

ROLE OF PICTORIAL HEALTH WARNING LABELS (HWLs) IN CONTROLLING & PREVENTING TOBACCO HABITS – A SYSTEMATIC REVIEW



INTRODUCTION

Product packaging is a key part of making the product's use appealing; however, this is not the case for tobacco. The WHO Framework Convention on Tobacco Control (FCTC) calls for the implementation of large pictorial warnings on tobacco products.¹

Regulatory agencies can use tobacco product packaging to communicate tobacco's health risks to consumers because of the unparalleled reach of pictorial warnings among smokers.²

As pictorial health warning labels have proliferated globally, so has research on their impact and effectiveness.³ However, little attempt has been made to systematically review the role of pictorial health warning labels (HWLs) in controlling and prevention of tobacco habits.



AIM

To assess whether pictorial health warning labels (HWLs) are an effective strategy for tobacco control.

OBJECTIVES

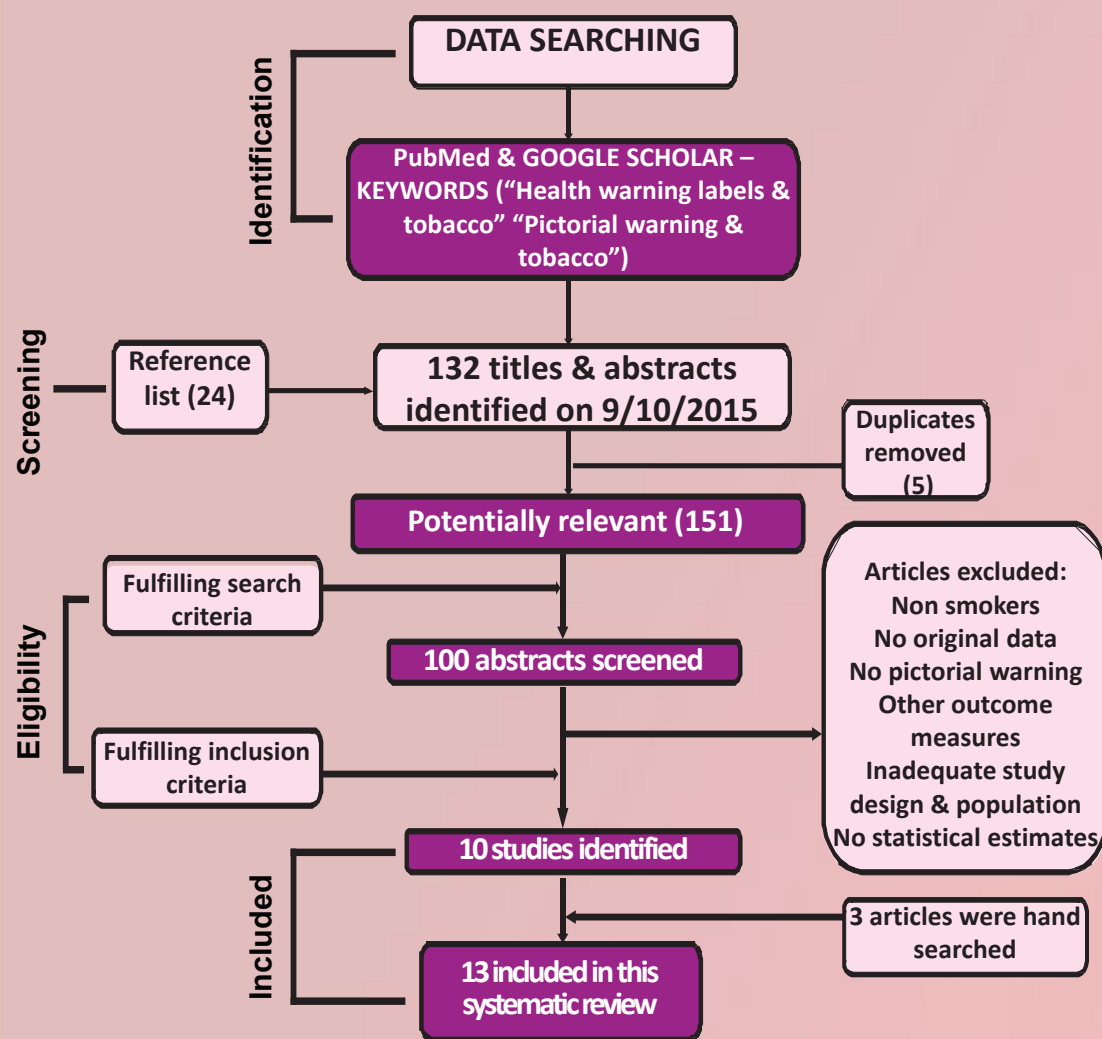
- To find out whether pictorial health warning labels (HWLs) increase knowledge regarding the health effects of tobacco.
- To find the effect of pictorial HWL on intentions to quit (evidence on controlling and prevention)
- To observe the impact of various HWL themes.

