

Effects of tobacco-free pharmacy policies on sales and placement of tobacco and tobacco cessation products

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Both authors conceived the study, designed the research protocol, and drafted and revised the manuscript. LP collected the data and conducted the data analysis.

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Abstract

Background: Although tobacco is the leading preventable cause of death in the United States, it is routinely sold in pharmacies. In 2008 San Francisco became the first city in the US to pass a tobacco-free pharmacy ordinance. Over the next decade, 171 municipalities enacted similar policies and CVS became a tobacco-free pharmacy chain. There is little research assessing how these policies have affected pharmacy stores.

Methods: In 2017, we visited Walgreens and CVS stores in San Francisco and neighboring San Jose, which allows tobacco sales, to compare displays of tobacco products and over-the-counter tobacco cessation products (NRT). We also surveyed store managers at each site regarding the impact that tobacco-free pharmacy policies had had on customer traffic and sales of NRT.

Results: We obtained display data from 72 pharmacy stores and collected surveys from 55 store managers (76% response rate). A majority of tobacco-free pharmacy respondents (55%) reported that the policy had not affected the number of customers visiting the store. In comparison, 70% of tobacco-selling pharmacy respondents believed that eliminating tobacco sales would reduce the number of customers visiting their stores. Pharmacy stores that were covered by tobacco-free pharmacy policies and those that were not reported comparable displays, sales, and counseling for NRT.

Conclusions: The implementation of tobacco-free pharmacy policies does not appear to reduce customer visits to pharmacy stores or NRT sales. Greater awareness of these outcomes could help pharmacy stores implement public health recommendations to eliminate tobacco sales and create healthier environments for communities they serve.

Introduction

Tobacco is the leading preventable cause of death in the US, causing over 480,000 deaths per year.¹ In most high income countries pharmacy stores do not sell tobacco,² but in the US pharmacy stores commonly do so.³⁻⁵ Tobacco sales in US pharmacies persist despite calls to ban the practice issued by the American Pharmacists Association,³ the American Medical Association, the American Heart Association, the American Cancer Society, and the American Lung Association, the finding that only 2% of pharmacists favor it,² and widespread public support for tobacco-free pharmacies.⁶⁻⁸ US chain pharmacies are more likely to sell tobacco than independent pharmacies,⁴ and have expressed fears that they will lose sales as justification for the practice.^{9,10} Their decision to sell tobacco has raising increasing questions as chain pharmacies develop new “wellness store” formats to expand access to primary care,² given that providing health care (including smoking cessation) is inconsistent with selling tobacco, a deadly product.^{5,11,12}

In 2008, San Francisco became the first city in the US to establish tobacco-free pharmacies; the ordinance was expanded from stand-alone pharmacies to all stores in the city in 2010.^{5,12} CVS pharmacies followed by discontinuing sales of tobacco at all US locations in September 2014.¹³ Since 2008, 171 additional cities have passed tobacco-free pharmacy laws, however this number represents less than 1% of US municipalities.^{14,15} Research on local policies and the CVS decision has shown that tobacco-free pharmacies reduce local tobacco sales,¹⁶ smoking initiation,¹⁷ smoking prevalence,¹⁸ and tobacco retailer density.¹⁹ While financial reports suggest that CVS has made up for the loss of tobacco sales with increased sales of other products,^{20,21} there is still limited research on the effects these policies have had on pharmacy stores themselves. Salient questions include whether fears of reduced customer visits are valid, whether tobacco-selling pharmacy stores near tobacco-free localities change their displays to attract these lost customers, whether store layouts change after the

elimination of tobacco “power walls” behind cash registers,¹⁷ and whether eliminating tobacco sales encourages customers to seek pharmacist assistance with smoking cessation.

The goal of this study was to assess the long term impacts of San Francisco’s tobacco-free pharmacy ordinances on chain pharmacy stores within the city, compared to those in a nearby city, San Jose, which does not restrict tobacco sales in pharmacies. We focused on three outcomes: (1) the display of tobacco products and over-the-counter nicotine replacement therapy products (NRT) intended for smoking cessation, (2) the perceived impact of a tobacco-free policy on customer visits, and (3) whether stores reported that customers purchasing NRT received counseling from pharmacists. We hypothesized that tobacco-free pharmacies would report no change in customer visits. We also anticipated that both tobacco-free and tobacco-selling pharmacy stores would have comparable NRT displays and sales.

