

Changes in tobacco depictions after implementation of tobacco-free film and TV rules in Bollywood films in India: a trend analysis

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ABSTRACT

Background India's tobacco-free film and TV rules were implemented from 2012. To assess the effect of the rules, we studied tobacco depictions in top-grossing Bollywood films released between 2006 and 2017 and rule compliance after 2012.

Methods Tobacco incidents and brand appearances were coded in 240 top-grossing Bollywood films (2006–2017) using the Breathe California method. Trends in number of tobacco incidents per film per year were studied before and after implementation of the rules using Poisson regression analysis. Compliance with rules over the years was studied using Pearson product-moment correlations.

Results Forty-five films were U-rated (all ages), 162 were UA-rated (below age 12 years must be adult-accompanied), and 33 were A-rated (age 18+ years only). Before implementation of the rules, the number of tobacco incidents per film was increasing by a factor of 1.1/year (95% CI 1.0 to 1.2, $p=0.002$). However, beginning year 2013, the number of incidents per film started falling significantly by a factor of 0.7/year (95% CI 0.6 to 0.9; $p=0.012$) compared with the previous increasing trend. The percentage of youth-rated (U and UA) films with any tobacco incidents also declined from a peak of 76% in 2012 to 35% in 2017. The percentage of films complying with the rules (audio-visual disclaimers, health spots, static warnings) did not change significantly from 2012 to 2017.

Conclusion India's 2012 rules were followed by a reduction in tobacco depictions in Bollywood films. Enhanced monitoring of compliance is needed to ensure the continued effectiveness of the rules.

BACKGROUND

Tobacco use is normalised and perpetuated by its depiction in films and television (TV) content.¹ Tobacco advertising, through various media, creates positive product imagery or associations in the minds of young people.² Previous research has found a causal relationship between exposure to smoking in motion pictures and adolescent smoking initiation.^{3–4} Research from India has shown that media advertising^{5,6} and exposure to tobacco brand names or visuals of actors smoking on-screen are associated with increased smoking among youth.⁷

Consistent with Article 13 of WHO Framework Convention on Tobacco Control (WHO FCTC),⁸

Section 5 of India's Cigarettes and Other Tobacco Products Act (COTPA) prohibits advertising and promotion of tobacco products in any media.⁹ Studies conducted before COTPA implementation in 2004 showed a high depiction of tobacco use in Bollywood films.^{3,10} Consequently, in 2005, the Ministry of Health and Family Welfare (MoHFW), government of India, issued rules under COTPA to ban all depictions of tobacco products in films or on TV.^{3,11,12} After opposition from Bollywood and the Ministry of Information and Broadcasting (MoIB) in 2006,¹² the government relaxed this blanket ban to permit tobacco depiction in films with specific warnings to be shown on the screen at the time tobacco use was being depicted. In 2008, a film producer filed a case challenging the revised rules in the Delhi High Court, following which, in 2009, the High Court struck down the rules banning smoking scenes in films produced in India. However, the Supreme Court of India permanently stayed the High Court's judgement, after which the government introduced stringent rules related to the depiction of tobacco imagery in all films and TV programmes screened across India,¹³ which took effect in October 2012.^{12,13}

Under these rules, all films containing tobacco imagery need: a strong justification for any tobacco product display, to the Central Board of Film Certification (CBFC); an audio-visual disclaimer on the ill-effects of tobacco use (20s) and an anti-tobacco health spot (30s), at the beginning and the middle of the film; a prominent, static, anti-tobacco health warning (eg, 'Smoking Kills' or 'Smoking Causes Cancer' (for smoking form of products); 'Tobacco Kills' or 'Tobacco Causes Cancer' (for smokeless tobacco products)) at the bottom of the screen every time tobacco use is depicted on screen.

