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Cigarette Prices and Community Price Comparisons in US Military Retail Stores

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What this paper adds:

- In order to address the negative impact of tobacco use, the US military enacted a number of important and progressive programs and policies to discourage use and mitigate harm.
- The Department of Defense (DoD) mandated that tobacco pricing be done in such a manner so as to not promote tobacco use.
- We previously demonstrated that US military exchanges have not been compliant with DoD mandates that pricing not be substantially lower than community prices using Walmart as a comparator.
- While DoD recognizes the relationship between the costs of tobacco products and their use from a public health perspective, tobacco prices remain low and tobacco use rates remain unacceptably high among military members.
- This study is unique because no systematic research has examined how military retail stores use community comparisons to set their tobacco product prices.
- In addition, this will be the first study to present data obtained on tobacco product prices and the community price comparisons used by military retail, which were obtained through a Freedom of Information Act request

ABSTRACT

BACKGROUND: Tobacco pricing impacts use, yet military retailers sell discounted cigarettes. No systematic research has examined how military retail stores use internal community comparisons to set prices. We analyzed data obtained through a Freedom of Information Act request on community price comparisons used by military retail to set cigarette prices.

METHODS: Data on cigarette prices were obtained directly from military retailers (exchanges) from January 2013-March 2014. Complete pricing data was provided from exchanges on 114 military installations.

RESULTS: The average price for a pack of Marlboro cigarettes in military exchanges was \$5.51, which was similar to the average lowest community price (\$5.45; Mean Difference=-0.06; p=0.104) and almost a \$1.00 lower than the average highest price (\$6.44). Military retail prices were 2.1%, 6.2%, and 13.7% higher than the lowest, average, and highest community comparisons and 18.2% of exchange prices violated pricing instructions. There was a negative correlation ($r = -.21$, $p = 0.02$) between the number of community stores surveyed and exchange cigarette prices.

CONCLUSIONS: There was no significant difference between prices for cigarettes on military installations and the lowest average community comparison, and in some locations the prices violated DoD policy. US Marine Corps exchanges had the lowest prices, which is of concern given that the Marines also have the highest rates of tobacco use in the DoD. Given the relationship between tobacco product prices and demand, a common minimum (or floor) shelf price for tobacco products should be set for all exchanges and discount coupon redemptions should be prohibited.

Smoking has significant negative impacts on nearly every aspect of military service^{1,2}. Despite adverse effects on readiness, military personnel use tobacco at higher rates than civilians and military service remains a risk factor for late initiation.³ A critical factor that contributes to this problem is the strong perception by service members and military health policy leadership that the military encourages use by selling tobacco products at discounted prices.⁴⁻⁵ The Department of Defense (DoD) acknowledged the link between tobacco pricing and consumption and called on military retail to set prices so they don't encourage use, with instructions that prices be "...no lower than 5 percent below the most competitive commercial price in the local community" (p. 6).⁶

We demonstrated over a two-year period that the military sells tobacco at prices substantially lower than a national discounter (Walmart).⁷⁻⁸ This is partly due to pricing based on the ambiguously defined most competitive commercial community price,⁵ which has been interpreted in a variety of ways.⁷⁻⁸ For example, price comparisons have been made with smoke shops, tobacco wholesalers, Native American reservations, and other military installations and the definition of "local" has been interpreted as including stores located hours away from a military installation.^{2,9}

Despite the importance placed on community price comparisons in military tobacco policy and pricing, no systematic research has examined how military retail stores use community comparisons to set tobacco product prices. This is the first study to analyze data obtained through a Freedom of Information Act (FOIA) request on tobacco product prices and the community price comparisons used by military retail.

METHODS

Exchange cigarette shelf prices (i.e., price that is post-excise tax, but pre-sales tax) and prices from community comparisons were obtained directly from the Army and Air Force Exchange Service (AAFES),¹⁰ Navy Exchange (NEX),¹¹ and Marine Corps Exchange (MCX)¹² headquarters through a FOIA request. Data are from the reporting period of January 2013 to March 2014. Data provided by the AAFES, NEX, and MCX were the result of individual military installations' community pricing surveys submitted to the AAFES, NEX, and MCX headquarters, which provided them to us. For MCX, US Marine Corps (USMC) bases provided community comparisons from the following categories: AAFES or NEX, grocery store, wine discounter, ABC store (a convenience store chain headquartered in Honolulu, HI), convenience store, gas station, Walmart, club store (Costco/Sams/BJs), Family Dollar or Dollar General, and chain drug store (CVS-Walgreens-Longs-Rite Aid). AAFES and NEX installations (i.e., those at US Army [USA], Air Force [USAF] and Navy [USN] installations) were required to provide price comparisons from two convenience stores, a tobacco store, a drug store, a grocery store, and, if applicable, a club store and an Indian reservation. All exchanges were instructed to conduct pricing surveys quarterly, but it was not possible to assess compliance from the data provided.

