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Tobacco Control

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4 **vendors in Khyber Pakhtunkhwa Pakistan**
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3 **Abstract (248 words)**
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6 **Introduction:** Regulatory compliance in the retail environment is integral to the success of
7 tobacco control. We assessed compliance among naswar (smokeless tobacco product widely used
8 in South Asia) vendors with tobacco control laws. We also assessed their awareness of tobacco-
9 related harms and policies and perceived effect of policies on their sales.
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16 **Methods:** We surveyed 286 naswar vendors in three districts of the Khyber-Pakhtunkhwa
17 province of Pakistan. We recruited general and specialty vendors from urban and rural areas
18 through multistage cluster sampling. Compliance was measured for promotion, sale to/by minors,
19 and tax paid on naswar. We used logistic regression analyses for assessing the association between
20 the outcome variables (awareness of tobacco harms and laws, perceptions about the effect of
21 policies on business, and compliance with laws) and their predictors.
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31 **Results:** Most vendors (70%) were aware of tobacco-related harms of naswar. Although educated
32 vendors were more aware of tobacco control policies, the greatest awareness was for a ban on sales
33 to/by minors (21% overall). The majority of vendors (76%) violated this policy (measured by self-
34 report), and violations were more common among rural than urban vendors (OR:2.27, 95%
35 CI:1.05-4.96). Most vendors (71%) violated a ban on promotion of naswar. Vendors perceived tax
36 increases and sales ban to/by minors as most detrimental for business.
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46 **Conclusion.** There was poor awareness and compliance among naswar vendors in Pakistan with
47 tobacco control laws. This study finds potential areas for policy interventions that can reduce
48 urban/rural disparities in implementation of and compliance with tobacco control laws.
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What this study adds:

The diversity of smokeless tobacco (SLT) products makes them challenging for regulatory interventions.

- This study provides novel insights into the naswar (a form of SLT) retail environment, in a geographical setting where its consumption is a social norm.
- More than 70% of vendors were involved in the promotion of naswar and its sale to minors. Most of the urban vendors were aware of tobacco-related health harms but knowledge regarding tobacco control laws was extremely poor. Implementation of control policies was perceived financially detrimental for business by speciality and rural vendors expecting a significant decline in their business following a ban on the sale of naswar to minors.
- The findings have potential implications for the implementation and compliance of existing tobacco control policies and their alignment with the FCTC. This study also identifies that for the sale of naswar to and by minors (especially in rural areas in Pakistan), population-level interventions could help to decrease disparities in tobacco-related harm reduction.
- For raising awareness and improving compliance among vendors, interventions like; mass media campaigns, group educations, and the use of flyers or posters are recommended. Further research is warranted on the strategies of improving compliance and implementation of POS laws.

Introduction

Smokeless tobacco (SLT) includes a diverse group of products containing tobacco, usually placed in the mouth or nose and used without burning¹. SLT contains more than 30 carcinogens¹ and is associated with a variety of diseases including head and neck cancers and gastro-intestinal and cardiovascular diseases²⁻⁴. Around the globe, more than 300 million people use SLT products in various forms. More than 85% of these SLT users live in South and Southeast Asia with a 70% global attributable loss in terms of Disability Adjusted Life Years just in India and 7% in Pakistan⁵. The 2014 global adult tobacco survey (GATS) estimated that 19.1% of adults in Pakistan use tobacco, of which 12.4% smoke, and 7.7% (approximately 17 million) use SLT⁶, the most common forms being paan – betel quid with tobacco (7.4%), naswar (7.2%) and gutkha (6.4%)⁷. Naswar is made of dried crushed tobacco, ash, water, and lime, with optional additives for flavor and color such as cardamom, menthol, and indigo⁸. Although naswar is available in many parts of the world under different names, historically it has mostly been consumed by the tribes of the south and central Asia⁸. Cheaper than cigarettes, naswar is highly addictive with a nicotine level of up to 26mg/g as compared to 16.3 mg/g in cigarettes⁹. Naswar contains approximately twice the amount (1380 ng/g) of carcinogenic TSNAs (tobacco-specific nitrosamines) compared to Swedish Snus (723 ng/g)^{4 9} – a form of SLT common in Nordic countries. Naswar use is a social norm among Pashtun ethnic population of Pakistan and is accepted as a confectionary item in the Pashtun dominant province of Khyber Pakhtunkhwa (KP). Children are not supposed to smoke in the presence of elders but naswar use is permitted, and elders often ask children to fetch naswar for them from the point of sale (POS)^{10 11}. A nationwide survey of Pakistan reports that naswar use is most common in KP⁷ while other forms of SLT are rarely found in this province¹². Naswar constitutes about 60% of the tobacco consumed in Peshawar, the capital city of KP¹³.

