Pertanika J. Soc. Sci. & Hum. 30 (1): 307 - 340 (2022)

PERTANIKA JOURNALS

SOCIAL SCIENCES & HUMANITIES

Journal homepage: http://www.pertanika.upm.edu.my/

Maintenance of Tobacco Abstinence—Effect of Anti-Tobacco Propaganda (Media) Messages

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ABSTRACT

Anti-tobacco propaganda media (Television, radio, print media and internet media) messages promote knowledge regarding the ill effect of tobacco on the human body as well as increase the negative attitude towards tobacco. However, their role in maintaining tobacco abstinence is not explored much. This review summarizes the effect of anti-tobacco propaganda (media) messages on the maintenance of tobacco abstinence; the influence of different types of anti-tobacco propaganda (media) messages on tobacco users and non-users. Tobacco users and recent quitters are not benefiting from these anti-tobacco propaganda and media messages. The graphic pictorial warnings were found to have more influence over increasing knowledge, changing attitude, enhancing quit attempts, quit intentions, and motivation to quit. However, it is also noticed that these anti-tobacco propaganda media messages have a boomerang effect on tobacco users. These media propaganda messages sometimes act as a cue for tobacco users and make them relapse. Many studies in the past have shown that these media messages positively impact the quitting process but, again, remained significant to the first attempt only. Hence, these messages have not been found to be very effective in maintaining tobacco abstinence among tobacco users. The exposure and frequency of the anti-tobacco propaganda (media) messages matter. Pro-tobacco advertisements can neutralize the effect of anti-tobacco propaganda messages. Although, anti-tobacco propaganda (media) messages play a crucial role in modifying tobacco-related behaviour.

Keywords: Abstinence maintenance, adolescents, anti-tobacco advertisements, anti-tobacco campaign, cessation, quit attempts

ARTICLE INFO

Article history:
Received: 24 July 2021
Accepted: 12 November 2021
Published: 10 March 2022

DOI: https://doi.org/10.47836/pjssh.30.1.16

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ISSN: 0128-7702
e-ISSN: 2231-8534

INTRODUCTION

India comes under the third major producer and the second-largest consumer of tobacco. Tobacco is used in India in its two forms, i.e., smoking and smokeless, for example, bidi, cigarette, cigar, hukkas and gutkha, pan, kaini, jarda, respectively. In India, tobacco consumption is not considered a social taboo; even in some cultures, tobacco is used as a medicinal herb for minor ailments like headache, toothache, and stomachache. Globally, tobacco kills seven million people and accounts for the death of more than one million Indians every year (Chhabra et al., 2021). Due to the very addictive characteristic of tobacco and its potentially harmful health consequences, morbidity and mortality related to tobacco have become a manufactured epidemic. However, all these deaths and morbidity could be prevented if the government and individuals take the correct steps at the right time. In order to fight tobacco and its related complexities, India made a significant attempt by endorsing the WHO Framework Convention on Tobacco Control (FCTC) on February 5th, 2005 (CareerRide.com, n.d.).

Although, under section 5 of the COTPA Act, already there is a prohibition on pro-tobacco advertisements and sponsorship of any tobacco product in India. Still, tobacco use is a major problem in this country. In view of this, the anti-tobacco propaganda (media) messages can play a vital role in tobacco control. It is proven through various studies that anti-tobacco propaganda (media) messages play a crucial role in moulding tobacco-related health behaviour among tobacco users and non-users. These changes could be either positive (helps in initiating tobacco quitting and maintaining tobacco abstinence) or negative (tobacco initiation and relapses) depending upon the frequency, intensity, and type of message. Several studies were done in the past indicating the importance of anti-tobacco Propaganda (media) messages and their significant role in tobacco initiation, cessation, and changing attitude towards tobacco (Elser et al.,2019; Gadiyar et al., 2018; Hair et al., 2021; Singh et al., 2018). Anti-tobacco propaganda (media) messages are available to the general public on various platforms, and they can be audio (Radio), visual (posters, billboards, signboards, pictorial and text warnings over tobacco products), or audio-visual (Television). Anti-tobacco propaganda (media) messages can be divided into different categories according to their themes. For example, personal testimonial messages, health warning messages, public and service announcements. According to physical appearances, these advertisements are available to the public in various means like text messages, pictorial or graphical messages, pictorial cum text messages etc. In the case of content, it is further studied as real stories, fear arousal message's, disgustful messages, or a combo of these two. The effect of a particular type of anti-tobacco propaganda (media) message is different for every individual as every individual is unique. This difference can be due to various socio-demographic and other factors

like gender, educational status, financial status, place of residence, the influence of family and tobacco consumption and level of dependence of the individual itself (Divinakumar et al., 2017; Elser et al., 2019; Majumdar et al., 2017; So & Popova, 2018). The warnings placed over tobacco products and broadcasted in media are not understood in a correct way by all as the general public included not only tobacco non-users but also users. In India, no one can ignore the literacy rate (73%). It means that more than 25% of countries population is still illiterate (Chandra, 2019; Katiyar, 2016). It must be noticed that most of the written and textual anti-tobacco propaganda (media) messages are in the English language, which makes them ineffective for the public not knowing the English language (Bincy et al., 2018). Earlier surveys reported that cautionary graphical/pictorial health warnings on tobacco products are most beneficial in educating the general public regarding negative impacts to tobacco on their health and help tobacco users to initiate quit attempts by modifying their tobacco-related behaviour (Bincy et al., 2018; Brewer et al., 2016) Although according to the GATS-2 report and some studies, a large percentage of smokers do not notice the tobacco products warning or if noticed at all not get motivated to quit (Gravely et al., 2016; Kemp et al., 2019; Kumar & Puranik, 2017).

OBJECTIVES

1. To assess the effect of anti-tobacco propaganda (media) messages on maintaining tobacco abstinence.

2. To assess the influence of different types of anti-tobacco propaganda (media) messages on overpopulation

REVIEW OF LITERATURE

Knowledge and Attitude Towards Tobacco Use

A total of five studies reported the effect of anti-tobacco propaganda (media) messages on knowledge regarding the ill effects of tobacco (Nogueira et al., 2018; Obeidat et al., 2016; Petersen et al., 2018; Sharma et al., 2018; Xu et al., 2015) and, effect of this anti-tobacco propaganda (media) messages on attitude related to tobacco is studied in seven studies (Cho et al., 2017; Gadiyar et al., 2018; Kowitt et al., 2018; Springvloet et al., 2015; Vallone et al., 2017). All the studies were cross-sectional surveys except one (Springvloet et al., 2015). Anti-tobacco propaganda (media) messages are effective in increasing knowledge and raising a negative attitude regarding tobacco products. On the other hand, only one study reported that anti-tobacco propaganda (media) messages are ineffective in increasing knowledge and unhelpful in generating negative attitudes towards tobacco products.

