Original Article

Motivation to quit tobacco; Impact of different types of Anti-tobacco state-sponsored media propaganda messages

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Abstract

Introduction: Antitobacco media messages can easily reach the mass and play a very positive and significant role in changing the motivational stages among recent quitters. Motivation is the key to changing human behaviour. Motivation can be intrinsic and extrinsic. To modify tobacco-related behaviour, one must have an inherent motivation to quit tobacco. However, the outside factors, for example, protobacco advertisements, antitobacco advertisements, peer pressure, celebrity influence, and family members' influence cannot be ignored. **Method:** A total of 400 recent tobacco quitters were enrolled from four colleges via a multistage sampling method. Time series research design was used for data collection at three time periods 0, 1, and 3 months. Study participants were divided into four groups: 1) personal testimony group, 2) health warning group, 3) celebrity-influenced public service announcements, and 4) natural exposure group. Media messages containing antitobacco video clippings and pictures were delivered to the participants via phone thrice a week, as per the groups assigned. All four groups were assessed for the motivational stage via contemplation ladder at 0, 1, and 3 months of intervals. **Results:** Antitobacco personal testimonial media messages are most effective in enhancing the motivation to quit tobacco, followed by the antitobacco health warning messages, which are also proven to be effective in maintaining high motivation levels to remain abstinent from smoking. However, public service announcements are ineffective in keeping the motivation to quit tobacco at higher smoking. **Conclusion:** Overall, the antitobacco state-sponsored media messages, personal testimonials, and health warnings about tobacco products effectively maintain and enhance motivation to quit tobacco.

Keywords: Adolescents, anti-tobacco media messages, intentions to quit tobacco, motivation to quit, recent quitters

Introduction

Antitobacco media messages can easily reach the mass and play a very positive and significant role in changing the motivational stages among recent quitters. There is a wide range of antitobacco media messages in our surroundings. Exposure to these antitobacco media messages helps tobacco users change tobacco-related attitudes and make nonsmokers not to initiate tobacco use. Every antitobacco media message has a unique role in amending tobacco-related behaviour.[1,2] Motivation is the key to changing human behaviour. Motivation can be

intrinsic and extrinsic. To modify tobacco-related behaviour, one must be motivated to quit tobacco. However, the extrinsic factors, like antitobacco advertisements, peer pressure, celebrity influence, and family members' influence, cannot be ignored. The protection motivation theory has a significant positive change in individuals' behaviour and keeps them away from tobacco and tobacco-related products and makes tobacco users and recent quitters more aware of the harms caused by tobacco to their health and hence enhance the intention to quit and help in decreasing relapse among tobacco users.[3,4]

Personal testimonial antitobacco media messages, which are highly dynamic and generate fear, consist of personal stories and are focused on 'why to quit tobacco' are found to be most effective in developing quitting activity among tobacco users

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than other fear and sadness-evoking media messages.[5,6] It also reported in research that antitobacco media messages enhance the craving for tobacco among recent tobacco quitters, decrease their intention to quit, and make them relapse. The smoking cues shown in antitobacco media messages reduce the motivation to quit. To be more effective, antitobacco media messages must have disgusting content.[7]

As per the Global Adult Tobacco Survey report 2020, persons who are exposed to antitobacco media messages, in the younger age group, who had to quit attempts in the last 12 months have a higher educational background and who are getting frequent advice from some healthcare workers to quit tobacco are more willing to quit smoking than others.[8] Antitobacco media messages, which focus on the ill effects of tobacco on health, especially on the internal organs (graphic warnings), are more appreciated by the public and motivate tobacco users to quit tobacco and helpful in maintaining tobacco cessation for a longer duration.[9,10]

Antitobacco media messages are vital in decreasing tobacco initiation, but their part in tobacco prevalence is still under doubt.[11] However, adolescents found these antitobacco media messages ineffective in generating quitting activities as they could not find these messages relating to them. The present study will explain the effect of different types of antitobacco media messages on motivation to quit tobacco among young adolescents recent quitters. Amid COVID-19 tobacco users, especially smokers were at more risk of mortality as compare to nonsmokers and hence become the vulnerable population. This vulnerability triggered smokers to quit tobacco but without adequate support, quitting process is incredibly challenging.[12] Antitobacco media messages could act as a good support and a cost-effective method if used properly.