The MoHFW and public health advocates proposed awarding films with tobacco an adult rating (A rating: 'not suitable for youth under 18 years') to keep tobacco out of films rated as appropriate for youth (U/A: 'parental guidance for children below the age of 12 years' and U: 'unrestricted'). Bollywood and its allies in the MoIB blocked this proposal.¹²

After COTPA took effect in 2004 eliminating most forms of conventional tobacco advertising (such as hoardings, billboards, print and digital media among others), tobacco depictions increased



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in Indian films, particularly, in Bollywood (Hindi language) films.¹⁴ Half (19 of 38 films) of the top-grossing youth-rated films (U (unrestricted public exhibition) and UA (parental guidance required for children under 12 years)) screened in India between 2006 and 2008 contained tobacco depictions.¹⁵ In 2015, an evaluation of India's tobacco-free film and TV rules was attempted through content coding and exit interviews at cinemas¹⁶; while a recent study assessed tobacco imagery in Bollywood films from 1994 to 2013.¹⁷ However, these studies did not compare the number of on-screen tobacco incidents before and after the rules were implemented.^{16 17} To fill this gap, this study used validated film coding methods^{18 19} to study tobacco depiction trends in Bollywood films released between 2006 and 2017, compliance with the rules after 2012, and any changes in the number of tobacco depictions after the rules were implemented.

METHODS

Study design

This paper presents time trends in depictions of tobacco imagery and compliance with rules in Bollywood films in India. We content coded top-grossing Bollywood films released in India between 2006 and 2017 using the Breathe California method^{20 21} to be comparable with other studies conducted in the USA²² and India.²³

Data sources

For the film sample, cinema box office data from major cities in India (<http://data.danetsoft.com/bollywoodtrade.com>) were used to identify the 20 highest-grossing Bollywood films per year from 2013 to 2017 (total 100 Bollywood films).²⁴ An identical method was used for selection of 45 top-grossing Bollywood films from 2006 to 2008 (15 films per year) coded in earlier published Indian studies^{15 25}; and for 100 top-grossing Bollywood films from 2009 to 2012 (25 films per year; unpublished).

Thus, a total of 245 top-grossing films screened between the years 2006 and 2017 were shortlisted for inclusion in this study. Out of these 245 films, DVDs for five films (two 2016 films, one each from 2010, 2015 and 2017) were unavailable. Hence, 240 films were included for analysis in this study.

Staff and training

Seven coders were engaged for the content-coding process. Each set of coders was separately provided with full-day training on the Breathe California method followed by hands-on practice on the content coding using film DVDs different from those used in this study. The training included an introduction to content-coding methods, using validated coding protocols, different types of tobacco products used and scenarios, verbal or non-verbal references to tobacco use, introduction to the current rules in India and hands-on experience in coding using Breathe California forms for content coding. The coders also noted any tobacco brand appearances, whether directly on the tobacco product/pack or in some other way. This tool was also used earlier for a study conducted by our team.²⁶ We also collected information on compliance with the Indian rules.

Data collection

The coders filled the data collection form while watching the film DVD which contained information about the film (distributor and major actors/actresses, CBFC rating, production house and director) and the number of tobacco incidents. The movies for year 2006–2012 were coded during our earlier studies,^{15 25}

while the remaining 100 films between 2013 and 2017 were coded in one go, within a period of 3 months. A tobacco incident was counted each time a character was shown using or handling (implied use) a tobacco product on the screen, for example, if the character was shown handling a tobacco product once (whether lit or unlit), it would be counted as one incident. The tobacco incidents in each film were summed up to obtain the total number of tobacco incidents in that film. Each film in the sample was assessed for compliance with the rules. The coders noted the presence or absence of required audio-visual disclaimers, anti-tobacco health spots, static warnings at the bottom of the screen during the period of display of tobacco products, along with its placement and size in terms of visibility and the specific text message used, and display of tobacco products/packs/brands.