Anti-tobacco propaganda (media) messages with text and graphic health warnings are effective in increasing knowledge of the general public regarding the ill effects of tobacco on their health and on others (Bansal et al., 2021; Hammond et al., 2018; Lee et al., 2020; Mannocci et al., 2019; Magnan et al., 2021; Murukutla et al., 2015; Mutti et al., 2016; Owusu et al., 2019;

Wang et al., 2019). However, the smokers and recent quitters remain unaffected because they found this anti-tobacco propaganda (media) messages aversive, inappropriate to them, and knowingly ignored them (Bourque et al., 2016; Clayton et al., 2017; Drovandi et al., 2018; Gendall et al., 2018; Harris et al., 2014; Hwang & Cho, 2020; Li et al., 2021; Schensul et al., 2018; Xu et al., 2015). In addition, positive public service announcements are effective in generating a negative attitude towards tobacco products (Cho et al., 2017; Clayton et al., 2020).

Quit Behaviour: Tobacco Use

The effectiveness of any anti-tobacco propaganda (media) message can be evaluated by its efficiency to generate quit attempts. The effect of these attempts, motivation to quit behaviour was measured by many studies. All the mentioned studies reported that anti-tobacco propaganda (media) messages are effective in increasing quit intentions, quit attempts, and quit behaviour among tobacco users (Brennan et al., 2019; Chauhan & Sharma, 2017; Davis et al., 2018; Durkin et al., 2018; Duke et al., 2020; Elser et al., 2019; Gadiyar et al., 2018; Kar et al., 2018; Kar et al., 2020; Lee et al., 2020; Leas et al., 2015; Nagelhout et al., 2016; Nguyen et al., 2019; Nonnemaker et al., 2015; Nogueira et al., 2018; Park et al., 2019; Springvloet et al., 2015; Xu et al., 2015; Yang et al., 2019). However, it is also reported that the anti-tobacco propaganda (media) messages are not found to be effective in maintaining a long-term quitting attitude (Chido-Amajuoyi et al., 2020; Nonnemaker et al., 2015; Nogueira et al., 2018; Schensul et al., 2018).

Cessation, Abstinence, and Relapse Prevention: Tobacco Use

The cessation process, prevention of relapse, and maintenance of abstinence are interlinked with each other. However, studies are scarce on the impact of anti-tobacco propaganda (media) messages on maintaining tobacco abstinence, cessation-oriented behaviour, or cessation. Many studies also reported that tobacco users willingly and knowingly ignore the anti-tobacco propaganda (media) messages and do not find them relevant. However, studies are there found that the anti-tobacco propaganda (media) messages have some positive impact on the cessation or cessation-oriented behaviour of an individual (Chauhan & Sharma, 2017; Veeraiah et al., 2018). The cessation-oriented behaviour mostly dealt with quit attempts and quit intentions of an individual. It is to be noted that most of the studies reported here are cross-sectional, and cessation cannot be measured in one instance as behaviour change is a long-term process.

Very interestingly, very few studies assessed the maintenance of abstinence or the effect of the anti-tobacco propaganda (media) messages on the prevention of relapse. Anti-tobacco propaganda (media) messages do not affect tobacco abstinence among tobacco users and are found unhelpful

in preventing relapses. Furthermore, the Boomerang effect of the anti-tobacco propaganda (media) messages cannot be ignored. If not used judiciously, the anti-tobacco propaganda (media) messages can make frequent relapse among tobacco users (Clayton et al., 2017; Liu & Bailey, 2019), as these propaganda messages do not have any impact on subsequent quit attempts but only on initial quit attempts (Colston et al., 2021; Nonnemaker et al., 2015).

Initiation of Tobacco: Impact of Anti-Tobacco Propaganda (Media) Messages

Studies reported that pro-tobacco advertisements and non-exposure of anti-tobacco propaganda media messages in early developmental ages are a major factor for smoking initiation among adolescents and adult population (Cantrell et al., 2016; Dunbar et al., 2019; Gendall et al., 2018; Hwang & Cho, 2020; Johnson et al., 2019; Kranzler et al., 2017; Mishu et al., 2020; Nan & Zhao, 2016; Rao et al., 2014; Zhu et al., 2019). However, smokers as well as recent quitters found these anti-tobacco propaganda media messages unhelpful and reported having a boomerang effect on them. 'No smoking' hoardings, signboards, and the anti-tobacco propaganda media messages on television act as smoking cues for tobacco users and recent quitters and make them relapse very frequently (Clayton et al., 2017; Harris et al., 2014). Tobacco non-users are much influenced by the anti-tobacco propaganda (media) messages compared to tobacco users. The anti-tobacco propaganda (media) messages built a negative attitude towards tobacco non-users and hence prevented tobacco initiation in this group. Among all other categories (text-only messages, celebrity influenced messages, personal testimonial messages, public service announcements) of anti-tobacco propaganda (media) messages, the graphical/pictorial health warnings over tobacco products are found to be more effective in decreasing tobacco initiation among tobacco non-users (Hwang & Cho, 2020; Niederdeppe et al., 2016).

Socio-DemographicVariables: Tobacco Users

Studies reported that females (Gantiva et al., 2021; Shahina et al., 2017; Verma et al., 2021) higher educational status, higher socioeconomic status, and increasing age were found to have a positive effect on anti-tobacco advertisements on smoking prevalence, quit behaviour and attitude towards tobacco. Om the other hand, adolescents found anti-tobacco propaganda (media) messages more effective for them, especially the pictorial health warning messages (Murukutla et al., 2015; Mutti et al., 2016). However, a number of studies illustrated that the anti-tobacco propaganda (media) messages are not getting any response from tobacco users (Bhat et al., 2018; Durkin et al., 2018; Drovandi et al., 2018; Hwang & Cho, 2020; Maynard et al., 2014). However, it is also reported that tobacco users and recent quitters found anti-tobacco propaganda media messages

effective that focused on why to quit strategies and based on personal testimonial contents (Brennan et al., 2019; Huang et al., 2018; McKinley & Limbu, 2021).