Because some data categories were inconsistently recorded (e.g., how often surveys were conducted, whether they were conducted in-person or telephonically, etc.), data abstracted include number and type of stores used for community comparisons, lowest and highest cigarette prices, types of stores where the lowest and highest prices were found, and average cost of the pack of cigarettes across comparison stores. Marlboro cigarette packs were chosen as the index brand because

they account for approximately 44% of the domestic market, outsell the next 11 brands combined, traditionally have been heavily marketed to the military, and were the index brand for our previous research.⁷⁻⁸

Complete pricing data were provided from 114 installation exchanges including USAF (n=38), USA (n=29), USN (n=34), USMC (n=13), and Joint-Service (n=5) bases, which represents 63% of all installations with exchanges in the continental US, Alaska, and Hawai'i.¹³ Stores used for community price comparisons were categorized into the following categories: 1) Convenience Stores; 2) Drug Stores; 3) Smoke Shops; 4) Grocery Stores; and 5) other store types.

We identified the highest, lowest, and average community price for Marlboro cigarettes provided by exchanges and the military installation price. To compare cigarette prices among services, we used a Box-Cox procedure to transform the data prior to conducting the statistical hypothesis test. SAS PROC MIXED with Tukey adjusted post-hoc comparisons was used to model cost differences between military services. Given their small numbers, military retail found on Joint Service installations (N = 5) were included in descriptive data but excluded in the model. Analyses were conducted using SAS 9.4 and SPSS Version 22.

RESULTS

Table 1 presents cigarette prices and community comparisons. The average highest and lowest prices for Marlboro in the community were \$6.44 and \$5.45, respectively. The average price for Marlboro in military retail stores was \$5.51, or nearly identical to the lowest community price, resulting in a statistically nonsignificant price difference between military retail and the lowest community price (Mean Difference = -

0.06; $p = 0.104$). There was a significant effect of Service on price ($p=0.020$). Follow-up tests suggested that USMC installation cigarette prices were significantly lower than those on USN installations ($p=0.016$).

Insert Table 1 Here

The average number of community price comparisons was 4.7 (range = 2-9). There was a negative correlation ($r=-0.21$, $p=0.02$) between number of comparisons and exchange prices. In fact, there was a \$0.69 cent/pack average difference in cigarette prices from installations that surveyed 2-3 community stores compared to those surveying 4 or more (\$6.03 vs \$5.34).

Table 1 also presents the percent savings realized by purchasing cigarettes on a military installation versus the high, low, and average price found in the community surveys. Over all installations, military retail cigarette prices were 2.1% higher than the lowest price and 6.2% and 13.7% lower than the average and highest prices, respectively, found in the community. Sixteen (13.8%) exchanges had cigarette prices more than 5% below the lowest community price (Table 1), making them non-compliant with DoD policy.⁵ There were no significant differences in compliance based on service ($p=0.783$; $p=0.832$ excluding Joint Service) and compliant and non-compliant exchanges conducted similar average numbers of comparisons (4.5 ± 1.4 vs. 4.8 ± 1.4 , respectively; $p=0.0501$).

We examined which store types served as the lowest and highest community price comparison. Lowest community prices were found at convenience stores (40%),

followed by drug stores (21%), Walmart (14%), smoke shops (12%), grocery stores (9%), or some other retailer (4%). Highest community prices were most often at grocery stores (38%), followed by convenience stores (24%), Walmart (16%), drug stores (10%), smoke shops (9%), and other retailers (3%).

DISCUSSION

We found a wide price range for Marlboro cigarette packs on US military installations. The USMC, the service with the highest smoking rate, had the lowest prices.³ There was no significant difference between cigarette prices on military installations and the lowest community price and 18.2% of exchange's prices were non-compliant with DoD policy.⁶ Military exchanges that conducted more comparisons had lower prices than those with fewer.

Our results show that exchanges offered cigarette prices similar to the cheapest in the local community, and in some locations the prices violated DoD policy.⁶ However, even prices in compliance with policy might give purchasers a greater than 5% discount because exchange sales are not subject to state or local sales taxes. We previously argued that a common minimum (or floor) shelf price for tobacco products should be set for exchanges by a committee including medical/health promotion personnel and that a consistent community comparison, such as the nearest Walmart, be used and we continue to support those recommendations^{2,7-8}.

