

Effectiveness of pictorial health warning on cigarette packages: A cross-sectional study in Sarawak, Malaysia

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Abstract

Introduction: Specific health warning placed on the tobacco product packages is considered as an effective and low-cost method for increasing the knowledge and awareness among the community. Thus, a study was conducted to assess the perception of pictorial health warnings (PHWs) against smoking among the adult rural population of Sarawak.

Methods: Cross-sectional data were collected from 10 villages in Kota Samarahan and Kuching Division by face to face interview using modified Global Adult Tobacco Survey questionnaire. Non-probability sampling method was adopted to select the villages. All the households of the selected villages were visited and an adult member was selected randomly from each house irrespective of the sex. After missing value imputation, 1000 data were analysed using statistical software IBM SPSS 20.0 version.

Results: Analysis showed that 28.8% of the respondents were current smokers, 7.8% were past smokers and the rest were non-smokers. Six items of pictorial health warnings were evaluated with five point Likert's scales for attractiveness, fearfulness and adequacy of the information. Analysis revealed that the majority of the respondents had perceived awareness on PHWs, but the smokers believed that this was not adequate to make them quit smoking. Only one-fifth (19.7%) of them reported that current pictorial health warnings were sufficient to motivate people to quit smoking.

Conclusion: Though the PHWs on cigarette packages are appealing, it is not sufficient as a reason to stop smoking. Thus, an approach using an integrated anti-tobacco public health programme should be focused into the specific targeted community.

Introduction

Tobacco smoking epidemic is one of the biggest public health threats all over the world. Nearly 6 million people die each year due to tobacco-related diseases. More than 5 million of those deaths are the result of direct tobacco use while more than 600,000 are the result of non-smokers being exposed to second-hand smoke. Approximately one person dies every 6 seconds due to tobacco accounting for one in 10 adult deaths.¹ Nearly 80% of the more than 1 billion smokers worldwide live in low- and middle-income countries, where the burden of tobacco-related illnesses and death is heaviest.² The burden of smoking is partly due to the aggressive marketing strategies of multinational tobacco companies.³ The World Health Organization Framework Convention on Tobacco Control (WHO FCTC), the world first public health

legal binding international treaty was ratified on 27 February 2005 to counter the problem of "globalisation of the tobacco epidemic." It is an evidence-based treaty that reaffirms the right of all people to the highest standard of health. The main objective of the framework is "to protect present and future generations from the devastating health, social, environmental and economic consequences of tobacco consumption and exposure to tobacco smoke." This framework was ratified by 168 countries and consisted of certain standards that signatory countries are encouraged to implement.⁴ Malaysia is among the signatory countries of WHO FCTC and has been taking several measures against smoking. This included the enactment of the Control of Tobacco Product (Amendment) Regulation in 2008, whereby effective from 1 January 2009, every cigarette pack sold in Malaysia is required to be printed with Pictorial Health Warnings

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(PHWs). This initiative put Malaysia as the fourth country to implement the PHWs in the Association of Southeast Asian Nations (ASEAN) region, after Singapore, Thailand and Brunei.⁵ The PHWs serve to create cost-effective means to increase public awareness about the dangers of tobacco use. Currently, there are 42 countries that represent approximately 42% of world population making PHWs mandatory on cigarette packages (WHO, 2013).⁶ Since the implementation of the PHWs in 2009, there were limited studies done locally on the impact of the PHWs on the adult population, especially in the state of Sarawak. Evaluation of the impact of this would help the relevant authorities to improve and enhance this initiative to better serve its purpose to increase awareness on the danger of smoking and thus decreasing the prevalence of smoking in Malaysia. The objective of this study was to explore the perception on PHWs on cigarette packages among the people of Sarawak.

