SJIF Impact Factor: 5.464

WORLD JOURNAL OF ADVANCE HEALTHCARE RESEARCH

ISSN: 2457-0400
Volume: 6.
Issue: 6
Page N. 93-100
Year: 2022

Original Article www.wjahr.com

EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE AND ATTITUDE REGARDING CONVALESCENT PLASMA THERAPY IN TREATMENT OF COVID 19 AMONG NURSING STUDENTS

***[1]Aparna C. Lakshmy, [2]Gopika Saju and Lakshmi Krishna S.[3]**

[1]Nursing Lecturer Amrita College of Nursing, Amrita Vishwa VidyapeethamUniversity, Kochi-41,Kerala 682041.
[2]Fouth Year BSc.Nursing Student, Amrita College of Nursing, AMRITA Vishwa Vidyapeetham, Health Sciences Campus, Kochi.
[3]Fouth Year BSc.Nursing Student, Amrita College of Nursing, AMRITA Vishwa Vidyapeetham, Health Sciences Campus, Kochi.

Received date: 30 March 2022 **Revised date:** 20 April 2022 **Accepted date:** 10 May 2022

***Corresponding Author: Aparna C. Lakshmy**

Nursing Lecturer Amrita College of Nursing, Amrita Vishwa VidyapeethamUniversity, Kochi-41,Kerala 682041.

ABSTRACT

The present study was intended to assess the effectiveness of structured teaching programme on knowledge and attitude regarding convalescent plasma therapy in treatment of COVID- 19 among nursing students. The objectives were to assess the effectiveness of training programme on knowledge and attitude regarding convalescent plasma therapy in the treatment of COVID 19 among nursing students and to find the association between knowledge and attitude regarding convalescent plasma treatment with selected socio demographic variables. Quasi experimental design was adopted for the study. The sample include 100 nursing students which was selected by stratified sampling technique. The tools used were structured questionnaire to collect sociodemographic data ,structured knowledge questionnaire to assess the level of knowledge and rating scale to assess the attitude. The findings revealed that, greater number of the nursing students had average knowledge and moderately favourable attitude regarding convalescent plasma therapy in treatment of COVID 19.The t- value revealed a significant improvement in the level of knowledge($t=10.11, p<0.01$) and attitude($t=5.83, p<0.01$) after the structured teaching programme .

KEYWORDS: Effectiveness, Structured teaching programme, Knowledge, Attitude, Convalescent plasma therapy, COVID-19, Nursing Students.

INTRODUCTION

COVID-19 due to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was announced a pandemic on 11 March (2020) by the World Health Organization (WHO)[1] Coronavirus is a deadly virus that mainly affects our respiratory system, GIT tract and Kidney. People with reduced immune system in their body fall prey to it. As there is no remedy to kill the virus, the best way to stop this pandemic is through precautions and to lower the viral load in the body.[2] To date, there are no proven therapies for infected patients. To combat the continuing pandemic, antibody-based treatments, such as monoclonal antibodies (mAbs), convalescent plasma (CP) therapies, and vaccine studies, have been investigated.[3] Based on the idea of passive immunization, convalescent plasma (CP) from COVID-19-convalescent donors has emerged as an choice for treatment and prevention of COVID-19 considering that ,it can rapidly be made accessible and, theoretically, could be used for providing immediate immunity to susceptible individuals through viral neutralization. CP transfusion can be used as a safe and useful treatment in moderately severe and severe patients.[4] This has increased attention to reduce large-scale epidemic disease. The early case series published from China on the therapeutic use of COVID-19 convalescent plasma (CP) showed a potential role in improving clinical symptoms, decreasing viral load and raising serum neutralizing antibody titres.[5] But, sadly, convalescent plasma donors are not forthcoming. This is largely due to the misconception that they may get reinfected during the donation process. Guidance is needed to the medical team mainly the nurses to direct blood centres and transfusion services on collection and manufacture of convalescent plasma. Existing gaps in knowledge regarding convalescent plasma need to be

identified to enable developing and defining recommendations on patient eligibility, administration, safety and monitoring of adverse events. Also future nurses can do a lots in bringing a positive attitude towards convalescent plasma therapy among general population and motivate them to donate plasma if they themselves have a positive attitude towards convalescent plasma therapy in COVID-19 treatment.

