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KNOWLEDGE AND PERCEPTION REGARDING COVID-19 AMONG NURSING STUDENTS IN SELECTED NURSING COLLEGE, KOCHI, INDIA

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ABSTRACT

Background: COVID 19 pandemic has continued to be the cause of profound morbidity and mortality globally. Nursing students being the future health care providers, their knowledge and perception regarding COVID 19 will certainly affect the patient outcomes and therefore needs to be explored. The purpose of the study was to determine the nursing students knowledge and perception about COVID 19 and to find their association with selected socio demographic variables. **Material and Methods:** A web-based survey among 280 B.Sc. Nursing students of a selected college in Kochi was conducted from February 2021 to April 2021. The data were collected through non-probability, convenience sampling technique using Google forms. A structured questionnaire and a five-point Likert scale were used to assess the knowledge and perception about COVID 19. **Results:** Among 280 nursing students, (179, 64%) of the participants possessed 'adequate' knowledge about COVID 19. (227, 81%) of the nursing students demonstrated positive perception about COVID 19 and a significant association was found between the 'year of study' of the students and their 'knowledge' level ($\chi2=19.53$, $p=0.003$) and 'perception' about COVID 19 ($\chi2=14.20$, $p=0.027$). **Conclusion:** This study concludes that nursing students have adequate knowledge and positive perception about the COVID 19. However, maintaining the knowledge levels amidst of rapidly evolving mutations of the corona virus that can elude the current tests, treatment and vaccines is a challenge.

KEYWORDS: Knowledge, Perception, COVID -19, Nursing Students.

INTRODUCTION

COVID-19 pandemic is an evolving highly infectious disease causing illness ranging from mild symptoms of common cold to very severe acute respiratory syndrome.[1] The World Health Organization declared COVID-19 pandemic as a health emergency on 30thJanuary 2020 and then a global pandemic on 11th March, 2020.[2] According to WHO's situation report on September 2020, approximately 32,730,945 confirmed cases and 991,224 deaths from COVID 19 were reported globally.[3] The battle against COVID-19 is still continuing in many parts of the world and mainly in India.[4] It was found that lack of knowledge about COVID-19 transmission, inadequate understanding of the population at risk and not paying attention to preventive measures among health care workers may result in delayed treatment and the rapid spread of the infection. Guidelines for the prevention and control of COVID-19 for health-care workers were published by the WHO.[1] As the number of cases increased by time, most nations strictly implemented many unprecedented steps to raise the awareness and improve knowledge about COVID-19. The exact pathogenesis of COVID 19 is being studied all over the world to find an effective cure for the disease. Meanwhile, the SARS- CoV-2 virus causing COVID 19 is mutating quickly which may make the tailored treatments and vaccines ineffective overtime.[5] So, the real challenge faced by the health care fraternity is to keep themselves updated with the all

the information about prevention and control of COVID 19.

An outbreak of a viral infection called COVID-19 or Corona virus infection was reported in Wuhan in December 2019 in Wuhan, China.[6] The first case of COVID-19 in India was reported on 30 January 2020.[7] As per Corona virus disease (COVID-19) Weekly Epidemiological Update by WHO, from 3 January 2020 to 13 September 2021, there have been 33,264,175 confirmed cases of COVID-19 with 442,874 deaths in India. Currently India has the largest number of confirmed cases in Asia and is only second to United States in the world. As of the day, 12 September 2021, a total of 5,534,977,637 Covid vaccine doses have been administered globally, out of which 699,062,776 vaccine doses were administered in India.[1]

It was from the Thrissur District of Kerala, the first case of the COVID-19 infection in India was reported and thereafter the COVID 19surge became unpredictable in Kerala. As of 13 September 2021, 27,254 new COVID-19 cases and 219 deaths were reported from Kerala. The worst COVID hit districts of Kerala were Ernakulam with the highest number of Covid-19 cases (2,572) followed by Thrissur (2,451), Thiruvananthapuram (1,884), Kozhikode (1,805) and Kottayam (1,780). Kerala now has the second highest number of confirmed cases in India, after Maharashtra.[8]

