
A STUDY TO ASSESS THE EFFICACY OF TEACHING PROGRAMME REGARDING COVID-19 VACCINATION IN TERMS OF ATTITUDE AND BARRIERS AMONG THE ADULTS RESIDING IN THE RURAL AREAS OF HARYANA

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Abstract

Background: The novel corona virus SARS Cov-2 was firstly reported in Wuhan China in December 2019. Out of all the interventions covid-19 vaccine found to be the best intervention against pandemic. The study aimed to assess and compare the attitude and barriers among adults regarding covid-19 vaccination.

Objectives: The objectives were to assess and compare attitude and barriers among adults in experimental and comparison group, to determine the relationship between attitude and barriers among adults, to find out the association of attitude and barriers regarding covid-19 vaccine among adults with their demographic variables.

Methodology: A quasi experimental study was conducted among 70 adults, selected by purposive sampling technique. Tools used were demographic variables, Likert scale and Structured Barriers Checklist regarding covid-19 vaccination. Pre-test conducted on 1st day followed by administration of teaching programme regarding covid-19 vaccination. The post-test of attitude and barriers was conducted on the 15th day for both the groups. Data was analyzed by using SPSS version 20.

Results: The results revealed that there was a significant difference in mean post-test attitude ($t=6.58$, $p=0.00^*$) and barriers scores ($t=6.89$, $p=0.00^*$) between experimental group and comparison group. There was a significant weak to moderate negative correlation between attitude and barriers and significant association of attitude scores with the demographic variables.

Conclusion: Teaching programme was effective in improving attitude and reducing barriers regarding covid-19 vaccination among adults in experimental group.

Keywords: Teaching programme, Attitude, Barriers, Adults, Efficacy, Covid-19.

INTRODUCTION

Corona virus belong to the single strand RNA family that is of zoonotic origin and mainly infects animals and humans. The novel corona virus SARS Cov-2 was firstly reported in Wuhan China in December 2019. The main reason for the rapid spread of this pandemic is travellers.

However firstly the symptoms reported for this disease were ranging from mild to severe cough, fever, headache, loss of smell and taste, nasal congestion, runny nose, muscle ache, sore throat etc. Infected person can feel the varying degree of symptoms over the time.

The number of infected cases kept on increasing with an alarming rate. Thus the covid-19 disease was declared as pandemic on 11th March 2020. The confirmed cases of covid-19 by 2022 are highest in USA 55,121,185 and second highest in India. Globally, there have been 521,920,560 confirmed cases of COVID-19, including 6,274,323 deaths, reported to WHO. In India, there have been 43,131,822 confirmed cases of COVID-19 with 524,323 deaths, reported to WHO.

The development of the covid vaccine is one of the best interventions for eradication of covid-19. However there are some mild side effects of the vaccine such as fever, pain at the site of the injection, headache, nausea etc, but these symptoms do not require any treatment.

The success of the mass vaccination drive depends upon the public attitude and trust over covid-19 vaccine. Unfortunately there is some proportion of eligible candidates for covid-19 vaccination which are not willing to take the covid-19 vaccination. This shows vaccine hesitancy is present among the general population. But there is a general agreement that health care workers should be vaccinated in almost all settings and this is not for their own benefit but also to effectively run the health care agencies.

The covid-19 vaccination drive when started faced a lot of problems as there were several misconceptions and barriers found among people such as most of the people were having difficulty in trusting the covid-19 vaccine as this was a very new vaccine for them, concerns regarding the vaccine safety and specially related to the side effects of the vaccine and also related to the efficacy of the vaccines currently used in India. Most of the people have thoughts such as vaccine contains some toxic substances that can harm them, vaccine can cause changes to their normal body functions which results in developing a negative attitude towards the covid-19 vaccine, which ultimately leads to the low success rate of the vaccination drive.