Methods

We conducted a cross-sectional study in chain pharmacy stores consisting of (a) direct observation of pharmacy product placements and (b) a survey of pharmacy store managers. The study included chain pharmacy stores in two localities: San Francisco, which passed a tobacco-free pharmacy law in 2008, and a neighboring city, San Jose, which contained a roughly equivalent number of chain pharmacy stores. The main chain pharmacy stores operating in both cities were Walgreens and CVS; at the time of data collection, all Walgreens stores in San Jose sold tobacco. CVS stores had been tobacco-free throughout the US since 2014, and served as a control case for both cities. We identified all pharmacy stores in each city by visiting each company’s website and searching by city name. After consulting with a regional manager for one chain, we explicitly excluded pharmacy stores located in tourist areas (e.g. Fisherman’s Wharf in San Francisco) because their business did not involve repeat customers and their layouts and product lines (e.g. souvenirs)

were substantially different from those of other stores. We also excluded CVS branches located inside Target stores because their store layouts were not controlled by CVS and their customer traffic included secondary visits made by Target shoppers.

One study author (LP) visited all Walgreens and CVS pharmacy stores that met the study inclusion criteria in April 2017. Data collected at each pharmacy store included: (a) photographs of tobacco products and/or tobacco cessation products (NRT) on display; (b) measurements of the distance from the store entrance to each display; (c) a 10-question survey completed by the store manager, assistant manager, or shift lead via the Qualtrics iPad application; and (d) any additional information volunteered by survey respondents. Stores were revisited up to two times if no one was available to complete the survey upon the initial visit.

The survey instrument was generated from existing tobacco-related surveys using input from a Walgreens store manager and UCSF tobacco control researchers. There were two versions of the survey instrument; one for tobacco-free pharmacies and one for tobacco-selling pharmacies (see Appendix for survey instruments). The surveys requested information on locations of NRT and/or tobacco products, sales data, frequency of pharmacist smoking cessation counseling prior to consumer NRT purchase, factors that could impact product placement, and the perceived impact that tobacco-free pharmacy laws had had or might have on customer visits. The University of California, San Francisco institutional review board approved the survey on January 30, 2017 (approval #16-20854). We used Stata 13 to conduct Fisher's exact and Pearson's chi square tests of statistical significance.

Results

Study characteristics

The corporate websites for Walgreens and CVS pharmacy stores identified 119 pharmacy stores in San Francisco and San Jose. We excluded 47 of these stores on the grounds that they were located inside Target stores or tourist areas, resulting in a total 72 stores in our sample. After visiting and surveying the stores in the sample, we obtained complete data on product placement for all stores (n=72); our survey response rate was 76% (n=55). Most of the surveys (n=35, 64%) were completed by store managers; in stores where the manager was not on-site at the time of visit, the survey was completed by the assistant manager (n=18, 33%) or the shift lead (n=2, 4%). The majority of the pharmacy stores were operated by Walgreens (n=48, 67%); more stores were located in San Francisco (n=39, 54%) than San Jose. Given that we included CVS stores, which are all tobacco-free, as a comparison case to Walgreens stores, most stores in the sample (n=56, 78%) did not sell tobacco. Characteristics of the sample and the survey respondents are provided in Table 1.

[TABLE 1 HERE]

Displays of tobacco products and NRT were similar within store type

The displays of tobacco products and NRT in pharmacy stores, like displays of all products, reflect a balance between marketing through exposure, by showing customers potential purchases, and theft risk. The pharmacy stores in our sample placed NRT and tobacco products (if sold) in similar locations. Tobacco selling pharmacy stores (Walgreens locations in San Jose) placed tobacco products behind the cash registers, in the traditional “power wall” position favored by tobacco companies to drive tobacco product sales.¹⁷ These stores placed NRT directly adjacent to the tobacco products, as shown in Figure 1. Survey reports were consistent with these findings;

respondents from tobacco-selling pharmacy stores reported that both tobacco and NRT products were stored behind the cash register (100%, n=10) and next to the entrance of the store (60%, n=6). Half of respondents reported that NRT was at high risk of theft (n=5, 50%) and that the location of NRT products was influenced by the risk of theft. Results are shown in Table 2.