All health care providers especially nurses are on the frontline battling against this pandemic. Nursing service is a vital component of healthcare delivery system that reaffirms its purpose as a practical discipline in assisting patients to achieve positive health outcomes.[9] The world have witnessed unprecedented over work by nurses directly involved in the response to the COVID-19 pandemic. On 3 March 2020, the Indian Nursing Council reported to the government that India has 1.7 nurses per 1000 population which is 43% less than the World Health Organization norm (3 per 1000).[10] So a cardinal decision was undertaken by the Ministry of Health& Family welfare in India that doctors preparing for post-graduation entrance tests, hospital interns, final-year medical students and final-year B.Sc nursing students can be deployed into service to fight against the Covid-19.[11] The nursing students contribution is a sustenance to the over stretched healthcare force. But as they are still learners contracting the disease to self and others is the major risk associated with their placement.[12]

Being a highly infectious disease with no definitive therapeutic drug, prevention is the only and the most important strategy. Awareness and preventive measures are essential to control the spread of COVID-19. Understanding the spectrum of illness and the pathogenic mechanism of the disease in a vulnerable population is critical.[13] Health care authorities have already initiated awareness and preparedness activities worldwide and Indian government have undertaken these activities with utmost importance.[14] The success of any preventive strategy depends on public adherence and individual willingness to take precautions. A study conducted by Papagiannis D (2020) to assess the knowledge, attitudes and practices towards prevention of new Corona virus (SARS-CoV-2) infection among 461 health care workers in Greece showed that the majority of subjects (88.28%) had a good level of knowledge and their knowledge score was significantly associated with both attitudes score ($p = 0.011$) and practices score ($p < 0.001$), indicating that Greek health care workers with a high knowledge score demonstrated a more positive perception and practice of preventive measures. The study concluded that exact perception about the associated risk will increase the adherence to control measures.[15]

The health care professionals' adherence to preventive measures is essential to fight against the pandemic. A cross-sectional web-based survey conducted by Kumar H & et al (2020) to assess the knowledge and perception regarding COVID-19 among 780 health care professionals in India, using voluntary sampling technique revealed that around 50% of the participants had good knowledge and nearly half of them (49.2%) had positive perception about COVID 19. The study concluded that high level of knowledge and perception of health professionals about SARS-CoV-2 will contribute to the successful management of the pandemic.[16]

Preparing students in healthcare profession for the pandemic is crucial as they may get exposed to COVID positive patients when they are involved in screening and awareness programmes and providing care to patients.[17] The nursing schools were entrusted the responsibility by the Government of India for screening and vaccinating nursing students, providing personal protective equipment and sharing structured guidelines to provide safe patient care and protect themselves.[18] COVID-19 is an infection which spreads in an exponential pace.[19] Its pathogenesis is being studied to find out a specific cure for the infection. Meanwhile, social distancing, maintaining general health and use of PPE (Personal Protective Equipment) like N95 Face mask, face shield and frequent hand washing are the measures to be adopted to protect oneself from the infection.[20] Besides they need to keep themselves updated whenever new information about the virus is released. Their decisions and actions have a direct influence on patient outcomes.[21] Therefore, the knowledge and perception of nursing students about prevention and control of COVID-19 should be explored.

MATERIALS AND METHODS

Study design

A non-experimental, descriptive design was adopted for the study. The study was conducted as a web-based survey.

Study area
The study included all the nursing students in all four batches within the age group of 18-21 years, studying on a regular basis in the Bachelor of Nursing program in the selected nursing college in Kochi district of Kerala.

Sampling tool/ technique
The minimum sample size was estimated statically based on a previous cross-sectional study conducted by K P Joshi, Madhuri L & Jamadar D among nursing students regarding COVID in 2020. A total of 280 Nursing Students of the selected nursing college were recruited into the study using non-probability, convenience sampling technique after considering the inclusion and exclusion criteria.

Data collection
After obtaining ethical clearance, the online data collection was done through Google forms [survey administration software offered by Google]. An online informed consent was obtained from all study participants before they proceeded to the questionnaires. The class coordinators of each batch were utilized to share with the students the link to participate in the study through WhatsApp mobile application. The approximate time to complete the three questionnaires was 15 to 20 minutes.