Materials and Methods

Participants for this study were currently abstinent (from the past month) tobacco users from colleges under Delhi University. A total of 400 study participants were enrolled from four colleges. Delhi university colleges were selected from a multistage sampling method (Figure 1 consort diagram on sample selection and flow of study). Time series research design was used for data collection at 0, 1, and 3 months. Amid COVID-19, data were collected via both online and offline modes, whatever was suitable for study participants. A written informed consent was obtained from the study participants. Written permission to conduct study was received from selected colleges of Delhi University. Ethical clearance was taken from the ethics committee at Chitkara University, Punjab EC/NEW/INST/2021/531/34.

Fagerstrom's nicotine dependence questionnaire was used to assess the level of nicotine dependence. Study participants were divided into four groups: 1) personal testimony group, 2) health warning group, 3) celebrity-influenced public service announcements, and 4) natural exposure group. Media messages containing antitobacco video clippings and pictures were

delivered to the participants via phone thrice a week, as per the groups assigned. All four groups were assessed for the motivational stage via contemplation ladder at 0, 1, and 3 months of intervals. A urine cotinine test was done to validate the subjective data at three months.

Results

Sociodemographic and selected variables of study participants

As given in Table 1, the mean tobacco initiation age of study participants was 17.17 ± 1.24 years. Study participants were able to maintain tobacco abstinence for 3.17 ± 1.46 months. Forty three percent of study participants were male and more than 56% were females. All the four groups, that is, personal testimonial, health warnings, public service announcements, and natural exposure groups statistically the same as the *P* value is more than 0.05. About 50% of study participants reported that they consumed smoking form of tobacco. Twenty one percent of study participants used smokeless tobacco, while more than 28% consumed both tobacco types. The majority of study participants, (77%), were in the very low nicotine dependence category. Only 4% of study participants were in the high nicotine dependence category. More than 70% of study participants reported that there were no family member or person living with them who was using tobacco products, whereas almost 30% of study participants reported the presence of family member or person using tobacco products living with them. Thirty four percent of study participants reported they started tobacco because of peer pressure and 88% started tobacco just as experimentation, 29% the influence of media/celebrity makes them start tobacco, and more than 12% initiated tobacco under the influence of family members. More than 80% of study participants reported exposure to antitobacco media messages. Almost 67% study participants were affirmatively that antitobacco media messages do catch their attention. Fifty five percent of study participants reported that antitobacco media messages were not effective in maintaining tobacco abstinence.

Change in motivational stage at beginning, at one and at month observation among study participants (Personal testimonial group)

As depicted in Table 2, that the mean scores of study participants on motivation to change at the beginning, after 1 and after 3 months of the study. There was a significant difference found among the 3 time periods. At the start study, participants were at 4.19 ± 0.86 (Action stage). After 1 month score declined to 3.72 ± 0.77 (Above Preparation stage) and after 3 months score was 3.77 ± 1.10 (Above Preparation stage).

Association between urine cotinine test and stages of motivation among study participants from personal testimonial group