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3 The diversity in SLT products poses substantial regulatory challenges¹⁴, making it difficult to
4 legislate SLT specific tobacco control laws. Moreover, the lack of a strong regulatory environment
5 for SLT coupled with very low prices (as compared to cigarettes) may lead to increase uptake as
6 well as more users switching from smoking to SLT use¹⁵. Elimination of tobacco products from
7 displays and restricting the advertisement of products at the POS are some regulations used
8 globally for reducing demand at the POS^{16 17}. A few studies originating from South Asia have
9 addressed the health warnings on SLT packaging and tobacco advertisement and promotion at the
10 POS^{18 19}.

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22 Pakistan ratified the Framework Convention on Tobacco Control (FCTC) in 2005²⁰. The treaty is
23 intended to restrict all forms of tobacco use but SLT has been neglected in most countries,
24 including Pakistan, compared to smoking^{20 21}. Tobacco control laws in Pakistan either lack clarity
25 or are missing in the case of SLT products²². For instance, tax is applied to raw tobacco but not to
26 SLT products. The law neither regulates the contents of tobacco products nor requires
27 manufacturers to disclose its contents to government authorities²³. However, the sale of all tobacco
28 products to minors is banned in Pakistan. Similarly, advertising and promotional activities are
29 mostly aligned with FCTC guidelines²³. A major issue in tobacco policy implementation is
30 particularly the compliance at POS in settings like South Asia where high compliance is difficult
31 to achieve^{12 24-27}. In the context of Pakistan, evidence on the implementation of SLT control laws
32 and compliance with the existing laws at the POS is virtually absent, as is the information on
33 disparities between urban and rural populations in this respect^{28 29}.

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51 The regulatory compliance of tobacco control policies depends upon individual and
52 structural/contextual factors like effective implementation mechanisms and raising capabilities of
53 policymakers, government personnel, civil society organizations, and other key stakeholders for
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3 tobacco control efforts³⁰. Among the individual factors, it is important to know the degree of
4 awareness of tobacco control policies among tobacco vendors, their perceived benefits and harms
5 to the vendors, and perceived barriers to compliance³¹. A tobacco vendor unaware of regulations
6 may not be able to conform to laws³¹, even though this does not protect him/her from any legal
7 consequences. Similarly, regulatory compliance might be affected by the perceived effects of a
8 particular policy on the retail business³¹. Understanding perceptions of tobacco vendors can help
9 policymakers identify policy interventions with the least resistance and hence have a greater
10 chance of success³². Moreover, some of the tobacco vendors considered tobacco a health hazard
11 for consumers³³ ¹¹, and their awareness about tobacco harms may be associated with their
12 compliance and interest in seeking alternative livelihoods rather than selling tobacco³⁴.
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27 This study aims to assess the awareness of naswar vendors about tobacco-related health harm and
28 tobacco control laws, their compliance with the laws, and their perceptions of decrease in sales
29 linked to regulatory compliance. Furthermore, we aim to assess the association between awareness
30 of health harms, awareness of tobacco control laws, perceptions about potential effects of tobacco
31 control policies on naswar sales, and shop and area type of vendors. Additionally, we assess the
32 predictors for compliance with national laws (promotion and sale to/by minors) and provisions of
33 FCTC (taxation) among naswar vendors.
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44 **Methods**