The anti-tobacco propaganda (media) messages sometimes act as triggers and cues for tobacco users to make them relapse. The boomerang effect of these anti-tobacco propaganda media messages cannot be ignored (Clayton et al., 2017). The primary channel to effectively reach and influence the general public is movies and cinema theatres, television, and radio, while smokers, as well as non-smokers, much appreciate other channels like newspapers, magazines, and posters. Adolescents who are non-tobacco users found anti-tobacco propaganda media messages effectively, particularly the graphical and pictorial health warning messages, which creates fear about the ill effects of tobacco. Contrary to that, adolescent tobacco users found these inappropriate to their age group (Unal et al., 2016). Therefore, it requires immediate considerations about the content of anti-tobacco propaganda (media) messages. These messages must be age-appropriate to be worthful. Studies also reported that the effectiveness of anti-tobacco propaganda (media) messages decreases with the smoking status or tobacco dependence level of an individual (Hwang & Cho, 2020; Niederdeppe et al., 2016). Achievement of sufficient population exposure is vital, especially for tobacco users, males, and individuals with lower socioeconomic status.

RESEARCH GAP

Available research mostly focused on quit attempts, motivation to quit, and intentions to quit tobacco. The effect of the anti-tobacco propaganda (media) messages on the cessation-oriented behaviour of tobacco users are still not studied well (Nonnemaker et al., 2015). Previous studies were mostly quantitative and used the data from the Global Youth Tobacco Survey (GYTS). There is a need to re-assess anti-tobacco propaganda (media) messages to be effective. The message must be frequently updated according to the need and current trends of the target population. Many studies indicate that youths exposed to anti-tobacco propaganda (media) messages are less likely to be current smokers. However, data does not determine which type of advertisements had the highest impact on a specific population.

"What is already known about the topic?"

- Anti-tobacco media messages play a crucial role in amending tobacco-related knowledge and behaviour of the general public.
- Television is the most common, influential, and cost-effective media.
- Pictorial and personal testimonial anti-tobacco messages are most effective among all other types of messages.
- Anti-tobacco media messages are effective in generating increasing quit attempts, quit intentions, and decreasing overall smoking prevalence.

"What does this paper add?"

- Anti-tobacco media messages majorly affect the non-tobacco user group. Tobacco users remain unaffected by most media messages except pictorial health warnings and personal testimonial stories.
- Anti-tobacco media messages, if not conveyed properly or if not understood by the users, can have a negative impact too.
- The effect of these anti-tobacco media messages on complete cessation and maintenance of abstinence is still not known.
- The maximum effect of anti-tobacco media messages must be delivered properly, with intensity and duration.

METHODS

The present paper updates the studies based on anti-tobacco propaganda (media) messages on tobacco-related behaviour. A comprehensive review of the literature was done. Original articles reporting the effect and impact of anti-tobacco advertisements, campaigns on adults and adolescents were included. Articles in languages other than English as well as letters, editorials reviews of pieces of literature were excluded. Abstracts were evaluated, articles that focused on populations other than children, adolescents, and adults excluded, the impact of anti-tobacco propaganda media messages on the sample population and comparing the message types were included resulting in 65 studies. Citation databases included: PubMed, Google Scholar, and Embase from 2014 to January 2021 (see Figure 1 for the flow of study). Search terms encompassed all types of tobacco (smoking or smokeless), media messages included T.V., radio, posters, text or pictorial warnings over tobacco products, and tobacco-related behaviour included; cessation, quit attempt, quit intentions, relapse, abstinence, or cessation.

Studies focused on the effect of anti-tobacco propaganda media message on knowledge, attitude, and tobacco-related behaviour like quit intentions, quit attempts, quit behaviour, cessation-oriented behaviour, abstinence and motivation to quit, smoking behaviour, and relapse included in this review. In addition, the effect of different types of messages like graphical, text, personal testimonial, the fear generated, and public service announcements on smoking-related behaviour were also included. Study design, sample population, type of media messages, data collection tools methods of data collection and effect of the message on knowledge, attitude, quit intentions, quit attempts, quit behaviour, cessation-oriented behaviour, cessation, abstinence, motivation to quit, smoking behaviour, relapse and smoking intentions smoking behaviour and overall findings pertinent to all studies are provided in Table 1.

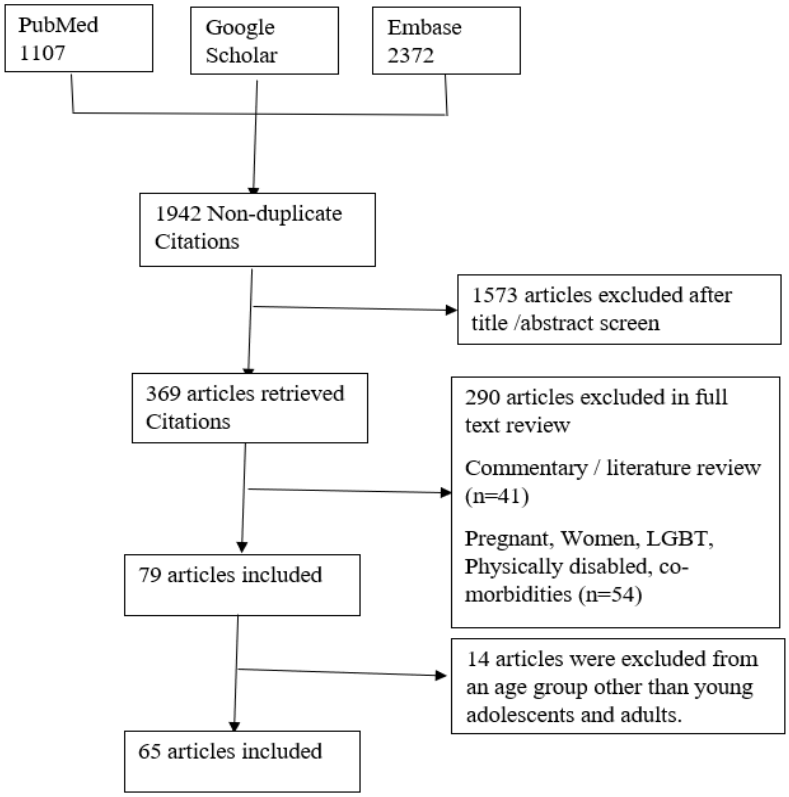

Figure 1. PRISMA diagram showing the flow of studies through the screening process

Table 1

Studies taken in review after screening

S.No.	Author and Year	Type of study and Population Studied	Type of Media messages Studied	Data collection tools.	Data collection method	K, A and EoAds(+/-) towards tobacco use and findings	QA, QB, QI, COB, C, AB MoQ, SB, R and SI
1	Bansal et al. (2021)	Cross-sectional study 15–17 years old school students	Pictorial health warnings	Impact over knowledge and attitude related to gender	On-line data collection	Graphic warnings are effective in changing tobacco-related attitudes more in females K in both genders increases.	NS

