional study design of quantitative research was conducted with 384 Nepalese migrant workers, who had returned from India and stayed in the Quarantine Center in Birendranagar, Surkhet of Nepal, between July to October 2020.

## Sampling

Opportunistic sampling was used; three health workers working in this quarantine centre were recruited for the study for the data collection. Before data collection, they were trained in three hours of theoretical and practical classes regarding research methods that include; data collection, ethical issues, confidentiality, anonymity, reliability, and accurate data collection.

## Data Collection Tools

Of the many theories related to explaining risk perception and health behaviour studies, the Health Belief Model (HBM) is one of the most commonly used models (Glanz et al., 2008). Using the HBM, a structured questionnaire was designed and applied as a key data collection tool. It asked for participants' details, perceptions and preventive behaviours. The personal profile of the participants included their cast, age, gender, education, and health status as a modifying factor. A total of 15 items were included in the protective behaviour category as health action (Fertman & Grim, 2010). PHB responses were dichotomous; yes, or no with 1 point given for each correct answer and 0 for each incorrect answer. The items were created using the World Health Organization's health protocols (WHO, 2019).

The responses to the risk perception were collected using 5 levels of Likert scale data which consisted; of strongly disagree (1), disagree (2), non-decided (3), agree (4), and strongly agree (5). Twenty-seven items are formulated based on individual beliefs or constructs of the HBM such as perceived susceptibility, severity, benefit, barriers, self-efficacy, and cues to actions (Fertman & Grim, 2010; Glanz et al., 2008). The total scores were then transferred to percentages. The score of perceived level of belief was >66%, considered high, 33-66% medium, and ≤ 33 low (Khanal et al., 2021).

## Reliability of the Study

The Cronbach's alpha coefficient was used to determine the reliability of the questionnaire (Tavakol & Dennick, 2011). The PHB component items had a value of .88 and the items on the Likert scale had a value of 0.80. Two items from the Likert scale and six items from PHB were eliminated after the pretest. A pilot test was done with 12 participants, who were not included in the main study (Teijlingen E Van & Hundley, 2002).

## Ethical Consideration

The consent was obtained from the Health Service Department of the Ministry of Social Development (HSDMSD) of the Karnali province as well as Birendranagar Municipality of Surkhet. The consent (verbal/written), from

all participants, was also obtained before the trial of the questionnaires. Their information was kept completely anonymous and confidential. The importance of voluntary engagement was emphasized.

**Statistical Test**

The Statistical Package of Social Science (SPSS) V.25 version was used for statistical analysis with a significance level of 5% (Coakes, 2012). The data were analyzed using descriptive and inferential statistics. The frequencies and percentages were computed for categorical variables, and the Chi-square for numerical variables.

## Results

The majority of participants (74%) were men and about two-thirds of participants (67%) were aged 20 to 39. The single largest groups were from the Chhetri caste (40%) with one-third, being Dalit (33%). Over one-third (35%) of participants were literate only and on the other end of the scale, only 7% had a higher academic degree. More than four in five (81%) of participants thought they had a good health condition.

**Table 1**

*Modifying Factors of the Respondents*

| Variable | Category | Frequency | Percentage |
|---|---|---|---|
| Gender | Male | 284 | 74.0 |
| | Female | 100 | 26.0 |
| Age | Below 20 | 38 | 9.9 |
| | 20-39 | 258 | 67.2 |
| | 40-59 | 76 | 19.8 |
| | 60 and over | 12 | 3.1 |
| Caste | Chhetri | 158 | 41.1 |
| | Brahmin | 48 | 12.5 |
| | Janajati | 50 | 13.0 |
| | Dalit | 128 | 33.3 |
| Education | Illiterate | 48 | 12.5 |
| | Literate | 137 | 35.7 |
| | Basic | 68 | 17.7 |
| | Secondary | 75 | 19.5 |
| | Higher | 27 | 7 |

| | | | |
|---|---|---|---|
| Health status | Normal / healthy | 310 | 80.7 |
| | Acute / poor health condition | 47 | 12.2 |
| | Suffers from chronic disease | 27 | 7.0 |
| Total | | 384 | 100.0 |