Inter-rater agreement analysis

We used the Wilcoxon signed-rank test to determine if there was consensus among the coders on the number of tobacco use incidents in each of the 24 randomly selected films (two films per year from 2006 to 2017) from our sample of 240 films. An identical method for assessing inter-rater agreement has been used by our team in a previous publication.²³ We found that there was no significant difference in the number of tobacco incidents between the two coders ($p=0.537$, median -1 ; and 95% CI -13.5 to 2.5), indicating reasonable inter-rater agreement.

Data analysis

As the number of films in the sample varied from year to year, the dependent variable in the analysis was the average number of tobacco incidents per film per year.

We used the Poisson regression analysis to conduct an interrupted time-series analysis to quantify the trend of tobacco incidents per film per year before and after the rules took effect. Specifically, we used Poisson regression command in Stata V.13.0: *poisson incidents Year2012 SmokeFreePolicy AfterPolicy, offset(ln number of films) vce (r) irr*, where 'incidents' was the number of tobacco incidents; 'ln number of films' natural log of the number of films; 'Year2012' is year centred on 2012 where years before 2012 were coded as -1 to -2 , -3 ... up to 2006 as -6 while years after 2012 were coded as 1 , 2 , 3 ... up to 2017 as 5 ; 'SmokeFreePolicy' a dummy variable where years after 2012 were coded as '1' and years before 2012 as '0'; 'AfterPolicy' considering years after the policy took effect: the year after 2012 were coded in increasing order from 1 , 2 ... 5 and years before 2012 were coded as 0 . The offset variable introduces a variable in the regression model with a coefficient of 1.0 that scales the model to incidents per film to account for the fact that the number of films varied from year to year. As the assumption of equal conditional means and variance is restrictive,²⁷ we used the robust variance estimates (vce) in our regression analysis.

In light of a long-term trend toward fewer adult-rated (A) films between 1994 and 2013¹⁷ combined with the fact that A-rated films have more smoking than youth-rated (U and U/A) films, we conducted a sensitivity analysis in which we analysed youth-rated and adult-rated films separately.

We tested for trends in compliance with the three key rules (anti-tobacco audio-visual disclaimer, anti-tobacco health spots before the film and at the middle, static warning on-screen during tobacco use depiction) that complied with the rules after 2012 by correlating the fraction of films complying with each of these rules with year using Pearson product-moment correlations.

RESULTS

Details of films included in the study

Between 2006 and 2017, the number of top-grossing films in the sample varied from 13 in 2006 to 25 in each of the years: 2009, 2011 and 2012 (online supplemental table S1). Out of the 240 films, 45 (19%) were U-rated, 162 were UA-rated (68%) and 33 (14%) were A-rated. The fraction of youth-rated films (U or U/A) in the sample varied from 77% in 2006 to 100% in 2017, increasing by an average of 1.7%/year ($p=0.027$). The proportion of films containing any tobacco incidents ranged from a high of over 70% in 2011 and 2012 to a low of 35% in 2014 and 2017.

Table 1 shows that overall mean incidents of tobacco use in films containing any tobacco imagery declined across youth-rated (U and UA) and adult-rated (A) films. Following the implementation of rules in 2012, incidents continued to rise in the A-rated films until 2013 and in the youth-rated films until 2014, following which there was a decline, reaching a minimum in 2016–2017. It is interesting to note that after implementation of the rules, the decline in A-rated films has been steeper compared with youth-rated films. The percentage of youth-rated (U and UA) films with any tobacco incidents also generally declined from a peak of 76% in 2012 to about 44% in 2013 and 35% in 2017 (table 1).

Changes in the number of tobacco incidents per film

The Poisson regression showed that the number of tobacco incidents per film was significantly increasing by a factor of 1.1/year (95% CI 1.0 to 1.2, $p=0.002$) before the policy. There was not a statistically significant immediate change in the absolute level of incidents per film from 2012 to 2013 (incidence rate ratio=0.9, 95% CI 0.6 to 1.4, $p=0.673$). However, beginning in the year 2013, the number of incidents per film started falling significantly compared with the pre-policy trend by a factor of 0.7/year (95% CI 0.6 to 0.9; $p=0.012$) (figure 1 and table 2).