Data Sources
The primary data was collected from the administration of three data collection instruments. A structured questionnaire was used to assess the socio demographic data of the participants. Another structured questionnaire formulated by the researchers using reference material and information leaflets on COVID 19 developed by WHO [World Health Organization], CDC [Centre for Disease Control] and Ministry of Health & Family Welfare, Government of India was used to assess their knowledge. The knowledge questionnaire covered three domains: Epidemiology (1,2,3,4,9,11,12,16,18, 20,21,26,27), Prevention & Control measures (7,8,17,19,22,23,25,29,30) and Diagnosis & Symptomatology (5,6,10,13,14,15,24,28) of COVID 19. The questionnaire included 30 Multiple Choice Questions with 4 options for each question. The total knowledge score ranged from 0 to 30. The total scores were interpreted as 0 to 15 (<50%) 'Poor', 15 to 23 (50-75%) 'Adequate' and 24 to 30(>75%) 'Good'. The third tool was a structured five-point Likert scale to assess the perception regarding COVID-19. It was prepared by the researchers and consisted of 14 items which included seven positive items (item no:3,5,7,9,11,12 & 13) and seven negative items (item no: 1,2,4,6,8,10 & 14) related to COVID-19 symptomatology, mode of transmission and preventive measures. The responses to negative statements were scored as 5(Strongly disagree), 4 (Disagree), 3(Neutral), 2(Agree) and 1(Strongly agree). The positive statements were reverse scored. The minimum score was 14 and the maximum perception score was 70. The perception was interpreted from the total score (14-41) Negative, (42) Neutral and (43-70) Positive perception.

Data Analysis
The information collected from the participants were scored, tabulated and saved as master spread sheet in Microsoft Excel. The data analysis was done using the SPSS [Statistical Package for Social Sciences] 20.0 version. Frequency, percentage, mean and standard deviation were used to explain the demographic variables, level of knowledge and perception about COVID 19. Pearson's Chi Square test was used to analyze the association between the Nursing students' knowledge and perception about COVID 19 with their demographic variables.

Quality Control
All the questionnaires were pre-evaluated by nursing experts and pre-tested among some students. No potential problems were identified. The Google form containing the questionnaires and the Likert scale was preset to accept responses from each participant only once.

Ethical consideration
Ethical clearance for the study was obtained from the Institutional Review Board of Amrita Vishwa Vidyapeetham and Research Committee of Amrita College of Nursing. Permission was sought from the Head of the Institution prior to data collection. The names of the participants were kept anonymous and confidentiality was maintained throughout the study.

RESULTS

Table 1: Socio demographic characteristics of respondents.

N= 280

Sl.No.	Characteristics	Frequency F	Percentage %
1	**Age**		
	17-19 years	62	22.1
	20-22 years	218	77.9
2	**Gender**		
	Male	5	1.8
	Female	275	98.2
3	**Year of Study**		

	First Year	9	3.2
	Second Year	95	33.9
	Third Year	95	33.9
	FourthYear	81	28.9
4	**Socioeconomic Status**		
	Upper class	5	1.8
	Middle class	271	96.8
	Lower class	4	1.4
5	**Type of Family**		
	Nuclear Family	231	82.5
	Extended Family	5	1.8
	Joint Family	44	15.7

Table 1 reveals that in the present study, more than three quarters of subjects, (218, 77.9%) belonged to the age group 20-22 years, with the high majority, (275, 98.2%) being females. The major proportion of students who participated in the survey were (95, 33.9%) students from second year and third year B.Sc. Nursing programme. Majority of the students (231, 82.5%) responded that their type of family was nuclear and almost all the respondents (271, 96.8%) claimed their socioeconomic status as middle class.

Table 2: Respondent's Knowledge regarding COVID-19.

N=280

Sl. No	Level of Knowledge	No. of Respondents	Percentage	Minimum Score	Maximum Score	Mean & SD
1	Poor Knowledge	75	27	5	24	16.27±3.668
2	Adequate Knowledge	179	64			
3	Good Knowledge	26	9			
	Total	**280**	**100**			

Table 2 illustrates the knowledge about COVID 19 among the nursing students. More than half of the students, (179, 64%) had 'adequate' knowledge about COVID 19 while (75, 27 %) had 'poor' knowledge regarding COVID-19.

