



Impact of the Warning through Local Image Character and Language Text for Smokers' Awareness of Health Risks and Interest in Quitting Smoking

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Authors' contributions

This work was carried out in collaboration among all authors. Authors Afzaal Ali, MS and Adnan Ali designed the study, wrote the literature and the first draft of the manuscript. Authors Afzaal Ali and MS carried out the analysis and reviewed the draft manuscript. All authors read and approved the final manuscript.

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ABSTRACT

Aims: This research attempts to empirically evaluate the local image character and language text concept to better explain the stages of change model to predict the behavioral change in smokers.

Study Design: The current research study is descriptive, applied and deductive in nature. Moreover, this is a cross-sectional research study as the data was collected once from the respondents under study using a structured questionnaire.

Methodology: As smoking prevalence is high among young people, the authors included 219 young male smokers by using purposive sampling technique. This study was conducted on a volunteer basis, 81 out of 300 committed respondents' refused to participate in the end. Smokers from two Pakistani cities viewed three health warnings on cigarette packets, which included (text-only warning, adopted text-plus graphical warning, and local text-plus graphical warning). Data

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were collected in April, 2014 and analyzed also in 2014.

Results: The findings suggest that there are significant differences in the effectiveness of three types of anti-smoking health related warnings. Text-plus graphical warnings cause smokers more than text-only warnings to pay more attention on warning, lead smokers having higher levels of fear, make them to stop from having a cigarette, and develop more motivation to quit finally. Most importantly, the current study adds to the evidence that warning label with local image character and language text is more effective than text-only warning, and warning label with adopted image character and language text.

Conclusion: The authors suggest that the health policy making institutions in other developing countries may use graphical warnings on cigarette packets with local character images and language text. According to the results of study, this policy can be more effective to get smokers' attention, raise awareness and educate smokers about the health hazards of smoking.

Keywords: Smoking; text-only warning; LTPG; ATPG; quit intention; health risks.

1. INTRODUCTION

Smoking has become an international dilemma that causes millions of human deaths every year due to its effects on health in the form of cancer, stroke and cardiovascular diseases [1-4]. Many previous research studies have highlighted a small decline in smoking prevalence in developed countries due to certain government initiatives [5-9]. These initiatives include the increase in taxes, ban on the cigarette advertisement, prohibition of smoking in public places and the inclusion of graphical health warnings along with text [10-12].

At the same time, other studies in smoking context have flagged the red signals for the developing countries [7,9,13,14] which are becoming a more attractive market for tobacco companies in response to barriers, which are created by the governments of developed countries. Approximately 5.4 million people died in 2009 directly related with smoking and 8 million people will die by 2030 should the situation not change, of which more than 80 percent will be from low to middle income countries [4,15].

In this context, concern over smoking health consequences has guided several countries including Pakistan to extend regulatory programmes that mean to decrease initiation of smoking as well as quick cessation efforts among smokers [16]. To fuel international action, many countries started to implement the treaty of Framework Convention on Tobacco Control (FCTC); by May 2015, 168 countries had signed the FCTC and 180 had ratified it [17]. This treaty emphasizes to increase the text size as well as the inclusion of graphical health related images on cigarette packets.

No doubt, due to ban on various types of advertisement in many countries, cigarette packaging serves as a critical marketing tool for the tobacco industry [18-20]. However, to promote brand appeal and relate it to other marketing forms, cigarette packaging can also provide reassurance to health concerned smokers [21]. Moreover, regardless of concerns that the shocking and disgusting nature of various graphical pictures may cause smokers to become depressed, or selectively ignore them and smoke as a coping mechanism [10,22], research has found that these gruesome images may be the most effective means of communicating health risks to smokers [19,23-26].

Breaking with the previous practice of just text-only writing, the new label contains a gruesome picture designed to discourage smokers from smoking. Although graphical health warnings are found more effective than text-only warnings, there may exist some uncertainty about the enduring impact and effectiveness of these warnings [27-30]. This uncertainty may be due to size and rotation of warnings (either text or graphical), language text used in warnings (local or English), character image used in warnings (local or adopted), color and position of warnings on the cigarette packets, and age, educational level of target population. Most importantly, on the contrary with the ample support base on the general effectiveness of pictorial warnings, the authors pay little attention on the most effective types of pictorial warning in terms of character image used in warnings (local or adopted) and message language text (local or English).