**Level of Risk Perception**

Questionnaires were tailored to measure the risk perception of the COVID-19 pandemic among Nepali Labor Migrants returning from India. Table 2 shows that the largest single group in each element of risk perception reported a medium risk level, apart from 'perceived barriers' where the most common answer was 'low risk (42.7%). Nearly half perceived themselves to be at medium risk in terms of susceptibility, followed by low level of susceptibility and the fewest (13%) reported a high level of susceptibility. A reasonably similar pattern was found for perceived severity, perceived benefits, perceived self-efficacy and perceived cues to action. In Table 2, the pattern of responses for perceived barriers was different as more respondents reported low levels of barriers than medium or high levels. Moreover, across all perceptions respondents also scored perceived barriers as the highest single factor, and as a result, perceived barriers have the lowest proportion of people who scored it as medium (*M=1.81*, *SD=0.80)*.

**Table 2**

*Level of Risk Perception of Study Participants*

| Risk perception | Risk perception level | | | | Mean | SD |
|---|---|---|---|---|---|---|
| | Low (1) | Medium (2) | High (3) | No response | | |
| Perceived susceptibility | 37.0 | 49.5.0 | 13.5 | - | 1.76 | .67 |
| Perceived severity | 33.3 | 44.3 | 21.9 | 0.5 | 1.88 | .73 |
| Perceived barriers | 42.7 | 32.8 | 24.5 | - | 1.81 | 0.80 |
| Perceived benefit | 35.9 | 54.7 | 9.4 | - | 1.73 | .61 |
| Perceived self-efficacy | 39.1 | 43.2 | 17.7 | - | | .72 |
| Perceived cues to action | 34.9 | 51.3 | 13.8 | - | 1.78 | .66 |

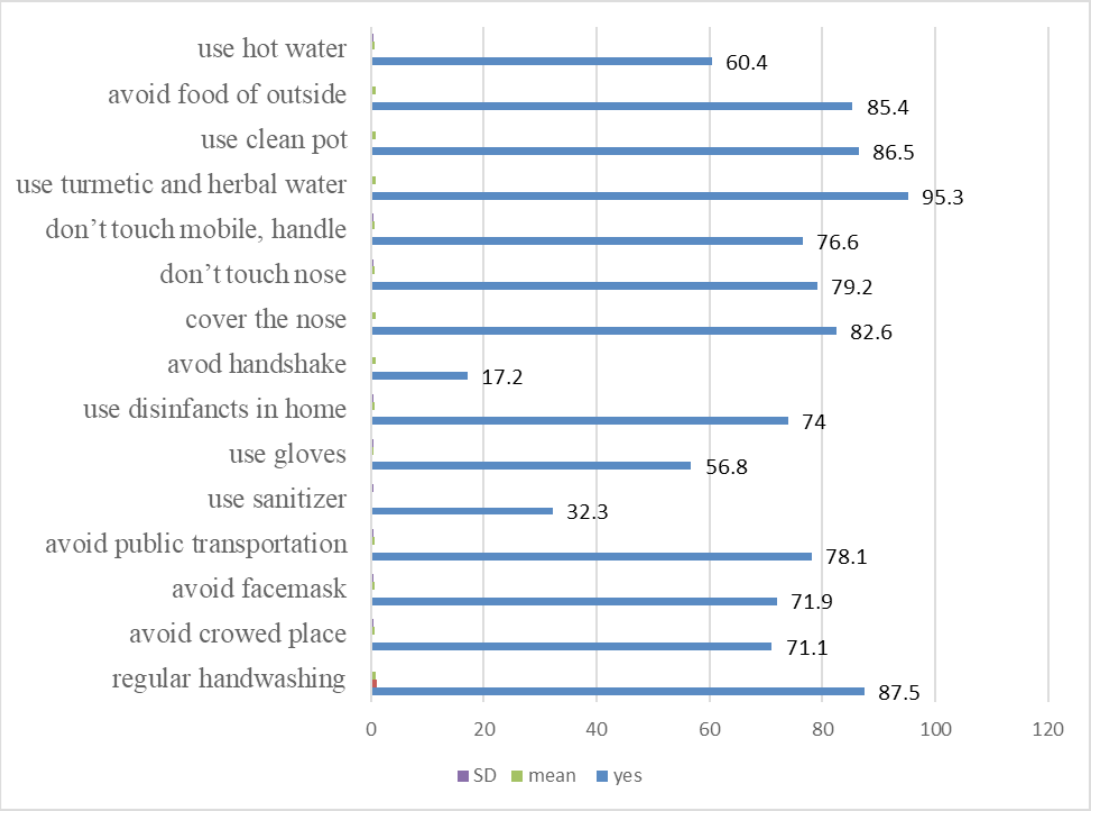
**Protective Health Behavior Against COVID-19**

