

A Novel Technique to Check the Effectiveness of Two Different Health Education Modes- A Randomized Control Trial

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Abstract

Objective: To assess the effectiveness of power point and memes about knowledge regarding lifestyle and practices related to oral hygiene among young adults

Methodology: The present study was designed as a Randomized control trial that involved 400 young adults aged 18-21 years. A pre-intervention survey was carried out among the study population regarding demographic details, knowledge pertaining to lifestyle, oral hygiene

practice using a pre-tested questionnaire. The participants were divided into 4 groups (Group1, Group 2, Group 3, Group 4) comprising of 100 each and accordingly each group received intervention (Group 1, Group 2, Group 3) with one or more health education modes and Group 4 was the control group. Data was analysed using SPSS version 16.0. Descriptive statistics were derived. T-test and ANOVA were used for data analysis.

Results: Out of 400 participants, 258 (64.5%) were males and 142 (35.5%) were females. Inter group comparison regarding knowledge about lifestyle showed significant difference between group 1 and group 3 ($p=.002$), and group 3 and group 4 ($p=.001$) respectively. With respect to oral hygiene practice group 3 had the best change post intervention when compared to group 1, group 2 and group 4 was found significant in the group which received intervention through power point and memes ($p=.001$).

Conclusion: The combination of memes and power point was found to be most effective when compared to memes or power point.

Keywords: Health Behaviour, Health Education, Lifestyle, Memes, Oral Hygiene

Introduction

The current epidemiological transition due to rapid urbanization and globalization in India leads to a great concern on increasing prevalence of Non Communicable Diseases (NCDs).^[1] World Health Organization (WHO) has reported that at least 80% of the premature heart diseases, stroke, type 2 diabetes, and 40% of cancer could be prevented through healthy diet, regular physical activity and avoidance of tobacco products.^[2]

Lifestyle is the perception of a society towards life, which is a diffuse concept often, used to denote the way its people live, thinks and behave. To a great extent it reflects the attitudes of a person or; reflecting a whole range of social values, cultural and behavioural patterns and lifelong personal habits (e.g. physical activity, diet, and smoking).^[3] However Brukiene and Aleksejunien^[4] concluded that oral health education interventions is a better alternative to conventional oral health education in modifying general and oral health behaviours in young adults.

In the mid-2000s websites and platforms like Facebook & Twitter changed the social media, creating a new way of

interaction. Today, there are a variety of social media sites available like Facebook, Instagram, Snapchat, WhatsApp etc and the majority of the users are teenagers.^[5]

The young adults are the future prospects of our country and a healthy nation can be built by the people who have sound health. As various lifestyle choices are adopted by their arises a need to study their lifestyle pattern.^[6] The desire for novelty and the courage for experiment are much greater in young adults than in later life. Most commonly reported behaviors in this population include such as watching TV, playing video games, hitting others, smoking and drinking alcohol, use of memes and social media^[7]. Hence, this study aims to bring a change in lifestyle and oral hygiene practices amongst 18-21 years old young adults through an interventional program using memes and power point.

Materials and Methods

A single-blind, concurrent parallel arm cluster randomized control trial was conducted to bring a change in the knowledge regarding lifestyle and practices related to oral hygiene among 18-21 year old young adults. A total of 400 participants were selected through convenient sampling method. Participants were randomly allocated (with an allocation ratio 1:1) to one of four groups and the randomization was done through lottery method. (Figure 1)

Group 1 (PPT);

Group 2 (Memes);

Group 3 (PPT and Memes);

Group 4 (Control)

Participants were recruited between July (01/07/2019) and September (30/09/2019). Total 400 young adults ($z \times sd / 0.5$)² with $z=2.58$, standard deviation was obtained from pilot study = 3.66. The study was approved by the Ethical Committee in Rungta College of Dental Sciences and research ethics committee.