The sensitivity analysis of youth-rated and adult-rated films confirmed that there were not statistically significant immediate changes in the absolute level of incidents per film but there were significant changes in the annual decline in the number of tobacco incidents per film after the policy took effect (table 2, second and third columns). Thus, the increase in youth-rated films as a fraction of all films over time did not account for our finding that there was a decline in the number of tobacco incidents per film over time after the policy took effect.

Compliance with tobacco-free film and TV rules

Figure 2 shows that overall, there was moderate compliance with all three indicators: static warnings when tobacco use is shown on screen, use of anti-tobacco health spots and posting an audio-visual disclaimer. There was no significant change in the fraction of films with audio-visual disclaimers (mean 22% compliance, p for correlation with time=0.235), anti-tobacco advertisements (33% compliance, $p=0.239$), or static warnings on-screen during tobacco use (31% compliance, $p=0.387$) after the rules went into effect in 2012. Other common violations included incorrect text used for static warnings, for example, 'Cigarette smoking is injurious to health' instead of 'Smoking Kills' or 'Smoking Causes Cancer', and incorrect fonts and background used to display the static warning. In some instances, the fonts were so small that they were hardly visible.

Table 1 Tobacco incidents in youth-rated (U and U/A) and adult-rated (A) top-grossing Bollywood films (2006–2017)

Release year	Youth rated (U and U/A)			Adult rated (A)							
	Number of films	Number of youth-rated films (U/U/A)	Youth-rated films containing any tobacco incidents % (n)	Total incidents in youth-rated films	Mean number of tobacco incidents in all youth-rated films (SEM)	Mean number of tobacco incidents among films with tobacco (SEM)	Number of adult-rated films (A)	Adult-rated films with any tobacco use % (n)	Total incidents in adult-rated films	Mean number of tobacco incidents in adult-rated films (SEM)	Mean number of tobacco incidents in adult-rated films among films with tobacco (SEM)
2006	13	10	60.0 (6)	127	13.8 (6.9)	17.9 (8.6)	3	100.0 (3)	52	17.3 (7.4)	17.3 (7.4)
2007	14	11	54.5 (6)	61	15.8 (7.2)	20.09 (8.8)	3	100.0 (3)	160	53.3 (23.7)	53.3 (23.7)
2008	15	13	38.5 (5)	24	11.1 (9.5)	20.9 (17.5)	2	50.0 (1)	154	71.5 (71.5)	143 (*)
2009	25	21	57.1 (12)	174	9.7 (3.1)	14.2 (4.2)	4	50.0 (4)	69	17.3 (9.9)	34.5 (0.5)
2010	24	22	50.0 (11)	199	10.7 (4.9)	15.1 (6.8)	2	100.0 (2)	57	28.5 (3.5)	28.5 (3.5)
2011	25	16	56.2 (9)	193	16.9 (3.8)	22.3 (4.4)	9	100.0 (9)	230	25.6 (7.6)	25.6 (7.6)
2012	25	21	76.2 (16)	314	22.6 (8.3)	26.9 (9.7)	4	75.0 (3)	251	62.8 (47.6)	83.7 (60.5)
2013	20	18	44.4 (8)	264	16.2 (6.6)	24.9 (9.3)	2	50.0 (1)	60	30.0 (30)	60 (*)
2014	20	19	31.5 (6)	199	10.8 (3.7)	23.9 (5.6)	1	100.0 (1)	16	16.0 (*)	16 (*)
2015	19	17	41.2 (7)	169	10.4 (3.5)	17.9 (5.0)	2	100.0 (2)	28	14.0 (11.0)	14 (11)
2016	20	19	36.8 (7)	282	14.3 (5.6)	25.9 (8.9)	1	100.0 (1)	3	3.0 (*)	3 (*)
2017	20	20	35.0 (7)	70	3.5 (2.6)	7.0 (5.1)	0	0.0 (0)	0	0 (*)	0 (*)

*Standard Error of Mean (SEM) could not be calculated because $n=0$ or 1.