A supportive exploratory descriptive study was done among Indian population above 18 years to assess the current knowledge, attitude, perceptions and concerns regarding covid-19 vaccines. Eight focus group discussions were carried out in the study. Sample selection was done by using

purposive sampling technique. The focus discussions among participants were recorded. The results of the study concluded that people have mixed perceptions regarding covid-19 vaccines. These mixed perceptions can be corrected by channelizing and passing messages to the population and that further can increase the willingness of the people to get vaccinated.

In India 173 crore people has taken the first dose of covid vaccination and 75.5 crore population is fully vaccinated, which signifies till now only 54.7% of the total population is fully vaccinated. Whereas vaccine statistical data of Haryana showed that the total population of Haryana is 2.30 crore, out of which only a small portion of population that is 25% people are vaccinated till March 2021, even the covid-19 vaccination drive started on January 15 2021 in Haryana. This is the evidence which shows that remaining population of Haryana is having some vaccine hesitancy which may be due to their misconceptions, attitude and barriers to get vaccinated with covid-19 vaccination.

A supportive study was done in South Carolina among college students to show how the risk exposures, risk perceptions of covid-19, and negative attitudes toward general vaccination were related to covid-19 vaccine acceptance. The results of the study revealed that perceived severity of COVID-19 was positively associated with vaccine acceptance. The study concluded that the concerns of side effects of vaccine should be addressed by dispelling the misconception, and target the most vulnerable subgroups who reported high level of risk exposures while showed low intention to take the vaccine.

Role play is acting out on a particular scenario which builds up confidence and making correct reactions to situations. It is a method of brainstorming, improving communication and improve the body of knowledge and attitude. Hence the researcher felt that there is a need to develop and evaluate the effectiveness of planned teaching programme in the form of role play to improve the attitude and reducing the barriers of the adults in rural areas regarding the covid-19 vaccination by creating awareness among them.

METHODOLOGY

A quasi experimental research with non-equivalent control group pre-test post-test design was conducted with the objectives was conducted with the objectives to assess and compare attitude and barriers among adults in experimental and comparison group, to determine the relationship between attitude and barriers among adults, to find out the association of attitude and barriers regarding covid-19 vaccine among adults with their demographic variables. The study was conducted among 70 adults (35 in experimental group, 35 in comparison group), selected by purposive sampling technique. The study was conducted at Maharishi Markandeshwar (Deemed To Be University), Mullana, Ambala, Haryana. The pre-test was conducted on day one followed by administration of teaching programme in the form of a video prepared of role play regarding covid-19 vaccination in experimental group respectively. The post-test of attitude and barriers was taken on the 15th day for both the groups as shown below in figure 1.1. Data was analyzed by descriptive and inferential statistics using SPSS version 20.

AIM

The aim of the study was to assess the effectiveness of teaching programme regarding covid-19 vaccination in terms of attitude and barriers among the adults residing in rural areas of Haryana.

HYPOTHESES

H₁: There will be a significant difference in the mean post-test attitude score regarding covid-19 vaccination among the adults between experimental and comparison group at 0.05 level of significance.

H₂: There will be a significant difference in the mean post-test barriers score regarding covid-19 vaccination among the adults between experimental and comparison group at 0.05 level of significance.

H₃: There will be a significant difference in the mean pre-test and post-test attitude scores regarding covid-19 vaccination among the adults in experimental and comparison group at 0.05 level of significance.

H₄: There will be a significant difference in the mean pre-test and post-test barriers scores regarding covid-19 vaccination among the adults in experimental and comparison group at 0.05 level of significance.

H₅: There will be a significant relationship between attitude and barriers scores regarding covid-19 vaccination among the adults in experimental and comparison group at 0.05 level of significance.

H_{6a}: There will be a significant association of attitude scores with the demographic variables among the adults in experimental and comparison group at 0.05 level of significance.

H_{6b}: There will be a significant association of barriers scores with the demographic variables among the adults in experimental and comparison group at 0.05 level of significance.