In this regard, the stages of change model [31] suggest that individual smokers must progress through different steps of behavioral change to quit smoking. The process initiates with no plan

to stop smoking, and then due to large size and emotional content of pictorial warning messages, smokers pay more attention on warning content that increases smokers' awareness of the risks associated with smoking. Here, the authors propose that the smoking warning containing local character image and language text will enhance its emotional intensity as compare to adopted image character and language text i.e. English. As a result, it will enhance smokers' awareness of the risks associated with smoking more than the adopted warning. In the next step, this will help and encourage smokers to stop smoking endorsing the new behavior of quitting smoking, and lastly maintaining this behavior [32,33].


To find out the effectiveness of different warnings in developing societies dealing with low education rate, less awareness, less income level, poor health conditions and unethical business practices by companies is utmost important to get the maximum potential benefits of warning on packets. For various reasons, a question arises whether graphical warnings with local character image and language text have value to smokers themselves regardless of public health effects. This question is very important but has received much less attention from the academic community. Therefore, the current study attempts to investigate the effectiveness of different health related warnings as well as the most effective types of warning in terms of character used in warning (local or adopted) and message language text (local or English), and ultimately their impact on the smokers' intention to quit smoking.

1.1 Smoking Prevalence in Pakistan

Pakistan's tobacco industry has been a traditionally reliable source of government income and providing employment opportunities

to over one million people. For instance, during 2012-2013, above 76 billion rupees were contributed to the Federal Exchequer as Central Excise Duty and Sales Tax. However, instead of strong tobacco industry lobby, Pakistan became a member of FCTC on November 3, 2004. Pakistan along with 171 countries signed this agreement, which obligates the signatories to print graphical warnings on cigarette packets. Under the agreed modification between the Ministry of National Health, Services, Regulations and Coordination (NHSRC) and tobacco companies, 10 per cent of the rear area of the cigarette packet must be covered with a written warning, while 30 per cent of the surface area of the cigarette packet must be occupied by graphical warnings [34]. After this launch, Pakistan became the 23rd country implementing the new requirement.

Pakistan is the fifth largest country in terms of population with approximately 180 million people. Two thirds of the country's people are not yet 30 years old, and the median age is 21. In Pakistan, where the majority of the population consists of youth, smoking prevalence is continuously growing; over half of the adult population is addicted to smoking in some form or the other [35]. There are approximately 30 million smokers and around 80,000 tobacco related deaths each year. It is also estimated that the prevalence of tobacco smoking in males is 36% and, alarmingly, for females the figure has jumped from 6 per cent to 16.3 per cent in recent years [36]. Among adolescents, particularly university students, the smoking prevalence is 15%, with the majority being male smokers. A study conducted by Rozi, Butt and Akhtar [37] in Karachi evaluating smoking in males revealed that smoking prevalence increases to 19.2% from age 15 to 17, 26.5% from age 18 to 20 and reaches 65% at 21 years and above.

History of health warnings in Pakistan		
S. no	Year of policy	Warning labels
1	Rules 2009	

History of health warnings in Pakistan		
S. no	Year of policy	Warning labels
2	Rules 2008	(a) WARNING: Protect children. Do not let them breathe your smoke. Ministry of Health. خبردار۔ بچوں کو سرگیت کے دھوئیں سے محفوظ رکھیں۔ وزارت صحت (b) WARNING: Smoking causes mouth and throat cancer. Ministry of Health. خبردار۔ تمباکو نوشی منہ اور گھٹے کے کینسر کا باعث ہے۔ وزارت صحت (c) WARNING: Quit smoking; live longer life. Ministry of Health. خبردار۔ تمباکو نوشی ترک کیجیے، لمبی زندگی پائیے۔ وزارت صحت (d) WARNING: Smoking severely harms you and the people around you. Ministry of Health. خبردار۔ آپ اور آپ کے ارد گرد کے لوگوں کے لیے تمباکو نوشی سخت مضر ہے۔ وزارت صحت
3	Rules 2003	”خبردار۔ تمباکو نوشی کینسر اور دل کی بیماریوں کا باعث ہے۔ وزارت صحت“ Warning: Smoking causes cancer and heart diseases. Ministry of Health.
4	Before 2003	خبردار۔ تمباکو نوشی صحت کے لیے مضر ہے۔ وزارت صحت Warning: Smoking is injurious to your health. Ministry of Health