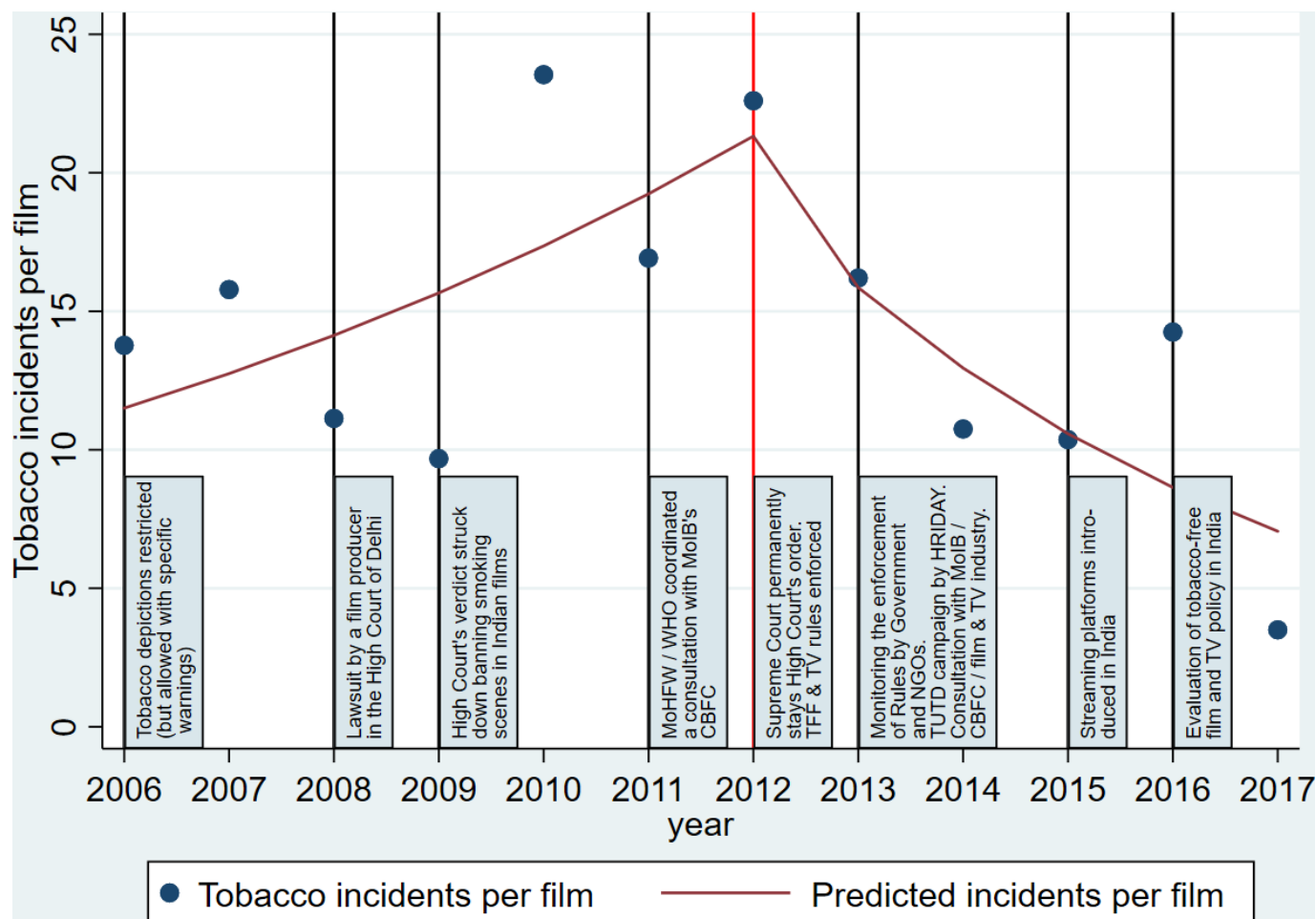


Figure 1 Number of tobacco incidents per film between the years 2006 and 2017 together with fit using the Poisson regression. CBFC, Central Board of Film Certification; HRIDAY, Health Related Information Dissemination Amongst Youth; MoHFW, Ministry of Health and Family Welfare; MoIB, Ministry of Information and Broadcasting; NGOs, non-governmental organisations; TFF, Tobacco-free films; TUTD, Thumbs Up Thumbs Down.

Tobacco brand display in films

The instances of brand display described in online supplemental table S2 are indicative of a low level of brand display (nine times in total from 2006 to 2017) in Bollywood films selected in this study. The most common brand depicted across all films was Wills Classic, followed by Gold Flake, More and Pall Mall. There were no specific trends in brand placement over the years. The most common form of brand depiction was through product pack placement. Some films continued to display tobacco brands even after the rules were implemented.

DISCUSSION

There was an overall increase in the number of tobacco incidents from year 2006 to 2012 (figure 1). However, after 2012 (implementation of tobacco-free film and TV rules in India), this trend reversed in 2013, followed by a continued steady decline in tobacco incidents in years 2014 and 2015. The lower rates of tobacco