45 **Study design and setting**

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48 We conducted a cross-sectional survey among naswar vendors in three districts of the KP province
49 in Pakistan (Peshawar, Mardan, and Bannu). These districts, with a population of 8.3 million³⁵,
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3 were purposively selected as they are among the five districts with the highest production,
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5 consumption, and sale of naswar in Pakistan³⁶.
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8 **Study participants, sample size, and sampling strategy**

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11 A detailed description of sample size and sampling strategy was reported elsewhere¹². Briefly, we
12
13 employed a multistage cluster sampling strategy to recruit both urban and rural vendors at the three
14
15 study sites. We first randomly selected the predefined (as per local government structure) urban
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17 and rural sub-district/Tehsil-council in each district, the primary sampling units. Next, we
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19 randomly selected union councils—the smallest administrative unit—from the respective urban and
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21 rural settings, the secondary sampling units. Based on a previous finding of 10% of vendors'
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23 noncompliance with the prohibition of tobacco sale to minors³⁷, we calculated a sample size of
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25 273 vendors through OpenEpi software (version-3.01)³⁸. We recruited 50 vendors in Bannu, 90 in
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27 Mardan, and 160 in Peshawar proportionate to the total number of shops in each city. We recruited
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29 naswar vendors from any shop that was selling at least one brand of naswar including grocery
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31 stores (selling edibles such as fresh fruits/vegetables, bakery, and canned food), convenience stores
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33 (selling edibles and other daily use commodities), and exclusive naswar shops (wholesale dealers
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35 and manufacturers of naswar who also use their manufacturing unit as POS). We grouped grocery
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37 and convenience stores as general vendors and those exclusively selling naswar as specialty
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39 vendors.
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46 **Data collection**

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49 We approached 300 eligible shop owners/managers in 31 selected areas between 10th November
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51 and 30th December 2019 and among them, 286 agreed to participate. The average time of an
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53 interview was 25-30 minutes. We used an interview tool (supplementary file-1) adapted from a
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3 pilot study conducted in three South Asian countries, based on the relevant articles of the FCTC³⁹.
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5 The tool was pilot tested on a sample of 10 general and three specialty vendors who were not
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7 included in the final analysis. Data collectors explained the purpose of the study and addressed
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9 vendors' queries/concerns before obtaining written consent.
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12 **Study variables**

13 **Demographic variables:**

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16 We collected data on participants' shop-type (general/specialty), area-type (rural/urban), duration
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18 of business (less than 5 years, 5 years or more), level of education (no formal education, and
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20 received education between 1 to 10 years, and more than 10 years), mean daily profit from sales of
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22 naswar.
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28 **Dependent variables:**

29 *Awareness*

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32 Awareness (aware/not aware) was assessed about health harms associated with tobacco/naswar
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34 use and tobacco control policies: ban on sale to/by minors, pictorial, and written health warning,
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36 and ban on advertisements at POS.
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41 *Perceptions*

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43 Perceived effect on business (no effect versus a decline in business) was assessed for five potential
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45 tobacco control measures: increasing tax, placing ingredients details on packaging, putting written
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47 and graphic health warning, and banning the sale of naswar to/by minors.
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51 *Compliance*

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3 Compliance (yes/no) with tobacco control laws was assessed for the following laws: promotion of
4 naswar (discounts, free samples, promotional goods, and credit lines), self-reported sale of naswar
5 to minors, self-reported sale of naswar by minors, and tax paid on naswar (yes/no).
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10 **Independent variables (IVs):**

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13 Independent variables for *awareness* and *perceptions* (dependent variables) included shop-type,
14 area-type, length of business, and education level. Although non-modifiable, factors such as area-
15 type can help understand tobacco control disparities. IVs for *compliance* included both non-
16 modifiable (shop-type, area-type and daily profit from naswar) and modifiable factors (awareness
17 of health harms and laws, and perceived negative effects of taxes and stopping sale to minors). An
18 understanding of the association between these modifiable factors and compliance can help design
19 future interventions aimed at increasing awareness and modifying perceptions of naswar vendors.
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30 **Statistical analysis**