TOOLS AND TECHNIQUE

Tools used in the study were demographic variables, Likert scale to assess the attitude and Structured Checklist to assess barriers regarding covid-19 vaccination. Reliability of Likert Scale was calculated by Cronbach's alpha (0.94) and Inter-rater was used for Structured Checklist (0.97). All the tools were found to be valid (S-CVI= 0.82 to 1, I-CVI= 0.71 to 1) and reliable (0.71-1) for study.

SECTION-I: Demographic variables

It comprises of fourteen items related to characteristics of the sample i.e age, gender, socioeconomic status, marital status, number of children, religion, self covid history, family covid history, status of covid vaccination, name of vaccine, time of first dose taken, proof of vaccination (as evidenced by cowin), centre of vaccination and availability of transport facility.

SECTION-II: (Part-A) Likert scale to assess the attitude of the adults regarding covid-19 vaccination.

Self-structured five point Likert Scale was used to assess the attitude of adults regarding the covid-19 vaccination. It consisted of 20 Likert type items whose scoring criteria was five-point scale. This tool included 10 positively framed statements (1, 2, 4, 5, 8, 13, 14, 16, 17 and 18) and 10 negatively framed items (3, 6, 7, 9, 10, 11, 12, 15, 19 and 20). Positive statements were scored from 5 for strongly agree, 4 for agree, 3 for neither agree nor disagree, 2 for disagree and 1 for strongly disagree. Whereas negative statements were scored reverse i.e 1 for strongly agree, 2 for agree, 3 for neither agree nor disagree, 4 for disagree and 5 for strongly disagree. The possible scores ranged from 20-100. Higher scores reflected positive attitude and lower scores reflected negative attitude.

SECTION-II: (Part-B) Structured Barriers Checklist to assess the barriers of the adults regarding covid-19 vaccination.

Structured Barriers Checklist was used to assess the barriers of adults regarding the covid-19 vaccination. It consist of 25 items under different areas. Each item has two responses i.e yes and no. For each 'Yes' 1 point was given and for each 'No' 0 point was given. The possible score ranges from 0-25. Highest score was 25 and lowest score was 0. The higher scores indicates the higher barriers and low scores indicates less barriers.

The **paper and pencil** technique was used to collect the information regarding the demographic variables, attitude and barriers of the adults.

INTERVENTION

Teaching programme regarding covid-19 vaccination was developed for the adults to improve their attitude and reduce the barriers associated with the covid-19 vaccination. This was done by preparing a video of the role play based on covid-19 vaccine importance and some facts related to the covid-19 vaccination. Video was made regarding importance, promotion of covid-19 vaccine and various wrong beliefs regarding the covid-19 vaccination that was preventing the adults from being covid-19 vaccinated. It was developed after reviewing the research or non-research literature related to covid-19 vaccination, also after taking suggestions and opinions from the experts.