As given in Table 3, that of 100 study participants, 15 were in the precontemplation stage on the cotinine test these all 15 study
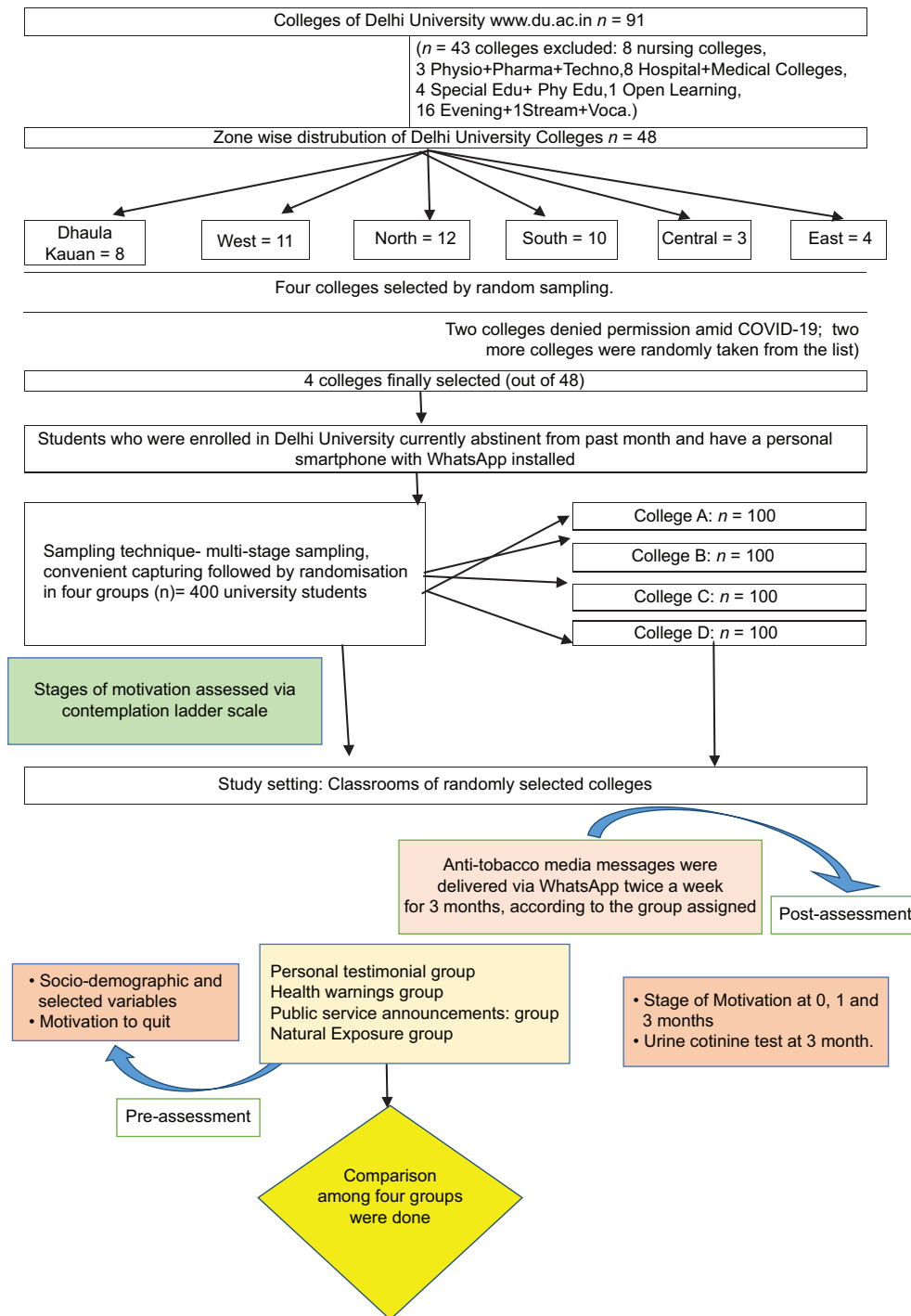
Figure 1: Consort diagram of sample selection and flow of the study

participants were found positive for cotinine levels. Another stage was the preparation stage; a total of 29 participants were in this stage, and of 29 study participants, four were found positive for urine cotinine levels. In the Action stage, there were 20 participants and all of these 20 study participants were negative for urine cotinine levels. Similarly, there were 36 participants in the maintenance stage and all were found negative for urine cotinine levels. The Chi-square value was 77.594 (3 degrees of freedom, 5% significance level). The significant value $P = 0.001$ was less than .05, at the 5% significance level.

All the study participants in the action and maintenance stages found negative urine cotinine levels. Also, majority of study participants from precontemplation stage found positive for urine cotinine levels. This indicates that the subjective data match with objective findings.