Viswasini (2020) conducted a survey on General Knowledge about COVID-19 and the importance of Convalescent plasma in the management of COVID -19 Tamil Nadu, India. The responses from 103 post graduate dental students were collected, tabulated and analysed using SPSS software. The result findings showed that around 90% of the dental students were aware of the convalescent plasma therapy and most of them suggested that plasma therapy is beneficial.[6]

Joshi (2020) conducted a cross sectional study among nursing student's Knowledge and awareness regarding the COVID-19, Telangana, India. A total of 407 nursing students taken by non-probability sampling, participated in this study. The results showed that 73.7 % nursing students aware about the treatment\vaccines for COVID -19. From the findings, the study concluded that regular educational and training programs on updates of COVID-19 and infection control measures across all healthcare professions including nursing student is very important.[7]

The aim of the present study is to understand the nursing student's knowledge and attitude regarding plasma therapy in the treatment of COVID -19 and to provide a structured teaching programme on convalescent plasma therapy in COVID-19 treatment .Its aim is to develop a sense of responsibility to prevent the morbidity and mortality due to COVID 19 for themselves as individuals, as members of heath team and as communities.

Statement of the Problem

Study to assess the effectiveness of structured teaching programme on knowledge and attitude regarding convalescent plasma therapy in treatment of COVID 19 among nursing students, Ernakulum district.

Objectives of the Study

Primary Objectives were to evaluate the effectiveness of structured teaching programme on knowledge and attitude towards convalescent plasma therapy for the treatment of COVID 19 among nursing students. Secondary objectives were to find the association between knowledge regarding convalescent plasma therapy in the treatment of COVID 19 and selected socio demographic data, find the association between attitude regarding convalescent plasma therapy in the treatment of COVID 19 and selected socio demographic data.

Operational Definitions

Effectiveness: Effectiveness refers to the degree to which the information given through educational intervention regarding convalescent plasma therapy in management of COVID 19 which is achieved by the nursing students in a desired level for improving the knowledge score and attitude scores which are measured by structured knowledge questionnaire and rating scale.

S**tructured teaching programme**: It refers to a systematically planned online teaching programme through google meet designed for the nursing students to impart information regarding convalescent plasma therapy in treatment of COVID 19.

K**nowledge:** Knowledge refers to the factual information regarding the importance of understanding convalescent plasma therapy in management of COVID 19 among nursing students which can be elicited as the pre-test and post -test scores.

Attitude: Attitude denotes to nursing student's tendency or predisposition to respond negatively or positively towards convalescent plasma therapy in treatment of COVID 19 which will be measured by using rating scale.

Convalescent plasma therapy: Convalescent plasma therapy refers to an investigational treatment for COVID-19, which includes the use of convalescent plasma of people who recovered from the COVID-19 infection recently.

COVID-19: COVID-19 (corona virus disease 2019) refers to highly contagious pathogenic viral infection first recognized in December 2019 and has announced as a pandemic on march 2020 which is caused by coronavirus 2.

Nursing Students: Nursing Students refers to the female and male students in the age group 17-25 years who studying in BSc Nursing programme in selected College of Nursing, Ernakulum District.

MATERIAL AND METHODS

Research approach and design: Quantitative, Quasi Experimental Research Design.

Research setting

The sample will be chosen from the students of Amrita College of Nursing, Ernakulum District.

Sample and sample size: 100 nursing students

Calculation

Based on effect of structured teaching programme on knowledge (23.71±2.36 v/s 15.14±4.10) and attitude (25.71±1.70 v/v 19.29±2.49) regarding convalescent plasma therapy in the treatment of COVID 19 among experimental group and control group observed from the pilot study conducted in 14 samples (7 cases an 7

controls) and with 80% power an d95% confidence the minimum sample size comes to 2 & 2 respectively. Therefore sample size finalized 50 samples in each group, totalling to 100 samples.