Table 1 *(Continue)*

S.No.	Author and Year	Type of study and Population Studied	Type of Media messages Studied	Data collection tools	Data collection method	K, A and EoAds(+/-) towards tobacco use and findings	QA, QB, QI, COB, C, AB MoQ, SB, R and SI
2	Bhat et al. (2018)	Cross-sectional survey; 18–25 young adults. Tobacco users and non-users.	Government initiated anti-tobacco advertisements.	Thematic appreciation test, sentence completion test and inkblot test	Face to face interviews.	EoAds. + Effective for non-tobacco users	NS
3	Bourque et al. (2016)	Cross-sectional study Current and abstinent smokers	Exposure to aversive and appetitive smoking-related stimuli	Questionnaire regarding the effect on smoking behaviour and smoking cessation	In-person data collection	Appetitive messages increase craving among current and abstinent smokers. Aversive messages have no effect on SB	C ↓ SB not effected
4	Brennan et al. (2019)	Experimental study. Adult smokers.	Pictorial warnings and basic text warnings on tobacco products.	Self-reports, behavioural responses post-exposure and quit attempts.	In-person interviews and observation.	Basic text message with a picture of a real person is most effective.	QA ↑
5	Cantrell et al. (2016)	Cross-sectional survey. Adults 18–24 years.	Tobacco outlets in residential areas.	Self-reports on tobacco outlet density and smoking behaviour	In-person interview	NS	SI ↑

Table 1 *(Continue)*

S.No.	Author and Year	Type of study and Population Studied	Type of Media messages Studied	Data collection tools	Data collection method	K, A and EoAds(+/-) towards tobacco use and findings	QA, QB, QI, COB, C, AB MoQ, SB, R and SI
6	Chauhan et al. (2017)	Cross-sectional survey. Youth.	State-sponsored T.V. anti-tobacco advertisements	Questions regarding the smoking status and exposure to anti-tobacco advertisements	In-person data collection	NS	QA ↑ QI ↑ C ↑
7	Chido-Amajuoyi et al. (2020)	Cross-sectional survey Adults	Exposure to anti-tobacco media messages	Self-reports on exposure to anti-smoking ads and effect on quit intentions and attempts	Household survey. Data from Health Information National Trends Survey	NS	QA no effect
8	Cho et al. (2017)	Cross-sectional survey College students	Public service announcements.	Self-reports Videos of PSA's	Face to face interviews.	A-EoAds.+ Positive anti-smoking public service announcements are more effective.	NS
9	Clayton et al. (2017)	Experimental study. Adult smokers.	Anti-tobacco PSAs with disgust and smoking cues	Bio-physical data; cardiac rhythm. Recall method. Self-reports. Questionnaire regarding Nicotine dependence and Nicotine withdrawal symptoms. Craving is accessed via a questionnaire of smoking urges.	Face to face interviews	EoAds (-) Smoking cues in anti-tobacco messages can have a boomerang effect. Recent quitters need disgust content in ads to remain sober.	SI ↑

Table 1 *(Continue)*

S.No.	Author and Year	Type of study and Population Studied	Type of Media messages Studied	Data collection tools	Data collection method	K, A and EoAds(+/-) towards tobacco use and findings	QA, QB, QI, COB, C, AB MoQ, SB, R and SI
10	Clayton et al. (2020)	Experimental study Young adults ever vaper users	Anti-vaping PSA's with Dogmatic vs Suggestive languages	Self-reports	Computer-based data collection in Lab.	Dogmatic language increases perceived freedom threats and state psychological reactance compared to suggestive language.	NS
11	Colston et al. (2021)	Longitudinal cohort study Young adults	Anti-tobacco media and state sponsored messages	Questionnaire regarding the effect of anti-tobacco media messages on smoking behaviour	In-person data collection National Longitudinal Data set 2002-2017	NS	No long term effect on SB
12	Davis et al. (2018)	Longitudinal survey. Adult smokers and recent quitters.	T.V. based TIPS advertisement	Self-reports on quit attempts and quit intentions. Exposure measured via GRP's	Telephonic survey	EoAds.+ Graphical and emotional ads encourage more QA and QI	QI ↑ QA ↑
13	Drovandi et al. (2018)	Cross-sectional survey. Adolescents 15–18 years; Tobacco users and non-users.	Cigarette package warnings.	Self-reports. Pictures of health warnings on cigarette packages.	Face to face interview.	EoAds- Not effective for tobacco users but non-users.	NS
14	Duke et al. (2020)	Cross-sectional survey. Adults current and recent quitters	T.V. anti-tobacco advertisements	Self-reports on quit attempts and exposure via TRP's	Telephonic survey.	EoAds. (+)	QA ↑ SB ↓

Table 1 *(Continue)*

S.No.	Author and Year	Type of study and Population Studied	Type of Media messages Studied	Data collection tools	Data collection method	K, A and EoAds(+/-) towards tobacco use and findings	QA, QB, QI, COB, C, AB MoQ, SB, R and SI
15	Dunbar et al. (2019)	Experimental study, Adolescents.	Cigarette packs warning.	Questions regarding future smoking susceptibility and perceived harms	Pen paper-based assessment.	Pictorial warnings over cigarette packs are not effective.	SI ↑
16	Elser et al. (2019)	Longitudinal Survey 18 years and above smokers	Exposure to media (pro and anti-tobacco messages)	Questionnaire regarding exposure to media and its effect on QI	Online	NS	QI ↑
17	Gadiyar et al. (2018)	Cross-sectional survey. 16–18 years old adolescents.	Anti-tobacco advertisements.	Tobacco usage status, questions related to awareness about anti-tobacco advertisements, and influence on attitude toward tobacco use.	Face to face interviews	A-	MoQ ↑ SI ↓
18	Gantiva et al. (2021)	Cross-sectional survey Adolescents, young and adult females	Graphical health warnings over tobacco products	Questionnaire regarding aversive effect, effect on craving	In-person data collection	GHW's not producing cravings. Size of pictorial warnings matters.	NS