Inclusion Criteria

- All 18-21 year young adults who were attending college and had not undergone through any such interventional programme
- All those who were willing to share their mobile number
- All those who gave an informed written consent

Exclusion Criteria

- Young adults who were less than 18 years and more than 21 years
- All those who had undergone similar intervention earlier
- All those who did not give an informed written consent

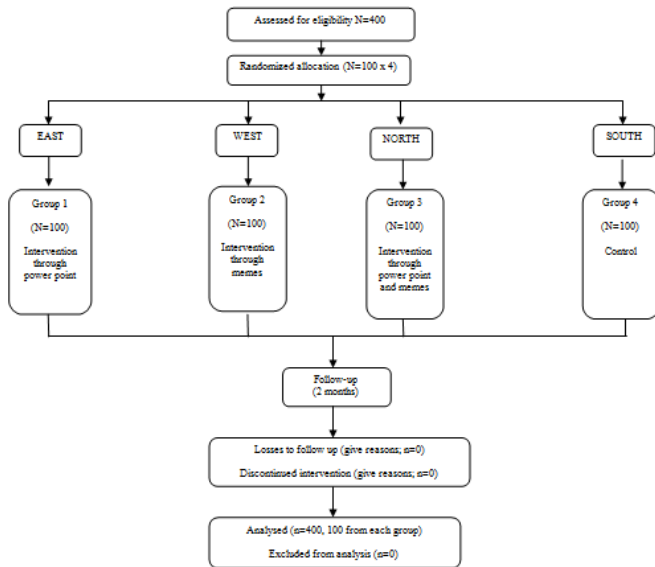
A pilot study was done on 60 participants in the age group of 18-21 years to know the feasibility, for training and calibration of examiner and to assess for the reliability of questions. The Kappa value for intra examiner reliability was obtained 0.81. A structured questionnaire was made in English language as all the study participants were acquainted with this language. Most of the items included in the questionnaire were previously validated or derived from similar research. In addition, there were seven items arising from the similar qualitative study. The Cronbach's alpha value was obtained as 0.79. The questionnaire was divided into three parts consisting of demographic details, knowledge regarding lifestyle habits, and practices regarding oral hygiene. The questionnaire took between 10 and 15 minutes to complete. The tools (questionnaire, power point, memes) used for the study were validated by the experts in the field of public health dentistry, psychiatry, social sciences and a graphic designing. The power point and memes were made were prepared using significant pictures related to lifestyle modification, maintaining of good oral hygiene, brushing technique and adverse effects of tobacco and alcohol. Emojis were used

in designing memes which could make it more interesting. After the approval of all 4 experts the intervention was carried out.

At baseline, eligible participants were approached to take part in the study. After informed written consent was obtained, they were asked to complete the questionnaire. Group 1 were given intervention through power point presentation which consisted lifestyle modifications, oral hygiene aids for a duration of 30 minutes on every Saturday for 2 weeks; group 2 were given intervention through memes which was send to them through a whatsapp group which consisted of oral hygiene aids, brushing techniques. The whatsapp group was made taking into consideration that no personal information of the participants were disclosed. This group had only one way means of sending messages and was accessible only by the researcher. The memes were send for a period of 14 days as a set of 10 memes, once in the morning and once in the evening. Group 3 were given intervention through both power point presentation which was shown to them for duration of 30 minutes on every Friday and memes send to them through whatsapp groups, as a set of 10 memes once in the morning and once in the evening for 14 days. Group 4 was the control group and were not given any intervention. An interval of 15 days was given after the intervention. After 15 days, participants were given the same questionnaire and were asked to fill it. The study was estimated to have 80% power at the 5% significance level to detect changes of knowledge regarding lifestyle and oral hygiene practices amongst young adults. Assuming a 20% attrition rate, the planned sample size was a total of 400, with 100 enrolled in each group. The young adults were divided into groups based on their sequence of allocated number. Only the researcher had access to the allocation sequence. The participants were blinded to group allocation. The researcher who delivered

interventions was aware of the group allocation. The interaction time spent with each participant was similar across the four groups, and it is likely that they were unaware that they had received different educational content.

Figure 1: Flow diagram of the study protocol



Statistical Analysis

Data was analyzed using Statistical Package for the Social Sciences version 16.0 manufactured by IBM Corporation –Armonk, New York, US. All the collected data was entered in the Microsoft Office Excel Sheet 2007 version. Coding was done in numerical format as the correct answer was coded to be 4 and the wrong answer as 1. Descriptive statistics were used to assess the frequency of correct and incorrect responses. Paired ‘t’ test was used for intra group comparison of overall scores from baseline to follow-up within groups. Intergroup comparison of intervention groups was done using one-way analysis of variance (ANOVA) test and Tukey post hoc. The level of significance was kept as $p < 0.05$ and the normality of the data was tested by Shapiro–Wilk test.