Table 1: Frequency distribution of socio-demographic and selected variables of the study participants (*n*=400)						
Socio-demographic Variables	**Personal Testimonial Group**	**Health Warnings Group**	**Public Service Announcements Group**	**Natural Exposure Group**	**Mean (total)**	**P**
Tobacco initiation age in years (mean±SD)	17.16±1.25	17.32±1.16	17.20±1.09	17.02±1.44	17.17±1.24	0.395
Past tobacco abstinence in months (mean±SD)	3.47±1.64	3.09±1.46	3.02±1.37	3.11±1.34	3.17±1.46	0.125
Variables	**Frequency (%)**					
Gender						
Male	53 (53%)	60 (60%)	53 (53%)	61 (61%)	227 (56.8%)	0.965
Female	47 (47%)	40 (40%)	47 (47%)	39 (39%)	173 (43.2%)	
Form of tobacco						
Smoking	42	51	56	52	201 (50.3%)	
Smokeless	25	18	19	22	84 (21.0%)	
Both	33	31	25	26	115 (28.8%)	
Severity of nicotine dependence						
Very low	82	78	69	77	306 (77%)	
Low	11	17	29	22	79 (20%) x	
Medium	5	4	1	1	11 (3%)	
High	2	1	1	0	4 (1%)	
Tobacco user in Family						
No	75	70	61	76	282 (70.5%)	
Yes	25	30	39	24	118 (29.5%)	
Reason for tobacco initiation (Peer Pressure)						
No	70	55	70	69	264 (66%)	
Yes	30	45	30	31	136 (34%)	
Experimentation						
No	19	11	9	8	47 (11.8%)	
Yes	81	89	91	92	353 (88.3%)	
Influence of Media/Celebrity						
No	82	73	78	51	284 (71%)	
Yes	18	27	22	49	116 (29%)	
Influence of Family member						
No	88	91	83	88	350 (87.5%)	
Yes	12	9	17	12	50 (12.5%)	
Yes	1	2	0	1	4 (1%)	
Anti-tobacco media messages catch attention						
No	34	31	26	42	133 (33.3%)	
Yes	66	69	74	58	267 (66.8%)	
Anti-tobacco media messages are effective in maintaining tobacco abstinence						
No	50	55	45	70	220 (55%)	
Yes	50	45	55	30	180 (45%)	

P<0.05

Table 2: Mean scores of study participants on motivation to change at the beginning, at 1-month and at 3-month observation n=100									
Parameter	**Mean, S.D**			**ANOVA (between time periods)**			**ANOVA (within time periods)**		
	At beginning	**After one month**	**After three month**	**SS**	**Df**	**Mean Sqr.**	**SS**	**df**	**Mean Sqr.**
Stages of motivation	(4.19, 0.86)	(3.72, 0.77)	(3.77, 1.10)	13.327	2	6.66	251.26	297	0.85
F				*F*=7.876, *P*=0.001					

ANOVA (Turkey Honestly significantly different), *P*<0.05, Personal testimonial group

Change in motivational stage at beginning, at one and three month observation among study participants (health warnings group)

As given in Table 4, the mean scores of study participants on motivation to change at beginning, after 1 and after 3 months of the study. There was no significant difference noted among 3 time periods. The mean score at beginning was 3.86 ± 0.89 (Preparation stage). The mean score of contemplation after one month and three months almost remained same 3.60 ± 0.83 and 3.61 ± 1.12, respectively.

Association between urine cotinine test and stages of motivation among study participants from health warnings group

As depicted in Table 5, that of 100 study participants, 21 were in the contemplation stage, and on the cotinine test, all 21 study participants found positive for cotinine levels. Another stage was the preparation stage, a total of 26 participants were in this stage, and all study participants were positive for urine cotinine levels. In the action stage, there was a total of 24 participants, and all these 24 study participants were found negative for urine cotinine levels. Similarly, there were total participants in maintenance stage and all found negative for urine cotinine levels. The Chi-square test is 100.000 (3 degrees of freedom, 5% significance level). The significant value $P = 0.001$ is less than. 05, at the 5% significance level. Also, majority of study participants from precontemplation stage found positive for urine cotinine levels. This indicates that the subjective data match with objective findings.

Change in motivational stage at beginning, at one and at three-month observation among study participants (Public service announcements group)

As given in Table 6, that the mean scores of study participants on motivation to change at beginning, after 1 and after 3 months of the study. There was a significant difference observed among the 3 time periods. At beginning the score was 4.03 ± 0.94 (action stage). After 1 month it declined to 3.36 ± 0.88 (preparation stage) and after three months

score further deteriorated to 2.96 ± 0.91 (contemplation stage).

Association between urine cotinine test and stages of motivation among study participants from public service announcements group

As depicted in Table 7, that of 100 study participants, 36 were in precontemplation stage and on the cotinine test, all 36 study participants found positive for cotinine levels. Another stage was preparation stage, a total of 39 participants were in this stage, and of 39 study participants, no one found positive for urine cotinine levels. In the action stage, there were a total of 18 participants and all of these 18 study participants were found negative for urine cotinine levels. Similarly, there were a total of 7 study participants in maintenance stage and all found negative for urine cotinine levels. Chi-square value is 100.000 (3 degrees of freedom, 5% significance level). The significant value $P = 0.001$ is less than. 05, at the 5% significance level.