CONSORT DIAGRAM

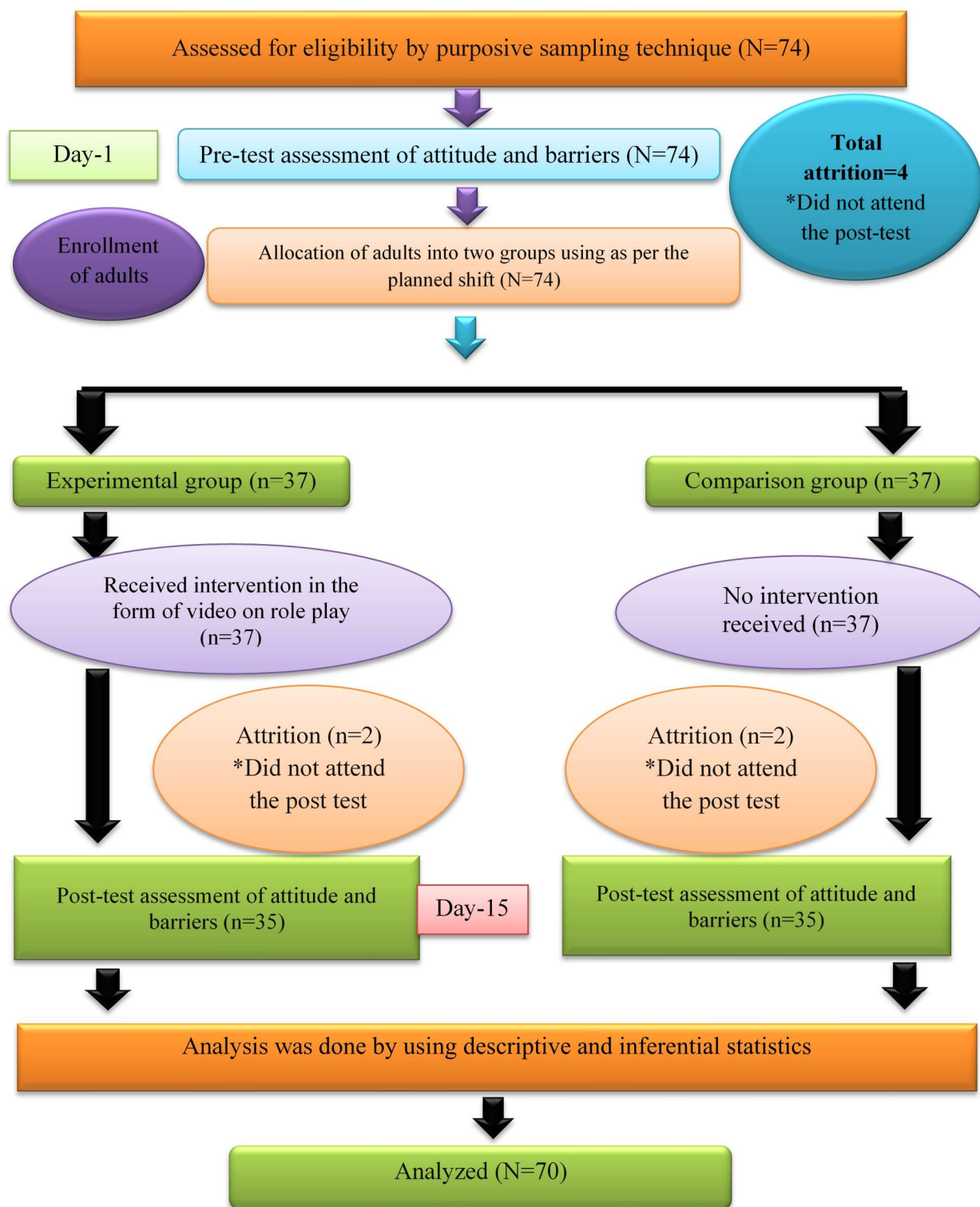


Figure 1.1 Consort diagram for sample selection

DATA ANALYSIS

The data was collected and analyzed once it was arranged, tabulated, analyzed and interpreted by using descriptive and inferential statistics by using SPSS version 20, after checking the normality of the data by using Kolmogorov Smirnov test.

RESULTS

The statistical analysis was done by using descriptive (frequency, percentage distribution, mean, standard deviation and range) and inferential (Chi-square, ANOVA, unpaired t-test, paired t-test and Pearson's correlation) statistics. The results of the study showed that there was a significant difference in mean post-test attitude and barriers scores between experimental group and comparison group. The mean post-test attitude scores ($t=6.58$, $p=0.00^*$) in experimental group was higher than the comparison group and post-test barriers scores ($t=6.89$, $p=0.00^*$) in experimental group were lower than the comparison group. There was a weak negative correlation $[-0.41(0.01^*)]$ between pre-test attitude and barriers whereas a moderate negative correlation $[-0.71(0.00^*)]$ between post-test attitude and barriers in experimental group. There was a weak negative correlation $[-0.59(0.00^*)]$ between the pre-test attitude and barriers and weak negative correlation $[-0.58(0.00^*)]$ between post-test attitude and barriers in comparison group. There was a significant association of attitude with the socioeconomic status (0.03^*), number of children (0.03^*) and name of vaccine (0.00^*) in experimental group whereas in comparison group there was a significant association of attitude scores with the marital status (0.04^*), number of children (0.03^*), name of vaccine (0.01^*), time of first dose taken (0.03^*) and proof of vaccination as evidenced by COVID-19 (0.00^*).

