



MOBILE PHONE BASED INTERVENTION TO EMPHASIZE NEGATIVE PERCEPTION OF ALCOHOL AND TOBACCO IN ADOLESCENTS IN BANGALORE

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ABSTRACT **Background And Need For The Study:** Alcohol and tobacco use among adolescents is associated with adverse outcomes like declining grades, absenteeism from school, poor peer relationships. Currently it is observed that mobile phone can be used as promising mode of delivering public health intervention as it is being used by majority of people in India. In this study, mobile health messages along with awareness program used to study impact on tobacco and alcohol usage, it's perception among adolescents.

Objectives:

1. To assess effect of structured awareness program on tobacco and alcohol hazards by pre, post-test evaluation program.
2. To assess effect of mobile based intervention to maintain negative perception about alcohol and tobacco consumption.
3. To find association of pre-test knowledge about tobacco and alcohol hazards with selected demographic variables.

Methods: After obtaining permission, questionnaires "a" (sociodemographic), "b" (knowledge, attitude regarding alcohol and tobacco) given to students. Later 1 hour sensitization done using ppt and interactive discussion. Following intervention, students divided into 2 groups, A and B based on classrooms. Group 'A' were followed with text messages on negative effect of alcohol and tobacco consumption weekly for next 2 months. Group B received all messages at the end of 2 months. After 2 months, questionnaire "b" given to both groups and results compared as within group, between groups comparison. **Results:** Pre, post-test evaluation showed significant results in knowledge, attitude, harmful effects of tobacco and alcohol consumption. Structured awareness program significantly improved knowledge, addiction and harmful effects of alcohol and tobacco among post test subjects like pan masala is addictive ($p < 0.001$), advertisement of tobacco products punishable and prohibited ($p < 0.001$). In mobile based intervention group with continuous knowledge share when compared to non-mobile based group, there was a significant improvement in knowledge regarding pan masala being harmful ($p < 0.043$) and addiction causing poor academic performance ($p < 0.011$).

KEYWORDS : Adolescence ;Addiction; Ppt

INTRODUCTION

Tobacco is responsible for over 8 million deaths annually. The 2019 GYTS-4 reported that nearly one-fifth of students aged 13-15 had used different forms of tobacco in their lives. In India, one third of the total population who use tobacco are above 15 years of age, with over a million tobacco-related deaths reported annually. Alcohol use among adolescent is associated with impairments in verbal learning, visual-spatial processing, memory, and attention, as well as developmental and structural deficits in the brain.

Recently, mobile phones have emerged as promising tool to deliver public health interventions due to their widespread use in India. Currently, there are insufficient school programs to maintain negative perceptions regarding the use of alcohol and tobacco among adolescents. This study will utilize mobile health messages alongside awareness programs to evaluate their impact on use of tobacco and alcohol among adolescents.

METHODOLOGY

Source Of Data: Students of 8th, 9th and 10th standard from schools in Karnataka were involved in the study

Study Design: Prospective study

Inclusion Criteria: All the students present in the class of 8, 9 and 10.

Exclusion Criteria

1. Students who are absent on days of pre and post test
2. On medication for psychiatric illness

Procedure: A cross sectional study done on 300 students. Permission was taken from the Deputy director of Public Instruction, Principal of the schools. Consent was taken from the parents and assent from the students. A sensitization module was prepared which include questionnaires, ppt, video display. These questionnaires were validated. There are 2 questionnaires namely "a" and "b". For Kannada medium students, questionnaire translated into Kannada language by the expertise. Questionnaire "a" includes demographic data.

Questionnaire "b" include assessing knowledge and attitude about alcohol and tobacco in adolescents. It has total of 42 questions, out of which 23 questions were based on knowledge. Each knowledge question given a score of 1 and total score of 23 and will be referred to as "k" score.