All the study participants of preparation, action, and maintenance stage found negative for urine cotinine levels. Also, study participants from precontemplation stage found positive for urine cotinine levels. This indicates that the subjective data match with objective findings.

Change in motivational stage at beginning, at one and at three-month observation among study participants (natural exposure group)

As depicted in Table 8, that the mean scores of study participants on motivation to change at beginning, after 1 and after 3 months of the study. There was a significant difference observed among the 3 time periods. At beginning the score was 3.82 ± 1.05 (preparation stage). After 1 month it declined to 2.86 ± 0.82 (contemplation stage) and after 3 months score further deteriorated to 2.08 ± 0.99 (contemplation stage).

Association between urine cotinine test and stages of motivation among study participants from natural exposure group

As given in Table 9, that of 100 study participants, 36 were in the precontemplation stage and on the cotinine test. All 36 study participants found positive for cotinine levels. Another stage was contemplation stage, a total of 28 participants were in this stage, and of 28 study participants, 18 were found positive for urine

Table 3: Association between urine cotinine vs stages of motivation at 3 months (*n*=100)

Stages	Observed & Expected Values	Cotinine Test Results		
		Negative	Positive	Total
Precontemplation Stage	Observed count	0	15	15
	Expected count	12.2	2.9	15.0
Preparation Stage	Observed count	25	4	29
	Expected count	23.5	5.5	29.0
Action Stage	Observed count	20	0	20
	Expected count	16.2	3.8	20.0
Maintenance Stage	Observed count	36	0	36
	Expected count	29.2	6.8	36.0
Total	Observed count	81	19	100
	Expected count	81.0	19.0	100.0

Chi-square=77.594, df=3, *P*<0.05, Personal testimonial group

Table 4: Mean scores of study participants on motivation to change at the beginning, at 1-month and at 3-month observation (*n*=100)

Parameter	Mean, S.D			ANOVA (between time periods)			ANOVA (within time periods)		
	At beginning	After one month	After three month	SS	df	Mean Sqr.	SS	Df	Mean Sqr.
Stages of motivation	(3.86, 0.89)	(3.60, 0.83)	(3.61, 1.12)	4.340	2	2.17	269.830	297	0.91
F				*F*=2.389, *P*=0.094					

ANOVA (Turkey Honestly significantly different), *P*<0.05, Health warnings group

cotinine levels. In the action stage, there were 6 participants, and these 6 study participants were found positive for urine cotinine levels. There was only 1 study participant in the maintenance stage and it was found negative for urine cotinine levels. The Chi-square value is 74.120 (4 degrees of freedom, 5% significance level). The significant value P =0.001 is less than 0.05, at the 5% significance level.

All of the study participants of action and maintenance stage found negative for urine cotinine levels. Also, majority of study participants from precontemplation and contemplation stage found positive for urine cotinine levels. This indicates that the subjective data match with objective findings.

Change in motivational stage at three-month observation among study participants from all four groups

As depicted in Table 10, after three months, the study participants from the personal testimonial group were at 3.77 ± 1.10, which means reaching the action stage from the preparation stage. Study participants from the health warning group were at 3.61 ± 1.12, which indicates similar findings to the personal testimonial group. However, after three months, the public service announcement group remained at 2.96 ± 0.91, illustrated no improvement, and remained in the contemplation stage, moving toward the preparation stage. Study participants from the natural exposure group also reported a decline in motivation to quit tobacco as they were at 2.08 ± 0.99 contemplation stage after completion of 3 months.