TABLE 1.1 Mean, Standard Deviation, Mean Difference and Standard Error of Mean Difference and 't' Value of Pre-test and Post-test Attitude Scores regarding Covid-19 Vaccination among Adults in Experimental and Comparison Group
N=70

Group		Mean±SD	MD	SE _{MD}	t value	df	p value
Experimental (n=35)	Pre-test	69.97±12.41	15.09	1.61	9.35	34	0.00*
	Post-test	85.06±7.53					
Comparison (n=35)	Pre-test	69.94±12.08	0.17	0.90	0.19	34	0.85 ^{NS}
	Post-test	69.77±11.47					

* Significant ($p<0.05$) ^{NS} Not significant ($p>0.05$) 't'(34)=1.68 |t|=t

Table 1.1 depicts that the difference was statistically non-significant at 0.05 level of significance. Thus, research hypothesis (H_3) was accepted and null hypothesis (H_{03}) was rejected. Thus, it

inferred that teaching programme was effective in improving attitude regarding covid-19 vaccine in experimental group.

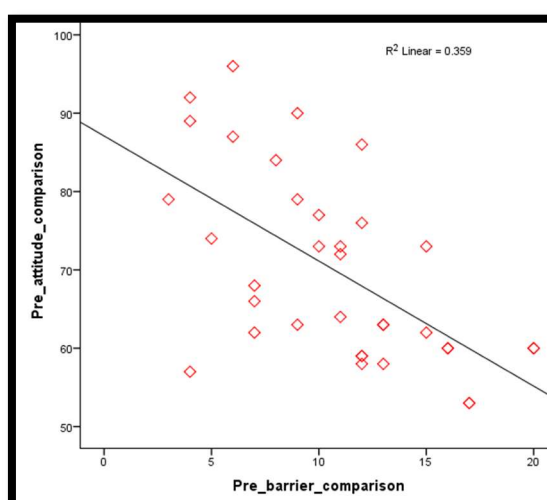
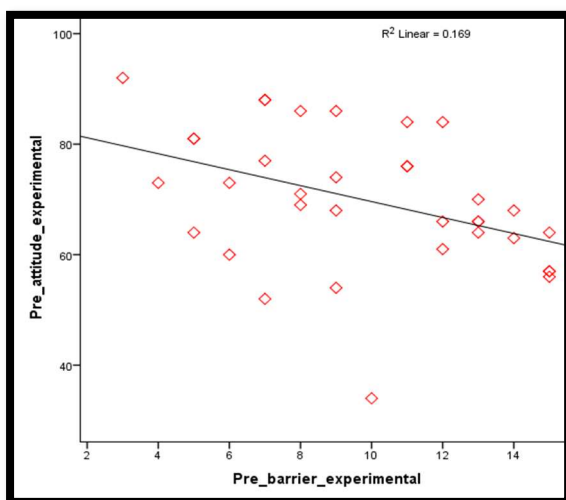
TABLE 1.2 Mean, Standard Deviation, Mean Difference, Standard Error of Mean Difference and 't' Value of Pre-test and Post-test Barriers Scores regarding Covid-19 Vaccination among adults in Experimental and Comparison Group

Group		Mean±SD	M _D	SE _{MD}	t value	df	p value
Experimental group (n=35)	Pre-test	9.74±3.53	4.9	0.38	12.75	34	0.00*
	Post-test	4.83±2.84					
Comparison group (n=35)	Pre-test	10.74±4.53	0.20	0.14	1.36	34	0.18 ^{NS}
	Post-test	10.94±4.41					

N=70

* Significant (p<0.05) ^{NS} Not significant(p>0.05) ' t'(34) =1.68 |-t|=t

Table 1.2 depicts that the difference was statistically non-significant at 0.05 level of significance. Thus, research hypothesis (H₃) was accepted and null hypothesis (H₀₃) was rejected. Thus, it inferred that teaching programme was effective in reducing barriers regarding covid-19 vaccine in experimental group.