Table 1 *(Continue)*

S.No.	Author and Year	Type of study and Population Studied	Type of Media messages Studied	Data collection tools	Data collection method	K, A and EoAds(+/-) towards tobacco use and findings	QA, QB, QI, COB, C, AB MoQ, SB, R and SI
19	Gendall et al. (2018)	Mixed method study. Adult smokers and susceptible non-smokers 16–30 years.	Health warnings on, Health, social, financial and cosmetic themes.	Self-reports. Tobacco warning messages and images. Juster scale to assess change in behaviour due to warning labels.	In-depth interviews. Face to face interviews	EoAds. - Graphical health warnings are not effective for tobacco users	NS
20	Hammond et al. (2018)	Cross-sectional survey. Smokers and non-smokers	Health warnings and themes NHE-a text–only warning NHE-pictorial (graphic, lived experiences or symbolic) NHE-pictorial+ testimonials vs didactic text	Questionnaire regarding the effectiveness of various types of ads	Self-reports	Pictorial warnings are most effective thanthe rest of the others. Among pictorial themes, “graphic” health effect warnings are most effective.	NS
21	Harris et al. (2014)	Experimental study. Adult smokers.	T.V. based PSA’s. Three different PSA’s on T.V	Behavioural assessment post-PSA’s		EoAds.-, Anti-smoking campaigns can increase the immediate SB.	SI ↑
22	Huang et al. (2018)	Mixed method approach. Adult smokers.	T.V. based advertisements.	Self-reports on the effectiveness of ads.	Paper-pen method, recall method and focus group interview	EoAds.+ Testimonial messages based on graphic and emotionally evocative content are effective	MoQ ↑

Table 1 *(Continue)*

S.No.	Author and Year	Type of study and Population Studied	Type of Media messages Studied	Data collection tools	Data collection method	K, A and EoAds(+/-) towards tobacco use and findings	QA, QB, QI, COB, C, AB MoQ, SB, R and SI
23	Hwang and Cho (2020)	Cross-sectional survey. 13–18 years old.	Anti-tobacco graphical warnings	Recall method. Self-report. Questionnaire regarding the recall and perceived effectiveness of the ads, smoking status and intentions not to start smoking after watching ads.	Web-based questionnaire	Health warnings are effective. Exposure of anti-smoking ads. Graphic health warnings are positively associated with no smoking.	SI ↓
24	Johnson et al. (2019)	Cross-sectional survey 18–24 years old females	Exposure to T.V Effect of celebrity	Questionnaire regarding knowledge about harmful effects of smoking, intention to smoke and refusal skills	Online	Celebrity has a significant effect on smoking behaviour K is low regarding health effects	Pro-tobacco T.V ads with celebrity SI ↑
25	Kar et al. (2020)	Cross-sectional survey. Persons 15 years and above	Anti-Tobacco messages in newspapers, magazines and cinema.	Questionnaire regarding Ad. Effectiveness and QI	Self-reports Data from GATS 2016-17	EoAds. +	QI ↑
26	Karr et al. (2018)	Cross- sectional survey. Current smokers	Tobacco dependence, previous attempt to quit and effect anti-tobacco messages	Questionnaire regarding Tobacco dependence, previous QA and QI	Secondary data analysis GATS 2009-10	EoAds+	QI ↑

Table 1 *(Continue)*

S.No.	Author and Year	Type of study and Population Studied	Type of Media messages Studied	Data collection tools	Data collection method	K, A and EoAds(+/-) towards tobacco use and findings	QA, QB, QI, COB, C, AB MoQ, SB, R and SI
27	Kemp et al. (2019)	Experimental study. Adolescents	Graphic health warnings with disgust vs non-disgust content.	Questions regarding attention towards pictorial warning, risk behaviour, negative emotions	Computer-based assessment.	EoAds_ Pictorial warnings do not trigger the attention of adolescents.	NS
28	Kowitt et al. (2018)	Cross-sectional survey. Adolescents (13–17 years)	Anti-tobacco campaigns targeting adults vs anti-tobacco campaigns targeting adolescents	Questions regarding a recall of ads. Attitude towards tobacco products	Telephonic survey. Self-reports on recall and attitude towards tobacco products	A- EoAds+ Recall of advertisements significantly associated with negative feelings towards tobacco products.	NS
29	Kranzler et al. (2017)	Cross-sectional survey 13–17 years non-smokers	Anti-smoking T.V ads. Recall	Questionnaire regarding a recall of ads, anti-smoking beliefs and non-smokers intentions to smoke	In-person data collection	A-	NS
30	Leas et al. (2015)	Cross- sectional survey. Adult's smokers.	T.V. based emotional narrative anti-tobacco advertisement.	Self-reports on quitting behaviour. Recall method.	Face to face interviews.	NS	QA ↑
31	Lee et al. (2020)	Longitudinal survey. Adult smokers	Graphic warnings over cigarette packs.	Self-reports on negative emotions, perceived risks of smoking and QI	Online survey	EoAds. (+) Graphical unpleasant images are effective.	QI ↑ MoQ ↑

Table 1 *(Continue)*

S.No.	Author and Year	Type of study and Population Studied	Type of Media messages Studied	Data collection tools	Data collection method	K, A and EoAds(+/-) towards tobacco use and findings	QA, QB, QI, COB, C, AB MoQ, SB, R and SI
32	Leshner et al. (2018)	Experimental study. Adults Smokers	Anti-tobacco messages varied in deception (content portraying tobacco companies as dishonest) and disgust (negative graphic images) content.	Psycho-physiological measures, self-report, and a recognition test	In-person interviews	Anti-tobacco advertisements containing both deception and disgust can make users defensive.	NS
33	Lix et al. (2021)	Experimental study Male Smokers and non-smokers	Disgust images over cigarette packs	Effect of smoking-related cues on cigarette packets	In-person data collection	Disgust images strengthen smokers' inhibitory control towards smoking-related cues	NS
34	Magnan et al. (2021)	Experimental study Adult smokers, non-smokers and dual users	Graphical warnings vs text-only warnings	Effect of different types of warnings on knowledge, attitude towards tobacco	On-line data collection	Graphical warnings are effective K ↑ A-	NS
35	Mannocci et al. (2019)	Quasi experimental study Smokers	Pictorial health warnings	Questionnaire regarding change in QB and K	In-person data collection	EoAds.+ Pictorial health warnings are effective K ↑	QB ↓

Table 1 *(Continue)*

S.No.	Author and Year	Type of study and Population Studied	Type of Media messages Studied	Data collection tools	Data collection method	K, A and EoAds(+/-) towards tobacco use and findings	QA, QB, QI, COB, C, AB MoQ, SB, R and SI
36	Maynard et al. (2014)	Cross-sectional survey; Dependent smokers.	Cigarette packs are branded, plain and blank.	Eye-tracking method. Recall method.	Individual computer-based assessment.	EoAds. + Regular smokers actively avoid the health warnings	NS
37	McKinley and Limbu (2021)	Experimental study 19–71 years old General population	Testimonial Anti-smoking messages; gain vs loss, self vs relational concern	Questionnaire regarding message effectiveness and anti-smoking attitudes	In person data collection	EoAds. (+)	QI ↑
38	Mishu et al. (2020)	Cross-sectional survey. Adolescents.	Anti-tobacco media messages and pro-tobacco messages.	Self-reports on ads. Effectiveness	Paper-pen survey	EoAds.+ Pro-tobacco messages exposure is associated with all forms of tobacco use, not anti-tobacco media messages	NS
39	Murukutla et al. (2015)	Cross-sectional survey; Smokers and non-smokers; 18–40 years	Second-hand smoking advertisement	Self-report, Questionnaire on effectiveness of advertisements.	Face to face interview.	EoAds+ Graphic health messages are more effective	NS
40	Mutti et al. (2016)	Experimental study. Smokeless tobacco users, 16–18 years	Text and pictorial smokeless tobacco health warnings.	Self-report on health warnings over tobacco products	Face to face interview.	EoAds.+ Pictorial health messages are more effective than text-only messages	NS