While minimum price laws/policies have not been shown to consistently increase cigarette prices, and tobacco manufactures often undermine the intent of excise taxes by offering discount coupons, it has been suggested that setting a simple minimum price for all cigarettes, in addition to the added excise and sales taxes, could result in

higher prices (which is linked to reduced demand) and easier enforcement.¹⁴ We also suggest that exchanges should stop allowing tobacco product discount coupon redemption. Selling discounted deadly products to its members is inconsistent with the military's approach to other consumer goods^{15,16} and undercuts its ability to communicate with authority about health and readiness.⁴

Given the negative impact of tobacco use on health and readiness^{1,2}, perceptions among military members that low prices support the culture of tobacco use^{4-5,17}, and the military's desire that price not encourage use,⁶ it is appropriate for the military to strengthen tobacco control efforts. The DoD recently initiated such an action by instructing all services to ensure that tobacco prices "...shall match the prevailing local pricing in the community, including the effect of all applicable taxes that local consumers pay..." (p. 2), which will result in higher exchange tobacco prices.¹⁸ Including tax is an advance; unfortunately, this policy, like the old one, fails to define "prevailing" or "local". The most effective approach to tobacco control would be for the military to become tobacco free.¹ Increasing tobacco prices or creating a tobacco free military will be challenging because tobacco revenues fund important programs for personnel and because Congress can, and does, influence military policies through the DoD budget process, and some members of Congress are influenced and supported by the tobacco industry.^{1,5}

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Author Contributions

Walker S.C. Poston, Ph.D., M.P.H. was involved in conception and design of the study, analysis and interpretation of the data, critical revisions of the manuscript, obtaining funding and supervision.

Christopher K. Haddock, Ph.D. was involved in conception and design of the study, analysis and interpretation of the data, critical revisions of the manuscript, obtaining funding and supervision.

Sara A. Jahnke, Ph.D. was involved in conception and design of the study, critical revisions of the manuscript, obtaining funding and supervision of data collection.

Elizabeth Smith, Ph.D. was involved in obtaining funding and all aspects of the production of the manuscript.

Ruth E. Malone, RN, Ph.D., FAAN was involved in obtaining funding and all aspects of the production of the manuscript.

Nattinee Jitnarin, Ph.D. was involved in acquisition of data, critical revisions of the manuscript, and administrative support.

The authors have no conflicts of interest to report.

Table 1: Military Retail and Community Comparison per-Pack Prices for Marlboro Red Cigarettes

| | Service Branch | | | | |
|--|-------------------------------|-----------------|-----------------|------------------|-----------------------|
| | USAF (n = 38) [†] | USA (n = 29) | USN (n = 34) | USMC (n = 13) | Joint Base (n = 5) |
| Military Price[‡] | | | | | |
| Mean (SD) | 5.37 (0.68) | 5.38(0.91) | 5.87 (1.36) | 4.93 (0.43) | 6.41 (1.52) |
| High | 7.63 | 7.71 | 9.95 | 6.09 | 8.50 |
| Low | 4.38 | 4.20 | 4.59 | 4.23 | 4.68 |
| Number of Stores Surveyed | | | | | |
| Mean (SD) | 5.51 (0.73) | 5.04 | 3.12 | 5.46 | 5.80 |
| High | 7 | 7 | 4 | 9 | 4 |
| Low | 3 | 2 | 2 | 4 | 2 |
| Lowest Community Price | | | | | |
| Mean (SD) | 5.30 (0.97) | 5.32 (1.08) | 5.82 (1.38) | 4.72 (0.72) | 6.45 (1.52) |
| High | 8.22 | 7.71 | 10.27 | 6.21 | 8.09 |
| Low | 3.45 | 4.20 | 4.31 | 3.61 | 4.90 |
| Highest Community Price | | | | | |
| Mean (SD) | 6.40 (1.04) | 6.46 (1.41) | 6.53 (1.41) | 5.84 (1.11) | 7.46 (1.77) |
| High | 9.35 | 10.99 | 10.75 | 8.09 | 10.19 |
| Low | 4.96 | 5.19 | 4.93 | 4.60 | 5.85 |
| Average Community Price | | | | | |
| Mean (SD) | 5.84 (0.94) | 5.83 (1.24) | 6.15 (1.36) | 5.13 (0.67) | 6.97 (1.86) |
| High | 8.71 | 9.56 | 10.51 | 6.78 | 9.79 |
| Low | 4.43 | 4.59 | 4.82 | 4.25 | 5.08 |
| Percent Savings on Cigarettes from Military Exchanges | | | | | |
| Mean (SD) | 7.6 (5.4) | 7.4 (7.0) | 4.5 (5.7) | 3.0 (6.9) | 7.7 (3.6) |

| | | | | | |
|--|-------|-------|-------|------|------|
| High | 15.5 | 16.2 | 9.7 | 13.7 | 14.1 |
| Low | -2.4 | -1.5 | -1.1 | -6.0 | 1.1 |
| Percent of exchanges not compliant with DoD policy ⁵ using lowest community price (%) | 13.5% | 18.5% | 14.7% | 7.7% | 0.0% |

[†]Number of stores providing pricing for Marlboro packs. [‡]All prices in 2013 U.S. Dollars.