Figure 2 shows protective behaviour against COVID-19 by Nepali Labour Migrants Returned from India. Most participants avoided shaking hands, whilst the majority (68%) had not used sanitiser. More than two-fifths (43%) of participants had not used gloves, followed by 29% not visiting crowded places, and 28% did not use masks.

About all (95%) participants used turmeric and herbal water, followed by 87% using a clean pot, 85% avoiding getting food outside, and 77% did not touch the mobile, handle. Simultaneously, the use of facemask proportion was lower (72%) compared to the use of disinfections at home (74%).

**Figure 1**

*Protective Health Behavior Reported by the Respondents*




**Relationship between Risk Perception and Protective Health Behavior**

The Chi-square statistic was confined to assess the association between risk perception behavior and protective behaviour of the Nepali Migrant Labor returnee from India. A study showed that there is an association between susceptibility to risk perception and protective behaviour in (NMLIs). The *p*-value <0.01 indicates that risk perception on susceptibility and protective behaviour is a statistically significant relationship. In a similar vein, evidence from Table 2 shows that there is a significant difference in the risk perception behaviour (severity, benefit, self-efficacy and cues of action) between protective behaviour (low and high level).

**Table 3**

*Relationship between Risk Perception and Protective Behavior*

| Constructs | | Protective behavior | | $X^2$ test |
|---|---|---|---|---|
| | | Low | high | |
| Susceptibility | High | 71.2% | 28.8% | 0.001 |
| | Medium | 34.2% | 65.8% | |
| | Low | 65.5% | 34.5% | |
| Total | | 50.8% | 49.2% | |
| Severity level | High | 66.7% | 33.3% | 0.000 |
| | Medium | 40.6% | 59.4% | |
| | Low | 54.7% | 45.3% | |
| Total | | 51.0% | 49.0% | |
| Benefit | High | 69.4% | 30.6% | 0.001 |
| | Medium | 42.9% | 57.1% | |
| | Low | 58.0% | 42.0% | |
| Total | | 50.8% | 49.2% | |
| Self-efficacy | High | 63.2% | 36.8% | 0.000 |
| | Medium | 35.5% | 64.5% | |
| | Low | 62.0% | 38.0% | |
| Total | | 50.8% | 49.2% | |
| Cues of Action | High | 64.2% | 35.8% | 0.000 |
| | Medium | 39.6% | 60.4% | |
| | Low | 61.9% | 38.1% | |
| Total | | 50.8% | 49.2% | |

Note: Chi square test ***=P<0.001, **=P<0.01 and *=P<0.05

## Discussion

### Level of Risk Perception

The present study found that participants had a higher degree of perceived barrier and self-efficacy than other constructs. Accordingly, more than a third (37%) of participants have a low perception of susceptibility to COVID-19 and about half (49%) have a moderate perception of susceptibility. Fewer (13%) people had a higher-level susceptibility. Previous studies on COVID-19 had consistent findings;

more than 80% of Italians living in Italy and Italians living abroad believe they are not at risk of SARS-CoV-2 infection (Motta Zanin et al., 2020). In a similar vein, (Abdelrahman, 2020) concluded that 73.5% of people believe COVID-19 is a harmful disease. Another study indicated that 45% of people believe they are at risk of contracting COVID-19. Men, African, Americans, and others who are less concerned about COVID-19 and more aware of their culture were more likely to believe they are not susceptible than their peers. (Scarinci et al., 2021). An Italian study found that health workers had a higher risk understanding, level of concern, and awareness about COVID-19 infection than the general population (Simione & Gnagnarella, 2020). In a different study, most people were worried 77.4% or were afraid (62.8%) and perceived susceptibility moderated the relationship between subjective health status and emotional reactions significantly (Inbar & Shinan-Altman, 2021).