Results

A total of 400 participants in the age group of 18-21 years were included in the study, among whom maximum

141(35.2%) were in the age group of 19 years, while least 55 (13.7%) were in the age group of 21 years. Males were in the majority 258 (64.5%) while females made up the remaining 142 (35.5%) (Table 1).

Table 1: Demographic Details

Age	Gender		Total N (%)
	Male N (%)	Female N (%)	
18	50 (12.5)	22(5.5)	72 (18)
19	87 (21.7)	54(13.5)	141(35.2)
20	86(21.5)	46(11.5)	132 (33)
21	35 (8.7)	20(5)	55(13.7)
	258 (64.5)	142 (35.5)	400(100)

Comparison of lifestyle was done amongst the 4 groups using ANOVA which showed significant difference ($p=.002$) (Table 2)

Table 2: Mean Comparison of lifestyle habits among various groups

Groups	N	Mean	SD	F Value	P-Value
1	100	1.98	0.94	9.26	.002
2	100	2.07	0.89		
3	100	2.10	0.66		
	100	1.78	0.73		

Statistical test: ANOVA; ($p < 0.05$ significant, CI=95%), N= number of study subjects

Tukey post hoc was applied for intergroup comparison, which showed significant difference among group 1-3, 2-4, 3-4 ($p=.002$, $p=.003$ and $p=.001$) whereas group 1-2, 2-3 and 1-4 were not significant. (Table 3)

Table 3: Inter Group Comparison of lifestyle habits

Groups	Mean Difference	p-value
1-2	-0.08100	0.502
1-3	0.21200*	0.002
1-4	0.00800	0.999
2-3	0.08900*	0.005
2-4	0.29300*	0.003
3-4	0.20400 *	0.001

Statistical test: tukey's post-hoc; (p<0.05 significant, CI=95%), N= number of study subjects

Comparison of pre intervention and post intervention related to number of times does a participant brushes teeth was done amongst the 4 groups using chi-square which showed a significant difference (p=.001) in Group 3. (Table 4)

Table 4: Comparison between frequencies of cleaning teeth at baseline and after intervention

Group	Frequency Of Cleaning Teeth	Pre-Intervention N (%)	Post-Intervention N (%)	X ² Value	P-Value
1	Once	20 (20)	32 (32)	55.17	0.028
	Twice	44 (44)	52 (52)		
	More Than Twice	36 (36)	16 (16)		
2	Once	60 (60)	54 (54)	8.58	0.072
	Twice	38 (38)	40 (40)		
	More Than Twice	2 (2)	6 (6)		
3	Once	30 (30)	20 (20)	3.43	0.001
	Twice	69 (69)	80 (80)		
	More Than Twice	1 (1)	0 (0)		
4	Once	43 (43)	45 (45)	3.94	0.414
	Twice	27 (27)	25 (25)		
	More Than Twice	30 (30)	30 (30)		

Statistical test: chi-square; (p<0.05 significant, CI=95%), N= number of study subjects

highest significant difference (p=.001) in Group 3. (Table 5)

Comparison of pre intervention and post intervention related to technique used while brushing teeth was done amongst the 4 groups using chi-square which showed

Table 5: Comparison between technique of brushing at baseline and after intervention

Group	Technique of Brushing	Pre-Intervention N (%)	Post-Intervention N (%)	X ² Value	P-Value
1	Vertical	58 (58)	36 (36)	61.67	0.003
	Vertical And Horizontal	23 (23)	36 (36)		
	Vertical, Horizontal And Round	19 (19)	28 (28)		
	Vertical	28 (28)	23 (23)	70.88	0.004
	Vertical And Horizontal	40 (40)	29 (29)		

2	Vertical, Horizontal And Round	32 (32)	48 (48)		
3	Vertical	36 (36)	20 (20)	86.49	0.001
	Vertical And Horizontal	41 (41)	26 (26)		
	Vertical, Horizontal And Round	23 (23)	54 (54)		
4	Vertical	42 (42)	38 (38)	2.00	0.73
	Vertical And Horizontal	28 (28)	31 (31)		
	Vertical, Horizontal And Round	30 (30)	31 (31)		

Statistical test: chi-square; (p<0.05 significant, CI=95%),

N= number of study subjects

Discussion

Young adults are in a process whereby an individual makes the gradual transition from childhood to adulthood. It is a critical period of development.^[8] Over half of NCD related deaths are associated with behaviors that begin or are reinforced during young adults, including tobacco and alcohol use, poor eating habits, and lack of exercise, compounded by the presence of obesity.^[9]