[TABLE 2 HERE]

Tobacco-free pharmacy stores (CVS stores in both cities and Walgreens stores in San Francisco) placed NRT in different locations depending on ownership. All Walgreens stores located NRT directly behind the cash registers, on the power wall. CVS stores placed NRT behind the cash registers on the power wall, as well as on aisle caps (see Figure 1). Consistent with this evidence, survey respondents reported that over the counter (OTC) tobacco cessation aids, specifically NRT, was located behind the cash registers (89%, n=40), and by the entrance of the store (38%, n=17). Consistent with respondents at tobacco-selling pharmacy stores, respondents at tobacco-free pharmacy stores reported NRT was at high risk of theft (51%, n=23). Nearly half of respondents (49%, n=22) reported that NRT product location is impacted by theft, however placing NRT behind a counter appeared to resolve the risk, given that few respondents reported that NRT was stored in locked bins (4%, n=2). Another 42% (n=19) of respondents reported that NRT placement was affected by other reasons such as store plan protocols (13%, n=6).

There is a statistically significant correlation between NRT and tobacco product placement, which is correlated with the type of store, suggesting that tobacco products and NRT will be stored in comparable locations at all tobacco-selling pharmacy stores, and NRT will be stored in the same locations in all tobacco-free pharmacy stores. Respondents reported the same theft risk for NRT regardless store type.

Experience and expectations about customer visits in tobacco-free pharmacies differed by store type

One of the reasons that chain pharmacy stores have been reluctant to eliminate tobacco product sales is the belief that selling tobacco products attracts customers. We found significant differences in the perceived effects of tobacco-free policies on customer visits, which reflected whether the stores had actually experienced these policies. An overwhelming majority of respondents at tobacco-selling pharmacy stores believed that eliminating tobacco sales would result in fewer customers visiting the store. In contrast, most tobacco-free pharmacy stores, whether in San Francisco or operated by CVS, reported that eliminating tobacco sales had not resulted in reduced customer visits.

Of the 10 total tobacco-selling pharmacy store respondents, 70% (n=7) reported that they believed fewer customers would visit their stores if tobacco product sales were eliminated. Despite this expectation, which implied that tobacco-purchasing customers would change their shopping habits, 90% (n=9) reported that they had not changed their tobacco product displays after competing local stores stopped selling tobacco products. In contrast, a majority of tobacco-free pharmacy store respondents reported that eliminating their tobacco product sales did not influence percent of customers who visited the store (56%, n=25), where they placed NRT in the stores (78%, n=35), or NRT sales (60%, n=27). Results are shown in Table 3.

[TABLE 3 HERE]

We found that no significant differences in reported NRT sales and reported tobacco product and NRT displays by store type ($p=0.079$). In contrast, the different expectations about customer traffic were statistically significant ($p=0.047$)—the expectations of tobacco-selling pharmacy store respondents were significantly different from the outcomes reported by tobacco-free pharmacy stores.

Most customers purchased NRT without a pharmacist consultation

It is conceivable that sales of NRT, as well as customer expectations about the role of pharmacists in smoking cessation, could change in the wake of eliminating tobacco sales. The appropriate use of tobacco cessation aids is not always intuitive to new users; for example, nicotine gum should not be chewed repeatedly, and it can be combined with patches to reduce cravings.²² To assess whether customers were more likely to seek help, we asked respondents in tobacco-selling and tobacco-free pharmacies to indicate the likelihood of NRT purchasers seeking assistance from pharmacists. Most respondents from tobacco-selling pharmacy stores (70%, n=7) reported that 10% or less of all customers purchased NRT. They also reported that 95% or more of these customers purchased NRT without a pharmacist consultation (80%, n=8), and that employees did not ask customers if they would like a pharmacist consultation prior to purchasing NRT. Similarly, most respondents from tobacco-free pharmacy stores (76%, n=34) reported that 10% or less of all customers purchased NRT. They also reported that 90% or more of these customers purchased NRT without a pharmacist consultation (73%, n=33), and that employees did not ask customers if they would like a pharmacist consultation prior to purchasing NRT (89%, n=40). The differences between store types were not statistically significant.