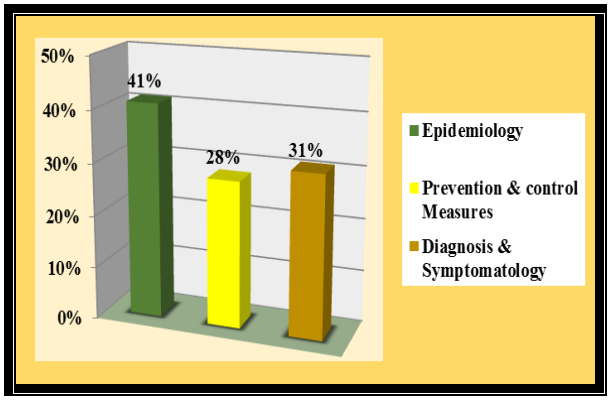
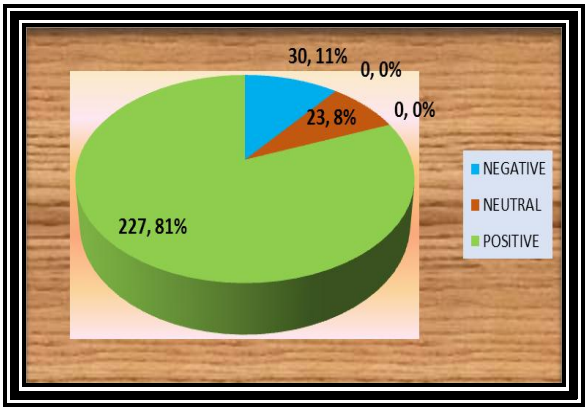


Figure 1: Nursing Students' Knowledge on Epidemiology, Prevention & Control Measures, Diagnosis & Symptomatology of COVID-19.

Figure 1 shows the section wise analysis of responses to the knowledge questionnaire about COVID 19. Nearly half of the participants (114, 41%) gave correct responses to the epidemiology of COVID 19, while (78, 28 %) and (87, 31%) correctly answered the questions about prevention and control measures and diagnosis & Symptomatology of COVID-19, respectively, indicates that students had better knowledge about the epidemiology of COVID-19



N=280

Figure 2: Respondent's based on perception regarding Covid-19.

Figure 2 shows the perception of nursing students about COVID 19. More than three quarter of the students (227, 81%) had positive and (30, 11%) had negative perception about COVID 19.

Table 3: Respondent's Perceptiontowards COVID 19.

N =280

Sl No	Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
		1	2	3	4	5		
1.	COVID-19 symptoms will appear within 2-4 days	29(10.4%)	57(20.4%)	102(36.4%)	85(30.4%)	7(2.5%)	3.06	2.70
2.	Persons with COVID-19 cannot transmit the virus to others when a fever is not present.	73(26.1)	99(35.4.6%)	55(19.6%)	38(13.6%)	15(5.4%)	3.63	3.30
3.	COVID -19 is fatal	16(5.7%)	36(12.9%)	121(43.2%)	73(26.1%)	34(12.1%)	3.26	2.90
4.	Flu vaccination is sufficient for preventing COVID-19	52(18.6%)	98(35%)	101(36.1%)	17(6.1%)	12(4.3%)	3.58	3.19
5.	During outbreak, eating well cooked and safely handled food is safe	11(3.9%)	13(4.6%)	68(24.3%)	116(41.4%)	72(25.7%)	3.80	3.42
6.	Eating or contacting wild animals would result in the infection by COVID-19 virus.	10(3.6%)	83(29.6%)	118(42.1%)	49(17.5%)	20(7.1%)	3.05	2.67
7.	Sick patients should share their recent travel history with health care providers.	14(5%)	9(3.2%)	53(18.9%)	87(31.1%)	117(41.8%)	4.01	3.64
8.	The person infected with novel Corona virus definitely develops symptoms.	16(5.7%)	57(20.4%)	116(41.4%)	70(25%)	21(7.5%)	2.92	2.56
9.	Disinfect equipment and working area at least once a day	6(2.1%)	4(1.4%)	63(22.5%)	123(43.9%)	84(30%)	3.98	3.56
10.	Diet rich with garlic protect from Corona virus infection.	5(1.8%)	38(13.6%)	145(51.8%)	72(25.7%)	20(7.1%)	2.77	2.37
11.	PPE protects from Corona virus infection.	23(8.2%)	59(21.1%)	105(37.5%)	72(25.7%)	21(7.5%)	3.03	2.69
12.	Washing hands with soap and water prevent transmission of infection.	8(2.9%)	10(3.6%)	60(21.4%)	129(46.1%)	73(26.1%)	3.89	3.48
13.	COVID-19 is transmitted through air contact	8(2.9%)	7(2.5%)	71(25.4%)	124(44.3%)	70(25%)	3.86	3.45
14.	At present there is effective cure for COVID-19	10(3.6%)	22(7.9 %)	120(42.9%)	102(36.4%)	26(9.3%)	2.60	2.23

