

Short Research Article

A test purchasing plan for the sale of cigarettes in southern Taiwan

ABSTRACT

Introduction: Statistics revealed that the percentage of convenience stores, supermarkets, betel nut stalls, and grocery shops that illegally sold tobacco products to minors is high in Taiwan. It is critical to prevent tobacco hazards to minors. The aim of the study is to estimate of the illegal sale of cigarettes to minors among retailers in southern Taiwan.

Methodology: A cross-sectional design was used in this study. The survey testers were university students older than 18 years and attired in senior high school uniforms to disguise themselves as senior high school students. They were assigned to test whether tobacco retailers confirmed customers' ages before selling tobacco products. The survey investigations were conducted from March 2015 to August 2015.

Results: The investigation covered 327 retailers, comprising 98 convenience stores, 115 grocery shops, and 114 betel nut stalls. The results revealed that among the 327 retailers, 239 (73.1%) failed to confirm that the buyer was at least 18 years of age before allowing the purchase. Age confirmation before tobacco sale was less frequent in urban areas compared with coastal regions and mountain regions ($F = 8.372, P < .01$).

Conclusion:

This study proposes establishing self-management strategies for compliant and noncompliant retailers to prevent illegal sale of tobacco products to minors.

Keywords: Tobacco hazards, disease prevention, teenage, smoke free, health promotion.

1. INTRODUCTION

"Tobacco use continues to be the leading global cause of preventable death. It kills nearly 6 million people and causes hundreds of billions of dollars of economic damage worldwide each year. If current trends continue, by 2030 tobacco will kill more than 8 million people worldwide each year, with 80% of these premature deaths among people" [1]. Tobacco use is one of the major risk factors of chronic diseases, including cancer, lung diseases, and cardiovascular diseases [1]. Physical harmful effects of smoking are significantly higher than the smokeless tobacco [2]. According to Taiwanese research results, over eighteen thousand people have died each year because of smoking-related diseases, and the annual medical costs of treating such diseases have exceeded NT\$16.5 billion, incurring a total economic loss of over NT\$50 billion [3].

19 Tobacco use begins for a majority of smokers during adolescence and high percentage of
20 illegal sale of cigarettes to minors have shown in Taiwan. According to the Taiwan Youth
21 Tobacco Survey, 45.7% of junior high school smokers were able to purchase cigarettes
22 directly and 52.8% were not stopped from purchasing cigarettes indirectly; 75.8% of senior
23 high school smokers were able to purchase cigarettes directly and 67.9% were not stopped
24 from purchasing cigarettes indirectly [4]. The Chinese Taipei Consumers' Foundation
25 conducted on-site inspections of 660 tobacco product retailers in 22 counties and cities in
26 2013 to assess cigarette sale to minors. Statistics revealed that the percentage of convenience
27 stores, supermarkets, betel nut stalls, and grocery shops that illegally sold tobacco products to
28 minors was 52.6%, among which the violation percentage by convenience stores was 38.8%
29 and that by grocery shops and betel nut stalls was 59.3% and 69.1%, respectively [5],
30 indicating a severe problem of illegal tobacco sale to minors.

31 In an effort to deter minors from initiating and sustaining tobacco use, most countries
32 have enacted laws that restrict the sale of tobacco to minors. A number of countries have
33 legislation restricting tobacco advertising, and regulating who can buy and use tobacco
34 products, and where people can smoke [6]. Tobacco product retailers were required to cover
35 up tobacco products to protect children from exposure in the UK [7]. Article 12, 13, and 14 of
36 the Tobacco Hazards Prevention Act of Taiwan stipulates that persons under the age of
37 eighteen shall not smoke, the parents, guardians or other people actually in charge of the care
38 of persons under the age of eighteen shall forbid the said persons to smoke, and no person
39 shall provide tobacco products to persons under the age of 18 [8].

40 The Health Promotion Administration, Ministry of Health and Welfare of Taiwan (2014)
41 has applied multimedia teaching materials in the "Stop, Observe, and Listen" Manual to
42 remind tobacco product retailers of regulations prohibiting the sale of cigarettes to minors.
43 Stop refers to "Stopping the illegal sale of tobacco products to minors under the age of 18."

