Al Ameen J Med Sci 2025;18(3):176-179 ● US National Library of Medicine enlisted journal ● ISSN 0974-1143

ORIGINAL ARTICLE CODEN: AAJMBG

To assess the impact of dietary habits on severity of COVID 19 in healthcare workers – A cross-sectional study

Divya Mendiratta[1] and Vanishree S. Bubanale[2*]

[1]MBBS Final year student, KAHERs, Jawaharlal Nehru Medical College, Nehru Nagar, Belagavi-590010, Karnataka, India and [2]Department of Biochemistry, KAHERs, Jawaharlal Nehru Medical College, Nehru Nagar, Belagavi-590010, Karnataka, India

Received: 17th March 2025; ***Accepted:*** 15th June 2025; ***Published:*** 01st July 2025

Abstract: *Background and Objectives*: Since it began in 2019, the COVID-19 epidemic has affected almost every nation on the planet. Lockdown has caused a substantial shift in people's eating habits, with a surge in the consumption of preserved goods and fast food. This change in eating habits had a much bigger effect on people's lives. There is a great knowledge vacuum on how minor dietary modifications might have a significant impact on the risk of developing corona. However, there is little data to support a link between dietary quality and the risk and severity of COVID-19. Hence this study was carried out to close that comprehension gap between people. It was a cross-sectional study conducted during the period January 2021 to December 2021. *Methods:* It was a cross-sectional study conducted for a period of ONE year during the delta wave period. Method of data collection was through the questionnaire approach. *Results:* We were able to find an association between severity score and dietary score of the patient. A positive correlation of 0.45 was identified using the Chi-square test. This value indicates a moderate positive correlation, suggesting that individuals with higher dietary scores (indicative of a poorer diet) tend to have higher severity scores (indicating more severe effects of COVID-19 infection). *Conclusion:* According to the study's findings, the severity of corona infection was correlated with poor diet quality. Our findings suggest that reducing the pandemic's effects may depend on public health programs that improve nutrition.

Keywords: Covid 19, Eating Habits, Severity Score, Dietary Score, Pandemic.

Introduction

Since it began in 2019, the COVID-19 epidemic has affected almost every nation on the planet. More than 4 crore cases and almost 5 lakh deaths were reported in India alone [1]. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the virus that causes COVID-19, a highly contagious condition that is believed to be spread via droplet infection and droplet nuclei from human respiratory activities like as coughing, sneezing, breathing, or talking [2].

Because of this, several nations' governments implemented various limitations, such as lockdowns, which were necessary safeguards but also had a detrimental effect on people's behaviour and health. Lockdown has caused a substantial shift in people's eating habits, with a surge in the consumption of preserved goods and fast food. This change in eating habits has a much bigger effect on people's lives than is readily apparent. These alterations are raising their danger of catching COVID-19 in addition to making them more susceptible to lifestyle issues. The distal socioeconomic determinants of health may also be proximally indicated by eating a healthy diet. [3-5]. The extent to which small dietary changes may significantly affect the risk of getting corona is largely unknown. Our dietary choices have a direct impact on the severity of COVID sickness and its transmission, in addition to having a major impact on our immunity in general. However, even taking into account upstream social determinants of health, there is insufficient evidence to indicate a relationship between dietary quality and the risk and severity of COVID-19 in the general population. Therefore, the purpose of this study was to bridge that understanding gap between individuals.

Material and Methods

Source of Data: Institutional Ethical clearance was obtained prior to conducting the study (Reference No. MDC/JNMCIEC/399, dated 02-07-2022). The study was conducted as a cross-sectional analysis over a one-year period from January 2021 to December 2021. This period was chosen because it corresponded with the widespread transmission of the Delta variant of COVID-19, which exhibited varying levels of severity across the population.

Sampling Method: The study employed a universal sampling technique.

Inclusion Criteria: The study included healthcare workers who;

- Contracted the coronavirus during the study period (January 2021 to December 2021).
- Were willing to participate in the study by providing informed consent.

Exclusion Criteria: The study excluded healthcare workers who;

- Did not contract the coronavirus.
- Contracted the coronavirus outside the study duration (i.e., before January 2021 or after December 2021).
- Did not provide consent to participate in the study.

Data Collection Procedure: Data was collected using a structured questionnaire distributed among the eligible population. The questionnaire was designed to gather comprehensive information to achieve the study's objectives, focusing on two primary aspects;

- Dietary habits of participants during the study period.
- Their experiences during the period of COVID-19 infection.