Sampling technique: Stratified sampling technique.

Sample selection criteria

Inclusion criteria

- BSc. Nursing students studying in selected college, Ernakulum District
- Age group of 17-25 years old.

Exclusion criteria

Nursing students who already attended any class\seminars\webinars on convalescent plasma therapy for treating COVID -19 with in last 1 weeks.

Instruments

Online Structured Questionnaire consisted of 3 sections

Section A: Sociodemographic data consisted of age, gender, year of study, area of residence religion, history of COVID-19,history of convalescent plasma therapy, previous knowledge on Convalescent plasma therapy, Previous class\seminars\webinars on Convalescent plasma therapy in the treatment of COVID-19 with in last 2 weeks,

Section B: Structured knowledge questionnaire to assess the knowledge regarding Convalescent plasma therapy **in** the management of COVID-19 among nursing students. It consisted of 30 multiple choice questions with 4 options for each question and samples are expected to choose one correct option for each. Each question carries1 mark. The maximum tool score of the questionnaire was 30 and score graded as 30-23 - excellent,22-16-good,15-8-Average,7-0-Poor.

Section C: Rating Scale to assess the attitude regarding Convalescent plasma therapy in the treatment of COVID-19 among nursing students. It consisted of 10 statements regarding convalescent plasma therapy in the management of COVID-19 and 3 responses such as agree, partially agree and disagree. The maximum score was 30 and the score was graded as Agree-3marks,Partially agree-2 marks and disagree- 1 mark. Negative statements are scored in reverse order. Score interpreted as 30-20 –favourable attitude, 19-10-Moderately Favourable attitude and below 10-unfavourable attitude.

Method of Data Collection

- Obtained permission from ethical committee, principal of Amrita college of nursing Ernakulum District.
- Detailed discussion with the class coordinators regarding the purpose and data collection procedures.
- Identified experimental and control group who fulfilling the sample selection criteria by stratified sampling technique.
- An online informed consent form filled first before collecting data.
- The Online Structured Questionnaire consisted of sociodemographic data, Structured knowledge questionnaire rating scale distributed through google forms.
- A time period of 20 to 30 minutes provided to the subjects for completing the online structured questionnaire.
- After the pre-test, structured teaching programme with a duration of 45 minutes on plasma therapy in the treatment of COVID -19 was given through google meet for the experimental group.
- Following the intervention, post-test was done after 2 weeks with same knowledge questionnaire and rating scale to both control and experimental group through google forms.

Statistical Analysis

Statistical Package for the Social Sciences statistical software (SPSS -21) was used for the analysis of data. Paired t –test was used to find the significant difference in the pre and post -test level of knowledge and attitude . Association of knowledge and attitude with socio demographic data was analysed using Chi-Square test.

RESULTS

The present study was intended to assess the effectiveness of structured teaching programme on knowledge and attitude regarding convalescent plasma therapy in management of COVID- 19 among nursing students.

Socio Demographic Characteristics

The Socio demographic data are presented in Table 01

Table 1:

Sociodemographic Variables	Parameters	Number of nursing students	Percentage
Age in years	17-20 years	64	64%
	21-25 years	36	36%
Gender	Male	93	93 %
	Female	7	7.0 %
Year of study	First year	23	23 %
	Second Year	25	25 %
	Third Year	26	26 %
	Fourth Year	26	26 %
Religion	Christian	25	25 %
	Hindu	74	74 %
	Muslim	1	1.0%
Area of residence	Rural Area	70	70 %
	Urban Area	30	30 %
History of convalescent Plasma therapy	Yes	3	3 %
	No	97	97%
History of COVID-19 infection	Yes	10	10 %
	No	90	90 %
Previous knowledge on Convalescent Plasma therapy in the treatment of Covid-19	No	55	55 %
	Yes	45	45 %
	The sources of knowledge include, • Internet	22	22%
	• Books/Newspaper	13	13 %
	• Class/Webinar/Seminars	6	6 %
	• Others	4	4.0%