Table 3 depicts the perception of nursing students in terms of each item in the Likert Scale about COVID 19. Among 280 subjects, (85, 30.4%) participants agreed that 'COVID-19 symptoms will appear within 2-4 days'. Around (15, 5.4%) strongly agreed that persons with COVID-19 cannot transmit the virus to others when a fever is not present. Only (16, 5.7%) students strongly disagreed that 'COVID 19 is fatal'. Approximately (12, 4.3%) subjects strongly agreed that flu vaccination is sufficient for preventing COVID-19. Majority of the participants (116, 41.4%) agreed that 'during outbreak, eating well cooked and safely handled food is safe' Smallest amount of people strongly disagreed that eating or contacting wild animals would result in the infection by COVID-19 virus and (117, 41.8%) strongly agreed that sick patients should share their recent travel history with health care providers. Least amount of participants (16, 5.7%) strongly disagreed that the person infected with novel Corona virus definitely develops symptoms. But nearly half of the students (123, 43.9%) agreed to disinfect equipment and working areas at least once a day. Very little amount of students (5, 1.8%) strongly disagreed that diet rich with garlic protect from corona virus infection. Only (21, 7.55%) strongly agreed that 'PPE protects from Corona virus infection'. It is notable that most of the students (129, 46.1%) agreed that 'washing hands with soap and water prevents transmission of infection'. (124, 44.3%) agreed that COVID-19 is transmitted through air contact. Nearly one third of the subjects (102, 36.4%) agreed that 'at present COVID 19 can be treated effectively'.

Table 4: Association between Knowledge regarding COVID-19 and selected Socio-demographic variables.

N =280

Sl No	Demographic Variable	Knowledge			Chi Square Value	P Value
		Poor	Adequate	Good		
1	**Age**				5.376	0.068
	17-19 years	13	38	11		
	20-22 years	27	125	66		
2	**Gender**				1.931	0.381
	Male	1	4	0		
	Female	39	159	77		
3	**Year of Study**				19.534	0.003
	First year	2	6	1		
	Second year	20	55	20		
	Third year	15	58	22		
	Fourth year	3	44	34		
4	**Socioeconomic status**				3.563	0.468
	Upper class	1	2	2		
	Middle class	39	157	75		
	Lower class	0	4	0		
5	**Type of family**				4.127	0.389
	Nuclear Family	31	133	67		
	Extended Family	2	2	1		
	Joint Family	7	28	9		

Significant at p<0.05

Table 4 shows that there is statistically significant association between year of study and level of knowledge of the nursing students, ($\chi2$=19.53, p = 0.003). The other socio-demographic variables such as age, gender, religion, socioeconomic status and type of family of nursing students have no association with their 'knowledge regarding COVID-19.

Table 5: Association between Perception towards COVID-19 and selected Socio-demographic variables.

N=280

Sl No	Demographic Variable	Perception			Chi Square Value	P Value
		Negative	Neutral	Positive		
1	**Age**				1.014	0.602
	17-19 years	5	4	53		
	20-22 years	70	69	79		
2	**Gender**				1.189	0.552
	Male	0	0	5		
	Female	30	23	222		
3	**Year of Study**				14.201	0.027
	First year	3	0	6		
	Second year	8	4	83		
	Third year	13	7	75		
	Fourth year	6	12	63		
4	**Socioeconomic status**				2.171	0.704
	Upper class	0	0	5		
	Middle class	30	23	218		
	Lower class	0	0	4		
5	**Type of family**				1.142	0.887
	Nuclear Family	25	20	186		
	Extended Family	1	0	4		
	Joint Family	4	3	37		

Significant at p<0.05

Table 5 shows that there is statistically significant association between the year of study and nursing students' perception about COVID 19 ($\chi2$=14.20, p= 0.027). The other socio-demographic variables such as

age, gender, religion, socioeconomic status and type of family of nursing students found to have no association with their perception about COVID 19.