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33 Descriptive analyses were conducted by shop and area type for the demographic variables,
34 awareness, perceptions, and compliance. We calculated frequencies and percentages for
35 categorical variables and means with standard deviation for continuous variables. We conducted
36 logistic regression analyses to assess the association between potential predictors and awareness
37 of tobacco harms and laws, perceptions about the effect of policies on business, and compliance
38 with laws. We calculated odds ratios (OR) with 95% confidence intervals (CI). All analyses were
39 conducted using STATA version-14⁴⁰.
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50 **Results**

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53 Our study sample consisted of 229 general and 57 specialty vendors, of which 88 were rural and
54 198 were urban vendors. The duration of business in around 60% of vendors was less than five
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3 years. One-quarter of the naswar vendors received no formal education whereas nearly 50%
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5 received education between one to 10 years (table 1). The average daily profit from naswar was
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7 1653 PKR (10.6 USD) among specialty vendors and only 68 PKR (0.43 USD) among general
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9 vendors (table 1). Seventy percent of vendors were aware of the tobacco-related health harms.
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11 Among the different policy options (supplementary file-1), vendors were aware of written and
12
13 pictorial health warnings and a ban on sale to/by minors. Awareness level was highest for a ban
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15 on sale to/by minors (21%) (table 1). Among the perceptions about the negative effects of tobacco
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17 control policies on naswar sales, taxes (42%) and stopping the sale of naswar to minors (39%)
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19 were considered most detrimental by vendors. Specialty vendors expressed most apprehensions
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21 regarding the perceived effects of four out of five policy measures (table 1). Regarding compliance,
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23 the self-reported sale of naswar to minors was the most frequently violated law (76%).
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29 Table 2 presents the predictors of the awareness of tobacco-related health harms and tobacco
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31 control policies. The awareness about tobacco-related harms was low among rural vendors
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33 compared to urban vendors (aOR:0.43; 95%CI:0.25-0.74). Formally educated vendors with five
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35 or more years' duration of business were more likely to be aware of a ban on sale to/by minors,
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37 pictorial health warning, and written health warning compared to vendors with less than five years
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39 of business and no education (Table 2).
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44 Table 3 presents predictors of perceptions about the negative effects of tobacco control policies on
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46 naswar sales. The specialty vendors were more likely to perceive a reduction in business with
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48 printing ingredients detail on packages, and written and graphic health warnings compared to
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50 general vendors. The odds of a perceived reduction in business with stopping the sale of naswar to
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52 minors were significantly elevated among rural vendors compared to urban vendors (aOR:2.55;
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54 95%CI:1.49-4.34). The odds of a perceived reduction in business with all the five policy measures
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3 significantly increased with length of business (table 3). Similarly, the educated vendors were more
4 likely to perceive a reduction in business with printing detail of ingredients and graphic health
5 warnings compared to vendors receiving no education (table 3).
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10 Table 4 presents predictors of compliance with the regulations. The odds of paying taxes were
11 significantly reduced among rural (aOR:0.16; 95%CI:0.05-0.47) vendors compared to urban
12 vendors. The odds of selling naswar to minors and selling by minors were twofold increased among
13 rural vendors compared to urban vendors. The odds of promoting naswar and paying taxes were
14 fourfold and twofold increased respectively, in those vendors who were aware of any tobacco
15 control law compared to unaware vendors, while the odds were significantly reduced for sale of
16 naswar to minors and sale by minors among the aware vendors (table 4). The odds of promoting
17 naswar were significantly increased in those vendors who expected a reduction in sales with paying
18 taxes on naswar (aOR:2.28; CI:1.24-4.21). Similarly, the odds of selling naswar to and by minors
19 were significantly increased in those vendors who expected a reduction in sales with stopping the
20 sale of naswar to minors (table 4). Although the mean daily profit from naswar sales was associated
21 with the sale of naswar to minors in univariate analysis, the daily profit was not associated with
22 compliance to any law in the multivariate analysis.
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41 **Discussion**