Each classroom was selected priorly. A unique number was allotted to each respondent and they were not required to reveal their identity. Each student was provided with a questionnaire "a" and "b" and advised to complete in 20 to 30 minutes. Following this, an intervention was done which included 1 hour sensitization by short video display, power point presentation and interactive discussion about tobacco and alcohol consumption. This mainly focuses on the magnitude of problems due to tobacco and alcohol consumption, symptoms and signs of addiction, laws passed by the Indian government regarding tobacco and alcohol prevention. Contact numbers of the parents were collected from the students. Following intervention, the students were divided into a set of 2 groups i.e A and B based on classrooms. "A" group students, under the supervision of class teacher were made as one group who were followed up with text messages on the negative effect of alcohol and tobacco consumption once every week for the 2 months. The other group received all the messages in person at the end of 2 months. After 2 months, the questionnaire "b" was given to both the groups and results are compared as below

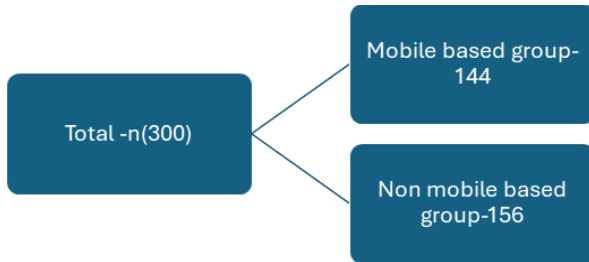
- a) within group comparison (pre and post-test)
- b) between groups comparison (A and B)

RESULTS:

Socio-demographics Of All Study Subjects:

Among the surveyed group, 2.0% are 12 years old, 15.3% are 13 years old, 30.0% are 14 years old, 18.3% are 15 years old, and 34.3% are 16 years old. 52.0% of the participants are female and 48.0% are male. 69.0% attend school in rural areas while 31.0% are in urban areas. 58.0% engage in 30 minutes a day for 5 days a week, 25.7% exercise for 90 minutes every week, and 16.3% do not engage in any physical activity. 90.0% do not know friends who drink alcohol, and 10.0% do. Similarly, 89.0% do not know friends who smoke, while

11.0% do.



Students from urban areas have a better knowledge score than from rural areas ($p < 0.001$). Children of illiterate fathers scored higher ($p = 0.007$). Children living with a single mother scored higher ($p = 0.034$). There was no significant difference based on whether friends used alcohol ($p = 0.076$), participants with friends who smoked scored significantly higher ($p = 0.021$). Significantly higher scores were observed among participants who reported engaging in higher levels of physical activity, specifically 90 minutes every week.

Table 1: Descriptive Analysis Of Association Between Demographic Variable And Pre Knowledge Score (k) Of All Study Subjects(n=300)

		N= 300	Mean of k score	Std. Deviation	P value
Gender	Female	156	20.6603	2.67485	0.413
	Male	144	20.4167	2.45946	
Locality	Rural	207	20.1691	2.90219	<0.001
	Urban	93	21.3763	1.27615	
Education of father	Literate	258	20.3837	2.68227	0.007
	Illiterate	42	21.5238	1.41831	
Education of mother	Literate	239	20.3975	2.74339	0.052
	Illiterate	61	21.1148	1.64417	
Live with	Single mother	20	21.7000	1.68897	0.034
	Both the parents	280	20.4607	2.60656	

Table 2 : Comparison of knowledge, attitude and harmful effects of tobacco and alcohol in mobile based intervention group(A) and non-mobile based intervention group(B)

	True / false	Pre test comparison			Pre-post comparison						Post-test comparison		
		Group A (n=144)	Group B (n=156)	P value	Group A Pre-test group	Group A Post-test group	P value	Group B Pre-test group	Group B Post-test group	P value	Group A (n=144)	Group B (n=156)	P value
Passive smoking is harmful	False	12	21	0.217	12	6	0.144	21	3	<0.001	6	3	0.24
	True	132	135		132	138		135	153		138	153	
Smoking in public place is punishable	False	3	10	0.12	3	0	0.08	10	0	0.001	0	0	
	True	141	146		141	144		146	156		144	156	
Pan masala is harmful	False	9	17	0.221	9	8	0.80	17	2	<0.001	8	2	0.043
	True	135	139		135	136		139	154		136	154	
Pan masala is addictive	False	23	23	0.893	23	6	0.001	23	5	<0.001	6	5	0.637
	True	121	133		121	138		133	152		138	151	
Advertisements of tobacco products punishable and prohibited	False	31	49	0.071	31	0	<0.001	49	0	<0.001	0	0	
	True	113	107		113	144		107	156		144	156	
Sale of tobacco to minors punishable	False	44	29	0.023	44	0	<0.001	29	0	<0.001	0	0	
	True	100	127		100	144		127	156		144	156	
Sale of tobacco within 100 yards of educational place prohibited and punishable	False	33	32	0.715	33	0	<0.001	32	0	<0.001	0	0	
	True	111	124		111	144		124	156		144	156	
Addiction is physical or medical illness	False	20	19	0.78	20	0	<0.001	19	0	<0.001	0	0	
	True	124	137		124	144		137	156		144	156	
Is addiction preventable?	False	39	69	0.003	20	0	<0.001	69	0	<0.001	0	0	
	True	105	87		124	144		87	156		144	156	
Is addiction treatable?	False	37	53	0.15	37	0	<0.001	53	0	<0.001	0	0	
	True	107	103		107	144		103	156		144	156	
Addiction cause liver and brain damage	False	13	5	0.06	13	0	<0.001	5	0	0.024	0	0	
	True	131	151		131	144		151	156		144	156	
Addiction cause premature death	False	15	2	0.001	15	0	<0.001	2	0	0.15	0	0	
	True	129	154		129	144		154	156		144	156	
Addiction cause anxiety	False	13	0	0	13	0	<0.001	0	0		0	0	
	True	131	156		131	144		156	156		144	156	
Addiction cause poor concentration	False	14	14	0.981	14	0	<0.001	14	0	<0.001	0	0	
	True	130	142		130	144		142	156		144	156	
Addiction cause inability to sleep	False	27	29	1	27	0	<0.001	29	0	<0.001	0	0	
	True	117	127		117	144		127	156		144	156	

