

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Know It To Fight It: Efficacy Of A Smart Phone Application (APP) For Prevention And Control Of Tobacco Use.

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ABSTRACT

Interventions for prevention and cessation of tobacco use have been increasingly used around the world. However, the effects of smartphone applications on spreading awareness on ill effects of tobacco use are evaluated less frequently. This paper assesses the efficacy of a smartphone application for tobacco cessation and prevention awareness among young children. A smart phone application was designed with the help of app developing engineers. A pilot study on 40 high school students from M.S. Ramaiah High School, Bengaluru was done to assess the effectiveness of the developed application. A validated questionnaire tool was used to assess the knowledge and attitude of participants regarding tobacco and its ill effects before and after running the application. The responses of the pre and post-test survey were statistically analyzed. The results showed significant improvement in the awareness of students following the app intervention. Hence this application could be used as an effective tool for tobacco awareness, prevention and control.

Keywords: APP, tobacco, survey, cessation.

<https://doi.org/10.33887/rjpbcs/2022.13.4.2>

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INTRODUCTION

The use of tobacco and its products is a major public health burden in India with around 275 million adults consuming varied products of tobacco. Though the Indian Government has been instrumental in implementing various laws like Cigarettes and Other Tobacco Products Act 2003 or COTPA (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) tobacco use has still been on the rise in the country [1].

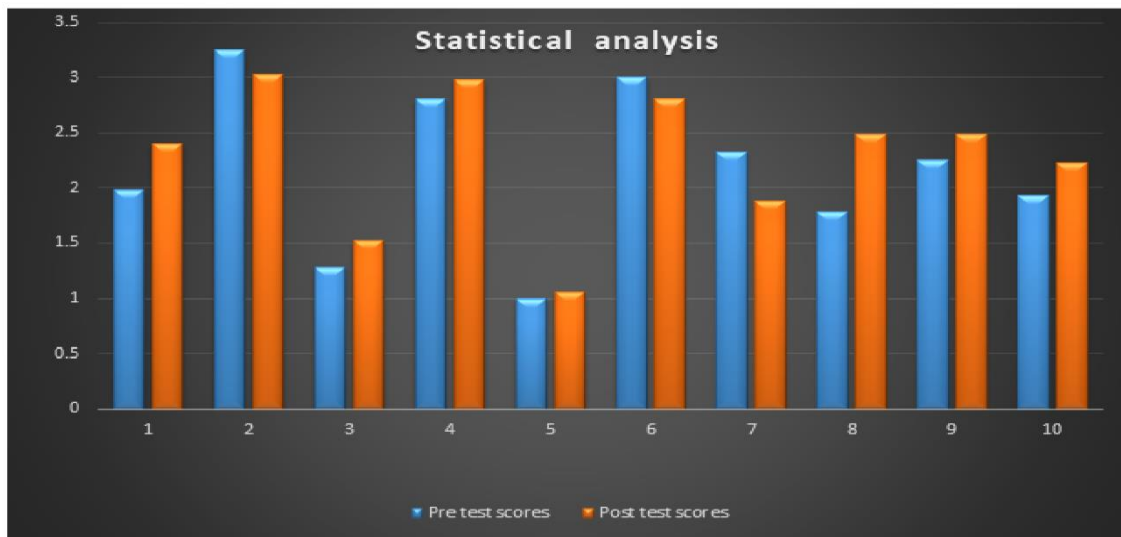
Tobacco use among the younger generation is increasing at an alarming rate in the country. Global Adult Tobacco Survey-2 (GATS-2) data showed that 1 out of every 8 young persons in the age group of 15 to 24 years was using some form of tobacco². According to the Global Adult Tobacco Survey 2 in India about 12.2% started using tobacco daily before turning 15 years, 23.6% started when they were between 15 and 17 years, and 19.4% started tobacco use at 18–19 years suggesting the increasing incidence of tobacco use at a younger age³. Various factors like lack of proper guidance, desire to imitate adults who use tobacco, peer pressure, lack of knowledge on the adverse effects of tobacco, easy availability of variety of tobacco products and innovative advertisements attract the children to tobacco [4].

Though governments and communities have made efforts to reduce initiation of smoking, decrease exposure to smoke, and increase cessation in the form of policy-level measures, such as increased taxation of tobacco products; strict enforcement of laws, regulations on consumption of tobacco products (eg: smoke-free policies in restaurants, bars, and other public places) and restrictions on advertising and mandatory health warnings on packages, the addiction to tobacco among youth is still on a steady rise [2, 3]. To curtail this the awareness regarding tobacco and its ill effects needs to be instilled early in children to prevent the use of tobacco.