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43 The main findings of this study suggest that overall awareness of tobacco-related health harms
44 from naswar consumption, was high in the study area in Pakistan, with three-quarters of the urban
45 vendors reporting awareness. Awareness about tobacco control laws was poor in general.
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47 Implementation of all the laws and specifically increase in taxes, ban on sale to minors and pictorial
48 health warnings were perceived as harmful for business. More than 70% of vendors were involved
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50 in the promotion of naswar and its sale to minors. Longer duration of business and higher education
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3 level of vendors were positively associated with awareness about tobacco control laws. Specialty
4 store type and longer duration of business were positively associated with expectations of a
5 reduction in business from tobacco control policies. Among the predictors of compliance with
6 regulations, area type of vendors, and awareness of any tobacco control law was strongly
7 associated with compliance.
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10 Awareness about tobacco-related health harms is an important factor for reduced likelihood of
11 initiation and greater likelihood of quitting tobacco use^{41 42}. We found less awareness of tobacco-
12 related harms among rural vendors. A study from India also found a low level of awareness of the
13 harms from SLT among rural users in two Indian states⁴³. Similarly, adequate knowledge about
14 tobacco control legislation and consequently compliance to legislations by tobacco vendors can
15 result in effective tobacco control^{44 45}. We report that 21% of vendors were aware of the ban on
16 the sale of tobacco to minors, which is in contrast to findings reported from India (69% & 89%)²⁴
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32. This might be due to India being more advanced in tobacco control implementation. Vendors with longer durations of being in business were more aware of tobacco control laws, reflecting the fact that a business advances in knowledge—including knowledge about relevant regulations—with experience⁴⁶. Educating tobacco vendors through specific programs about tobacco control laws has resulted in greater compliance and awareness in many countries^{47 48}. For low and middle-income countries (LMICs) like Pakistan, a prerequisite for such educational activities is the literacy of vendors which was around 75% and educated vendors more frequently reported awareness about laws. Moreover, education was found to be associated with vendor compliance²⁴. For regulating tobacco retail, the views of key stakeholders, including tobacco retailers, may influence the acceptance of policies, so far, a limited number of studies explored retailers' perceptions of tobacco control policies⁴⁹⁻⁵¹. Regarding perceptions of vendors about policies, the