In this study, more than two-fifths (44%) of participants had a medium level of perceived severity, one-third had a low level, and slightly more than one-fifth (22%) had a high level of perceived severity. On COVID-19, 43% of participants had low perceived barriers. More than two-fifths (43%) of participants had a medium level of self-efficacy, nearly two-fifths (39%) had a low level, and nearly one-fifth (18%) had a high level of risk perception. More than half (51%) of the participants saw medium-level cues to action. Kuang et al. (2020) found that COVID-19 remains an unknown hazard, and that the majority of people believe they are at no (60.4%) or low (23.4%) risk of contracting coronavirus. Just, 8.7 % thought there was a medium risk, and 7.6 % thought there was a high risk. A subsequent study found an association between perceived susceptibility and the seriousness of illness (Weinstein et al., 1991). Another research showed, 91.6% of people believe COVID-19 is extremely contagious, with symptoms comparable to flu and influenza, 84.4% the coronavirus would have a greater effect, 76% and that 45.8% believe it would take longer to recover (Zegarra et al., 2020).

The present study found that most respondents reported a medium rather than a lower-level perception or belief about all the constructs. Very few respondents had a high-level risk perception regarding COVID-19. A study of Iranian medical students reported they perceived themselves to have a mild risk (Taghrir et al., 2020). Another study found similar results that COVID-19 risk perception was moderate to high (Mya Kyaw et al., 2020). Some earlier studies found different results from ours. An online survey conducted on Nepalese health workers found that they perceived their risk of COVID-19 to be high (Sharma et al., 2020). COVID-19 patients in Wuhan China and waiters in Southern Ethiopia Zhong et al. (2021) and Asefa et al. (2020)respectively found respondents had a higher risk perception of the COVID-

19. During the first wave of COVID-19, a systematic study found that the perceived seriousness of the disease was significantly higher than the perceived vulnerability to haveing COVID-19 (Clavel et al., 2021).

**Health Protective Behaviours**

Overall, the findings of this study indicated that the PHB of respondents seemed low. The situation includes hand washing, using turmeric and hot water, using face mask, avoiding public transportation, avoiding crowded places, using sanitising, and use of gloves. In contrast with our findings such as almost all participants used recommended protective measures to an appropriate degree, except for wearing masks and gloves (Girma et al., 2020). Nepalese health workers' preventive behaviour was high despite access to an enabling environment was limited (Sharma et al., 2020). Earlier studies are in favour of our findings such as about 88% of participants washed their hands more frequently and for longer periods, while about 82% avoided busy areas, decreased personal meetings and connections, and kept their distance from other people (78%) and 58% using disinfectants (Lüdecke & von dem Knesebeck, 2020). Health workers' preventive behaviour was low, especially among males. Gloves, surgical masks, N95 masks, protective glasses, disposable aprons/overalls, and aprons/jerseys were all used at a rate of 96.6%, 98%, 36%, 21%, 12%, and 22%, respectively (Arslanca et al., 2021). A systematic review conducted on adult found that they were knowledgeable about protective behaviours such as hand-washing, mask-wearing, social distancing, and avoidance behaviours (Clavel et al., 2021).