44 Observe refers to “Observing that the customer may be under the age of 18. If in doubt,
45 retailers should request identification”. Listen refers to the fact that “Retailers should inform
46 customers of the regulations and advise customers to abide by them” [9]. The Manual and
47 supporting pamphlets were designed to promote the tobacco hazard prevention policy, “No
48 person shall provide tobacco products to persons under the age of eighteen,” and reduce the
49 number of retailers violating the regulations on sale of tobacco products to minors. This study
50 aimed to estimate of the illegal sale of cigarettes to minors among retailers in the counties and
51 cities of southern Taiwan.

52 2. METHODOLOGY

53 In an effort to promote greater awareness of the problem of youth tobacco use and access,
54 this study presents estimates of the illegal sale of cigarettes to minors in southern Taiwan. A
55 cross-sectional design was applied in this study. Thirteen survey testers included 6 male and
56 7 female nursing school students were older than 18 years and attired in senior high school
57 uniforms to disguise themselves as senior high school students. The formal tobacco hazard
58 prevention sessions were held twice a week for one month for survey testers. They were
59 assigned to purchase tobacco products from tobacco retailers in the counties and cities of
60 southern Taiwan. The testers assessed whether the retailers took the initiative to confirm
61 customers’ ages before selling tobacco products. The survey investigations included 18
62 counties and cities in southern Taiwan and were conducted from March to August 2015.

63 Descriptive statistics and statistical inference were used in this study. The significance
64 level was set at $p < 0.05$. All analyses were performed using SPSS software (version 18).

65 3. RESULTS

66 The investigation covered 327 retailers, comprising 98 convenience stores, 115 grocery
67 shops, and 114 betel nut stalls. The results indicated that among the 327 retailers, 239
68 (73.0%) retailers failed to confirm that the buyer was at least 18 years of age before allowing

purchase. The convenience stores, betel nut stalls, and grocery shops that failed to confirm that the customer was at least 18 years of age before allowing purchase of tobacco products significantly differed ($P < 0.001$)(Table 1), with grocery shops having the highest rate of failing to confirm customers' ages before tobacco sale (27.2%)(Table 1). The results of a comparison among retailers in mountain regions, coastal regions, and urban areas indicated that retailers in the mountain regions were the least likely to confirm customers' age before tobacco sale ($F = 8.372$, $P < .01$) (Table 2).

Table 1 Failing to confirm customers' ages before tobacco sale (N=327)

Retailers	failing to confirm customers' ages before tobacco sale		<i>p</i>
	Yes	No	
Convenience stores	74(22.6%)	24(7.3%)	0.001***
Betel nut stalls	76(23.2%)	38(11.6%)	
Grocery shops	89(27.2%)	26(8.1%)	

* $P < .05$; ** $P < .01$; *** $P < .001$

Table 2 Confirm customers' age before tobacco sale (N=327)

Regions	Confirm customers' age before tobacco sale	N (%)	F	<i>P</i>	Scheffe
Mountain regions	Yes	71(21.7%)	8.372	0.004**	urban areas > mountain regions, coastal regions
	No	60(18.3%)			
Coastal regions	Yes	74(22.6%)			
	No	24(7.4%)			
Urban areas	Yes	94(28.8%)			
	No	4(1.2%)			

* $P < .05$; ** $P < .01$; *** $P < .001$

Significant differences were observed in the number of displayed posters that warned against illegal sale of tobacco products to minors among retailers in the mountain regions, coastal regions, and urban areas ($P < .01$). Among the 327 retailers, 296 (90.5%) abided by government regulations in displaying posters warning against illegal sale of tobacco products to minors. The retailers in the mountain regions showed the highest compliance with the law regarding displaying warning posters (38.8%) (Table 3). The convenience stores, betel nut

stalls, and grocery shops that complied with regulations significantly differed in the rate of displaying warning posters ($P < .01$) (Table 4), with the convenience stores showing the highest compliance (30.0%) and grocery shops showing the least compliance (24.5%) (Table 4).