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3 highest level (42%) of a perceived reduction in sales was reported with potential increases in taxes
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5 on naswar, a finding in line with those of a previous study, in which naswar vendors expressed the
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7 same concern¹¹. A negative effect of a naswar sales ban to minors was the second most frequently
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9 reported negative perception by vendors, which is in contrast to a study done on tobacco retailers
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11 of Nigeria, where 84% of retailers supported the implementation of such a policy⁵². Rural vendors
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13 in this study expected a more profound decrease in business with a ban on the sale of naswar to
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15 minors when compared to urban sellers. This perception of rural vendors reinforces the previously
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17 reported presence of urban/rural disparities in youth tobacco use^{53 54}. Printing details of
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19 ingredients, graphics, and written health warnings on naswar packets were seen as detrimental for
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21 business by specialty vendors. This is likely linked to the amount of their income from naswar
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23 sales as compared to general vendors. Moreover, printing health warning labels were considered
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25 an extra expense by the specialty vendors and naswar manufacturers¹¹. Vendors with a longer
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27 duration of business expected a reduction in sales if they were made to follow different tobacco
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29 control laws. Similar findings were reported among retailers in a study in USA⁵⁵. This indicates
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31 that a longer sales practice led to more concerns about business infringements with more
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33 regulation.
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40 Limiting sales of tobacco to minors is an important tobacco control strategy to reduce tobacco use
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42 and access by youth and different reports have highlighted that successful deterrence of tobacco
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44 sales to youths can decrease their tobacco usage^{56 57}. Three-quarters of retailers in our study
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46 reported selling naswar to minors, with rural vendors being more likely to do so, which is in line
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48 with the findings from India⁵⁸. Although Pakistan's tobacco control laws prohibit the sale of
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50 tobacco products to minors, compliance can be improved through enforcement efforts and vendor
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52 education across different communities⁴⁸. Vendors who were aware of tobacco control laws were
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3 less likely to sell naswar to and by minors, similar to findings reported from India⁵⁹. Laws in
4
5 Pakistan also prohibit the promotion of tobacco products like free distribution and special
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7 discounts²³ but we found more than 70% of vendors practicing such promotion of naswar. In
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9 Mumbai, India, an additional scheme of silver coins in packets of gutkha and other SLT products
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11 supported this practice⁶⁰. Around 33% of the vendors admitted to having sales assistants below the
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13 age of 18, rural vendors and those who perceived a negative effect of stopping sales to minors
14
15 were more likely to employ under-age sales assistants. This was an obvious violation of national
16
17 legislations and puts the enforcement of the respective laws in question⁶¹.
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21 In our study, only 16% of vendors affirmed that tax is paid on naswar and vendors were less likely
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23 to pay tax if they were rural vendors. POS vendors in a previous study stated that tax is an issue
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25 for specialty vendors like manufacturers or suppliers of naswar and even national laws obligate
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27 the tax only on raw tobacco and not SLT products^{11 23}. For specialty vendors, naswar is their sole
28
29 source of income which is why they feared a loss in business with compliance of laws. This
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31 perception of specialty vendors is in line with other studies where vendors who reported more
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33 income from tobacco sales were less likely to be compliant with tobacco control laws^{24 62 11}.
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37 Limitations of the study include the fact that it was conducted in only three districts of the KP
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39 province in Pakistan. However, these cities are the hubs of the naswar business in Pakistan, and
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41 products from here are sent across the country and even abroad. Thus, the findings of the study
42
43 might not be generalizable to other provinces of the country or SLT sales in LMICs in general.
44
45 Although socially desirable answers were an issue for awareness-related information and sale to
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47 minors, the provision of subsequent open-ended questions mitigated this problem. Eliciting
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49 information on the monetary aspects of the business was difficult, particularly if they deal with
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51 such sensitive issues as profits and taxes, hence the accuracy of the information on these variables
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3 may be limited. Although we obtained information on the payment of taxes, the actual amount of
4 tax paid could not be calculated. Strengths of this study include the ability of this study to discern
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6 between the different vendor types and to investigate urban-rural disparities.
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10 **Conclusions**

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13 Awareness about different tobacco control laws was found poor among the tobacco vendors in the
14 Khyber-Pakhtunkhwa province of Pakistan. The Laws regarding the promotion of naswar and its
15 sale to minors were frequently violated by vendors, and particularly so by rural vendors. The
16 financial implications of policies on the sale of naswar are a key determinant of compliance among
17 specialty vendors. Our findings suggest that policymakers in Pakistan should consider the urban
18 and rural disparities in tobacco use and develop awareness or education programs for tobacco
19 vendors to enhance awareness of tobacco-related harm and control laws. To align with the WHO's
20 recommendation of raising taxes to 70% of the retail price for tobacco products, Pakistan needs to
21 include SLT products as well.
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34 **Ethical approval**

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38 Ethical approval for the study was obtained from the Ethics Board of Khyber Medical University
39 (No. DIR/KMU-EB/ST/000554).
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2
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5 in this paper.
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8 **Authors' contributions:**

9
10 All authors contributed to the planning of the study. FA, ZK, MNK, ZKb: contributed to the
11
12 conduct of study and data collection. FA, KS, SF, ZK, MNK, ZKb, MK: worked on the analysis
13
14 of data and the first draft of the manuscript. HZ, LB, SF, KS, MNK: provided technical input
15
16 throughout the study. All authors contributed to all versions of the manuscript including the final
17
18 version.
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Table 1: The characteristics of naswar vendors and their awareness, perceptions of and compliance with the regulations, by store and area type