Labels used in Pakistan courtesy of Ministry of National Health Services, Regulations and Coordination, Government of Pakistan. Retrieved 15 December, 2014. <http://nhsr.gov.pk/>

2. METHODOLOGY

2.1 Participants

The current research study is descriptive, applied and deductive in nature. Moreover, this is a cross-sectional research study as the data was collected once from the respondents under study using a structured questionnaire. As smoking prevalence is high among young people [38,36], the authors included casual as well as regular young male smokers whose ages were between 18 and 25 years. To create a more representative sample of the population, the authors selected two cities of Pakistan, i.e. Rawalpindi and Islamabad. Islamabad is the capital city of Pakistan, and Rawalpindi is an adjacent city to Islamabad. Both these cities are well developed in terms of quality of education, health, infrastructure, jobs and above all, high living standards. Due to these factors, people from all over Pakistan settled here. Almost every section of the Pakistani population has its representation in these two cities, especially in Islamabad.

In order to recruit potential respondent for this study, the authors used purposive sampling technique. To do this, the authors contacted university teachers who thereafter asked their students to participate in this activity designed to gather students' feedback. In this way, the authors selected bachelor, master and post graduate students. The required sample size was 300 (100 each group). After spending enough time and energy, initially 300 students committed to participate in this research study. However, finally 219 respondents participated (text-only= 59, ATPG= 80, and ATPG= 80). As this study was conducted on voluntary basis;

therefore, 81 out of 300 committed respondents refused to participate in the end.

2.2 Procedure

The authors developed three types of two page questionnaire. In the first page, the respondents were asked to provide information about Socio-demographic variables. In the second page, the authors taped cognitive/behavioral response about three anti-smoking warnings separately used in this study. Data were collected in afternoon on 29th April, 2014 and analyzed also in 2014. In the first step, the authors showed a text-only warning to the respondents with a multimedia slide and asked them to fill the required question paper. Then, the authors collected back filled questionnaires from respondents. Similarly, the authors showed the ATPG warning to the respondents and asked them to fill the required question paper. Finally, the authors showed a newly introduced LTPG warning to the respondents and got the required data (See Fig. 1).

Currently, all tobacco companies are using the same LTPG health warnings on cigarette packets. Moreover, the authors have used ATPG warning that local tobacco companies are not using yet. This warning label has been selected in consultation with the supervisor of the research. In addition, the authors have intentionally adopted ATPG warning label to see: is there any difference between the effectiveness of ATPG and LTPG? LTPG warning label contains local image character and local language text as compare to ATPG with adopted image character and language text. Demographic table, demographic analysis, Mean analysis and one way ANOVAs were used to explain the results.

2.3 Instruments

2.3.1 socio-demographics variables

Demographic variables included age, education level, number of cigarettes per day, number of years for smoking, and average pocket money. Intention to quit smoking cigarettes were assessed by asking "Are you planning to quit smoking cigarettes in near future... not planning to quit, within the next month, within the next 3 months, within the next 6 months, and sometime in the future. The first option is recorded as 0="not planning to quit" and 1 any of the last four three options.

2.3.2 Perceived effectiveness of health warnings

The perceived effectiveness of health warnings was treated as a continuous variable since it was reported on a scale of 1–4, with 1= not at all, 2= a little, 3= somewhat and 4= a lot. To measure the response of a smoker towards the effectiveness of cigarette packets warnings, following questions were adapted from the study of Fathelrahman et al. [39]. (1) To what extent, if at all, do you read or look closely at labels? (2) To what extent, if at all, do those health warnings make you think about the health risks? (3) To what extent, if at all, do the health warnings on the cigarette packet designs make you more likely to quit smoking? (4) To what extent, if at all do the warning labels cause you to stop from having a cigarette?

2.4 Statistical Analysis

Age and education differences in the frequency of smoking, number of cigarettes per day, starting year of smoking, average pocket money

as well as intention to quit smoking were analyzed using mean- analysis and one- way ANOVA statistics. To assess significant differences in respondents' responses about the effectiveness of three types of warning labels mean- analysis was used. To establish the reliability and validity of a measurement scale, the authors practiced confirmatory factor analysis (CFA) and cronbach's alpha. For all analyses an alpha level of .05 were applied.