Methods***Study design and sampling procedure***

This was a cross-sectional study conducted in 10 different Kampung (villages), in two of the 11 divisions in Sarawak. Five Kampung (villages) from Kota Samarahan and Kampung (villages) from Kuching division were selected. A non-probability sampling technique was adopted to select the Kampung. All of the households of the Kampung were visited. One respondent aged 18 years or more was selected randomly irrespective of sex from each household. Respondents who did not consent or unwilling to participate; age below 18 years, persons incapable of answering the questionnaires and those visiting the state were excluded from the study. A total of 1000 data from 10 Kampung were finally analysed. Detailed procedure has been described elsewhere.⁷

Instrument development and data collection procedure

A modified data collection instrument was developed based on Global Adult Tobacco Survey (GATS)⁸ and other relevant additional instruments were also consulted. A pre-tested questionnaire was done in a non-sample area utilising the Malay language translated questionnaire. Data were collected using face to face interview by Doctor of Public Health (DrPH) first year students using an interviewer administered questionnaire. A semi-structured questionnaire was developed consisting of several parts, such as socio-demographic characteristics, tobacco use, behaviour and its patterns and also its related issues of PHWs. Respondents were asked whether they have ever seen any health warning on cigarette packs (yes/no) and then asked what type of health warnings. Six sets of health warnings were evaluated (Figure 1) viz. "Smoking can cause lung cancer", "Smoking can cause premature birth", "Smoking can cause gangrene", "Smoking can cause neck cancer", "Smoking can cause mouth cancer" and "Smoking can cause miscarriage. The PHWs in the cigarette packets were evaluated in terms of attractiveness, fearfulness and adequacy of information. Based on "Control of Tobacco Product (Amendment) Regulations, Malaysia, 2008, the six items of PHWs were evaluated with five point Likert's scales. Pre-testing of the questionnaire was done in a non-sample area. A minor change of questionnaire was made after pre-testing. The study proposal was approved by the Technical Review Committee of the Faculty of Medicine and Health Science (FMHS) and Research and Innovation Management Centre (RIMC), Universiti Malaysia Sarawak (UNIMAS). Ethical clearance was also taken from the Ethics committee of the Faculty of Medicine and Health Sciences, UNIMAS.

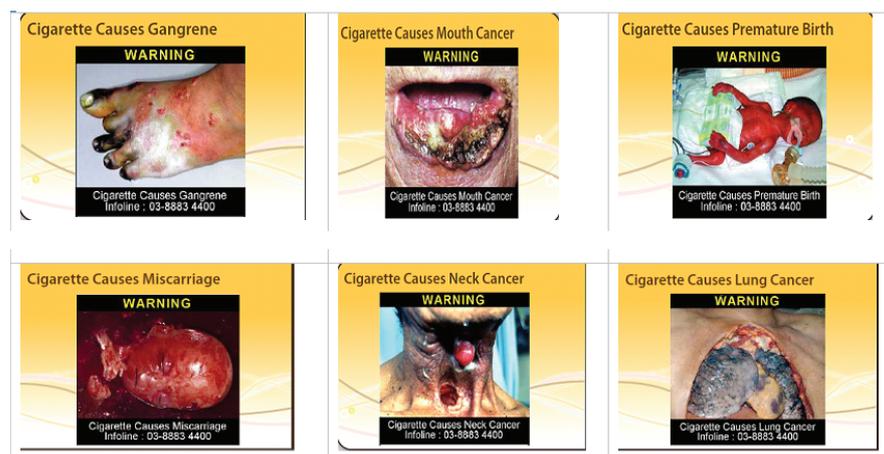


Figure 1. Pictorial health warning on the cigarette packages

Data processing and analysis

Data were entered manually and cross-checking was done using IBM SPSS Software 20.0 version.⁹ After validation, descriptive statistics were presented to summarize participants' socio-demographic characteristics, pattern and frequency of smoking. Missing data were carefully examined and were imputed. However, important variable, such as smoking history, if not collected was not included in the final data analysis.

Results

Socio-demographic characteristics of the respondents

Details of socio-demographic characteristics of the respondents are presented in Table 1. More than half (52%) of the respondents were men and the rest were women. Approximately two-fifth (41.1%) of the respondents had higher secondary and above education followed by

primary level of education (27%). The majority of the respondents were Malays (91.5%) and Muslims (92.2%). The mean family size was 5.37 with standard deviation 2.1. Three fourths (74.8%) respondents were married. One-third of the respondents were engaged in any gainful job, such as in service sectors (24%) and 10.2% of respondents were businessmen. However, 65.8% were engaged in different types of job, such as housewife, students, self-employed and others. To determine the socio-economic status, number of living room was used as proxy variables. The mean number of living room was 2.99 and one-third of the respondents had 1–2 living rooms (32.9%) and less than one-third had more than 4 living rooms (28.7%). Analysis showed that 28.8% of the respondents were current smokers, 7.8% were past smokers and the rest were non-smokers (Table not shown). The mean age of smokers was 40.09 years with standard deviations of 17.2 years.