DISCUSSION

The present study was undertaken to assess the knowledge and perception about COVID 19 among nursing students. The first objective of the study was to assess the knowledge and awareness about COVID 19 among nursing students. This study results shows that more than half of the students, (179, 64%) had 'adequate' knowledge while (75, 27 %) 'poor' knowledge regarding COVID-19. The present study was in tune with study conducted by Abhirami P on 'knowledge regarding COVID 19 pandemic' among 213 student nurses in Chennai in 2020, showed that more than half of the students, (121, 56.8%) had adequate knowledge and (3, 1.4%) had poor knowledge regarding COVID-19.[24] The study finding is also in line with other studies where overall 56.5% of university students in Jordan (N=2083) showed good knowledge[22] and more than half, 67.6% of 715 medical allied health students in Turkey displayed 'moderate' (50-75%) level of knowledge about COVID 19.[23]

The second objective of this study was to assess the perception of nursing students regarding COVID-19. The remarkable finding of this study was that more than three quarter of the respondents 81% (227) had positive and 11% (30) had negative perception about COVID 19. This study finding is in congruent with the finding of the cross-sectional study conducted by Lettor KBI et al where majority of the high school students, 86.7 % had a positive perception about COVID-19 transmission and control.[24] This finding is also supported by the study conducted by Awale S et al in Nepal in June 2020 which reported that more than half of the (N=382) nursing students had favorable attitude towards COVID.[25]

The third objective of the study was to find the association between the selected demographic variables with knowledge and perception of nursing students. The present study shows that the demographic variable 'year of study' has a statistically significant association (p> 0.005) with the knowledge level of nursing students (p value of 0.003) ($\chi2$=19.534). The results indicated that the student's knowledge increased as they go higher in the academic ladder. Similar findings were observed by Mohammed Hamdan et al in their multi-university study among 1,226 student nurses in Saudi Arabia in 2020 and they attributed the senior students' profound understanding about COVID 19 to the theoretical courses they have undergone and exposure to cases during their clinical posting.[26]

The fourth objective was to find the association between the selected demographic variables with perception of nursing students. The present study also illustrates that the demographic variable 'year of study' has a statistically significant association with the nursing students perception about COVID 19 ($\chi2$=14.20, p=0.03). The other demographic variables such as age, gender, religion, socioeconomic status and type of family of nursing students found to have no association with their perception about COVID 19. This finding is in contrast with the study findings of Sasmal S and Roy M in West Bengal in 2020 among nursing students[27] and Pandit N and Raut A among the medical and allied health science students in India[28] that there is no significant association between students' perception about COVID 19 and their year of academic study.

CONCLUSION

This study concludes that the nursing students have adequate knowledge and positive perception regarding COVID-19 symptomatology, mode of transmission and preventive measures. This is a promising finding that the members of the future frontline healthcare work force are well equipped to tackle the pandemic. The study was conducted immediately after the students' return to the college following lockdown in Kerala. They have not received any academic course or formal teaching on COVID 19. So, the study findings can be considered as an acknowledgement to all the initiatives undertaken by the Government of India & media partnering with the World Health Organization to improve the awareness of the public about COVID 19 and consistent effort of nursing educational institutions to empower students considering their vulnerability to Corona Virus. A Corona virus pose a challenge today and tomorrow as it is ever evolving which makes it mandate for all medical and allied health science students to check regularly about the information on COVID 19 to keep themselves and their patient's safe.

LIMITATIONS

The study is limited to the undergraduate nursing students at a selected college of nursing in Kochi, Kerala. The proportion of male students is small by default in the nursing programme thus gender-based variations could not be assessed. Similarly, the proportion of first year B. Sc students involved in the study was small. Appropriate representation of nursing students based on their year of study and number of students in each year could not established by convenience sampling technique. Moreover, the programming of Google forms to close the survey by default when the sample size is met increased the likelihood of students who accessed the link as soon as they received it, to be included in the study. Hence the findings cannot be generalized.

Recommendations

Conflict of Interest

There is no conflict of interest for the study.

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