2.5 Characteristics of Sample

The results in Table 1 reveal that the age of the smokers was in between 18-26. Furthermore, among the respondents of the study 39.7% were studying for a bachelor's degree, 45.7% were studying in the master program and 14.6% were found studying in the post-graduate program. Similarly 40.2% of the respondents replied that they smoke 1-5 cigarettes per day. Likewise, 18.3% replied that they smoke 6-10, 22.4% smoke 11-15 and 19.2% smoke more than 15 cigarettes daily. Regarding the start of smoking, 19.2% replied that they started smoking one year ago. Likewise 34.7% replied that they started smoking 2-3 years ago, 17.8% started 4-5 years ago and 28.3% started smoking more than five years ago. Because the data was collected from young people, they were also queried about the monthly pocket money which they receive from their parents. Out of 219 respondents, 27.4% replied that they can have Rs. 500-1000 pocket money per month. Likewise, 16.4% replied that they can have Rs. 1000-2000, 15.1% replied that they can have Rs. 2000-3000 and 41.1% mentioned that that they have more than Rs. 3000 pocket money each month. Finally, 63% respondents were planning to quit smoking in near future while 37% mentioned that they are not planning to quit.



Fig. 1. Health related warnings

Labels used in Pakistan: courtesy of ministry of national health services, regulations and coordination, government of Pakistan. Retrieved 15 December, 2014. <http://nhsrc.gov.pk/>

Table 1. Characteristics of final sample (n=219)

Variables	Number	%	Variables	Number	%
Age			How many years ago you started smoking?		
18-20	54	24.7	One year ago	42	19.2
21-23	126	57.5	2-3 years ago	76	34.7
24-26	31	14.2	4-5 years ago	39	17.8
>26	8	3.7	>5 years ago	62	28.3
Education			Average pocket money		
Bachelors	87	39.7	500-1000	60	27.4
Master	100	45.7	1000-2000	36	16.4
Post Graduate	32	14.6	2000-3000	33	15.1
Number of cigarettes / Day			>3000	90	41.1
1-5	88	40.2	Intention to quit		
6-10	40	18.3	Not planning to quit	80	37
11-15	49	22.4	Planning to quit	136	63
>15	42	19.2			

Table 2. Summarizes the reliability and validity results

Constructs									
	AVE	C.R	Cronbach's alphas	AVE	C.R	Cronbach's alphas	AVE	C.R	Cronbach's alphas
EoW	0.79	0.73	0.86	0.87	0.83	0.89	0.89	0.88	0.94

2.6 Reliability and Validity Analysis

In order to establish the reliability of a measurement scale used in this study, the authors practiced Confirmatory Factor Analysis (CFA) widely used by previous scholars [40-42]. The reliability of a construct was established using average variance extracted (AVE), construct reliability (CR) and cronbach's alpha.

Based on CFA results, the authors established the reliability of EoW construct among three health warnings as values for AVE and C.R in Table 2 the minimum threshold of 0.5 and 0.6 respectively. Similarly, the cronbach's alpha value demonstrated strong internal consistency of the scale for EoW variable.

3. RESULTS

3.1 Effectiveness of Warning Labels

Table 3 shows significant differences among text-only warning, ATPG warning and LTPG warning when respondents were questioned to know the effectiveness of these warnings on cigarette packets.




The results in Table 3 indicate that the respondents have observed the ATPG and LTPG labels more closely than text-only warning.

Text plus graphical warnings have also induced a higher level of instantaneous fear in participants. The results show graphical warnings have caused participants to perceive smoking as a health risk. Notably, LTPG warnings have made participants think more about health risks than ATPG warning. Moreover, the results show that the text-plus graphical warnings produce a stronger motivation in convincing youth to stop smoking than text-only warning. Furthermore, the authors have found that newly introduced LTPG warnings are more effective than ATPG warnings and text-only warnings to help smokers in creating a resistance to smoke cigarettes.

3.2 Effectiveness of Warning Labels in Term of Socio-demographics Variables

The results (Table 4) present the one-way ANOVA and mean ratings in context of Socio-demographics variables across all respondents for each of three health warnings on the dimension of motivating smokers to quit. The results conclude that warning effectiveness was associated with age, education, number of cigarettes per day, starting year of smoking and average pocket money. Intention to quit was not significantly associated with effectiveness ratings among youth.