MATERIALS AND METHODS

- We used a comprehensive search strategy to locate studies relevant to this review. The search strategy involved 3 steps:
- First we searched electronic databases like PubMed, Google Scholar and the Cochrane Library with keywords like "health warning labels and tobacco" and "pictorial warning and tobacco" for articles published in English in the past 5 years.
- Second we examined the reference sections of 2 narrative reviews of cigarette packaging warnings.
- Third, we examined the reference lists of the final set of articles in our review.
- We included all reports that came up in our search, i.e. peer reviewed journal articles.

DATA COLLECTION & ANALYSIS

Three authors independently assessed all studies for inclusion criteria and for study quality. One author extracted the data, and 2 reviewers independently examined all the studies for relevance. During this process, we excluded the articles only if both reviewers independently determined that the article was irrelevant.



RESULTS

The 13 studies were conducted in 8 countries; most were conducted (3) in the USA followed by 2 each in Brazil, India, and Iran, and 1 each in Malaysia, Taiwan, Jordan and the UK. These studies were published between 2010 and 2015. Studies included smokers & young adults with ages ranging from 14 to 57 years. Study samples ranged from 20 - 1731. Studies used different warnings, ranging from text, existing images, newer images and different percentages of area covered on the cigarette package. More than 10 outcome measures were studied. We identified 4 outcome measures in at least 2 studies.

TABLE 1: Quality assessment of various studies included in the systematic review (2010-15)

Author, study area & period	study	Outcome Assessed	Study design	Outcome definition	Exposure definition	Study Population	Statistical analysis	Totalscore	Overall quality
Hawari FI et al., 2011, Jordan ⁴		A+B+C	1	1	0	1	1	4	poor
Bittencourt L et al., 2013, Brazil ⁵		A+B	1	2	2	2	1	8	good
Heydari GR et al., 2011, Iran ⁶		D+E	1	0	2	1	1	5	fair
Shojaezadeh D et al., 2014, Iran ⁷		G+H	1	2	2	2	1	8	good
Karinagannanavar A et al., 2011, India ⁸		A+C+G	1	1	2	2	1	7	good
Chang F 2010, Taiwan ⁹		C+H	2	2	2	1	1	8	good
Mallikarjun S et al., 2014, India ¹⁰		A+C	1	1	2	1	1	6	fair
Fathelrahman AI et al., 2010, Iran ¹¹		C+H	2	2	1	1	1	7	good
Jawad M et al., 2015, UK ¹²		G	1	0	2	0	1	4	poor
Volchan E et al., 2013, Brazil ¹³		F+J	2	0	0	1	1	4	poor
Meed EL et al., 2015, US ¹⁴		C	1	1	0	1	1	4	poor
Mays Det al., 2015, US ¹⁵		C	2	2	0	1	1	6	fair
Thrasher JF et al., 2011, US ¹⁶		J	2	0	2	2	1	7	good

Key for Table 1

OUTCOME ASSESSED A- Salience B- fear C- motivation to quit D- Decreased consumption E- Knowledge about implementation of new HWL F- Effectiveness G- Impact H- Awareness about health risk I- Behavioral response J- Type of HWL	STUDY DESIGN 1. Observational 2. Experimental OUTCOME DEFINITION 1. Salience/Motivation to quit as primary outcome measure 2. Salience/Motivation to quit as secondary outcome measure 0. any other outcome measure	STUDY POPULATION: 2 = adequate & representative 1 = adequate or representative 0 = neither adequate nor representative EXPOSURE DEFINITION 2. Appropriate 1. Appropriate intended for printing 0. inappropriate	STATISTICAL ANALYSIS 2 = pertinent & adjusted 1 = not pertinent or unadjusted 0 = not pertinent & unadjusted TOTAL SCORE 0-2=very poor 3-4=fair 5-6=good 7-8=poor
---	---	--	---

Table 2: Salience of HWLs & Motivation to Quit reported in various

Sr No	Author & Year	Total Sample Size	No. of smokers	No. of smokers who intended to quit smoking after exposure to HWLs(%)	No. of smokers who noticed HWLs(%)
1.	Hawari et al, 2011 ⁴	450	140	57.8(49.6-65.9)	62.8(54.8-70.8)
2.	Bittencourt et al, 2013 ⁵	265	265	68.7(63.1-74.2)	91.6(88.3-95.0)
3.	Heydari et al, 2011 ⁶	1731	1731	69.0(66.8-71.1)	---
4.	Shojaezadeh et al, 2014 ⁷	500	500	39.2(34.9-43.4)	---
5.	Karinagannanavar et al, 2011 ⁸	435	435	14.4(11.1-17.7)	72.5(68.9-76.0)
6.	Chang et al, 2010 ⁹	1094	151	60.9(53.2-68.7)	90.7(86.0-95.3)
7.	Mallikarjun et al, 2014 ¹⁰	263	263	79.4(74.0-83.9)	98(96.3-99.6)
8.	Fatherahman et al, 2010 ¹¹	174	140	41.4(32.8-49.1)	---
9.	Meade et al, 2015 ¹⁴	25	25	56.0(36.5-75.4)	---