incidents per top-grossing film were potentially helped by the monitoring of the MoIB's enforcement of the rule by MoHFW and the civil society. The evaluation of tobacco-free films and television rules in India by WHO and Vital Strategies reporting the instances of tobacco imagery in top-grossing movies and TV programmes in the year 2016 may have also helped to maintain these lower rates of tobacco incidents per top-grossing film in 2017.¹²

Similar to our overall findings, there was a decline in tobacco incidents observed in youth-rated and adult-rated films after the implementation of the rules. As of April 2021, the CBFC, the government agency charged with reviewing and rating films, still was not considering tobacco portrayal when assigning ratings. Compliance with key provisions of the rules was moderate across years and there was no significant difference in compliance over the years for these rules. Incidents of brand placement were sparse throughout from 2006 to 2017, but still present, even after the rules were implemented.

Table 2 Changes in tobacco incidents per film before and after policy change (IRR and 95% CI)

	All films	Youth-rated films (U and U/A)	Adult-rated films (A)
Annual change pre-policy	1.1/year (1.0 to 1.2; p=0.002)	1.1/year (0.9 to 1.4; p=0.155)	1.0/year (0.8 to 1.3; p=0.808)
Immediate change from 2012 to 2013	0.9 (0.6 to 1.4; p=0.673)	1.3 (0.8 to 2.2; p=0.266)	1.3 (0.6 to 2.7; p=0.447)
Annual change post-policy	0.7/year (0.6 to 0.9; p=0.012)	0.7/year (0.5 to 1.0; p=0.049)	0.6/year (0.4 to 0.8; p=0.001)

IRR, incidence rate ratio.