Table 3. Smoker's response towards warnings

Items	Statements			
		Mean values	Mean values	Mean values
Q#1	To what extent, if at all, do you read or look closely at label?	2.4 (2*)	3.2 (3*)	3.4 (3*)
Q#2	To what extent, if at all, does this health warning make you think about the health risks?	1.9 (2*)	2.6 (3*)	3.7 (4*)
Q#3	To what extent, if at all, does this health warning on the cigarette packet designs make you more likely to quit smoking?	2.2 (2*)	3.3 (3*)	3.6 (4*)
Q#4	To what extent, if at all, does the warning label cause you to stop from having a cigarette?	1.9	2.9 (3*)	3.6 (4*)

Notes: n=219, Round figure

The mean scores reported in this table are based on responses to a four-point scale where "1" indicates "not at all" and "4" indicates "a lot". Scores in bold are significantly higher than scores which are italicised, which in turn differ significant from scores that are in normal text

Table 4. Perceived effectiveness of health warnings in context of socio- demographics variables

Demographical variables								
		N	Mean	SD	Mean	SD	Mean	SD
Age	Between 18 to 20	54	1.9	.40	2.9	.25	3.5	.57
	Between 21 to 23	12	2.2	.51	3.0	.35	3.6	.61
		6						
	Between 24 to 26	31	2.7	.25	3.4	.25	3.8	.59
	>26	8	1.7	.27	2.6	.45	3.3	.63
	F (Sig.)		22.940(.000)		6.261(.000)		5.073(.002)	
Education	Bachelor	87	1.8	.46	3.3	.25	3.8	.22
	Master	10	2.1	.25	2.9	.38	3.6	.54
		0						
	Post-graduates	32	2.5	.43	2.8	.00	3.4	.25
	F (Sig.)		13.694 (.000)		10.701 (.000)		7.641 (.001)	
No. of Cigarettes	1-5	88	2.2	.42	3.0	.36	3.4	.36
	6-10	40	1.7	.32	3.1	.25	3.6	.25
	11-15	49	1.8	.46	2.8	.24	3.5	.27
	>15	42	2.3	.15	3.0	.25	3.7	.41
		F (Sig.)		25.142 (.000)		9.936 (.000)		23.399 (.000)
Starting year of smoking	One year ago	42	2.3	.15	2.9	.25	3.7	.63
	2-3 years ago	76	2.1	.48	3.3	.33	3.6	.53
	4-5 years ago	39	1.8	.38	2.8	.25	3.4	.32
	>5 years ago	62	2.1	.34	3.0	.19	3.6	.38
		F (Sig.)		26.799 (.000)		14.162 (.000)		1.325 (.268)
Average pocket Money	500-1000	60	2.4	.48	3.3	.22	3.8	.61
	1000-2000	36	2.3	.51	3.1	.24	3.6	.50
	2000-3000	33	1.9	.40	2.9	.25	3.6	.25
	>3000	90	1.6	.32	2.7	.25	3.4	.36
		F (Sig.)		26.799 (.000)		14.162 (.000)		1.325 (.268)
Intention to quit	Not planning to Quit	80	2.1	.40	3.0	.44	3.6	.38
	Planning to Quit	13	2.1	.38	3.1	.45	3.6	.37
		6						
	F (Sig.)		.092 (.761)		.412 (.522)		.162 (.687)	

Interactions were tested among subgroups of age, education level, average pocket money, number of cigarettes and starting year of smoking, and each of the health warnings. A significant variation in mean values of all variables subgroups for the text-only, ATPG and LTPG warnings was observed: although mean ratings for text-only warning versus graphical warnings were almost dissimilar in all groups, the relative difference between text-only warning and graphical warning ratings was greater in groups. The rating value significantly differs in text-only versus graphical warnings. LTPG warning is rated highest in motivating smokers to quit, followed by ATPG and text-only. In all three warnings, there is a systematic downward trend of mean values in subgroups of age, education

and average pocket money to rank the perceived effectiveness of warnings. Smokers with young ages, less education and low income rank health warnings with high mean values than older ages, more education and high income smokers with low mean values. This implies that an increase in age, education and income level decreases the perceived effectiveness of health warnings in motivating smokers to quit smoking.

Finally, there is no relationship found in respondents' quit intention planning in future and effectiveness of warnings. However, notably significant differences are found in mean values in terms of warning label effectiveness to motivate smokers to quit smoking in text-only versus graphical warnings. To conclude,

however LTPG warning is rated the highest in terms of effectiveness in motivating smokers to quit, followed by ATPG and text-only warning.