Characteristics		Overall (N=286)	Store type (n, %)		Area type (n, %)	
			General (n=229)	Specialty (n=57)	Rural (n=88)	Urban (n=198)
Length of business	Less than 5 years	167 (58.4)	148 (64.6)	19 (33.3)	59 (67.1)	108 (54.6)
	5 or More years	119 (41.6)	81 (35.4)	38 (66.7)	29 (32.9)	90 (45.4)
Level of education	No formal education	72 (25.2)	52 (22.7)	20 (35.1)	24 (27.3)	48 (24.2)
	1 to 10 years	140 (49.0)	111 (48.5)	29 (50.9)	41 (46.6)	99 (50.0)
	More than 10 years	74 (25.8)	66 (28.8)	08 (14.0)	23 (26.1)	51 (25.8)
Daily profit from naswar in PKR, Mean (SD)		384 (695.1)	68.2 (48.2)	1653.1 (639.1)	367.4 (696.5)	391.5 (697.4)
Awareness about health harms and tobacco control laws						
Awareness about tobacco-related health harms		199 (69.6)	162 (70.7)	37 (64.9)	50 (56.8)	149 (75.2)
Awareness about written health warning		43 (15.0)	34 (14.9)	09 (15.8)	09 (10.2)	34 (17.1)
Awareness about pictorial health warning		52 (18.2)	39 (17.0)	13 (22.8)	15 (17.0)	37 (18.7)
Awareness about ban on sale to and by minors		61 (21.3)	50 (21.8)	11 (19.3)	12 (13.6)	49 (24.8)
Perceptions about the potential effects of tobacco control on naswar sales						
Negative effect of tax increase on sales		119 (41.6)	88 (38.4)	31 (54.4)	38 (43.2)	81 (40.9)
Negative effect of labeling ingredients on sales		32 (11.2)	16 (7.0)	16 (28.0)	5 (5.7)	27 (13.6)
Negative effect of written health warning on sales		58 (20.3)	36 (15.7)	22 (38.6)	11(12.5)	47 (23.7)
Negative effect of pictorial health warning on sales		74 (25.9)	49 (21.4)	25 (43.9)	24 (27.3)	50 (25.2)
Negative effect of stopping sale of naswar to minors		111 (38.8)	93 (40.6)	18 (31.6)	46 (52.3)	65 (32.8)
Compliance with tobacco control laws						
Promotion of naswar	Yes	204 (71.3)	167 (72.9)	37 (64.9)	67 (76.1)	137 (69.2)
Sale of naswar to minors	Yes	218 (76.2)	180 (78.6)	38 (66.6)	77 (87.5)	141 (71.2)
Sale of naswar by minors	Yes	93 (32.5)	70 (30.6)	23 (40.4)	42 (47.7)	51 (25.8)
Tax paid on naswar	Yes	47 (16.4)	31 (13.5)	16 (28.0)	05 (5.6)	42 (21.2)

Note: General= point of sale, Specialty= exclusive naswar sellers. For awareness, counts of only aware vendors are mentioned.

Table 2: Predictors of awareness about health harms and tobacco control laws

Predictors	Awareness about tobacco related health harms aOR (95% CI)	Awareness about ban on sale to/by minors aOR (95% CI)	Awareness about pictorial health warning aOR (95% CI)	Awareness about written health warning aOR (95% CI)
Store type				
Specialty (ref)	-	-	-	-
General	1.44 (0.74-2.80)	1.26 (0.57-2.77)	0.86 (0.40-1.85)	1.06 (0.45-2.50)
Area type				
Urban (ref)	-	-	-	-
Rural	0.43 (0.25-0.74)*	0.53 (0.26-1.08)	1.05 (0.53-2.11)	0.62 (0.28-1.39)
Length of business				
Less than 5 years (ref)	-	-	-	-
5 or more years	1.19 (0.68-2.08)	2.43 (1.31-4.49)*	2.99 (1.55-5.77)*	2.60 (1.29-5.23)*
Level of education				
No formal education (ref)	-	-	-	-
1 to 10 years	0.64 (0.33-1.24)	3.91 (1.52-10.03)*	3.34 (1.35-8.23)*	3.28 (1.17-9.19)*
More than 10 years	0.67 (0.31-1.42)	4.33 (1.58-11.84)*	2.10 (0.75-5.81)	2.87 (0.93-8.80)

Note: The reference category for all dependent variables is; not aware. Adjusted odds ratios (aOR) are adjusted for all the other independent variables in the respective model.