Friends use alcohol	No	270	20.4556	2.65694	0.076
	Yes	30	21.3333	1.42232	
Friends who smoke	No	267	20.4232	2.65651	0.021
	Yes	33	21.5152	1.43878	
Physical activity(time)					
No		49	19.8163	2.93452	p<0.001
30 min a day for 5 days/week		174	20.3333	2.56777	
90 min every week		77	21.4805	2.06226	

Group A is more inclined to believe that addiction is preventable. Group B is more likely to believe that the sale of tobacco to minors is punishable, addiction leads to rape and alters family and causes premature death and anxiety.

In mobile based group, awareness that pan masala is addictive showed significant increase from 84% to 95.8%, awareness that advertisements of tobacco products are punishable and prohibited increased significantly from 78.5% to 100.0%, understanding that the sale of tobacco to minors is punishable significantly increased from 69.4% to 100% and the knowledge of sale of tobacco within 100 yards of educational institutions is prohibited and punishable increased significantly from 77.1% to 100% students post intervention. Knowledge that addiction is preventable increased significantly from 72.9% to 100.0%, addiction is treatable showed significant increase from 74.3% to 100% in mobile based group.

In non-mobile based group the understanding that passive smoking is harmful increased significantly from 86.5% to 98.1%, knowledge that pan masala is harmful increased significantly from 89.1% to 98.7% in post intervention group. Pan masala is addictive increased significantly from 85.3% to 96.8%, awareness that advertisements of tobacco products are punishable and prohibited increased significantly from 68.6% to 100.0% post educational intervention.

Addiction is preventable also increased significantly from 55.8% to 100.0%, addiction is treatable showed significant improvement from 66% to 100% in non-mobile based group.

Addiction cause rape	False	26	12	0.012	26	0	<0.001	12	0	<0.001	0	0	
	True	118	144		118	144		144	156		144	156	
Addiction alter family or peer relationship	False	18	3	0.001	18	0	<0.001	3	0	0.08	0	0	
	True	126	153		126	144		153	156		144	156	
Addiction cause poor academic performance	False	6	2	0.234	6	0	0.013	2	0	0.01	0	7	0.011
	True	138	154		138	144		154	156		144	149	
Addiction make one violent	False	9	1	0.017	9	0	0.002	1	0	0.317	0	0	
	True	135	155		135	144		155	156		144	156	
Addiction makes to commit suicide	False	7	5	0.66	9	0	0.002	5	0	0.02	0	0	
	True	137	151		135	144		151	156		144	156	
Addiction cause property damage	False	14	14	0.998	14	0	<0.001	14	0	<0.001	0	0	
	True	130	142		130	144		142	156		144	156	
Alcohol addiction cause accident.	False	7	2	0.14	7	0	0.007	2	0	0.15	0	0	
	True	137	154		137	144		154	156		144	156	

Pre assessment 8(2.7%) were aware of limit of alcohol in blood while post sensitization, it increased to 237(79%) which is statistically significant with $p < 0.001$. Similarly 137(44.7%) students were aware of legal age to consume alcohol and post sensitization it increased to 264(88%) with $p < 0.001$.