Table 1. Socio-demographic characteristics of the respondents ($n = 1000$)

Characteristics	Frequency	%	95% CI	
			Lower bound	Upper bound
<i>Age in years</i>				
<20	124	12.4	10.4	14.4
20–29	206	20.6	18.1	23.1
30–39	206	20.6	18.1	23.1
40–49	187	18.7	16.4	21.1
50–59	123	12.3	10.3	14.4
≥60	154	15.4	13.1	17.7
Mean (SD)	4.01(17.2)		39.05	41.19
<i>Genders</i>				
Male	520	52.0	48.9	55.1
Female	480	48.0	44.9	51.1
<i>Level of education</i>				
No formal education	169	16.9	14.6	19.2
Primary	270	27.0	24.3	29.8
Secondary	150	15.0	12.9	17.2
Higher secondary and above	411	41.1	38.1	44.2
<i>Religion</i>				
Muslim	992	92.2	90.5	93.8
Non-Muslim	78	7.8	6.2	9.5
<i>Ethnicity</i>				
Malay	915	91.5	89.7	93.2
Chinese	85	8.5	6.8	10.3
<i>Family Size</i>				
<5	366	36.6	33.6	39.6
≥5	634	63.4	60.4	66.4
	5.37 (2.1)		5.23	5.51

Table 1. Socio-demographic characteristics of the respondents ($n = 1000$) (Continued)

Characteristics	Frequency	%	95% CI	
			Lower bound	Upper bound
<i>Marital status</i>				
Unmarried	252	25.2	22.5	27.9
Married	748	74.8	72.1	77.5
<i>Nature of work</i>				
Service	240	24.0	21.4	26.7
Business	102	10.2	8.4	12.1
Others	658	65.8	62.9	68.6
<i>No. of rooms</i>				
1-2	329	32.9	30.1	35.8
3	384	38.4	35.4	41.4
≥4	287	28.7	25.9	31.4
Mean (SD)	2.99 (1.1)		2.90	3.06

Pattern of health warnings on cigarette packages

One-fifth (19.4%) of respondents reportedly mentioned that they did not see any health warnings. Figure 2 shows the percentage distribution of the responses on PHWs. Highest percentages reported that smoking causes lung cancer (43.2%) followed by smoking causes prematurity (40.9%), smoking causes gangrene (37.9%) and smoking causes miscarriage (32.7%) and the rest were non-smokers (Table not shown). The mean age of smokers was 40.09 years with standard deviations of 17.2 years.

Respondent's reactions to pictorial health warning labels

Table 2 shows the adult reactions towards the PHWs. Analysis revealed that the majority of the respondents were optimistic about the attractiveness of the warning (varies from 84% to 89%). However, very few reported that the PHWs were not attractive. Similar results were also found in terms of fearfulness, which varies from 78% to 85%. Regarding the adequacy of the PHWs, 77% to 86% of the respondents had positive reactions towards knowledge of health effects of smoking.

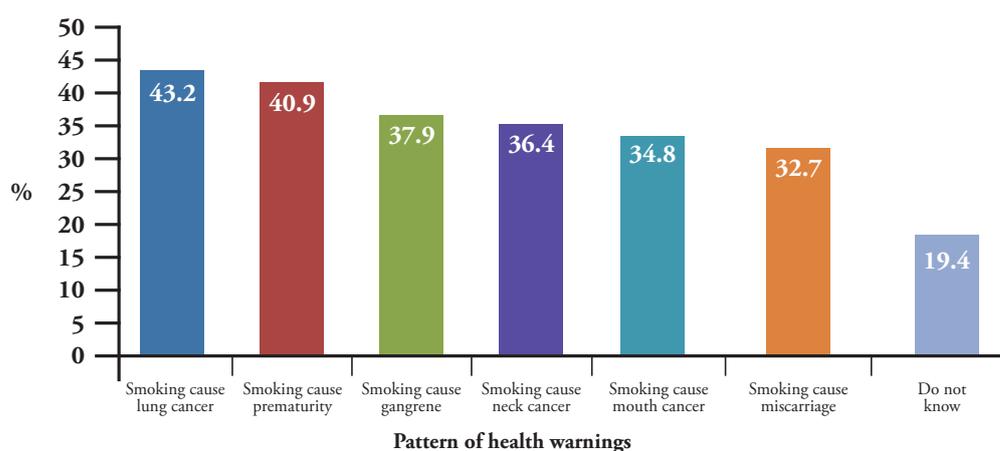
Figure 2. Multiple responses to pattern of health warnings