Discussion

Effect of anti-tobacco personal testimonial messages on motivation stage

In the present study, participants from the personal testimonial group were at the action stage and able to maintain their motivational stage after 1 and 3 months. Studies done on adult smokers reported that personal testimonial messages that evoke the emotions of tobacco users are effective in generating motivation to quit tobacco.[13-15] Tobacco users attach themselves more with the personal testimonial messages which are focused on benefits related to tobacco quitting, show sad personal outcomes of tobacco are found to be effective in increasing intentions to quit tobacco among tobacco quitters, and hence help in declining overall tobacco prevalence.[16]

Effect of anti-tobacco health warnings on motivation stage

The state-sponsored health warning messages were able to keep the study participants in preparation stage. Video or pictorial health warnings over tobacco products able to maintain and enhance the motivation to quit tobacco among recent quitters.[16-19] However, contrary to present findings, it is also reported in some studies that pictorial health warnings increase quit intentions for a smoking form of tobacco among cigarette users and also increase the chance of use of alternate tobacco products like hookah, snus, smokeless tobacco, or e-cigarette.[20,21] In the present study, participants were recent quitters and their nicotine dependence levels were also deficient. Also, more than half of the study participants were using smokeless forms of tobacco and dual users were unlikely in the previous studies, which only had cigarette smokers as their study participants. Adolescents focused on anti-tobacco health warnings are more effective and increase quitting activity and motivation to finish compared to other antitobacco media messages.[22,23]

Effect of anti-tobacco the public-service announcements on the motivation stage

In the present study, participants from the antitobacco public service announcements group reported a decline in the motivation to quit tobacco from the beginning to 1 and after 3 months of study. At the beginning, study participants were at action stage after one month, their motivation level decreased to preparation level, and after three months, it further deteriorated to contemplation stage. This is concluded that

Table 5: Association between urine cotinine vs stages of motivation at 3 month (*n*=100)				
Stages	**Observed & Expected Values**	**Cotinine test results**		
		Negative	**Positive**	**Total**
Contemplation	Observed count	0	21	21
	Expected count	16.6	4.4	21.0
Preparation Stage	Observed count	26	0	26
	Expected count	20.5	5.5	26.0
Action Stage	Observed count	24	0	24
	Expected count	19.0	5.0	24.0
Maintenance Stage	Observed count	29	0	29
	Expected count	22.9	6.1	29.0
Total	Observed count	79	21	100
	Expected count	79.0	21.0	100.0

Chi-square=100.000, df=3, *P*<0.05, Health warnings group

Table 6: Mean scores of study participants on motivation to change at the beginning, at 1-month and at 3-month observation (*n*=100)									
Parameter	**Mean, S.D**			**ANOVA (between time periods)**			**ANOVA (within time periods)**		
	At beginning	After one month	After three month	SS	d.f	Mean Sqr.	SS	d.f	Mean Sqr.
Stages of motivation	(4.03, 0.94)	(3.36 0.88)	(2.96, 0.91)	58.460	2	29.23	245.790	297	0.83
F				*F*=35.32, *P*=0.001					

ANOVA (Turkey Honestly significantly different), *P*<0.05, Public service announcements group

celebrity-influenced antitobacco public service announcements do not have much impact over tobacco users. However, they could keep the study participants at the contemplation stage. Celebrity-influenced public service announcements do not enhance the motivation level of tobacco users to quit tobacco; still, they are important in maintaining the motivational stage at the contemplation level. Similar findings were communicated by a study done on preuniversity students.[24] Most participants reported that celebrity-influenced public service announcements make them think about quitting tobacco but do not influence their tobacco-stopping behaviour.[25] Celebrity featuring antitobacco public service announcements have a solid potential to raise awareness related to harm caused by tobacco products in the human body.[26,27] A recent review elaborates that the celebrity's physical aura and social credibility influence the general public to see and listen to them.[28,29] Tobacco users found celebrity-influenced antitobacco advertisements to enhance their cessation-related behaviour.[30]

Message fatigue and wear-out effects are the common phenomenon which happened due to repeated exposure of same antitobacco media messages. It significantly occludes the performances of antitobacco media messages. Rotating warnings and changing layout and design are vital to maintaining saliency and effectiveness of antitobacco health messages.[31]

Conclusion

Antitobacco personal testimonial media messages are most effective in enhancing and maintaining the motivation to quit tobacco, followed by antitobacco health warning messages, which are also proven to be effective in maintaining high motivation levels to remain abstinent from tobacco. However, the public service announcements are ineffective in keeping the motivation to quit tobacco at higher levels. Overall, the antitobacco state-sponsored media messages, personal testimonials, and health warnings about tobacco products effectively maintain and enhance motivation to quit tobacco.