Discussion

This study sought to expand on existing research assessing the effects of tobacco-free policies on customer and pharmacist perceptions by evaluating additional outcomes relevant to pharmacy stores. These included customer visits to stores, nicotine replacement therapy (NRT) sales, and NRT displays at pharmacy stores. Overall, our findings suggest that tobacco-free pharmacy stores did not experience a change in any of these three outcomes after eliminating the sale of tobacco.

As noted by other sources, selling tobacco conflicts with the self-identified mission of pharmacies, which is to promote the wellbeing of their customers. Before the passage of San Francisco's tobacco-free pharmacy ordinance, a 2003 study reported the majority of the city's pharmacies placed NRT products next to cigarettes.²³ We found that tobacco-selling pharmacies continued this product placement; like San Francisco pharmacies in the past, San Jose Walgreens stores placed NRT next to tobacco products. This kind of display is problematic because it undercuts the purpose of smoking cessation aids by promoting tobacco. In addition, tobacco-selling pharmacy stores placed tobacco products by the store entrance. This location is pivotal because it increases the convenience of tobacco purchases as well as advertising their use to everyone entering the store.¹⁷ The creation of the "power wall" was based on tobacco industry research showing that placing cigarettes directly behind cash registers would repeatedly expose consumers to tobacco products and to positive messages about tobacco, increasing tobacco sales and use.¹⁷ Tobacco-free pharmacy stores, in contrast, typically replaced the tobacco products formerly sold in this location with NRT, promoting tobacco cessation instead of tobacco use.

We also found that most over-the-counter NRT was usually purchased without a pharmacist consultation, and that employees did not suggest this consultation. The purpose of NRT is to aid in smoking cessation by replacing the use of tobacco products, and with proper use and a tapering regimen, can help eliminate the addiction to nicotine. Information about how to use and taper NRT is one of counseling points that pharmacists can provide to people who are making a quit attempt. NRT is most effective when combined with counseling that helps identify and resolve smoking triggers; and patients who do not receive simultaneous counseling are likely to find NRT ineffective.^{24,25} Patients who do not receive counseling also have a greater risk of becoming addicted to NRT given that they may not be aware of when and how to properly taper down the nicotine

content.²² Our research suggests that all pharmacy stores could be more assertive in encouraging NRT purchasers to consult with pharmacists at the time of sale.

Although we did not ask directly about perceptions tobacco-free pharmacy policies, two survey respondents volunteered that they were pleased to work at a tobacco-free pharmacy and that this change created a healthier environment for their community. This volunteered response from managers was consistent with the beliefs of pharmacists, when surveyed, 86% of pharmacists stated that they preferred working in a tobacco-free pharmacy.²⁶ Future studies could expand on these surveys by including the perceptions of other pharmacy employees.

Our research has limitations. We focused on only two municipalities; because we chose to study San Francisco due to its long-standing tobacco-free pharmacy ordinance, it is possible that the effects of the ordinance may not reflect the experience of localities that have recently passed these ordinances. We could not survey pharmacy stores that had closed between the implementation of the San Francisco ordinance (or after CVS changed its policy in 2014) and our 2017 survey. Similarly, our research specifically excluded pharmacy stores in tourist areas and CVS locations within Target stores; these locations may have different displays and different customer interactions.

Overall, our findings suggest that the fears expressed by chain pharmacy stores that eliminating tobacco sales will reduce customer traffic have not borne out. In addition, the modification of store displays in tobacco-free pharmacies to place NRT in prominent positions formerly occupied by tobacco products, including the power wall, means that these stores promote cessation rather than tobacco use. This communicates a quit smoking message even if the displays do not result in greater onsite sales of NRT. Finally, our findings suggest that all pharmacy stores could promote pharmacist counseling on NRT use more effectively, increasing the chances that tobacco users will successfully quit.

Figure I. Tobacco and NRT displays in SF and SF pharmacy stores

Tobacco and Tobacco Cessation Products in Pharmacy Stores	
<p>Example 1: NRT behind cash registers (Walgreens, SF)</p>	<p>Example 2: Tobacco products behind cash registers (Walgreens, SJ)</p>
	
<p>Example 3: NRT near pharmacy (CVS, SF)</p>	<p>Example 4: NRT near pharmacy (CVS, SJ)</p>
	
<p>Example 5: NRT on cash register shelves (CVS, SF)</p>	<p>Figure 6: NRT on an aisle end (CVS, SJ)</p>