4. DISCUSSION AND CONCLUSION

This research attempts to empirically introduce the local image character and language text concept to better explain the stages of change model to predict the behavioral change in smokers. Although the concept and importance of cigarette packet warnings are deeply entrenched in the health risks, none of the previous authors empirically established that local image character and language text for warning as compared to the adopted image character and language text for contributing towards the smokers' intention to quit smoking.

The findings of our research suggest that there are significant differences in the effectiveness of three types of anti-smoking health related warnings in terms of receiving more smokers' attention, inducing a higher level of instantaneous fear in the mind of smokers, and thereby helping smokers to develop a resistance against smoking and thus to quit smoking. However, text-plus graphical warnings cause smokers more than text-only warnings to pay more attention on warning, lead smokers having higher levels of fear, make them to stop from having a cigarette, and develop more motivation to quit finally. In fact, text plus graphical warning convince the users and can play a more decisive role in helping smokers quit smoking. Although written warnings are to some extent important in helping smokers quit smoking, they are less effective than text plus graphical health warnings. Specifically, LTPG warnings have made respondents more likely to quit smoking when compared to ATPG warning. These findings are consistent with findings of former studies, which have already proved the effectiveness of graphical health related warnings in altering the attitude of smokers and non smokers towards smoking [11,16,28,29,43,35,44,45,46]. Although, quitting smoking is difficult, the intention to quit is the first step to quit smoking.

The inclusion of old text-only warning and new Pakistani LTPG warning has allowed the authors for an explicit comparison against the ATPG warning. Old text-only Pakistani health warning has been rated as the lowest in effectiveness and the new LTPG health warning is barely higher than the old warning as well as ATPG in effectiveness. Most importantly, the current study

adds to the evidence that LTPG warning is more effective than ATPG warning, as LTPG warning contains local image character and language text. Therefore, the authors suggest that the health policy making institutions in other developing countries may use graphical warnings on cigarette packets with local character images and language text. According to the results of study, this policy can be more effective to get smokers' attention, raise awareness and educate smokers about the health hazards of smoking.

Moreover, these warnings might prove to be useful to attract low-income and less educated consumers, as many of them would not change their cigarette consumption because of rising prices alone. To some extent, LTPG warnings can help raise awareness and understanding, as well as effectively communicate the health related risk of smoking.

For socio-economic variables such as age, education and average pocket money, the results differ substantially in terms of the effectiveness of the used three warnings as well as among the sub groups of each variable. While for number of cigarettes per day and starting year of smoking variables, the results also differ substantially in terms of the effectiveness of the warnings. Finally, the authors do not find any relationship in respondent's quit intention, planning in future and effectiveness of health related warning labels.

5. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

In spite of the above mentioned new insights, this research study has quite a few factors that must be taken into consideration while interpreting the results.

Originally, 300 students committed to participate in this survey, but finally 219 participated. Therefore, the authors have a point of view that a big sample size might enhance the generalizability of this research. Secondly, the authors only considered male respondents for the study, though the smoking prevalence is on the rise in female smokers, even in Pakistan [35]. It was due to cultural restrictions that the authors were unable to collect data from female smokers. It will be worthwhile if female smokers can be considered in future research.

To avoid information clutter and get original responses, the authors used only one warning

label from each category i.e. text-only warning, ATPG warning and LTPG warning. However, future researches may use more than one warning for each category to tap possible variation in respondents' responses within the same category. An important limitation is that the authors used cross sectional data for this study. Longitudinal studies in future could be more effective to tap the attitudinal and behavioral responses of smokers about graphical health related warnings. Furthermore, a comparative study of smokers' vs. non smokers' responses regarding the perceived effectiveness of each graphical health related warning can provide a better understanding to extend the focus of anti smoking campaigns.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