Table 2. Percentage distribution of respondents reactions towards PHWs ($n = 1000$)

Propositions	Smoking causes					
	Premature birth	Miscarriage	Mouth cancer	Gangrene	Neck cancer	Lung cancer
<i>Attract attention</i>						
Do not attract	5.1	5.8	4.4	5.0	4.4	4.4
Less attract	1.0	0.9	0.6	1.9	1.6	1.0
Moderately attract	7.6	7.9	5.1	8.9	7.4	5.7
Attractive	12.2	15.5	14.0	11.5	7.0	11.6
Very attractive	74.1	69.9	75.9	72.7	79.6	77.3
Mean score (SD)	4.46 (1.0)	4.43 (1.1)	4.56 (1.0)	4.45 (1.1)	4.56 (1.0)	4.56 (1.0)
<i>Scariness</i>						
Not scared at all	6.2	6.1	4.8	5.8	4.8	4.9
Less scared	5.4	4.4	3.0	5.8	2.0	3.0
Moderately scared	9.1	8.5	8.7	10.7	8.0	7.7
Scared	8.7	8.4	7.9	7.8	12.8	7.8
Very scared	70.6	72.6	75.6	69.9	72.4	76.6
Mean score (SD)	4.32 (1.2)	4.37 (1.2)	4.47 (1.1)	4.30 (1.2)	4.46 (1.1)	4.48 (1.1)
<i>Sufficient in information</i>						
Not informative at all	8.1	7.4	6.5	6.7	6.8	7.5
Less informative	3.7	3.5	4.3	4.4	3.2	2.2
Moderately informative	10.9	7.7	8.7	6.9	4.0	9.0
Informative	10.2	13.4	10.0	13.1	13.4	11.7
Very informative	67.1	68.0	70.5	68.9	72.6	69.6
Mean score (SD)	4.25 (1.3)	4.31 (1.2)	4.34 (1.2)	4.33 (1.2)	4.42 (1.2)	4.34 (1.2)

Table 3. Opinion on pictorial health warnings on cigarette packages

Opinion	Frequency	%	95% CI	
			Lower bound	Upper bound
<i>Whether health warning enough to motivate people to stop smoking (n = 1000)</i>				
Yes	197	19.7	17.3	22.1
No	638	63.8	60.9	66.8
Not Sure	165	16.5	14.2	18.7
<i>Intention to quit smoking in the next 12 months (n = 288, smokers)</i>				
Yes	90	31.3	25.7	36.5
No	196	68.1	62.8	73.5
Not Sure	2	0.7	0.0	1.7
<i>Attempted to quit smoking in last 12 months (n = 288, smokers)</i>				
Yes	100	34.7	29.2	39.9
No	188	65.3	60.1	70.8
<i>Confident to remain a non-smoker after seeing health warnings (n = 625, never smokers)</i>				
Yes	522	83.5	80.6	86.3
No	50	8.0	6.0	10.2
Not sure	53	8.5	6.4	10.8

Opinion on pictorial health warning labels

Both smokers ($n = 288$, 28.8%) and non-smokers ($n = 712$, 71.2%) were asked whether the “health warnings were enough to encourage people to stop smoking”. One-fifth (19.7%) of the respondents were of the opinion that the current PHWs were not adequate to encourage people not to smoke, and another 16.5% were not sure about the PHWs. Smokers were asked whether they had any intention to quit in the next 12 months. Less than one-third (31.3%) of them reported that they had intention to quit smoking in the next 12 months and among them, 34.7% attempted to quit smoking. On the contrary, the never-smokers ($n = 625$) were asked whether they are confident to refrain themselves from starting smoking after seeing these health warnings. Four fifths (83.5%) were confident to remain non-smokers. However, 8% of them were not confident to remain as a non-smoker.