Smartphones are being extensively owned and used by the youth. Smartphone applications are better accepted amongst the younger generation and may provide a better platform for propagation of awareness against adverse effects of tobacco. Smartphone applications could help in reinforcement of healthy habits and abstinence from tobacco use which could mould patterns of population wide tobacco use⁵. Though many smartphone applications have been used for tobacco cessation not many applications are tried for tobacco prevention and control. Hence, we devised a smartphone application for tobacco awareness and control “Know it to Fight It” for spreading awareness regarding the ill effects of tobacco.

MATERIALS AND METHODS

A smart phone application named as “Know it to Fight It” was designed with the help of app development engineers. The app was designed in such a way so as to attract the younger generation and had different components like puzzle game, memory game and tobacco awareness educational videos. A pilot study was designed and 40 students from the higher secondary school were enrolled to test the efficacy of the app. A validated questionnaire tool was developed to assess the knowledge and attitude of school children regarding tobacco and its ill effects. The questionnaire contained questions regarding awareness about ill effects of tobacco and benefits of healthy habits. This questionnaire was circulated amongst the student’s pre and post introduction to the app. The pre and post test results were analysed. Paired sample “t” test was performed to analyze the mean difference in the pre and post-test questionnaire survey. The results showed significant differences (p value = 0.002) in the awareness of students following the app intervention



Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	q1	1.98	40	1.000	.158
	q1 post	2.40	40	1.215	.192
Pair 2	q2 pre	3.25	40	1.056	.167
	q2 post	3.03	40	.947	.150
Pair 3	q3 pre	1.28	40	.452	.071
	q3 post	1.53	40	.716	.113
Pair 4	q4 pre	2.80	40	.758	.120
	q4 post	2.98	40	.947	.150
Pair 5	q5 pre	1.00	40	.000	.000
	q5 post	1.05	40	.221	.035
Pair 6	q6 pre	3.00	40	.816	.129
	q6 post	2.80	40	.723	.114
Pair 7	q7 pre	2.33	40	1.207	.191
	q7 post	1.88	40	1.159	.183
Pair 8	q8 pre	1.78	40	1.097	.174
	q8 post	2.48	40	1.154	.183
Pair 9	q9 pre	2.25	40	1.127	.178
	q9 post	2.48	40	1.450	.229
Pair 10	q10 pre	1.93	40	1.185	.187
	q10 post	2.23	40	1.330	.210
Pair 11	q11 pre	3.03	40	1.050	.166
	q11 post	2.20	40	.966	.153



Pair 12	q12 pre	1.23	40	.423	.067
	q12 post	1.83	40	1.217	.192
Pair 13	q13 pre	2.38	40	1.005	.159
	q13 post	2.50	40	1.219	.193
Pair 14	q14 pre	2.80	40	1.137	.180
	q14 post	2.23	40	1.271	.201
Pair 15	q15 pre	2.83	40	1.083	.171
	q15 post	2.90	40	.982	.155
Pair 16	q16 pre	1.50	40	.816	.129
	q16 post	1.18	40	.501	.079

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	q1 & q1 post	40	-.076	.041
Pair 2	q2 pre & q2 post	40	.122	.054
Pair 3	q3 pre & q3 post	40	-.061	.007
Pair 4	q4 pre & q4 post	40	-.186	.251
Pair 5	q5 pre & q5 post	40	.	.
Pair 6	q6 pre & q6 post	40	-.130	.123
Pair 7	q7 pre & q7 post	40	-.172	.089
Pair 8	q8 pre & q8 post	40	-.055	.735
Pair 9	q9 pre & q9 post	40	-.357	.024
Pair 10	q10 pre & q10 post	40	-.249	.021
Pair 11	q11 pre & q11 post	40	.121	.456
Pair 12	q12 pre & q12 post	40	.328	.039
Pair 13	q13 pre & q13 post	40	.115	.079
Pair 14	q14 pre & q14 post	40	-.075	.048
Pair 15	q15 pre & q15 post	40	-.017	.018
Pair 16	q16 pre & q16 post	40	-.094	.064

Paired Differences					
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference
					Lower
Pair 1	q1 - q1 post	-.425	1.631	.258	-.947
Pair 2	q2 pre - q2 post	.225	1.330	.210	-.200
Pair 3	q3 pre - q3 post	-.250	.870	.138	-.528
Pair 4	q4 pre - q4 post	-.175	1.318	.208	-.597
Pair 5	q5 pre - q5 post	-.050	.221	.035	-.121
Pair 6	q6 pre - q6 post	.200	1.159	.183	-.171
Pair 7	q7 pre - q7 post	.450	1.811	.286	-.129
Pair 8	q8 pre - q8 post	-.700	1.636	.259	-1.223
Pair 9	q9 pre - q9 post	-.225	2.130	.337	-.906
Pair 10	q10 pre - q10 post	-.300	1.990	.315	-.936
Pair 11	q11 pre - q11 post	.825	1.338	.211	.397
Pair 12	q12 pre - q12 post	-.600	1.150	.182	-.968
Pair 13	q13 pre - q13 post	-.125	1.488	.235	-.601
Pair 14	q14 pre - q14 post	.575	1.767	.279	.010
Pair 15	q15 pre - q15 post	-.075	1.474	.233	-.547