Table 3 Displaying posters warning against illegal sale of tobacco products to minors (N=327)

	Displaying posters warning against illegal sale of tobacco products to minors		<i>p</i>
	Yes	No	
Mountain regions	127(38.8%)	4(1.2%)	0.006**
Coastal regions	80(24.5%)	18(5.5%)	
Urban areas	89(27.2%)	9(2.8%)	

* $P < .05$; ** $P < .01$; *** $P < .001$

Table 4 Complied with regulations to display warning posters (N=327)

Retailers	Complied with regulations to display warning posters		<i>p</i>
	Yes	No	
Convenience stores	98(30.0%)	0(0%)	0.01**
Betel nut stalls	95(29.1%)	19(5.8%)	
Grocery shops	80(24.5 %)	35(10.6%)	

* $P < .05$; ** $P < .01$; *** $P < .001$

4. DISCUSSION

The study results indicated that the number of stores that sold tobacco products to students in uniform without age confirmation in counties and cities in southern Taiwan (73.0%) was higher than those in the counties and cities in eastern Taiwan (44 of 118 retailers, 37.3%) [10] and northern Taiwan (36 of 120, 30.0%)[11]. The investigation results revealed that grocery shops demonstrated the highest rate of failing to confirm customers' ages before tobacco sale and the least compliance in displaying posters warning against illegal sale of tobacco products to minors. This study proposes increasing the frequency of inspections by tobacco product retailers and placing the retailers that illegally sell tobacco products to minors under supervision and guidance. Self-management strategies should be established and incentive measures should be instituted for compliant retailers. For noncompliant retailers under supervision, heavier penalties should be exacted. Tobacco

hazard counseling services should also be established, supervised, and managed by counties and cities, and should include an informant hotline and public feedback webpage.

Based on literature review, minors demonstrated very low levels of knowledge about tobacco products and health threats associated with tobacco products may influence their smoking behaviors [12]. Tobacco hazard prevention policies, diverse pamphlet promotions, and health education promotions have been effective in reducing the smoking rates of the youth population [13] [14] [15] and multimedia educational programs improve physiological health status and reduce smoking for younger smokers in Taiwan [16]. Meanwhile, health providers need to design multimedia education to assist younger smokers to acquire information about the risks associated with tobacco use and ensure their health status [17].

Efforts to develop a healthy, smoke-free environment can also be increased by displaying antismoking signs and creating smoke-free campuses and smoke-free communities. Community administrative departments and retailers should cooperate in promoting antismoking campaigns and form a “caring store network” to prevent tobacco sale to minors.

5. CONCLUSION

This study proposes establishing self-management strategies for compliant and noncompliant retailers to prevent illegal sale of tobacco products to minors. This study, together with the international body evidence, suggests that smoke-free multimedia pamphlets and advertisements are effective in tobacco hazard prevention. Furthermore, antismoking campaigns, community resource use, and training of volunteers, such as parents, students, and community retailers, in tobacco hazard prevention education should be organized to form a smoke-free home and community environment. Health care providers play critical roles in counseling minors and their patients for tobacco cessation. Further research and education about the tobacco hazard risks are critical to reducing excess tobacco-related mortality.

ETHICAL APPROVAL

All authors hereby declare that this study was performed in accordance with the ethical standards and approved by Chiayi County Health Bureau in Taiwan.

Acknowledgments

This study was supported by a grant from Chiayi County Health Bureau in Taiwan. The authors wish to express appreciation for this grant.