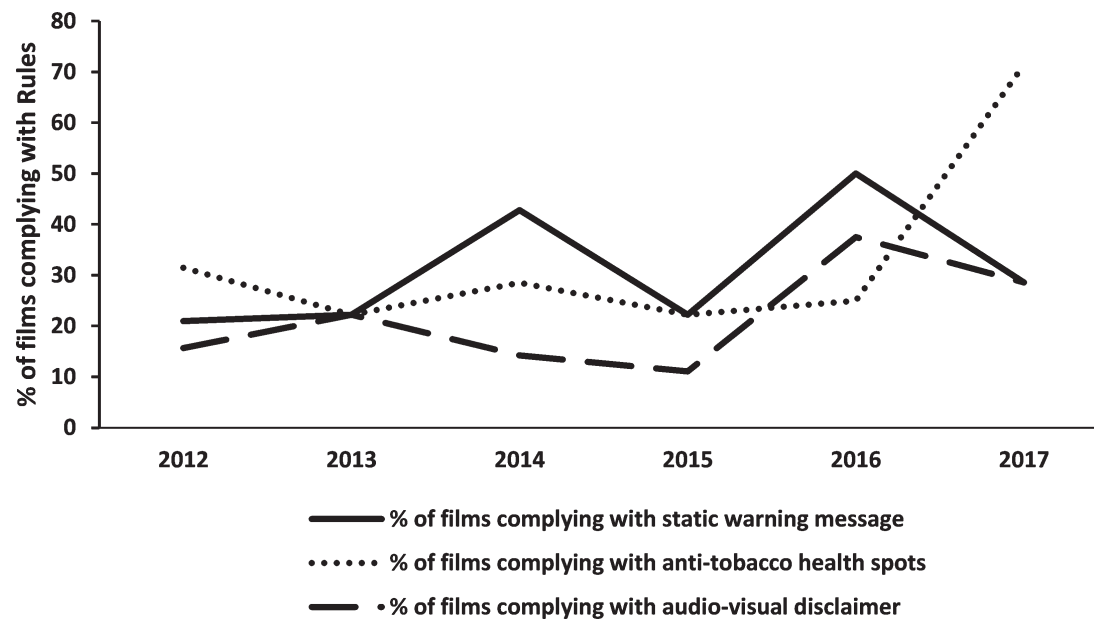


Figure 2 Compliance with tobacco-free film and TV rules after their implementation in 2012.

This study showed that there has been a substantial decline in the top-grossing Bollywood films depicting tobacco incidents since the implementation of the rules in 2012. Several studies in the past have shown that anti-smoking advertisements before the start of films with tobacco use are effective in reducing the effect of tobacco use exposure.^{28 29} A quasi-experimental study conducted in Kiel, Germany with 4073 patrons also asserted that the anti-smoking advertisements before the films induce negative attitudes towards smoking in general.²⁹ Prior research has highlighted that policies that ban the advertising, promotion and sponsorship of tobacco, and the placement of anti-tobacco mass media messages that portray the truth about the deadly health harms of tobacco are effective in countering pro-tobacco imagery and reducing tobacco consumption.^{7 30 31} Our study demonstrated the effectiveness of stringent Indian tobacco-free film and television rules encompassing more than just one anti-smoking advertisement.

This study reports a decline in tobacco incidents per film after implementation of 2012 rules in India (figure 1). Under pressure from a public campaign and the Master Settlement Agreement between US state attorneys general, a study in the USA noted a decline in the number of on-screen tobacco incidents in youth-rated (G, PG or PG-13) top-grossing movies, decreasing by 71.6% from 2093 incidents monitored in 2005 to 595 in 2010.³² Another US study demonstrated parallel downward trends in smoking in films and adolescents' smoking from 1990 to 2007.³³ Enhanced implementation and monitoring of tobacco-free film and television rules in India have the potential to address tobacco use among youth in India.

Among films that included any tobacco incidents, fewer than half complied with requirements of static warnings when the tobacco products are shown, anti-tobacco spots at the beginning and the middle of the film, and the audio-visual disclaimer informing about the adverse health effects of tobacco (figure 2). The levels of compliance with the rules varied for each of these provisions; however, there was no significant increase in the compliance levels over the years. Moreover, other violations such as incorrect warning text and incorrect fonts and background were also commonly observed. Laxity in enforcement may have been a key reason that the tobacco incidents continued

to increase for a few years after the implementation of the rules. Our findings are consistent with the previous study conducted by Vital Strategies and WHO in India which studied compliance with the rules in cinema halls and suggested that only 27% of the films with tobacco imagery fully complied with all the specified rules.¹⁶ These studies highlight the need for enhanced enforcement of the rules by the government of India.