(n=100)

More than half of the nursing students were in the age group 17-20 years (64%).Most of them were females (93 %) and 7 % of them were males. In case of year of study, 23 % of them belongs to first year,25 % belongs to second year,26 % belongs to third year and 26 % belongs to fourth year. Majority of the participants were Hindu (74 %),25 % belongs to Christian and only 1 % belongs to Muslim. Majority of them (70 %) residing in rural area and only 30 % residing in urban area. Most of the participants (90 %) had no history of COVID-19 infection and 10 % of them had a history of COVID-19.Majority of them (97 %) had no history of Plasma therapy. Majority 55 % of them had no previous knowledge on Convalescent Plasma therapy in the treatment of Covid-19 and 45 % of them had previous knowledge on Convalescent Plasma therapy in the treatment of Covid-19.

Knowledge regarding convalescent plasma therapy in the treatment of COVID 19 among nursing students

Figure 1 (n=Experimental-50, Control-50)

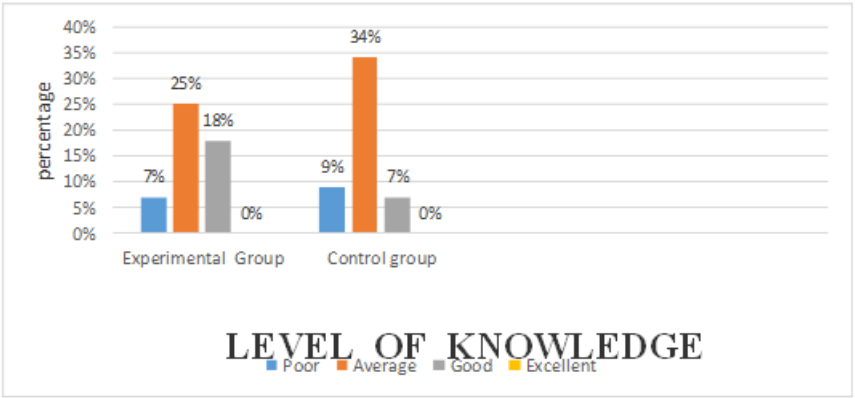

Figure 1: Pre-test level of knowledge regarding convalescent plasma therapy in treatment of COVID 19 among nursing students.

The pre-test knowledge regarding convalescent plasma therapy in management of COVID 19 among experimental group reveals that 7 % of them belongs to poor category,25 % of the nursing students belongs to average category and 18 % belongs to good category. None of them belongs to excellent category. In control group, 9 % of the nursing students belongs to poor category,34 % of them belongs to average category and 7 % of the nursing students belongs to good category. None of them belongs to excellent category.

Attitude regarding convalescent plasma therapy in treatment of COVID 19 among nursing students

Table 2: Depicts pre-test attitude score regarding convalescent plasma therapy in treatment of COVID 19 among nursing students.

Category	Experimental Group		Control Group	
	Frequency	Percentage	Frequency	Percentage
Unfavourable Attitude	7	7 %	11	11 %
Moderately Favourable Attitude	32	32 %	24	24 %
Favourable Attitude	11	11 %	15	15 %

Table: 2 (n=Experimental-50, Control-50)

Assessment of attitude regarding convalescent plasma therapy in treatment of COVID 19 among Experimental group revealed 32 % of the nursing students had moderately favourable attitude,7 % of them had unfavourable attitude and 11 % of the nursing students had unfavourable attitude .In control group, majority (24 %) belongs to moderately favourable attitude,11 % of them had unfavourable attitude and 15 % them had favourable attitude regarding convalescent plasma therapy in treatment of COVID 19.

Evaluate the effectiveness of structured teaching programme on knowledge regarding convalescent plasma therapy in treatment of COVID 19 among nursing students.