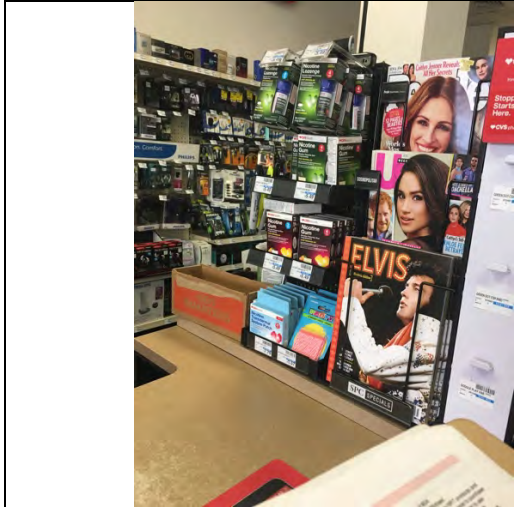


Table I: Sample characteristics

	<u>N</u>	<u>Percent</u>
Pharmacy stores	72	100%
<i>Company</i>		
CVS	24	33%
Walgreens	48	67%
<i>Location</i>		
San Francisco	39	54%
San Jose	33	46%
<i>Store type</i>		
Tobacco-free	56	78%
Tobacco-selling	16	22%
Survey respondents	55	100%
<i>Position</i>		
Store manager	35	64%
Assistant manager	18	33%
Shift lead	2	4%

Table 2: Tobacco product and NRT product locations

	Behind Cash Register		By Store Entrance		NRTs are High Theft Risk Products		
	NRTs*, n (%), [expected frequency]	Tobacco Products, n (%), [expected frequency]	NRTs, n (%), [expected frequency]	Tobacco Products, n (%), [expected frequency]	Yes, n (%), [expected frequency]	No, n (%), [expected frequency]	I do not know, n (%), [expected frequency]
Tobacco-free	40 (89%) [32.9]	0 (0%) [7.1]	17 (38%) [13.6]	0 (0%) [3.4]	23 (51%) [21.2]	19 (42%) [19.6]	2 (4%) [3.3]
Tobacco-selling	6 (60%) [13.1]	10 (100%) [2.9]	7 (70%) [10.4]	6 (60%) [2.6]	3 (30%) [4.8]	5 (50%) [4.4]	2 (20%) [0.7]
Fisher's exact (p)	0.000		0.003		0.141		

Table 3: Perceived effects of tobacco-free pharmacy policies

	NRT* Sales/Tobacco Display			Percent of Customers Who Visit		
	Increased, n (%), [expected frequency]	Decreased, n (%), [expected frequency]	No Changes, n (%), [expected frequency]	Increased, n (%), [expected frequency]	Decrease, n (%), [expected frequency]	No Changes, n (%) [expected frequency]
Tobacco-free**	13 (29%) [10.5]	2 (4%) [2.4]	27 (60%) [29.1]	4 (9%) [3.2]	10 (22%) [13.5]	25 (55%) [22.3]
Tobacco-selling	0 (0%) [2.5]	1 (10%) [0.6]	9 (90%) [6.9]	0 (0%) [0.8]	7 (70%) [3.5]	3 (30%) [5.7]
Fisher's Exact (p)	0.079			0.047		

* Nicotine replacement therapy (NRT)

** 3 respondents reported not knowing the NRT sales changes, and 6 respondents reported not knowing the impact on customers the law has had.