Young adults can be very smart consumers of media messages. They don't just take on board everything they see and hear on social media or in other media. Media influence can be **deliberate and direct or indirect**. This group can also pick up important health promotion messages from social media and other media. This might include messages aimed at preventing youth depression and suicide, promoting positive, respectful relationships, or encouraging healthy eating and lifestyle habits. Social media and other media can also influence the decisions that young adults make about their health and lifestyle. For example, media messages and content can make it look 'normal', cool or grown-up to eat junk food, smoke, drink alcohol and take other drugs

In the present study it was observed that pre-intervention knowledge regarding lifestyle and oral hygiene practice was 52.8% in male and 59.6 % in female; which increased to 68.3% in males and 72.6 % in females post intervention. Similar results were obtained by P

Wahengbam et al^[10] and Singh SV et al^[11]. This is usually attributed to the fact that the females are more concerned about overall health and facial image.^[1]

As knowledge about dietary habits play an important role in maintaining healthy lifestyle, it was observed that only before the intervention 43% participants were aware of good dietary habits whereas 57% participants were unaware of good dietary habits, whereas after intervention 68% participants were seen aware of good dietary habits. Similar results were obtained in the study by Nivedha V et al^[12] and Kandelman D^[13]. This might be due to similar changes obtained in individuals through their diet.

Young adults are highly vulnerable to deleterious lifestyle habits like tobacco and alcohol use. It was observed that before intervention 52.8% participants responded to tobacco use and 42.8% participants responded to alcohol use as not being dangerous for their health, whereas after intervention 72.1% participants responded to tobacco use and 67.9 % participants responded to alcohol use as being dangerous and were ready to quit such habits. Similar result was obtained in the study by Singh SV et al^[14]. This might be due to the awareness given to the participants through interventions, which had helped them to think about quitting of deleterious habits.

Oral diseases remain a global problem affecting many communities in the world. Since oral diseases are related to behaviors of an individual, they can be largely prevented by modifying their health behaviors.^[15] The awareness about oral hygiene was found to be good

among the young adults after intervention i.e. 62% participants responded to using toothpaste, toothbrush and floss which was 48% before the intervention was given to them, whereas contrary results were obtained in the study by Doshi et al. [16] and Usman et al [17] and this might be due to variation in their oral hygiene practices, lack of knowledge regarding oral health, indifferent attitude and their socioeconomic status. It was observed that before intervention on 30.2% participants used vertical, horizontal and round motion technique while brushing their teeth, whereas post intervention 56.8% started using all three motions for cleaning their teeth. Similar results were obtained in the study by Al-Tayar et al [15].

Memes are so trending that they can leave messages, which might be useful in day to day activity along with lifestyle modifications. [18] In the present study, 78% participants who were given intervention through power point and memes showed better lifestyle changes, when compared to other groups, whereas contrary results were obtained by Milene Moreira Leão [19] and Dziaugytė L [20] wherein intervention through power point showed better results.

Social Media bridges the gap between people causing awareness among them. Much social awareness campaigns run on Social Media to create awareness in people around the globe. Most of the young adults spend more than 60 minutes on an average on Social Media and when it comes to learning and career most of them admitted that Social Media is useful for academic studies. [21] In our study we observed that the intervention given in combination of power point and memes was most effective in bringing about changes in the lifestyle habits and oral hygiene practices among young adults when compared to individual intervention through power point and memes. As power point presentation is an older method of health education and is being followed since

years, it was observed that participants tend to forget what they see in few days, whereas irresistible urge of using social media had made the youth understand and implicate memes in their daily lifestyle. So, it was observed that when a combination of power point and memes were used in giving intervention showed a better result.

A limitation of this study is that it was conducted only for a duration of 3 months, long term value of the improvement need to be confirmed by further longitudinal studies with an increase in sample size. Inequality in gender was observed. The study was done in private colleges and did not involve government sectors. Hence, it is recommended that such interventional programs should be introduced for school children and teenagers at high school for a longer duration of time as these things leave a better impact than the older techniques of chalk and talk, lectures and group discussions on leading to a healthy lifestyle changes.

Conclusion

Lifestyle forms an important part of lives that influences the overall health of an individual along with oral health. The present study showed that intervention given to the group through power point and memes was found to be more effective when compared to other groups, in modification of lifestyle and oral hygiene practices among young adults.

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