The instances of brand display were found to be at a low level in Bollywood films. Although sparse, brand display was still observed after the rules came into force. The persistence of tobacco brand display in Bollywood films after the rules were implemented suggests that cigarette marketers still enjoy direct promotional benefits from vivid tobacco content on theatre screens, which have been prohibited in traditional advertising media since 2004. This is problematic as tobacco advertising and promotion in films are associated with tobacco use among youth in India²⁵ as observed in other countries.³ Brand display violates Article 13 guidelines of the WHO FCTC, to which India has been a party since 2004.³⁴

Prior research has attempted to quantify the extent of portrayals of smoking in popular culture, and the impact of such portrayals on attitudes to smoking and on smoking uptake.^{32 35–39} The current study uses validated methods^{18 19} and yields data on the extent of portrayals comparable with that from other similar studies. Moreover, apart from the content coding of conventional films, the Breathe California method has been widely used for content coding of on-demand films and TV series produced by the streaming platforms expanding so rapidly internationally.^{19 23}

During the study period, online streaming—which is not covered by the rules—started in India. A recent study by this group of researchers has shown high instances of tobacco imagery on on-demand streaming platforms in India.²³ Our findings, therefore, strengthen the support for amendments proposed by MoHFW, to Section 5 of COTPA⁴⁰ (2003) for bringing the streaming platforms under its ambit.

Limitations

The present study has limitations. First, the films coded for content were only the highest-grossing titles. Films with smaller

budgets, more restrictive ratings and lower public profiles might have different tobacco content, levels of compliance with rules or frequency of tobacco brand display. However, the inclusion of the highest-grossing films ensures that the films seen by the largest audiences, and consequently delivering the broadest tobacco exposure, were included. Second, as the study only focused on Bollywood (Hindi) films, tobacco imagery in films produced in other Indian languages, especially the regional ones, has not been studied. Future research can be focused on multiple Indian regional films, as recent data have shown that tobacco imagery is higher in South Indian-language films than in Hindi films.⁴¹

CONCLUSION

Our study shows that the implementation of the tobacco-free film and TV rules in India in 2012 was followed by a decrease in tobacco incidents across top-grossing Bollywood films (figure 1). The increase in depiction of tobacco imagery in films following introduction of streaming platforms in India supports the need to bring the online streaming platforms under ambit of COTPA (2003). Compliance with the rules (audio-visual disclaimers, health spots, static-warnings) was moderate and did not change significantly from 2012 to 2017. The production houses and film-makers must be sensitised about the issue and exercise accountability towards the youth of India and its diaspora. While implementation of the rules was followed by a reversal of the increasing trend in appearance of tobacco incidents, compliance with the rules is still incomplete (figure 2). There is a need for enhanced monitoring and implementation of the rules by the appropriate government of India agencies, particularly the CBFC (MoIB) as well as by the MoHFW.

What this paper adds

- Section 5 of India's Cigarettes and Other Tobacco Products Act (2003) prohibits advertising and promotion of tobacco products in any media and this prohibition extends to depiction of tobacco products or their use in films and television (TV) programmes.
- This study assesses tobacco depiction trends in 240 top-grossing Bollywood films released between 2006 and 2017 and compliance with India's tobacco-free film and TV rules after their implementation in 2012.
- After the implementation of rules in 2012, the number of incidents per film started falling significantly by a factor of 0.7/year (95% CI 0.6 to 0.9; $p=0.012$) as compared with the pre-policy increasing trend.
- The percentage of youth-rated (U and UA) films with any tobacco incidents also declined from 2012 to 2017.
- India's 2012 rules were followed by a reduction in tobacco depictions in Bollywood films, although more work needs to be done to further increase compliance with the rules within those films that do depict tobacco.

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