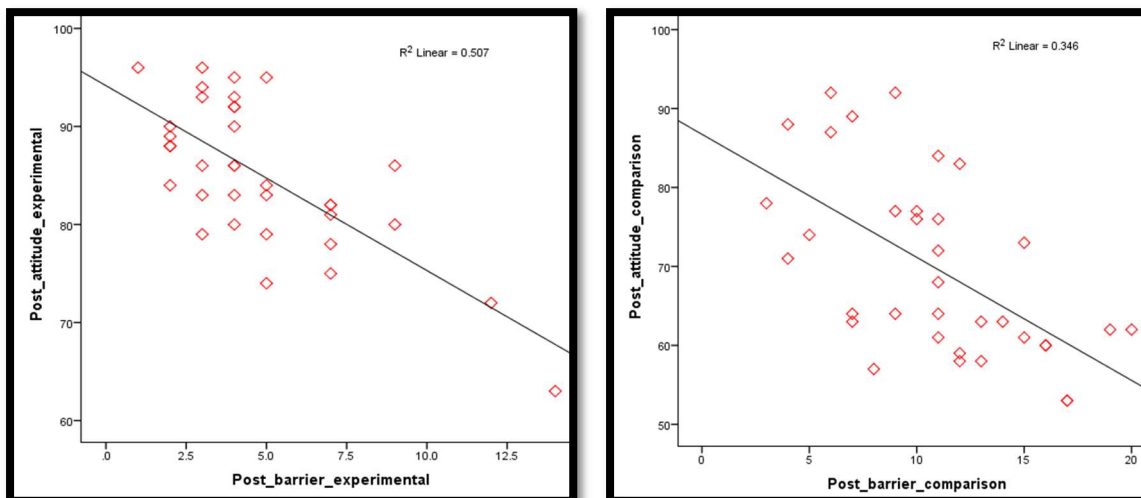


Figure 1.2 Scattered diagram showing correlation between attitude and barriers scores of adults regarding covid-19 vaccination in experimental group and comparison group (pre-test and post-test).

Figure 1.2 depicts that the calculated value was found to be statistically significant at 0.05 level of significance. Hence, the research hypothesis (H_5) was accepted and null hypothesis (H_{05}) was rejected. Thus, it concluded that there was a weak negative statistically significant correlation between attitude and barriers of adults regarding covid-19 vaccination before and after the administration of teaching programme regarding covid-19 vaccination.

TABLE 1.3 One way ANOVA and Independent t-test value showing Association of Pre-test Attitude scores of Adults regarding Covid-19 Vaccination with Demographic Variables in Experimental and Comparison Group.

N=70

Demographic Variables	Experimental group (n=35)	Mean	Df	t/F	p value	Comparison group (n=35)	Mean	df	t/F	p value
1. Age										
1.1 18- 25 years	11(31.4%)	72.73	2/3	1.00	0.37	15(42.9%)	71.27	2/3	0.17	0.84
1.2 25-35 years	14(40.0%)	71.07				8(22.9%)	68.25			
1.3 Above 35 years	10(28.6%)	65.4				12(34.3%)	69.4			
2. Gender										
2.1 Male	30(85.7%)	69.33	33	0.74	0.46	28(80%)	70.75	33	0.78	0.43