Table 3 : Descriptive Analysis Of Legal Aspects Of Alcohol- Limit And Age In Karnataka (n=300)

	Response	Pre		Post		Mc Nemer P value
		Frequency	Percent	Frequency	Percent	
Limit of alcohol	Correct	8	2.7	237	79.0	20.315 (P<0.001)
	Wrong	292	97.3	63	21.0	
	Total	300	100.0	300	100.0	
Legal age	Correct	134	44.7	264	88.0	15.802 (P<0.001)
	Wrong	166	55.3	36	12.0	
	Total	300	100.0	300	100.0	

DISCUSSION:

Friends' smoking habits also showed a significant association with pre-test knowledge scores. It is similar to a study done by **Kaur A et al**² showed peer smokers had a significant pre-test knowledge score. **Amiri M et al**³ reported that students with higher knowledge and awareness of drugs had a lower addiction potential, supporting our finding that pre-test knowledge varies with demographic factors.

In this study, mobile-based intervention significantly improved participants' perceptions and knowledge about alcohol and tobacco, emphasizing the legal ramifications and health risks involved. This finding aligns with **Paz Castro R et al**⁴, who studied engagement with a mobile phone-based life skills program and found that higher engagement was associated with positive outcomes such as non-smoking and reduced problematic drinking among adolescents. In this study, educational intervention significantly changed adolescents' perceptions about consequences of addiction like liver and brain damage, premature death, poor academic performance. These results are consistent with findings from studies such as **Cannizzaro E et al**⁵, which reported increased awareness of the harmful effects of substance use following educational interventions.

Post-intervention, there was a substantial increase in awareness about the legal age to consume alcohol and knowledge about the legal limits of alcohol in blood. **Scalese M et al**⁶ noted that legal knowledge is crucial in shaping adolescents' attitudes towards substance use. **Paz Castro R et al**⁴ found that mobile-based life skills interventions were effective in reducing problematic drinking and smoking among adolescents. Similarly, **Jayakrishnan et al**⁷ demonstrated the effectiveness of school-based anti-tobacco education programs.

In a study done by **Arora M et al**⁸ showed that community-based interventions can be effective in preventing adolescents from initiating tobacco use. In a study done by **O'Brien KH et al**⁹ showed that most adolescents felt that getting a booster of intervention content on their smartphones would be beneficial for ongoing care and an easy way to access information. In a quasi-experimental study by **Carrion- Valero F et al**¹⁰, the response to a preventive multi-personal intervention model (intervention) against tobacco consumption was compared with standard anti-smoking activity carried out by local government administration (control). The percentage of non-smokers increased from 84.1% to 88.7% in the intervention group and remained almost unchanged among controls (89.3% vs 89.9%). After one year, there was an increase in the prevalence of non-smokers, decrease in the prevalence of smokers among students who received the multi-personal intervention, whereas changes among controls were almost

negligible.

In the study mobile phone was used as a media to maintain negative perception about alcohol and tobacco because of its accessibility.

CONCLUSION

Pre and post-test evaluation showed significant results with respect to knowledge, attitude and harmful effects of tobacco and alcohol consumption. In the study, the structured awareness program, there were statistically significant improvement in knowledge, addiction and harmful effects of alcohol and tobacco among post test subjects like pan masala is addictive, advertisement of tobacco products punishable and prohibited, sale of tobacco to minors is punishable, sale of tobacco within 100 yards of educational place prohibited and punishable, addiction is treatable, addiction is preventable, addiction cause brain and liver damage, addiction cause premature death, anxiety, poor concentration, inability to sleep, cause rape, alter family or peer relationship, poor academic performance, makes one violent, leads to robbery, addiction is physical / mental illness.

In the mobile based intervention group with continuous knowledge share when compared to non-mobile based group, there was a significant improvement in knowledge regarding pan masala being harmful and addiction causing poor academic performance.

The knowledge, attitude and awareness of harmful effects of tobacco and alcohol consumption in the study population was good as assessed by pre-test. In the study, urban students have a better pre-knowledge score than rural students, subjects whose fathers are illiterate, who live with single mother than both parents, subjects who have friends who smoke have a statistically significant pre-knowledge score. Students who engage in physical activity for 90 min every week have statistically significant pre-knowledge score have significant pre-knowledge score.

STRENGTH:

The study involves both urban and rural area with good sample size of 300.

LIMITATIONS:

- The subjects were not followed up
- Accessibility of mobile phones
- The questionnaire were self-reported

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