Table 3: Mean, standard deviation and paired t-test value of level of knowledge regarding convalescent plasma therapy in treatment of COVID 19 among nursing students.

Group	Test	mean	S.D	Standard error	Mean Improvement	t-value	p-value
Experimental Group	Pre-test	2.22	0.678	0.090	0.78	10.11	0.001*
	Post -test	3.00	0.755	0.106			
Control Group	Pre-test	1.96	0.570	0.080	0.18	2.436	0.019*
	Post -test	2.14	0.606	0.085			

(n=Experimental-50, Control-50) *Significant at 0.05 level.

The table 3 shows that in experimental group, mean and S.D of pre-test is 2.22 and 0.678 and for the post-test is 3.00 and 0.755.The mean difference between pre and post-test is 0.78.The t value is 10.11.Since the p-value is less than 0.01,the average improvement in knowledge is 0.78 seen in the level of knowledge is significant. In control group, mean and S.D of pre-test is 1.96 and 0.570 and for the post-test is 2.14 and 0.606.The mean difference between pre and post-test is 0.18.The value is 2.436 .Since the p-value is less than 0.01,the average improvement in knowledge is 0.18 seen in the level of knowledge is significant. So we can conclude that structured teaching programme is effective in improving the level of knowledge in experimental group, with the scores of experimental group being remarkably higher than those of the control group.

Evaluate the effectiveness of structured teaching programme on Attitude regarding convalescent plasma therapy in treatment of COVID 19

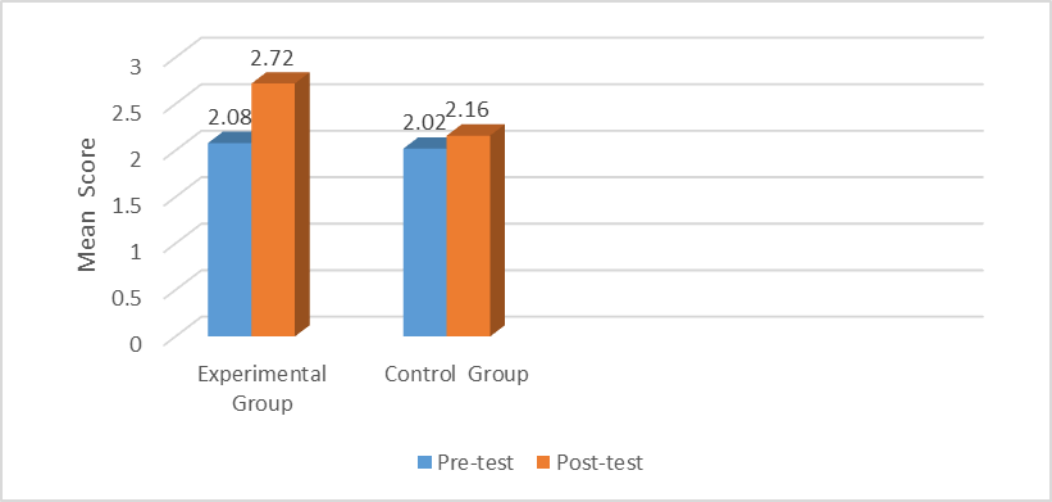

Figure 2: Mean pre-test and post-test score of attitude regarding convalescent plasma therapy in treatment of COVID 19 among nursing students.

Figure 2 (n=Experimental-50, Control-50)

In experimental group, mean and S.D of pre-test is 2.08 and 0.600 and for the post-test is 2.720 and 0.453.The difference between the mean score of pre-test and post-test is 0.64.The t value is 5.830 .Since the p-value is 0.001 which is less than 0.01,the average improvement in attitude is 0.64 seen in the level of attitude is significant. In control group, mean and S.D of pre-test is 2.020 and 0.769 and for the post-test is 2.160 and 0.680.The difference between mean score of pre-test and post-test is 0.14.The t- value is 1.632 .Since the p-value is 0.109 which is more than 0.05,the average improvement in attitude is 0.14 seen in the level of attitude is not significant. So we can conclude that educational intervention is effective in improving the level of attitude regarding convalescent plasma therapy in treatment of COVID 19 in experimental group, with the scores of experimental group being significantly higher than those of the control group.