- Campbell NC, Elliott AM, Sharp L, Ritchie LD, Cassidy J, Little J. Rural and urban differences in stage at diagnosis of colorectal and lung cancers. *British Journal of Cancer*. 2001;84:910-914.
- Kaufman N, Yach D. Tobacco Control: Challenges and prospects. *Bulletin of the World Health Organization*. 2000;787:867.
- Levin KA, Leyland AH. Urban/Rural inequalities in ischaemic heart disease in Scotland, 1981-1999. *American Journal of Public Health*. 2006a;96:145-151.
- World Health Organization. WHO Report on the Global Tobacco Epidemic, 2008-The MPOWER package, Geneva; 2008.
- Abdullah ASM, Husten C. Promotion of smoking cessation in developing countries: A framework for urgent public health interventions. *Thorax*. 2004;59:623-630.
- CDC. Current tobacco use among middle and high school students—U.S, 2011–2012. *Morbidity and Mortality Weekly Report MMWR*. 2013;62(45):893–897.
- Ezzati M, Lopez AD. Estimates of global mortality attributable to smoking in 2000. *Lancet*. 2003;362(9387):847–852.
- Ng M, Freeman MK, Fleming TD, et al. Smoking prevalence and cigarette consumption in 187 countries, 1980-2012. *The Journal of American Medical Association*. 2014;311(2):183-192. Available:<http://jama.jamanetwork.com/article.aspx?articleid=1812960>
- Steakley L. Smoking rates increasing in the developing world. Published by Stanford Medicine. August 22nd, 2012. Available:<http://scopeblog.stanford.edu/2012/08/22/smoking-rates-increasing-in-the-developing-world/>
- Hansen J, Winzeler S, Topolinski S. When the death makes you smoke: A terror management perspective on the effectiveness of cigarette on-pack warnings. *Journal of Experimental Social Psychology*. 2010;46:226–228.
- Johnson SE, Wu CC, Coleman BN, Choiniere CJ. Self-reported exposure to tobacco warning labels among U.S. Middle and High School Students. *Am J Prev Med*. 2014;47(2S1):S69–S75.
- Sen A, Wirjanto T. Estimating the impacts of cigarette taxes on youth smoking participation, initiation, and persistence: Empirical evidence from Canada. *Journal of Health Economics*. 2010;19:1264–1280.
- Feng G, Jiang Y, Li Q. Individual-level factors associated with intentions to quit smoking among adult smokers in six cities of China: Findings from the ITC China Survey. *Tobacco Control*. 2011;19(2):i6-11.
- World Health Organization. Tobacco; Key facts Sheet.; 2014. Available:<http://www.who.int/mediacentre/factsheets/fs339/en/>
- American Cancer Society. The global tobacco epidemic. *American Cancer Society Global Tobacco Control*. n,p; Available:<http://www.cancer.org/aboutus/globalhealth/globaltobaccocontrol/the-global-tobacco-epidemic>
- Hoek J, Gendall P, Louviere J. Rationalisation as delusion: pictorial health warnings and tobacco industry arguments. *Journal of Consumer Marketing*. 2011;28(7):476-483.
- World Health Organization. Updated Status of the WHO FCTC: Ratification and Accession by Country, World Health Organization, Geneva. 2015; available at: Available:http://www.who.int/fctc/signatories_parties/en/ (Accessed 25 May)