2.2 Female	5(14.3%)	73.8 0				7(20%)	66.7 1			
3. Socio-economic status										
3.1 Upper class	1(2.9%)	34.0 0	2/3 2	6.83 F	0.00 *	1(2.9%)	53.0 0	2/3 2	1.0 4 ^F	0.36 NS
3.2 Upper middle	15(42.9%)	68.0 7				14(40%)	71.0 7			
3.3 Lower middle	19(54.3 %)	73.3 7				20(57.1 %)	70.0 0			
4. Marital status										
4.1 Married	23(65.7%)	70.4 3	33	0.30 t	0.76 NS	18(51.4%))	73.8 3	33	2.0 5 ^t	0.04 *
4.2 Unmarried	12(34.3%)	69.0 8				17(48.6%))	65.8 2			
5. Number of children										
5.1 No children	19(54.3 %)	68.1 1	2/3 2	3.77 F	0.03 *	20(57.1 %)	65.6 0	2/3 2	3.6 0 ^F	0.03 *
5.2 1-2	8(22.9%)	64.8 8				8(22.9%)	77.1 3			
5.3 More than 2	8(22.9%)	79.5 0				7(20%)	74.1 4			
6. Religion										
6.1 Hindu	32(91.4 %)	70.3 4	33	0.57 t	0.57 NS	33(94.3 %)	69.7 9	33	0.3 0 ^t	0.76 NS
6.2 Sikh	3(8.6%)	66.0 0				2(5.7%)	72.5 0			
7. Self covid history										
7.1 Yes	1(2.9%)	57.0 0	33	1.06 t	0.29 NS	3(8.6%)	68.3 3	33	0.2 3 ^t	0.81 NS
7.2 No	34(97.1 %)	70.3 5				32(91.4 %)	70.0 9			
8. Family history of covid										
8.1 Yes	2(5.7%)	54.5 0	33	1.88 t	0.06 NS	1(2.9%)	79.0 0	33	0.7 5 ^t	0.45 NS

8.2 No	33(94.3%)	70.9				34(97.1%)	69.6			
		1				)	8			
9. Status of covid vaccination										
9.1 Not vaccinated	31(88.6%)	71.1	33	1.66	0.10	33(94.3%)	68.5	33	3.1	0.00
	)	9		t	NS	)	5		1 ^t	*
9.2 First dose taken	4(11.4%)	60.5				2(5.7%)	93.0			
		0					0			
10. Name of vaccine										
10.1Covaxin	1(25.0%)	34.0	2	2.17	0.16	1(50.0%)	96.0			
		0		t	NS	)	0			
10.2Covishield	3(75.0%)	69.3				1(50.0%)	90.0			
		3				)	0			
11. Time of first dose taken										
11.1 1-2 months back	-		2	2.27	0.15	1(50.0%)	94.0			
				t	NS	)	0			
11.2 3-4 months back	2(50.0%)	76.0				-				
		0								
11.3 More than 4 months back	2(50.0%)	45.0				1(50.0%)	69.6			
		0					7			
12. Proof of vaccination(as evidenced by cowin)										
12.1 Yes	4(100%)					2(100%)				
12.2 No	-					-				
13. Centre of vaccination										
13.1Private	-					-				
13.2 Public	4(100%)					2(100%)				
14. Availability of transportation facility										
14.1Personal vehicle	19(54.3%)	68.4	33	0.77	0.44	18(51.4%)	70.0	33	0.0	0.95
	)	7		t	NS	)	6		5 ^t	NS
14.2 Public vehicle	16(45.7%)	71.7				17(48.6%)	69.8			
		5				)	2			

^{NS} Not significant($p>0.05$) * Significant ($p<0.05$) $F(2/32)= 3.23$ $t(33)=1.68$, $|-t|=t$,

Table 1.3 depicts that in experimental group, there was statistically non-significant association of pre-test attitude score of adults with their demographic variables except for socioeconomic status and number of children. Whereas in comparison group there was no statistically significant association of pre-test attitude scores of adults with their demographic variables except marital status, number of children, status of vaccination. Hence it was concluded that research hypothesis (H_{6a}) was partially accepted and null hypothesis (H_{06a}) partially rejected. Thus, it concluded that there was association of pre-test attitude scores of adults with their demographic variables.