Association between knowledge score regarding convalescent plasma therapy in treatment of COVID 19 among nursing students with sociodemographic data

In Experimental Group, the major findings indicated that ,no association between knowledge score with sociodemographic data such as age (χ^2-1.075,p-0.585),Gender(χ^2-2.484,p-0.289), Religion((χ^2-1.442,p-0.486),Area of residence (χ^2-3.380,p-0.185), Year of study((χ^2-2.99,p-0.810),History of COVID 19 infection (χ^2-0.208,p-0.901),History of Convalescent plasma therapy (χ^2-2.679,p-0.262),Previous knowledge on Convalescent plasma therapy (χ^2-5.011,p-0.756).

In Control Group, the major findings indicated that, no association between knowledge score with sociodemographic data such as age (χ^2-1.990,p-0.370), Gender (χ^2-1.502,p-0.472), Religion((χ^2-0.643,p-0.958),Area of residence (χ^2-0.493,p-0.782),History of COVID 19 infection (χ^2-1.427,p-0.490),Previous knowledge on Convalescent plasma therapy (χ^2-11.77,p-0.300). The computed chi square value between the pre-test level of knowledge and Year of study((χ^2-13.37,p-0.037), History of Convalescent plasma therapy (χ^2-6.268,p-0.044) were significant at 0.05 level. So we can conclude that there were association between history of convalescent plasma therapy and year of study.

Association between attitude regarding convalescent plasma therapy in treatment of COVID 19 among nursing students with sociodemographic data.

In Experimental Group, the major findings indicated that there were no association between attitude score with sociodemographic data such as age (χ^2-5.452,p-0.065),Gender(χ^2-2.484,p-0.289), Religion((χ^2-1.442,p-0.486),Area of residence (χ^2-3.380,p-0.185),History of COVID 19 infection (χ^2-3.095,p-0.213),Previous knowledge on Convalescent plasma therapy (χ^2-6.023,p-0.645), History of Convalescent plasma therapy (χ^2-2.451,p-0.294). The computed chi square value between the pre-test level of knowledge and Year of study((χ^2-19.724,p-0.003), was significant at 0.05 level. So we can conclude that there was association between history of convalescent plasma therapy and year of study.

In control group, there were no association between attitude with sociodemographic data such as age (χ^2-1.990,p-0.370),Gender(χ^2-2.381,p-0.304), Religion((χ^2-2.733,p-0.603),Area of residence (χ^2-3.614,p-0.164),History of COVID 19 infection (χ^2-2.719,p-0.257),History of Convalescent plasma therapy (χ^2-2.624,p-0.269),Previous knowledge on Convalescent plasma therapy (χ^2-11.778,p-0.300). The computed chi square value between the pre-test attitude score and Year of study((χ^2-13.308,p-0.038) was significant at 0.05 level. So we can conclude that there was association

between history of convalescent plasma therapy and year of study.

DISCUSSION

The corona virus made an imbalance in our health systems in tackling emergency situations related to the spread of new infectious agents that needs the rapid development of effective care strategies.[8] The convalescent plasma which is collected from previously infected individuals to passively transfer antibodies to protect or treat human has been used from ancient times onwards. Duan (2020) conducted a study to assess the effect of convalescent plasma therapy in severe COVID-19 patients, China. The study included 10 severe COVID-19 patients which was confirmed by real-time viral RNA test. This study showed Convalescent plasma therapy was well effective and could potentially improve the clinical outcomes.[9]

Nurses play a vital role in health care system and health team. All health care providers especially nurses are on the frontline battling against this pandemic and providing services to patients which is helpful to prevent and control COVID-19 pandemic. So they must stay aware of the latest information on the COVID-19 outbreak. One donor can give life to several people.[10] People who have fully recovered from COVID-19 for at least two weeks can donate plasma. So the nurses also have an important role in changing the attitude towards convalescent plasma therapy and to encourage the COVID -19 patients to donate plasma which may help save the lives of other patients.