18. Hammond D, Parkinson C. The impact of cigarette package design on perceptions of risk. *J Public Health (Oxf)*. 2009;31(3): 345–353.
19. International Agency for Research on Cancer. IARC handbooks of cancer prevention, tobacco control, 12: Methods for evaluating tobacco control policies. Lyon, France: IARC; 2008.
20. Slade J. The pack as advertisement. *Tobacco Control*. 1997;6(3):169–170.
21. Bansal-Travers M, Hammond D, Smith P, Cummings KM. the impact of cigarette pack design, descriptors, and warning labels on risk perception in the U.S. *Am J Prev Med*. 2011;40(6):674-682.
22. Peterson EB, Thomsen S, Lindsay G, John K. Adolescents' attention to traditional and graphic tobacco warning labels: An eye-tracking approach. *Journal of Drug Education*. 2010;40(3):227-244.
23. Hammond D. Health warning messages on tobacco products: A review. *Tob Control*. 2011;20(5):327–337.
24. Hammond D, Fong GT, McNeill A, Borland R, Cummings KM. Effectiveness of cigarette warning labels in informing smokers about the risks of smoking: Findings from the International Tobacco Control (ITC) Four Country Survey. *Tob Control*. 2006;15(3S):Siii19–Siii25.
25. Vardavas CI, Connolly G, Karamanolis K, Kafatos A. Adolescents perceived effectiveness of the proposed European graphic tobacco warning labels. *European Journal of Public Health*. 2009;19(2):212-217.
26. White V, Webster B, Wakefield M. Do graphic warning labels have an impact on adolescents' smoking-related beliefs and behaviours? *Addiction*. 2008;103(9):1562-1571.
27. Fong TG, Hammond D, Jiang Y, Li Q, Quah AC, Driezen P, Yan M. Perceptions of tobacco health warnings in China compared with picture and text-only health warnings from other countries: An experimental study. *Tobacco Control*. 2010;19(2):69-77.
28. Fong GT, Hammond D, Hitchman SC. The impact of graphic pictures on the effectiveness of tobacco health warnings. *Bulletin World Health Organization*. 2009;87(8):640-643.
29. Hammond D, Fong GT, Borland R, Cummings KM, McNeill A, Driezen P. Text and graphic warnings on cigarette packages findings from the international tobacco control four country study. *American Journal of Preventive Medicine*. 2007;32(3):202-209.
30. Hoek J, Wilson N, Allen M, Edwards R, Thomson G, Li J. Lessons from New Zealand's introduction of pictorial health warnings on tobacco packaging. *Bulletin World Health Organization*. 2010;88(11): 861-866.
31. Prochaska JO, DiClemente CC, Norcross JC. In search of how people change. Applications to addictive behaviors. *Am Psychol*. 1992;47:1102–1114.
32. DiClemente CC, Prochaska JO, Fairhurst SK, et al. The process of smoking cessation: an analysis of precontemplation, contemplation, and preparation stages of change. *J Consult Clin Psychol*. 1991;59: 295–304.
33. Prochaska JO, Goldstein MG. Process of smoking cessation. Implications for clinicians. *Clin Chest Med*. 1991;12:727-735.
34. Wasif S. Cigarette packs to carry pictorial warning. *Express Tribune*; 2010. Available:<http://tribune.com.pk/story/17746/cigarette-packs-to-carry-pictorial-warning/>
35. Kugelman M. Can Pakistan Avert Demographic Doom? *The Diplomat*. June 05; 2013. Available:<http://thediplomat.com/2013/06/can-pakistan-avert-demographic-doom/>
36. Rozi S, Butt ZA, Akhtar S. Correlates of cigarette smoking among male college students in Karachi, Pakistan. *BMC Public Health*. 2007;1(7):312.
37. Haggerty KP, Fleming CB, Catalano RF, Harachi TW, Abbott RD. Raising healthy children: Examining the Impact of Promoting Healthy Driving Behavior within a Social Development Intervention. *Prevention Science*. 2006;7(3):257–267.
38. Masood Z. Pakistan and tobacco. *The Express Tribune*. June 1; 2013. Available:<http://tribune.com.pk/story/55729/1/80000-pakistanis-die-annually-from-smoking/>
39. Fathelrahman AI, Omar M, Awang R, Cummings KM, Borland R, Samin AS. Impact of the new Malaysian cigarette pack warnings on smokers' awareness of health risks and interest in quitting smoking. *International Journal of Environment Research and Public Health*. 2010;7(11):4089-4099.

40. Ahmad S, Butt MM. Can after sale service generate brand equity?" Marketing Intelligence and Planning. 2012;30(3):307-323.
41. Washburn JH, Plank RE. Measuring brand equity: An evaluation of a consumer-based brand equity scale. Journal of Marketing Theory and Practice. 2002;10(1):46-62.
42. Yoo B, Donthu N. Developing and validating a multidimensional consumer-based brand equity scale. Journal of Business Research. 2001;52:1-14.
43. Huang J, Chaloupka FJ, Fong GT. Cigarette graphic warning labels and smoking prevalence in Canada: A critical examination and reformulation of the FDA regulatory impact analysis. Tobacco Control; 2013. DOI: 10.1136/tobaccocontrol-2013-051170
44. Newman-Norlund RD, Thrasher JF, Fridrikson J, Brixius W, et al. Neural biomarkers for assessing the effects of different types of imagery in pictorial health warning labels on cigarette packaging. Public Health. 2014;4(12):e006411. DOI: 10.1136/bmjopen-2014-006411
45. O'Hegarty M, Pederson LL, Nelson DE, Mowery P, Gable JM, Wortley P. Reactions of young adult smokers to warning labels on cigarette packages. American Journal of Preventive Medicine. 2014;30(6):467-473.
46. Rousu MC, Marette S, Thrasher JF, Lusk JL. The economic value to smokers of graphic warning labels on cigarettes: Evidence from combining market and experimental auction data. Journal of Economic Behavior and Organization. 2014;108:123-134.

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