The following were the questions included in the questionnaire;

1) How many days were you admitted to the hospital during the time you contracted coronavirus?
2) What symptoms did you get during the infection period? (Select multiple if applicable)
3) Did you suffer from any of the following after effects? (Select multiple if applicable)
4) Was your sense of smell affected?
5) How long did smell take to go back to normal?
6) Respond to this question, only if response to previous question is NOT marked as "smell sensation was normal"
7) Was your sense of taste affected?
8) During the infection what was the lowest level to which your oxygen percentage fell?
9) For how many days did you require a ventilator?
10) What kind of diet do you consume?
11) How frequently did you order fast food during lock down?
12) What all preserved food items did you use regularly during lock down? (Select multiple if applicable)
13) Which all sugary food items did you use regularly during lockdown? (Select multiple if applicable)
14) How much raw fruits and vegetables did you consume during the lockdown?

The questions from 1 to 9 gathered information regarding the severity of viral infection and questions from 10 to 14 were asked to assess about the dietary habits of the participants.

Plan of Analysis / Statistical Tools: The data collected was analysed using SPSS software (version 22). The statistical methods employed in the analysis included-

- *Chi-square tests* for assessing associations between categorical variables.
- *Multiple logistic regression analysis* to identify potential predictors and associations.

Sample size: Was calculated using the formula-

$n = 4pq/d2$
p = prevalence = 11.4 percent
$q = 100 - p = 100 - 11.4 = 88.6$
d = absolute error of 5%
$n = (4)(11.4)(100-11.4)/(5)(5)$
$= 161.6$
$= 162$

Results

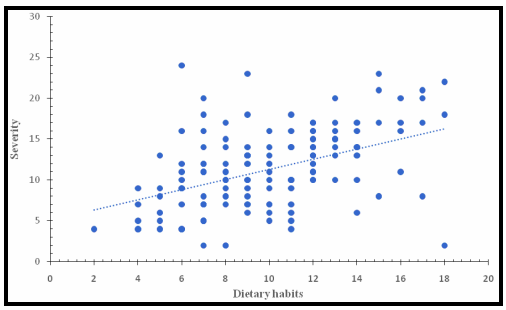
We were able to find an association between severity score and dietary score of the patient.

Association between Severity Score and Dietary Score: A positive correlation of 0.45 (Table 1) was identified using the Chi-square test. This value indicates a moderate positive correlation, suggesting that individuals with higher dietary scores (indicative of a poorer diet) tend to have higher severity scores (indicating more severe effects of COVID-19 infection) (Figure: 1).

Table-1: Pearson Chi-Square Tests

		Severity Group
Dietary habits Three groups	Chi square	25.147
	df	4
	significance	< 0.001

Fig-1: Correlation between diet and severity of Covid Infection



Association between Profession, Dietary Score, and Severity Score: The analysis found associations between: Profession and Dietary Score Profession and Severity Score which shows Higher education level correlates with a better dietary score, which in turn is associated with a lower severity score. This could suggest that individuals with higher educational levels are likely to follow healthier dietary habits, which might help mitigate the severity of COVID-19 symptoms (Table 2 and Table 3).

Table-2: Relation between dietary groups and severity of infection

		Severity					
		Mild		Moderate		Severe	
		Number	Percentage	Number	Percentage	Number	Percentage
Dietary groups	Healthy	52	68.4	22	28.9	2	2.6
	Moderate Healthy	31	37.8	50	61.0	1	1.2
	Unhealthy	2	50	1	25.0	1	25.0

Table-3: Association between profession and severity

Profession	Frequency	Percent
Doctor	78	48.1
Technician	6	3.7
Paramedical Staff	52	32.1
Reception Staff	26	16
Total	100	100

Discussion

Coronaviruses can cause significant lung damage and respiratory illnesses [6-10]. Online interfaces are handier for people, which is why some of the issues associated with the COVID-19 shutdown, such as ordering fast food, eating preserved foods, increasing weight, and decreasing mobility, are still present.

Healthy plant-based diets were associated with a lower risk and severity of COVID-19, according to Jordi Merino et al. Similar to the current investigation, the study also discovered a risk gradient between poor food quality and more socioeconomic deprivation, suggesting that the favourable association between diet and COVID-19 may be particularly apparent among those with higher socioeconomic deprivation [11]. Enhancing nutrition may lessen the burden of infectious diseases, according to a small number of studies [12-14]. Our results are consistent with early data suggesting that enhancing diet may lessen the prevalence of infectious illnesses [12-14]. The purpose of this study was to close the knowledge gap about the dietary changes and precautions that must be taken in

order to prevent the disease from having a serious impact on a person. Overconsumption of regular dietary components affects our body's flora over time.