Assessment of the pre-test knowledge of nursing students regarding convalescent plasma therapy reveals that, Majority 25% of experimental and 35 % of control group had average knowledge regarding convalescent plasma therapy in treatment of COVID 19. In contrast to the present study, Joshi (2020) conducted a cross sectional study on nursing student's Knowledge and awareness regarding the COVID-19, Telangana, India showed that 73.7 % nursing students had good knowledge and awareness about the treatment\vaccines for COVID -19. Assessment of pre-test attitude scores revealed that Majority 32% of experimental and 24 % of control group had moderately favourable attitude regarding convalescent plasma therapy in treatment of COVID. The findings of the study supported by a cross sectional study conducted by Lidia (2021) to assess Attitudes and Knowledge of Young Adults Towards COVID-19 Convalescent Plasma donation and Its Therapeutic Properties showed a positive attitude towards CP donation.[11]

In this study, teaching programme was effective in improving the level of knowledge and attitude regarding convalescent plasma therapy in treatment of COVID 19 among nursing students, with the scores of experimental group being significantly higher than those of the control group. These findings can't be compared with previous studies as most of the voluntary online surveys don't have a follow-up assessment or absence of an education intervention program for Convalescent plasma therapy in the treatment of COVID-19.However, the findings of the study supported by a pre/post quasi-experimental study by Manal (2020) to assess the of effect of Teaching Program regarding COVID-19 on Knowledge, practice and attitude among Student which shows that educational intervention helped in improving knowledge, attitudes, and practices among students regarding COVID -19.[12]

Association between knowledge regarding convalescent plasma therapy in treatment of COVID 19 among nursing students with sociodemographic data reveals that there were no association between knowledge score with sociodemographic data such as age, Gender, Religion, Area of residence,Year of study, History of COVID 19 infection ,History of Convalescent plasma therapy ,Previous knowledge on Convalescent plasma therapy .But in Control Group, there were significant association between Year of study and History of Convalescent plasma therapy. Association between attitude regarding convalescent plasma therapy in treatment of COVID 19 among nursing students with sociodemographic data revealed that there were no association between level of attitude and sociodemographic variables except year of study for both the experimental and control group. In contrast to the present study, Lidia (2021) conducted a cross sectional study to assess the attitudes and knowledge among young adults regarding COVID-19 convalescent plasma donation and its therapeutic properties showed that significant relationships between level of knowledge and intensity of attitude with sociodemographic variables such as gender, age, and student's college affiliation.[13]

Limitations of the study

Some of the participants were not well equipped with high internet connections that was required for attending online structured teaching programme. Researchers faced difficulty in managing time due to poor connectivity.

Recommendations

- The study can be repeated with large sample size to generalize the findings.
- Similar study can be conducted on community setting including general population.
- The similar studies can be conducted like.
- An experimental study to assess the effect of convalescent plasma therapy in the management of COVID -19

Compliance with ethical standard

The study was started after obtaining permission from Ethics Committee. This study does not contain any studies with animals performed by author.

CONCLUSION

The present study assessed the effect of structured teaching programme on knowledge and attitude regarding convalescent plasma therapy in management of COVID 19 among nursing students. Based on the findings the following conclusion were drawn that most of the nursing students had average knowledge and moderately favourable attitude regarding convalescent plasma therapy in treatment of COVID 19. The structured teaching programme was effective in improving the level of knowledge and attitude regarding convalescent plasma therapy in management of COVID 19 among nursing students. Preparedness is the key to the success of all disaster management strategies.[14] So there is a strong necessity to implement frequent educational interventions and training programs on plasma therapy in treatment of COVID 19 and COVID related updates across all nurses and other healthcare professions so that they can successfully manage any of the health crisis like COVID-19.