Limitations

There are a few limitations to this study. The first limitation is that the study results are based on subjective data. However, a urine cotinine test is put in the study to validate the personal data with objective findings and it seems to be reliable data on analysis. The second limitation of this study is that the study only included the participants from Delhi University colleges. Hence, the findings cannot be generalized to other populations like older adults and children. The third limitation of this present study is that most participants already had a higher motivation (preparation stage) to quit at the beginning of the study. So, this study cannot be generalized to those with a lower incentive to stop, like precontemplation or contemplation stage.

Recommendations

Qualitative studies can be done to find out the exact effect of antitobacco health warning messages on adolescents. What are the current requirements to make these media messages successful in gaining tobacco cessation? Interventional studies can be done to find out the effect of antitobacco health warnings on adolescents. Similarly, studies can be done on other populations with larger sample sizes.

Key points

State-sponsored antitobacco media messages could bring positive attitudinal changes in tobacco users and recent quitters if used wisely.

Personal testimonial and health warning antitobacco messages are more effective in keeping the motivation to quit tobacco toward higher stages.

Take-home message

Rotating warnings and changing layout and design are vital to maintaining saliency and effectiveness of antitobacco health messages.

Government must focus on bringing new updated antitobacco messages to decrease the tobacco prevalence and incidence rates.

Table 7: Association between urine cotinine vs. stages of motivation at 3 months (*n*=100)

Stages	Observed & Expected Values	Cotinine test results		
		Negative	Positive	Total
Precontemplation	Observed count	0	36	36
	Expected count	23.0	13.0	36.0
Preparation Stage	Observed count	39	0	39
	Expected count	25.0	14.0	39.0
Action Stage	Observed count	18	0	18
	Expected count	11.5	6.5	18.0
Maintenance Stage	Observed count	7	0	7
	Expected count	4.5	2.5	7.0
Total	Observed count	64	36	100
	Expected count	64.0	36.0	100.0

Chi-square=100.000, df=3, *P*<0.05, Public service announcements group

Table 8: Mean scores of study participants on motivation to change at the beginning, at 1-month and at 3-month observation (*n*=100)

Parameter	Mean, S.D			ANOVA (Between time periods)			ANOVA (Within time periods)		
	At beginning	After 1 month	After 3 months	SS	d.f	Mean Sqr.	SS	d.f	Mean Sqr.
Stages of motivation	(3.82, 1.05)	(2.86, 0.82)	(2.08, 0.99)	151.920	2	75.96	274.160	297	0.92
F				*F*=82.29, *P*=0.001					

ANOVA (Turkey Honestly significantly different), *P*<0.05, Natural exposure group

Table 9: Association between urine cotinine vs stages of motivation at 3 months (n=100)				
Stages	**Observed & Expected Values**	**Cotinine test results**		
		Negative	**Positive**	**Total**
Pre-contemplation Stage	Observed count	0	36	36
	Expected count	16.6	19.4	36.0
Contemplation	Observed count	10	18	28
	Expected count	12.9	15.1	28.0
Preparation Stage	Observed count	29	0	29
	Expected count	13.3	15.7	29.0
Action Stage	Observed count	6	0	6
	Expected count	2.8	3.2	6.0
Maintenance Stage	Observed count	1	0	1
	Expected count	0.5	0.5	1.0
Total	Count	46	54	100
	Expected Count	46.0	54.0	100.0

Chi-square=74.120, df=4, P<0.05, Natural exposure group

Table 10: Mean scores of study participants on motivation to change at 3-month observation (n=400)										
Parameter	**Mean, S. D**				**ANOVA (Between groups)**			**ANOVA (Within groups)**		
	Personal testimonial group	**Health warning group**	**Public service announcements group**	**Natural exposure group**	**SS**	**d.f**	**Mean Sqr.**	**SS**	**d.f**	**Mean Sqr.**
Stages of Motivation	(3.77, 1.10)	(3.61, 1.12)	(2.96, 0.91	(2.08, 0.99)	176.89	3	3.105	422.70	396	0.992
F			F=55.24, P=0.001							

ANOVA (Turkey Honestly significantly different), P<0.05, personal testimonial, health warnings, public service announcements, and natural exposure group

Creating newer health warnings periodically prevent message fatigue and wash out the wear-out effects among consumers and enhance their motivation to quit tobacco.

Conflicts of interest

There are no conflicts of interest.

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