Discussion

The graphic health warnings on tobacco packages are an easy, inexpensive way to communicate the truth about tobacco consumption in the general population. The warnings increase awareness about the risks of tobacco use. PHWs are considered as potential methods in multilingual societies to communicate the risks of tobacco use to consumers. It should be eye catching, informative and economically feasible.^{10,11} Extensive research in Canada suggests that large pictorial display (more than 50%) and strongly worded health warnings, supported by emotionally strong graphics, are highly effective in tobacco control.^{12,13} Our study found that approximately one-fifth of the respondents did not ever see any PHWs on cigarette packs. More than four fifths of the respondents (both smokers and non-smokers) had identified that the PHWs were not enough to motivate smokers to quit smoking. However, approximately 31.3% of smokers described their intention to quit after seeing the PHWs, while 83.5% of non-smokers described their willingness to remain non-smoker after seeing the PHWs. These findings clearly depicted that the more prominent and direct health warning are, the more effective it would be to cause any change in perception and behaviour.¹⁰ The PHWs on cigarette packages had an impact on both smokers and non-smokers, but the pictures need to

be improved and refined to create better awareness regarding the dangers of smoking. Our study found a conflicting result about the PHWs as 84% to 89% of the respondents had a positive opinion about the attractiveness of the pictures. Very few respondents opined that the PHWs were not attractive. Similar results were also found in terms of scariness of the picture and sufficiency of information that had positive reactions towards knowledge of health effects of smoking. Our data showed that only one fourths of the respondents had intention to quit smoking in next 12 months. Viewing the pictorial warning had little impact on the desire to quit smoking. Kishore et al. (2013)¹⁴ analysed the multi-country GATS data from Bangladesh, India and Thailand revealed that majority (more than two fifths) of the smokers were either unable to quit or unwilling to quit despite of awareness about smoking hazards. On the contrary, some previous studies concluded that warning labels made them not only think about the health risks of smoking but also made them think about quitting smoking.^{15,16} This was also consistent with Ukraine Global Adult Tobacco Survey (WHO, 2010).¹⁷ Another study in Malaysia found that warning labels have a relationship with quitting interest that is the warnings labels has stimulatory thoughts about quitting smoking.¹⁸ This could be as a result of their nicotine dependence clouding their judgment. The Surgeon General Report (2012) concluded that there is a strong causal relationship between smoking and addiction to nicotine.¹⁹ Another reason for not quitting could be that smoking is considered as part of their routine life as smokers had the common perception that it gave them an opportunity to relax, make friends, helps in work productivity, and others. Thus the “routine” perception of smoking was another reason for poor or no attempt to quit smoking.²⁰ Previous studies reported that though the large number of smokers desire to quit smoking, but only very few of them are successful.²¹ Haddad and Petro-Nustas (2006)²² opined that quitting smoking is a complex process and depends on physiological, psychological, environmental, and social factors. Nicotine content in tobacco is highly addictive.²³ Smoking tobacco causes rapid distribution of nicotine to the brain. With the long continued use, the nicotine receptor might be sensitised and withdrawal of nicotine leads observable physical abstinence syndrome.²⁴

The key limitation of this study concerns the use of a convenience sample, which may not be representative of the Sarawak population. Only two divisions were purposively selected for data collection and most of the population were Malays. Hence, the perceptions of pictorial warnings among the diverse racial groups living in Sarawak were not evaluated. Another limitation of this study was that, only descriptive evaluation of the graphic health warnings was done depending on respondents' self-reported information, which might not be reflective of their educational background.

Our findings suggest that the Malaysian PHW labels are not very effective for certain target population. The warning labels do not effectively increase the desire to quit, especially among the smokers. However, it may deter non-smokers and early smokers from smoking. Although the temporal association

between PHWs and quitting smoking was not established due to cross-sectional study design, the findings indicated that warning labels should be beneficial to the population if the graphic displays could be made more noticeable, readable, believable and memorable in line with the WHO FCTC. This may be a key element in reducing the attractiveness of smoking, especially among young adults and teenagers and it should be part of a larger public health education effort.