Table 1 *(Continue)*

S.No.	Author and Year	Type of study and Population Studied	Type of Media messages Studied	Data collection tools	Data collection method	K, A and EoAds(+/-) towards tobacco use and findings	QA, QB, QI, COB, C, AB MoQ, SB, R and SI
41	Nan et al. (2016)	Cross-sectional survey 12–17 years old	Anti-smoking ads.	Questionnaire regarding smoking intention, exposure to anti-smoking ads and recall	Data from Legacy Media Tracking Survey III Telephone survey	EoAds.+	SI ↓
42	Nguyen et al. (2019)	Cross-sectional survey young adults 18–26 years	Anti-tobacco industry attitude and the relation between quit intentions and quit attempts	Questionnaire regarding Q1	Paper pen survey	NS	QI ↑ QA ↑
43	Niederdeppe et al. (2016)	Cross-sectional survey. Youth and adults	T.V anti-smoking PSA's Youth-targeted, adult/general-targeted. Health consequences ads, graphical and personal testimonial ads.	Relationship between the volume and content of youth targeted and general/adult targeted anti-smoking PSA's	Commercially available data on T. V. anti-smoking PSA's and data from state tobacco control activity.	PSAs that emphasize the health consequences of smoking (to oneself and others) and contain anti-industry appeals are associated with reduced youth smoking rates.	SI ↓
44	Nonnemaker et al. (2014)	Cross-sectional survey. Adults 18 years and older are current smokers.	T.V based Anti-smoking advertisements.	Gross rating points (GRP's) and Self-reports of recall of advertisements.	Data were taken from New York Adult Tobacco Survey. Telephonic interviews.	EoAds.+ Graphical and Emotional anti-smoking media messages. Strong graphic ads. Are effective except for persons with mental health issues.	QA ↑ C ↑

Table 1 *(Continue)*

S.No.	Author and Year	Type of study and Population Studied	Type of Media messages Studied	Data collection tools	Data collection method	K, A and EoAds(+/-) towards tobacco use and findings	QA, QB, QI, COB, C, AB MoQ, SB, R and SI
45	Nonnemaker et al. (2015)	Longitudinal survey adult smokers and recent quitters	Media campaigns via T.V., Radio and social media	Self-reports on smoking status. Media exposure measured via TRP's.	Telephonic interview	NS	QA ↑ No effect on R and Subsequent QA
46	Noueira et al. (2018)	Cross-sectional survey adult smokers	T.V advertisements.	Questionnaires regarding awareness of advertisements, health risks K and QA	WAVE I data. Face to face interviews	K ↑	QA ↑
47	Obeidat et al. (2016)	Cross-sectional survey General public	Anti-tobacco messages and their recall	Questionnaire regarding Recall of anti-tobacco messages and effect on increasing knowledge about associated harms	In-person data collection	Effect of knowledge not satisfactory	NS
48	Owusu et al. (2019)	Experimental study	Pictorial and text only warnings and Fear appeal messages adaptive vs maladaptive responses	Questionnaire regarding the effect on perceived informativeness, negative emotion and denial	On-line data collection	Pictorial messages are more effective than text-only warnings in increasing QI. Fear appeal messages adaptive responses are better.	QI ↑
49	Park et al. (2019)	Longitudinal survey	Exposure to anti-tobacco messages on T.V with Quit lines	Quit lines assessed for QA	Quit line data assessment	EoAds.+	QA ↑

Table 1 *(Continue)*

S.No.	Author and Year	Type of study and Population Studied	Type of Media messages Studied	Data collection tools	Data collection method	K, A and EoAds(+/-) towards tobacco use and findings	QA, QB, QI, COB, C, AB MoQ, SB, R and SI
50	Petersen et al. (2018)	Cross-sectional survey 18–55 years old females	Anti-tobacco advertisement awareness	Questionnaire regarding awareness of the risk associated with smoking and SHS	Household survey	K ↑	NS
51	Qin et al. (2014)	Cross- sectional survey. 18–45 years old.	T.V. based anti-tobacco advertisements.	Self-reports on recall of advertisements and effect on future behaviour.	Face to Face interviews	EoAds. (+) Participants who reported seeing the anti-tobacco advertisement were more likely not to give cigarettes as a gift in the future.	NS
52	Rao et al. (2014)	Cross-sectional survey. Adolescents 13–15 years.	Anti-tobacco messages from T.V. radio, billboards, posters, newspapers, magazines and movies. Home, school and any social event	Self-reports on exposure to anti-tobacco ads.	GYTS secondary data.	No exposure to anti-tobacco ads related to future smoking behaviour	SI ↑
53	Schessul et al. (2018)	Cross-sectional survey. Females' smokeless tobacco users (18–40 years)	Anti-tobacco media messages on T.V and tobacco products.	Questionnaire regarding the influence of media on tobacco behaviour.	Self-reports	EoAds. (-) Husband influence; Yes	QB; No effect

Table 1 *(Continue)*

S.No.	Author and Year	Type of study and Population Studied	Type of Media messages Studied	Data collection tools	Data collection method	K, A and EoAds(+/-) towards tobacco use and findings	QA, QB, QI, COB, C, AB MoQ, SB, R and SI
54	Shahina et al. (2017)	Cross-sectional survey 18–40 years SLT user females	Anti-tobacco TV messages and tobacco product warnings	Questionnaire regarding effect of QI	In-person data collection	EoAds.+	QI↑ more in T.V messages.
55	Sharma et al. (2018)	Cross-sectional survey. Adults (15–40 years)	Anti-tobacco media messages via T.V., Newspaper	Questions asked about the source of entertainment, information, knowledge regarding the ill effects of tobacco.	Pen-pencil based survey	K+ T.V is the most common, cost-effective and important media among all other	NA
56	Springvloet et al. (2015)	Longitudinal study. Tobacco users	Anti-tobacco advertisements OR information's	Self-reporting Anti-tobacco advertisements recall method	WAVE 2 data computer assisted telephonic/web interview	A(-) with increasing education	QI ↑ with increasing education
57	Tan et al. (2017)	Cross-sectional study. 18–70 years old. Smokers, non-smokers and gender	Anti-smoking warning labels.	Self-reports. Questionnaire regarding smoking habits and beliefs about smoking and effectiveness of the warning labels	Face to face interview.	EoAds.+ Females found all the warning labels effective.	NS
58	Unal et al. (2016)	Cross-sectional survey. Adolescents' students	T.V anti-smoking advertisements	Questionnaires regarding EoAds	In-person data collection	EoAds decreases with smoking status. Health-related anti-tobacco ads are more appreciated.	NS