DISCUSSION

In the present study the majority of the adults were in the age group of 26-35 in experimental group (40.0%) whereas in comparison group the majority of the adults (42.9%) were from age group of 18-25. The findings were consistent for experimental group with the result of the study conducted by **Singhania Nikhil et al. 2021**⁵⁷ in which the majority of the adults were from age group of 25-35. This might be due because of the reason that the vaccination drive was firstly initiated among adults and also due to the family responsibility which made the adults to understand about the importance of vaccine and can prevent their family members from the disease.

In the present study the majority of the adults were male in experimental group (85.7%) as well as in comparison group (80%). The findings were consistent with the result of the study conducted by **Kumari Archana et al. 2021**⁵⁶ in which majority of adults was male (54.73%). Justification of the finding could be due to the reason that for some occupation such as security guards, mali, drivers etc. majority of males are appointed.

In the present study the teaching programme regarding covid-19 vaccination was effective in improving attitude among adults of experimental group related to vaccine side-effects (0.00). The findings were consistent with the result of the study conducted by **Kaim Arielle, Jaffe Eli et al. 2020**⁵³ in which brief educational intervention was effective in improving attitude of adults towards vaccine safety ($p=0.00$). The possible reason for the significance in the specific area could be due to the additional information the adults are getting from the social media regarding the disease and vaccine, also as the vaccine is new people want to know more and more about the vaccine.

In the present study the teaching programme regarding covid-19 vaccination was effective in reducing barriers among adults of experimental group (0.00). The findings were consistent with the result of the study conducted by **Jensen T. Ulrich, Ayers Stephanie et al. 2021**⁵⁹ in which video based messages were used as a intervention to raise the intentions to get vaccinated. It can be due to study intervention and might be due to influence caused by information people getting from news, awareness programmes etc.

In the present study the majority of the adults have significant correlation between post-test attitude and barrier score ($p=0.00$). The findings were inconsistent with the study conducted by

Witus S. Leah et al. 2021⁶⁰ in which those who were exposed to intervention were having more intention to vaccinate ($p=0.27$). Justification of the statement could be due to improvement of attitude of adults after the administration of study intervention which can further help in reducing barriers regarding the covid-19 vaccination among the adults.

In the present study the pre-test attitude score have significant association with one of the demographic variable i.e socioeconomic status ($F=6.83$, $p=0.00$). The findings were consistent with a study conducted by **Umakanthan Srikanth et al 2021³⁷** in which the adults with the high socioeconomic status showed the positive attitude towards the covid-19 vaccine. This might be due to the reason that the people with the high socioeconomic status can easily afford all the resources and can take information from television, android phones, social media etc. but those with the low socioeconomic status could not be able to afford such access.

Limitations:

The study was done on a small sample size, so further generalization was not done and the study was conducted in a same setting.

CONCLUSION

The teaching programme was effective in improving attitude and reducing barriers among adults regarding covid-19 vaccination.

KEY POINTS

The calculated 't' value in experimental group after administration of teaching programme regarding covid-19 vaccination programme was 9.35 ($p=0.00$) which was found to be significant at 0.05 level of significance.

The calculated 't' value after administration of teaching programme regarding covid-19 vaccination programme was 12.75 ($p=0.00$) which was found to be significant at 0.05 level of significance.

ETHICAL PERMISSION

Formal administrative approval was obtained from the Preventive and Social Medicine Department of Maharishi Markandeshwar (Deemed To Be University) Mullana, Ambala, to conduct the pilot study. To conduct the final study approval was obtained from Registrar of Maharishi Markandeshwar (Deemed To Be University) Mullana, Ambala.

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