ACKNOWLEDGEMENT

The investigators praises and thank God for making confident enough to complete the study. The investigators expresses sincere thanks Dr Prem Kumar Vasudevan Nair, Medical Director of AIMS,Kochi ,Bri.Sai bala M,Nursing Director,AIMS,Kochi, Professor K.T Moly, Principal ,Amrita College of Nursing and Professor Sheela Pavithran,Vice Principal Amrita College of Nursing for their enthusiastic approach towards study. The researcher's sincere thanks to all who directly or indirectly helped in the success of this study.

Source of Funding: No sources of funding were available.

Conflict of Interest: No conflict of interest among authors.

REFERENCE

1. COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU)". ArcGIS. Johns Hopkins University. Retrieved, 5 October 2020.
2. Sukumaran S, A review on covid-19 pandemic a global threat-current status and challenges and preventive strategies, International Journal of Applied Pharmaceutics, 2021; 13(5): 10 – 14.
3. Garcia, Spatial analysis of COVID-19 hospitalised cases in an entire city: The risk of studying only lattice data, Science of the Total Environment, Volume 8061, February Article number 150521, 2022.
4. Khan, Usefulness of convalescent plasma transfusion for the treatment of severely ill COVID-19 patients in Pakistan, BMC Infectious Diseases Open AccessVolume 21, Issue 1December Article number, 2021; 1014.
5. Piyush, Convalescent plasma therapy: a promising coronavirus disease 2019 treatment strategy, Open Biol, 2020 Sep; 10(9): 200174.
6. Available from: https://www.ncbi.nlm.nih.gov /pmc/articles/PMC7536086/.
7. Viswasini, General awareness about COVID-19 and the role of Convalescent plasma therapy in the treatment of COVID -19 among post graduate dental students - A KAP Survey,International journal of research in Pharmaceutical science, 2020; 11. SPL1: 11 SPL 1 (COVID-19)
8. Joshi, Knowledge and awareness among nursing students regarding the COVID-19: a cross sectional study, IJCMPH, 2020; 7: 7.
9. Available from: http://dx.doi.org/10.18203/2394-6040.ijcmph20202536.
10. Kolifarhood, Epidemiological and Clinical Aspects of COVID-19; a Narrative Review, Arch Acad Emerg Med. 2020; 8(1): e41.
11. Available from https://www.ncbi.nlm.nih.gov /pmc/articles/PMC7117787/.
12. Duan, Effectiveness of convalescent plasma therapy in severe COVID-19 patients.
13. PNAS April 28, 2020 117 (17) 9490-9496; first published April 6, 2020.
14. Available from:https://doi.org/10.1073/pnas.2004168117.
15. Sreejesh K. P., Beula, S. S., Dona, C., and M., D., "Awareness and Attitude Regarding Organ Transplantation Among People Residing in Rural and Urban Area, Ernakulam District", International Journal of Nursing Education and Research, 2016; 4(3): 359-362.
16. Joshi, Knowledge and awareness among nursing students regarding the COVID-19: a cross sectional study,IJCMPH, 2020; 7(7).
17. Available from: http://dx.doi.org/10.18203/2394-6040.ijcmph20202536.
18. Manal, Impact of Teaching Program Regarding COVID-19 on Knowledge, Attitudes, Practices among Student, Journal of research square, 2020.
19. Available from: https://www.researchsquare.com /article/rs-60327/v1.
20. Lidia,Knowledge and Attitudes of Young Adults Towards Donation of COVID-19 Convalescent Plasma and Its Therapeutic Properties,Journal of blood medicine, 2021; 12.
21. Available from ; https://www.ncbi.nlm.nih.gov /pmc/articles/PMC8364396/
22. Kumar SK, B, J., and SG, T., "Effectiveness of a training programme on knowledge regarding disaster preparedness among nursing students in a selected College of Nursing", Asian Journal of Microbiology, Biotechnology & Environmental Sciences Paper, 2018; 20: 184-188.