Paired Samples Test					
		Paired Differences	t	df	Sig. (2-tailed)
		95% Confidence Interval of the Difference			
		Upper			
Pair 1	q1 - q1 post	.097	-1.648	39	.107
Pair 2	q2 pre - q2 post	.650	1.070	39	.291
Pair 3	q3 pre - q3 post	.028	-1.818	39	.077
Pair 4	q4 pre - q4 post	.247	-.840	39	.406

Pair 5	q5 pre - q5 post	.021	-1.433	39	.160
Pair 6	q6 pre - q6 post	.571	1.091	39	.282
Pair 7	q7 pre - q7 post	1.029	1.572	39	.124
Pair 8	q8 pre - q8 post	-.177	-2.706	39	.010
Pair 9	q9 pre - q9 post	.456	-.668	39	.508
Pair 10	q10 pre - q10 post	.336	-.954	39	.346
Pair 11	q11 pre - q11 post	1.253	3.901	39	.000
Pair 12	q12 pre - q12 post	-.232	-3.299	39	.002
Pair 13	q13 pre - q13 post	.351	-.531	39	.598
Pair 14	q14 pre - q14 post	1.140	2.058	39	.046
Pair 15	q15 pre - q15 post	.397	-.322	39	.749
Pair 16	q16 pre - q16 post	.644	2.061	39	.046

DISCUSSION

India not only ranks as the second largest producer but also as the second largest consumer of tobacco in the world [1]. The data provided by Global Adult Tobacco Survey 2 in India suggests that 266.8 million tobacco users were in the age range of 15 years and above among which 12.2% confirmed beginning tobacco use before the age of 15 years [3]. The 2015 National Youth Tobacco Survey also confirmed that e cigarette use was increasing among the middle and high school students as early as an age of 13 years [4]. Worldwide the frequency of tobacco use has been estimated to be 1 in every 10 girls and 1 in every 5 boys, aged 13 to 15 years. These trends in tobacco use is estimated to result in the deaths of 250 million children and young people over time in many developing countries [2].

According to CDC fact sheet data 2022, the factors which promote early initiation of tobacco use in childhood include advertisements of tobacco use in mass media, peer or parent use of tobacco, mental health issues like depression, anxiety or stress, easy access, availability and low price of tobacco products, lucrative marketing strategies by the tobacco industry and lack of awareness or education of tobacco and its hazards [6].

Nicotine is the primary reinforcing component in tobacco responsible for the addictive potential of tobacco and its products. Nicotine addiction among youth is a matter of concern. The developing brains' reward system and regions associated with emotional and cognitive functions are hampered by nicotine. Tobacco researchers have concluded that nicotine exposure to these parts of the brain could result in associated alterations which could cause prolonged tobacco use in adulthood. Due to the increasing dependence and addiction to tobacco setting early in adolescence there are higher chances of other substance use disorders (like cocaine, heroin etc) setting in the young tobacco users which is referred to as a "gateway" effect. Hence preventing tobacco use during early childhood years by spreading awareness about tobacco and its ill effects could go a long way in preventing future use of tobacco in youth. This factor could be crucial to reduce the burden of non-communicable diseases, including cancers in the world [7].

Prevention of tobacco use has been imposed at various levels like the policy level measures by the government such as increased taxation of tobacco products, smoke free policies in public places, restrictions on advertising and mandatory health warnings on packages. Though guidance from parents and families could also play a role in prevention of tobacco use, a Cochrane review published in 2013 demonstrated that school based interventions were effective in reducing the smoking rates by a notable 12% reduction when compared with control groups thus emphasizing the role of school based programs in tobacco awareness initiatives [8].

For promoting behavioural change mobile phone technology has enormous potential and reach. Health apps for smart phones are simple to download and widely used by mobile phone users. According to the WHO research, global mobile phone usage has the potential to improve availability, accessibility, innovation, and portability of health service and promotion efforts [5].

CONCLUSIONS

This innovative mobile application with features involving pros and cons of a healthy life versus the adverse effects of tobacco incorporated into games and puzzles is sure to engage the young minds and could be used as a useful awareness tool amongst school children for prevention and control of tobacco use. Though there are many apps for smokers and tobacco users to help them stop smoking, this smartphone app takes a proactive approach by spreading awareness to both nonsmokers and tobacco

users. This app was developed to suit smart phone apps hosted on publishers servers (eg: Google Play) and could be subjected to their changing technical modifications and regulation policies. These could be addressed in future by publishing these apps in self hosted web links or sites.

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