DISCUSSION

- The methodological heterogeneity of the studies was so large that articles could seldom be compared with one another. The variability in terms of the exposure measurement, study design and population, statistical analysis and adjustments was also very large. Studies reported no clear-cut criteria for being smokers. Study quality was generally low with the majority not providing any association measures.
- This systematic review shows that evidence concerning the effect of pictorial HWLs on smoking behavior is inconclusive. Moreover, the transition of an intention to quit smoking into actual and sustained behavioral change as an outcome has not been assessed.
- Some studies assessed pictorial HWLs using cognitive measures and emotional reaction (i.e. fear, pleasantness, attraction etc.¹³) based on different natures of warnings, which showed mixed result; however, they were not comparable, making the findings questionable.^{4,9}
- Plain tobacco packaging are the future; but whether it will reduce the demand for smoking needs to be investigated.¹⁶
- It can be reported that HWLs are well noticed and motivate individuals to quit, but the actual quitting cannot be justified from this review. The use of industrial data could have been helpful in depicting the change in tobacco consumption following label implementation. Nevertheless these findings support that these variables can have a great impact on the behavior to change model.

CONCLUSION

Pictorial warning have a good salience and are also effective in motivating patients to quit; however, there are limited studies providing clear evidence on the prevention of tobacco habits. Future studies are required to assess the long term effects on smoking behaviour, reducing smoking initiation, the impact of social & cultural norms and health beliefs in relation to pictorial health warning labels.

REFERENCES

- Noar SM, Hall MG, Francis DB, Ribisl KM, Pepper JK, Brewer NT. Pictorial cigarette pack warnings: a meta-analysis of experimental studies. *Tob Control* 2015;0:1-14
- Centers for Disease Control and Prevention. Health warnings on tobacco products—worldwide, 2007. *Morb Mortal Wkly Rep* 2009;58:528-529
- Hammond D. Health warning messages on tobacco products :a review. *Tob Control* 2011;20:327-337
- Hawari FI, Bader RK, Beano MH, Obeidat NA, Ayub HS, Habashneh MA et al. Perceptions of young Jordanian adults to proposed anti-tobacco pictorial warning labels. *BMC Public Health*. 2011;11:414-418
- Bittencourt L, Person SD, Cruz RC, Scarinici IC. Pictorial health warnings on cigarette packs and the impact on women. *Rev Saude Publica* 2013;47(6):1123-1129
- Heydari GR, Ramezankhani A, Talischi F. The Impacts of Cigarette Packaging Pictorial Warning Labels on Smokers in the City of Tehran. *Tanaffos* 2011; 10(1):40-47
- Shojaezadeh D, Peyman N, Shakeri MT, Nedjat S, Hakkak AM, Taghdisi MH et al. Pictorial Health Warning Labels on Cigarette Packages: An Investigation on Opinions of Male Smokers. *Iran Red Crescent Med J*. 2014; 16(3):
- Karinagannanavar A, Raghavendra B, Hemagiri K, Goud TG. Awareness about Pictorial Warnings on Tobacco Products and its Impact on Tobacco Consumers in Bellary, India. *Asian Pacific J Cancer Prev* 2011; 12:2485-2489
- Chang F, Chung C, Yu P and Chao K. The impact of graphic cigarette warning labels and smoke-free law on health awareness and thoughts of quitting in Taiwan. *Health edu res*. 2011 (2):179-191
- Mallikarjun S, Rao A, Rajesh G, Shenoy R, Pai M. Role of Tobacco Warning Labels in Informing Smokers about Risks of Smoking among Bus Drivers in Mangalore, India. *Asian Pac J Cancer Prev*. 2014;15 (19): 8265-8270
- Fathelrahman AI, Omar M, Awang R, Cummings KM, Borland R and Samin ASBM. Impact of the New Malaysian Cigarette Pack Warnings on Smokers' Awareness of Health Risks and Interest in Quitting Smoking. *Int. J. Environ. Res. Public Health* 2010; 7:4089-4099
- Jawad M, Bakir A, Ali M, and Grant A. Impact of Waterpipe Tobacco Pack Health Warnings on Waterpipe Smoking Attitudes: A Qualitative Analysis among Regular Users in London. *BioMed Research International*. 2015;15:1-6
- Volchan E, David IA, Tavares G, Nascimento BM, Oliveira JM, Gleiser S et al. Implicit Motivational Impact of Pictorial Health Warning on Cigarette Packs. *Plos One*. 2013; 8(8):1-6
- Meade EL, Cohen JE, Kennedy CE, Gallo J and Latkin CA. The role of theory-driven graphic warning labels in motivation to quit: a qualitative study on perceptions from low-income, urban smokers *BMC Public Health*. 2015;15:92-103
- Mays D, Niaura RS, Evans WD, Hammond D, Luta G, Tercyak KP. Cigarette packaging and health warnings: the impact of plain packaging and message framing on young smokers. *Tob Control* 2015;24:e87-e92
- Thrasher JF, Rousuc MC, Hammond D, Navarro A, Corrigan JR. Estimating the impact of pictorial health warnings and "plain" cigarette packaging: Evidence from experimental auctions among adult smokers in the United States. *Health Policy* 2011;102 :41-48