REFERENCES

- 1 World Health Organization (2011). MPOWER policies. *WHO report on the global tobacco epidemic, 2011*, p.1-164. [cited 2016 May 31] Available: <http://www.who.int/publications/list/9789240687813/zh/>
- 2 Malhotra, S., Kakkar, N., Ghosh, A. & Khan, I. (2016). Smoking and smokeless tobacco use in children & adolescents: clinical profile and comparison. *Journal of Indian Association Child Adolescent Mental Health*, 12(2), 121-142.
- 3 Department of Health and Executive Yuan (2007). Tobacco control in Taiwan. [cited 2015 September 12] Available: <http://tobacco.hpa.gov.tw/Upload/FTB/UpFiles/2004%E5%8F%B0%E7%81%A3%E8%8F%B8%E5%AE%B3%E9%98%B2%E5%88%B6%E5%B9%B4%E5%A0%B1.pdf>
- 4 Ministry of Health and Welfare (2014). Global youth tobacco survey. [cited 2015 August 12] Available: <http://tobacco.hpa.gov.tw/Show.aspx?MenuId=582>
- 5 Ministry of Health and Welfare (2013). Tobacco control weekly express, 30th August 1st, 2013. [cited 2015 August 12] Available: <https://health99.hpa.gov.tw/box2/smokefreelife/cessationDetail.aspx?IDNo=851>
- 6 World Health Organization (2016). World health statistics. p.1-136. [cited 2016 May 31] Available: http://www.who.int/publications/list/9789241565264_eng/zh/

- 158 7 Eadie, D., et al., (2016). Are retail outlets complying with national legislation to protect
159 children from exposure to tobacco displays at point of sale? Results from the first
160 compliance study in the UK. *PLoS ONE*, 11(3), 1-11.
- 161 8 Ministry of Health and Welfare (2009). Tobacco hazards prevention act. [cited 2016 May
162 31] Available: <http://tobacco.hpa.gov.tw/Show.aspx?MenuId=544>
- 163 9 Ministry of Health and Welfare (2014). “Stop, Observe, and Listen” in tobacco sales-
164 protect youths from tobacco hazards. [cited 2015 August 12] Available:
165 <http://www.mohw.gov.tw/news/531450067>
- 166 10 Public Health Bureau, Yilan County (2014). Penalty policy against tobacco sales to
167 youths under 18. [cited 2015 August 22] Available:
168 <http://www.ilshb.gov.tw/index.php?catid=23&cid=4&id=2274&action=view>
- 169 11 Chi, B.Y. (2014). 34% retailers without age confirmation and sale tobacco products to
170 teenagers. [cited 2015 October 22] Available:
171 http://www.24drs.com/Daily/article.asp?x_no=9282&page=1
- 172 12 VanDevanter, N., Zhou, S., Katigbak, C., Naegle, M., Sherman, S. & Weitzman, M.
173 (2016). Knowledge, beliefs, behaviors, and social norms related to use of alternative
174 tobacco products among undergraduate and graduate nursing students in an urban U.S.
175 university setting. *Journal of Nursing Scholarship*, 48(2), 147–153.
- 176 13 Perez, D. A., Grunseit, A., Rissel, C., Kite, J., Cotter, T., Dunlop, S., & Bauman, A.
177 (2012). Tobacco promotion below-the- line: exposure among adolescents and young
178 adults in NSW, Australia. *BMC Public Health*, 12, 429.
- 179 14 Schillo, B. A., Mowery, A., Greenseid, L. O., Luxenberg, M. G., Zieffler, A.,
180 Christenson, M., & Boyle, R. G. (2011). The relation between media promotions and
181 service volume for a statewide tobacco quit line and web-based cessation program. *BMC*
182 *Public Health*, 11: 939.

- 183 15 Willemsen, M. C. & De Zwart, W. M. (1999). The effectiveness of policy and health
184 education strategies for reducing adolescent smoking: a review of the evidence. *Journal*
185 *of Adolescence*, 22, 587-599.
- 186 16 Yen, M. L., Wang, P. L., Lin, J. G. & Chung, M. L. (2014). The effects and measures of
187 auricular acupressure and intensive multimedia for smoking cessation in college students.
188 *Evidence-based Complementary & Alternative Medicine*, 2014, 1-6.
- 189 17 Cooper, T.V., Cabriaes, J. A., Hernandez, N. & Law, J. (2016). A baseline assessment of
190 attitudes toward tobacco free campus policies in a U.S./Mexico border university.
191 *Addictive Behaviors*, 60, 223-227.