Table 1 *(Continue)*

S.No.	Author and Year	Type of study and Population Studied	Type of Media messages Studied	Data collection tools	Data collection method	K, A and EoAds(+/-) towards tobacco use and findings	QA, QB, QI, COB, C, AB MoQ, SB, R and SI
59	Vallone et al. (2017)	Longitudinal Cohort Study (15–21 years old)	Truth ads effectiveness	Questionnaire regarding ad awareness, quit intentions, anti-tobacco attitudes,	Follow-up interviews	EoAds.+ K ↑ A-	QI ↑
60	Veeraiah et al. (2018)	Cross-sectional survey. Tobacco users.	Pictorial warnings over tobacco products Radio, newspaper, billboards and T.V. films	Questionnaire regarding the impact of pictorial warnings and anti-tobacco advertisements on tobacco behaviour.	Household survey	EoAds.+ Pictorial warnings are effective in generating QB	COB+
61	Verma et al. (2021)	Cross-sectional Survey Age 15 and above Females	Anti-smoking media advertisements	Questionnaire regarding interest in quitting, quitting attempts and successful quitting	Secondary analysis from GATS-2 DATA	EoAds. (+)	QI ↑
62	Wang et al. (2019)	Experimental study. Smokers	Anti-tobacco pictorial warnings on cigarette packs	Questions regarding effectiveness of ads based on recognition memory task	Paper pen-based memory test	EoAds+ Pictorial warnings with highly emotional content are more effective.	NS

Table 1 *(Continue)*

S.No.	Author and Year	Type of study and Population Studied	Type of Media messages Studied	Data collection tools	Data collection method	K, A and EoAds(+/-) towards tobacco use and findings	QA, QB, QI, COB, C, AB MoQ, SB, R and SI
63	Xu et al. (2015)	Cross-sectional survey. Tobacco users and non-users 18–45 years.	T.V. anti-tobacco advertisements	Self-reports. Questionnaires regarding tobacco-related K and A	Face to face interview	No effect on K and A (smokers)	QI ↑
64	Yang et al. (2019)	Cross-sectional study Male smokers	Exposure to anti-tobacco ads	Questionnaire regarding exposure to anti-tobacco ads and effect on QA	In-person data collection	EoAds.+	QA ↑
65	Zhu et al. (2019)	Cross-sectional survey students	Exposure to media (pro and anti-tobacco messages)	Questionnaire regarding a recall of ads and susceptibility to smoke in future	In-person interview	Anti-tobacco ads neutralize the effect of pro-tobacco ads.	SI ↓

Note: K, knowledge; A, attitude; EoAds., the effectiveness of anti-tobacco advertisements; QA, quit attempts; QB, quit behaviour; QI, quit behaviour; QI, quit intentions; COB, cessation-oriented behaviour; Cessation; AB, abstinence; MoQ, motivation to quit; SI, smoking intention; R, relapse; SB, smoking behaviour; NS, not studied.

RESULTS

The Effect of Anti-Tobacco Propaganda (media) Messages on Maintenance of Tobacco Abstinence

The majority of studies assessing the effect of the anti-tobacco propaganda (media) messages are cross-sectional designs; hence, we can make an association between variables but, the causal relations cannot be explained through these studies. These messages can increase the quit behaviour and decrease smoking behaviour, but gender influence is seen in most studies as females are much more influenced by the anti-tobacco propaganda (media) messages and more receptive than male respondents. On the other hand, the impact of anti-tobacco propaganda (media) message on knowledge and attitude regarding tobacco is also assessed and found to be effective enough.

Contrary to knowledge and attitude findings, the effect on quit intentions is not positive in all studies. Some of the studies reported very low effects, and some reported no effect on the quit intentions of current smokers. These findings indicate a low to a medium association between increased knowledge and attitude with quit. It should be considered that anti-tobacco propaganda (media) messages with pictorial warnings with text have more power to motivate the current smokers to quit. Anti-tobacco propaganda (media) messages with fear factors have the power to motivate individuals for trying to quit smoking. It must be noted that peer pressure is not considered as the main barrier in quitting tobacco but the uncomfortable sensations (withdrawal effects) due to quitting, as reported by many studies. The government must also include content in the advertisements that support this issue of withdrawal management. Tobacco users and recent quitters do not benefit from the anti-tobacco propaganda (media) messages as they find them irrelevant and generally misinterpret the warnings placed over tobacco products.

Some studies reported the exposure and frequency of the anti-tobacco propaganda (media) messages on individuals that matter. The effect does not come in one instance but is a gradual process. Also, the age of an individual when exposed to the anti-tobacco propaganda (media) messages decides the future consequences or tobacco behaviour of an individual, as reported by many studies. An adolescent, if in his/her early developmental stages, get exposed to pro-tobacco advertisements like via retail advertisements in a shop, tobacco-company sponsored events, indirect exposure via movies or media programs then it is estimated that they may indulge in tobacco consuming behaviour in the near future, on the other hand, the non-exposure of anti-tobacco propaganda (media) messages is a major factor for smoking initiation among adolescents and adult population. Non-exposure to these anti-tobacco advertisements and exposure to pro-tobacco marketing advertisements significantly amends the tobacco-related behaviour of a person.

On the whole, findings suggest that anti-tobacco propaganda (media) messages

have a major impact on quitting behaviour of tobacco users. Although quit intentions and quit attempts evaluated by a few longitudinal surveys reported that the anti-tobacco propaganda (media) messages do not have any major impact over successive quitting attempts of tobacco users but the initial. It is also reported that the anti-tobacco propaganda (media) messages have a positive influence over cessation-oriented behaviour of tobacco users. However, maintenance of this cessation-oriented behaviour is still questionable as a few longitudinal studies suggest that anti-tobacco propaganda media messages have no impact on the maintenance of abstinence or help in the prevention of relapse.