**Association between Risk Perception and Health Protective Behaviour**

This study found a significant difference between levels of risk perception for instance vulnerability, seriousness, benefit, self-efficacy, and action cues, and PHB, $p=<0.01$. Consistent with the present findings, fear and the associated risk perception play a direct and indirect role in preventive behaviours (Cori et al., 2021). In a similar vein, the high-risk perception was positively associated with adherence to more than one protective measure against COVID-19 (Oyetunji et al., 2021). An earlier study conducted by Schneider et al. (2021) found a strong positive relationship between health-protective behaviours and risk perception. It means that higher levels of risk perception were correlated with higher levels of protective behaviours. Furthermore, it demonstrates that while health-protective behaviours are related to risk perception, they are not causal (Schneider et al., 2021). If the likelihood of those around us being infected was high, the person felt that further social distancing was needed to reduce the risk (Savadori & Lauriola, 2021). Yıldırım et al. (2021), found susceptibility, perceived risk, and fear were all significant predictors of protective behaviour.

Based on presumed susceptibility and interest in health-promoting behavioural measures, a study using the HBM conducted in theGerman and Australian population divides people into four categories and found that group 1 has a lower perception of coronavirus severity as well as a lower perception of susceptibility to the disease, indicating a low danger perception and therefore a low desire to participate in health-related behaviours. Group 2 has a lower perceived susceptibility but still follows the rules; the average personal risk is not troubling, but the virus is considered extremely dangerous with perceived severity. Group 3 estimates the individual risk of infection as high, but only partially complies with preventive measures as the perceived benefits do not reflect an important incentive; whichmeans lower perceived severity of the disease. Individuals who belong to group 4 reported both a higher perceived vulnerability and perceived severity (Eichenberg et al., 2021). Another study found an association between overall risk perception, perceived vulnerability, and self-efficacy and using a preventative health behavioural practice (Girma et al., 2020). During the COVID-19 pandemic, vulnerability, physical threat, and fear were found to significantly increase engagement in preventive behaviours (Yıldırım et al., 2021), and greater perceived susceptibility was linked to higher emotional reactions (Levkovich & Shinan-Altman, 2021).

The levels of risk perception of the respondents of this study may have been insufficient due to their low social, economic and educational status (Acharya et al., 2022). This study looks into the risk perception and COVID-19 PHB among labour migrant workers. If people believe COVID-19 is a low-risk virus, the government's efforts to control it can fail. People who believe the risk is low are often more likely to pass it on to others without taking any precautions. The second phase of COVID-19 is spreading in South Asia as we mentioned in this article, which has resulted in more Nepali workers returning home. To condense as well as prevent the spread of COVID-19 and increase risk perception and PHB during the pandemic, public awareness and risk communication are needed.

The purpose of this study was to look at all of the constructs in the HBM to see if they could be used to predict participants' COVID-19 PHB. Our study is, of course, not without shortcomings. This study paints a vivid picture of risk perception and protective behaviour in the context of COVID-19. This study also found a positive relationship between HBM constructs and protective health behaviour, but it was unable to prove causality. Second, there were only two areas of focus  risk perception and PHB. Risk communication and knowledge of COVID-19 have not been included in this study. So, this study has covered only a limited number of study variables. Third, the study generalizes the ability  of the entire migrant

population to be minimal since it only included migrant workers from one quarantine centre. Fourth, the process of the data collection method was structured. As a result, respondents were unable to convey their distinct subjective feelings and views. Finally, the principal author and co-authors of this study were unable to engage in the data collection process due to the COVID-19 lockdown and victimization. The fact that the data was collected by people from outside of the study, thus this study may not be free from bias.

## Conclusion

This study shows low-risk perceptions regarding COVID-19. This suggests that most individuals do not perceive COVID-19 as posing a significant risk to their well-being. Despite low-risk perceptions, the exhibit responsible behavior by adhering to recommended preventive measures. This study highlights a significant relationship between respondents' risk perception level and protective health behaviors. The study emphasized the importance of awareness to increase risk perception among people who returned from India during the outbreak.

## Author's Contribution

SPK: Design of the study, analysis of data, interpretation of data, drafting, and approval of the final version of the manuscript. SPK, CS, KB & MS: Conception of the study, interpretation of data, revised the manuscript critically, approved the final version of the manuscript. SPK, CS, KB: collection of data, analysis of data and drafting, SPK, CS, KB, EvT& JA, RBP: Conception of the study, interpretation of data, SK, KV, EvT, PB & UG: revised the manuscript critically, approved the final version of the manuscript.

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