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References

- World Health Organization. WHO report on the global tobacco epidemic, 2013: Enforcing bans on tobacco advertising, promotion and sponsorship. 2003.
- World Health Organization, media centre: Tobacco, fact sheet N 339. Available at: <http://www.who.int/mediacentre/factsheets/fs339/en/index.html>. Accessed October 12, 2015.
- Action on smoking and health (ASH): ASH fact sheet on: Tobacco and the developing world. Available at: www.ash.org.uk. Accessed March 4, 2014.
- World Health Organization. WHO framework convention on tobacco control. Geneva, Switzerland, WHO. 2005.
- Southeast Asia Tobacco Control Alliance. Implementing pictorial health warning in Malaysia: challenges and lessons learned. 2010.
- World Health Organization. Tobacco free initiative. WHO FCTC health warning database. Available at: <http://www.who.int/tobacco/healthwarnings/database/en/index.html>. Accessed January 19, 2013.
- Rahman MM, Arif MT, Razak MFA, et al. Does menthol-brand cigarette initiate early smoking? Evidence from a cross-sectional study in Sarawak, Malaysia. *Inan J Publ Health*. 2014;43(3):385–86.
- World Health Organization (WHO), Country Office for Bangladesh. Global adult tobacco survey: Bangladesh Report, 2009.
- IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp. 2011.
- Karibasappa GN, Nagesh L, Usha GV, et al. Assessment of awareness about pictorial warnings on tobacco products among 15 years and above age in Davangere city, Karnataka, India: A cross-sectional survey. *Indian J Stomatol*. 2011;2(4):227–32.
- Hammond D, Fong GT, Borland R, et al. Text and graphic warnings on cigarette packages findings from the international tobacco control four country study. *Am J Prev Med*. 2007;32(3):202–9.
- Environics Research Group. Qualitative (focus group) report regarding health warning labels and images on cigarette packages. Ottawa: Health Canada, Office of Tobacco Control; 1999.
- Shanahan P, Elliott. Evaluation of the health warnings and of Health and explanatory health messages on tobacco products. Department of Health and Aged Care, Canberra: Commonwealth of Australia; 2000.
- Kishore J, Jena PK, Bandyopadhyay C, et al. Hardcore smoking in three south-east Asian countries: Results from the global adult tobacco survey. *Asian Pac J Cancer Prev*. 2013;14:625–30.
- Hammond D, Fong GT, McNeill A, et al. Effectiveness of cigarette warning labels in informing smokers about the risks of smoking: findings from the international tobacco control (ITC) four country survey. *Tobacco Control*. 2006;15:19–25.
- Raute LJ, Pednekar MS, Gupta PC. Pictorial health warnings on cigarette packs: A population based study findings from India. *Tobacco Use Insights*. 2009;2:11–6.
- World Health Organization. Ukraine Global Adult Tobacco Survey (GATS), 2010. Available at: http://www.who.int/tobacco/surveillance/en_rfi_gats_ukraine_report_2010.pdf. Accessed September 19, 2015.

18. Fathelrahman AI, Maizurah O, Rahmat A, et al. Smokers' responses toward cigarette pack warning labels in predicting quit intention, stage of change, and self-efficacy. *Nicotine Tob Res.* 2009;11(3):248–53.
19. U.S. Department of Health and Human Services. Preventing tobacco use among youth and young adults: A report of the surgeon general. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2012. Available at: <http://www.surgeongeneral.gov/library/reports/preventing-youth-tobacco-use/full-report.pdf>. Accessed August 20, 2015.
20. Bryant CW. Why is it so hard to quit smoking? Available at: <http://health.howstuffworks.com/wellness/smoking-cessation/hard-to-quit-smoking3.htm>. Accessed August 20, 2015.
21. Rigotti NA. Treatment of tobacco use and dependence. *New Engl J Med.* 2002;346:506–12.
22. Haddad, L.G, Wasileh Petro-Nustas. Predictors of intention to quit smoking among Jordanian University students. *Can J Public Health.* 2006;97(1):9–13.
23. U.S. Department of Health and Human Services. The health consequences of smoking: nicotine addiction. a report of the surgeon general. Atlanta (GA): U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 1988. DHHS Publication No. (CDC) 88–8406.
24. Rasmussen N. Maurice Seavers, the stimulants and the political economy of addiction in American biomedicine. *BioSocieties.* 2009;5:105–23.