The Influence of Different Types of Anti-Tobacco Propaganda (media) Messages Over Population

A number of studies reported that pictorial and graphical health warnings with fearful messages have a great influence over tobacco non-users, especially among females and adolescents. Although, in general, the anti-tobacco propaganda (media) messages are effective in making an impact on the whole population. Research studies focused on tobacco users illustrated that most anti-tobacco propaganda (media) messages are not getting any response from tobacco users. It is a major issue of concern and cannot be ignored. For tobacco users, it is the anti-tobacco (media) messages based on 'why to quit' strategies (messages which justify why it is necessary to quit) and based on personal testimonial content (real stories of persons who are affected badly by tobacco use) are found effective. However, some studies also reported that lived experiences, symbolic or testimonial warnings are less effective in generating a positive response from current smokers. A few studies also reported that the effectiveness of anti-tobacco propaganda (media) messages decreases with the smoking status or level of tobacco dependence of an individual. Most of the anti-tobacco propaganda (media) messages give information about negative health effects of tobacco on consumer and their family (second-hand smoking) not taken positively by tobacco users, and they find them irrelevant and ignore them consciously. Few studies reported that advertisements that arouse fear and guilt effectively change smoking behaviour among tobacco users as well as non-tobacco users. Graphical anti-tobacco propaganda (media) messages are considered more efficient than anti-tobacco propaganda (media) messages showing negative health effects in text-only formats. Non-smokers seem to be more touched by the negative health effects of anti-tobacco propaganda (media) messages than fellow smokers.

The celebrity influence plays an important role in any anti-tobacco propaganda (media) message. These messages are more effective for adolescents, females, and the tobacco non-user group. Some studies reported that the high prevalence of tobacco use is related to lower socioeconomic, educational status, rural residence, and maturity. The reason for this higher prevalence might be the difference in

the level of understanding or non-relevance of particular advertisements in these specific groups. Few studies reported the effect of anti-tobacco propaganda (media) messages on quitting behaviour, and their results are not consistent with each other. Few studies suggested that pictorial health warnings create a very low effect on quit behaviour; contrary to this, some studies reported that graphic advertisements have a universal appeal and help in changing smoking-related behaviour. This difference in their findings might be due to the variations in the study sample and study design as the former study included the smokers only and reported that quitting behaviour is very low after seeing the pictorial warnings on cigarette packs while the latter one consists of respondents from both groups. Overall quitting behaviour is not influenced by one factor but many factors like age, socioeconomic status, place of residence and type of family, age of initiation, and level of dependence.

DISCUSSION

This review concludes that anti-tobacco propaganda (media) messages play a crucial role in modifying tobacco-related behaviour among the general population. A total of 65 research papers were included in the review. A total of 41 cross-sectional studies, eight longitudinal studies, 14 experimental studies, two mixed studies demonstrated the distinct impact of anti-tobacco advertisements on tobacco behaviour of tobacco users, recent quitters, as well as to non-users. Overall findings indicate that anti-tobacco propaganda (media) messages are effective in reducing tobacco use prevalence if used judiciously. In order to be more effective and comprehensive, government-sponsored anti-tobacco propaganda (media) messages must be prepared with appropriate content and should cover other sections of the population, not only non-tobacco users and females. It is to be noted that almost all the studies assessed the effect of these anti-tobacco media messages on the smoking form of tobacco. However, a smokeless form of tobacco is used by females, especially in India. The influence of celebrity on quit behaviour or smoking behaviour is studied by a few studies and gave a mixed effect. This finding can guide states while making future anti-tobacco advertisements.

Among the different categories of anti-tobacco propaganda (media) messages available, lived experiences, symbolic or testimonial warnings are less effective in generating a positive response from current smokers. On the other hand, non-smokers seem to be more touched by the negative health effects of anti-tobacco propaganda (media) messages. Graphic health warnings and media messages with anti-tobacco industry themes are more effective in decreasing smoking initiation among tobacco non-users than any other category of anti-tobacco propaganda (media) messages. However, some studies also reported that the anti-tobacco propaganda (media) messages might have a boomerang effect on tobacco users. The 'No smoking' hoardings, 'Stop Smoking' signboards, and the anti-tobacco propaganda (media) messages can act as

smoking cues for tobacco users and recent quitters and make them relapse. The anti-tobacco propaganda (media) messages can be important investments in successful tobacco control programmes. Therefore, the anti-tobacco propaganda (media) messages help educate the public about the harms of tobacco use, change attitudes and beliefs regarding tobacco use, increase quitting intentions and quit attempts among tobacco users, and reduce overall tobacco use prevalence.

The content of the anti-tobacco propaganda (media) messages must be assessed at infrequent intervals to make the time and trend appropriate. Furthermore, adolescents' age is vulnerable to tobacco initiation, and they are considering advertisements as inappropriate to their age group. Therefore, it requires immediate considerations about the content of anti-tobacco health messages. Health messages must be age appropriate. Presently, the effect of this anti-tobacco propaganda (media) message over maintaining tobacco abstinence is still under doubt. Achievement of sufficient population exposure is vital, especially for tobacco users, males, individuals with lower socioeconomic status. The primary channel to effectively reach and influence the general public is movies and cinema theatres, television, and radio, while smokers and non-smokers do not much appreciate other channels like newspapers, magazines, and posters. Therefore, longitudinal and qualitative studies are required to find the appropriate need-based content for future anti-tobacco propaganda (media) messages.

CONCLUSION

Anti-tobacco (media) messages effectively reduce the overall prevalence of tobacco use among tobacco users. They are equally beneficial in decreasing the incidence rates of tobacco use hence effective for the non-smoker group. Anti-tobacco media messages must be tailored or customized for a better and deeper reach for certain groups, which to date remained resistant. The smoking form of tobacco remains the main focus of almost all the studies. It is due to its negative consequences on others' health. However, the smokeless form of tobacco is equally or more harmful for tobacco users. Anti-tobacco (media) messages must address all the sections of society, and to be effective messages, one must not feel offended after watching or listening to them. Otherwise, the boomerang effect of these anti-tobacco (media) messages, as discussed in many studies, could not be ignored.

ACKNOWLEDGMENTS

In this section, the author would like to express gratitude to Dr. Meenakshi Sood and Dr. Sandhya Gupta, respectively, who has guided throughout the review of this paper. The author would also like to thank their family who supported them throughout the writing.

Author Contributions: Dr. Meenakshi Sood and Dr. Sandhya Gupta have a significant contribution in review, editing, and supervision. Laxmi Kumari contributed to the original draft preparation.

Funding: "This research received no external funding."

Conflicts of Interest: "The authors declare no conflict of interest."

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