References

1. Centers for Disease Control and Prevention. Smoking & Tobacco Use. *Fast Facts and Fact Sheets* 2018; https://www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts/index.htm. Accessed March 6, 2018.
2. Brennan TA, Schroeder SA. Ending sales of tobacco products in pharmacies. *JAMA*. 2014;311(11):1105-1106.
3. American Pharmacists Association. Report of the 2010 APhA House of Delegates: discontinuation of the sale of tobacco products in pharmacies and facilities that include pharmacies. *Journal of the American Pharmacists Association*. 2010;50(4):471.
4. Seidenberg AB, Hong W, Liu J, Noel JK, Rees VW. Availability and range of tobacco products for sale in Massachusetts pharmacies. *Tobacco Control*. 2013;22(6):372-375.
5. Katz MH. Banning tobacco sales in pharmacies: The right prescription. *JAMA*. 2008;300(12):1451-1453.
6. Kroon LA, Corelli RL, Roth A, Hudmon K. Public perceptions of the ban on tobacco sales in San Francisco pharmacies. *Tobacco Control*. 2013;22(6):369-371.
7. Wang TW, Agaku IT, Marynak KL, King BA. Attitudes Toward Prohibiting Tobacco Sales in Pharmacy Stores Among U.S. Adults. *American Journal of Preventive Medicine*. 2016;51(6):1038-1043.
8. Patwardhan P, McMillen R, Winickoff J. Consumer perceptions of the sale of tobacco products in pharmacies and grocery stores among U.S. adults. *BMC research notes*. 2013;6:261.
9. Blank C. To sell or not to sell tobacco: Who should decide? *Drug Topics*. 2016.
10. Egan M. CVS banned tobacco. Now its sales are hurting. 2015; <http://money.cnn.com/2015/08/04/investing/cvs-earnings-cigarettes/>. Accessed March 6, 2018.
11. Why Cigarettes and Pharmacies Don't Mix: Prescription for Change [press release]. Oakland, CA: American Nonsmokers' Rights Foundation, October 6 2008.
12. Katz MH. Tobacco-free pharmacies: can we extend the ban? *Tobacco Control*. 2013;22(6):363-364.
13. CVS Health. We're Tobacco Free. 2014; <https://cvshealth.com/thought-leadership/we-are-tobacco-free>. Accessed March 6, 2018.
14. United States Census Bureau. Census Bureau Reports There Are 89,004 Local Governments in the United States. 2012; <https://www.census.gov/newsroom/releases/archives/governments/cb12-161.html>. Accessed March 6, 2018.
15. Americans Nonsmokers' Rights Foundation. *Municipalities with Tobacco-free Pharmacy Laws*. January 2 2018.
16. Polinski JM, Howell B, Gagnon MA, Kymes SM, Brennan TA, Shrank WH. Impact of CVS Pharmacy's Discontinuance of Tobacco Sales on Cigarette Purchasing (2012–2014). *American Journal of Public Health*. 2017;107(4):556-562.
17. Shadel WG, Martino SC, Setodji CM, et al. Hiding the tobacco power wall reduces cigarette smoking risk in adolescents: using an experimental convenience store to assess tobacco regulatory options at retail point-of-sale. *Tobacco Control*. 2015.
18. Jin Y, Lu B, Berman M, Klein EG, Foraker RE, Ferketich AK. The impact of tobacco-free pharmacy policies on smoking prevalence. *Journal of the American Pharmacists Association*. 2016;56(6):627-632.

19. Jin Y, Lu B, Klein EG, Berman M, Foraker RE, Ferketich AK. Tobacco-Free Pharmacy Laws and Trends in Tobacco Retailer Density in California and Massachusetts. *American Journal of Public Health*. 2016;106(4):679-685.
20. Japsen B. CVS Health Pharmacy Business Overcomes Loss Of Tobacco Sales. *Forbes* 2014.
21. Solomon B. CVS Suffers After Quitting Cigarettes, But Pharmacy Saves The Day. *Forbes* 2014.
22. American Cancer Society. Nicotine Replacement Therapy for Quitting Tobacco. 2017; <https://www.cancer.org/healthy/stay-away-from-tobacco/guide-quitteing-smoking/nicotine-replacement-therapy.html>. Accessed March 20, 2018.
23. Eule B, Sullivan MK, Schroeder SA, Hudmon KS. Merchandising of cigarettes in San Francisco pharmacies: 27 years later. *Tobacco Control*. 2004;13(4):429-432.
24. Apollonio D, Glantz SA. Tobacco Industry Research on Nicotine Replacement Therapy: “If Anyone Is Going to Take Away Our Business It Should Be Us”. *American Journal of Public Health*. 2017;107(10):1636-1642.
25. Shiffman S, Sweeney CT. Ten years after the Rx-to-OTC switch of nicotine replacement therapy: What have we learned about the benefits and risks of non-prescription availability? *Health policy (Amsterdam, Netherlands)*. 2008;86(1):17-26.
26. Smith DM, Hyland AJ, Rivard C, Bednarczyk EM, Brody PM, Marshall JR. Tobacco sales in pharmacies: a survey of attitudes, knowledge and beliefs of pharmacists employed in student experiential and other worksites in Western New York. *BMC research notes*. 2012;5:413-413.