Limitation of the study

- Since recall bias lasts for an average of around a year, there may be some discrepancies between the results and reality, and they may not recall the precise responses.
- Dietary analysis in terms of percentage of nutrients would have been done.

Conclusion

According to the study's findings, the severity of corona infection was correlated with poor diet quality. Our findings suggest that reducing the pandemic's effects may depend on public health programs that improve nutritional status of the individuals.

Implications: This study gave us a number of insights into different facets of eating patterns that might be applied in the future to create a diet that will give a healthy person the best defence against COVID-19. We can learn more about the impact of various dietary components on the severity of COVID 19 since the research focuses on various dietary patterns across the healthcare population that vary by socioeconomic status and level of awareness. The prepared questionnaire was based on the altered dietary habits during the pandemic in order to gather information about their consumption of fast food, which will give us an idea of the types of fat they consume; their consumption of preserved foods, which will give us an idea of how much salt they consume; and, finally, their consumption of sweets, which will allow us to determine the effect of their dietary sugar on the infection. The information gathered may be a valuable resource for identifying the beneficial and detrimental elements in our diet, particularly considering the COVID-19 pandemic and among the healthcare workers who were most impacted.

Financial Support and sponsorship: Nil

Conflicts of interest: There are no conflicts of interest.

References

1. World Ometer. Coronavirus Cases in India. As of April 13, 2024. Available from: *https://www.worldometers.info/coronavirus/country/india/*
2. Jayaweera M, Perera H, Gunawardana B, Manatunge J. Transmission of COVID-19 virus by droplets and aerosols: A critical review on the unresolved dichotomy. *Environmental research.* 2020; 188:109819.
3. Marmot MG, Stansfeld S, Patel C et al. Health inequalities among British civil servants: the Whitehall II study. *Lancet.* 1991; 337:1387-1393.
4. Belanger MJ, Hill MA, Angelidi AM et al. Covid-19 and Disparities in Nutrition and Obesity. *N Engl J Med.* 2020; 383:e69.
5. Rehm CD, Peñalvo JL, Afshin A et al. Dietary Intake among US Adults, 1999-2012. *JAMA.* 2016; 315:2542.
6. Leung C. Clinical features of deaths in the novel coronavirus epidemic in China. *Rev Med Virol.* 2020; 30: e2103.
7. Wu D, Wu T, Liu Q et al. The SARS- CoV-2 outbreak: what we know. *Int J Infect Dis.* 2020; 94:44–48.
8. Weiss SR, Leibowitz JL. Coronavirus pathogenesis. *Adv. Virus Res.* 2011; 81:85-164.
9. Su S, Wong G, Shi W et al. Epidemiology, genetic recombination, and pathogenesis of coronaviruses. *Trends Microbiol.* 2016; 24:490-502.
10. Chen Y, Liu Q, Guo D. Emerging coronaviruses: genome structure, replication, and pathogenesis. *J Med Virol.* 2020; 92:418-423.
11. Merino J, Joshi AD, Nguyen LH, Leeming ER, Mazidi M, Drew DA, Gibson R, Graham MS, Lo CH, Capdevila J, Murray B. Diet quality and risk and severity of COVID-19: a prospective cohort study. *Gut*. 2022; 70(11):2096-2104.
12. Belanger MJ, Hill MA, Angelidi AM et al. Covid-19 and Disparities in Nutrition and Obesity. *N Engl J Med.* 2020; 383:e69.
13. Storm I, Den Hertog F, Van Oers H et al. How to improve collaboration between the public health sector and other policy sectors to reduce health inequalities? - A study in sixteen municipalities in the Netherlands. *Int J Equity Health.* 2016; 15.
14. Calder PC. Nutrition, immunity and COVID-19. *BMJ Nutr Prev Heal.* 2020; 3:74-92.

Cite this article as: Mendiratta D and Bubanale VS. To assess the impact of dietary habits on severity of COVID 19 in healthcare workers – A cross-sectional study. *Al Ameen J Med Sci* 2025; 18(3): 176-179.

*All correspondences to: Dr. Vanishree S. Bubanale, Professor, Department of Biochemistry, KAHERs, Jawaharlal Nehru Medical College, Nehru Nagar, Belagavi-590010, Karnataka, India. Email: vanishreebubanale@gmail.com