Table 3: Predictors of vendors' perceptions about potential effects of tobacco control policies on naswar sales

Predictors	Increasing taxes will decrease business. aOR (95% CI)	Printing ingredients on pack will decrease business aOR (95% CI)	Printing written health warning will decrease business. aOR (95% CI)	Printing graphic health warnings will decrease business aOR (95% CI)	Stopping sale to minors will decrease business aOR (95% CI)
Store type					
Specialty (ref)	-	-	-	-	-
General	0.65 (0.35-1.21)	0.16 (0.06-0.39)*	0.32 (0.16-0.66)*	0.37 (0.19-0.72)*	1.90 (0.97-3.71)
Area type					
Urban (ref)	-	-	-	-	-
Rural	1.20 (0.71-2.03)	0.36 (0.12-1.05)	0.48 (0.22-1.01)	1.27 (0.69-2.33)	2.55 (1.49-4.34)*
Length of business					
Less than 5 years (ref)	-	-	-	-	-
5 or more years	2.07 (1.24-3.44)*	2.58 (1.10-6.04)*	2.37 (1.25-4.49)*	2.32 (1.29-4.16)*	2.09 (1.23-3.54)*
Level of education					
No formal education (ref)	-	-	-	-	-
1 to 10 years	0.85 (0.47-1.54)	11.99 (2.48-57.93)*	2.27 (1.00-5.14)*	2.76 (1.27-5.96)*	1.09 (0.59-2.01)
More than 10 years	0.91 (0.46-1.80)	8.58 (1.57-46.93)*	1.74 (0.68-4.46)	2.66 (1.12-6.27)*	1.10 (0.55-2.22)

Note: The reference category for all dependent variables is; no effect on business. Adjusted odds ratios (aOR) are adjusted for all the other independent variables in the respective model.

Table 4: Predictors of vendors' compliance with the regulations

Predictors	Promoting naswar aOR (95% CI)	Sale of naswar to minors aOR (95% CI)	Sale of naswar by minors aOR (95% CI)	Tax paid on naswar aOR (95% CI)
Store type				
Specialty (ref)	-	-	-	-
General	0.86 (0.16-4.56)	1.16 (0.20-6.77)	1.13 (0.23-5.41)	0.19 (0.03-1.17)
Area type				
Urban (ref)	-	-	-	-
Rural	1.58 (0.84-2.94)	2.27 (1.04-4.92)*	2.36 (1.35-4.13)*	0.16 (0.05-0.47)*
Awareness of harms				
No (ref)	-	-	-	-
Yes	0.61 (0.32-1.15)	0.92 (0.46-1.86)	1.22 (0.68-2.19)	0.48 (0.23-0.98)*
Awareness of any tobacco control law				
No (ref)	-	-	-	-
Yes	4.50 (1.87-10.83)*	0.22 (0.10-0.50)*	0.35 (0.17-0.72)*	2.32 (1.07-5.06)*
Perceiving negative effect of taxes on sales				
No (ref)	-	-	-	-
Yes	2.18 (1.17-4.03)*	1.03 (0.52-2.03)	1.30 (0.74-2.28)	1.01 (0.49-2.09)
Perceiving negative effect of stopping sale to minors				
No (ref)	-	-	-	-
Yes	0.58 (0.31-1.08)	9.25 (3.82-22.35)*	1.78 (1.01-3.15)*	1.27 (0.62-2.61)

Note: The reference category for all dependent variables is: no. Adjusted odds ratios (aOR) are adjusted for all the other independent variables in the respective model.

STOP-Survey Questionnaire-POS vendors

District:

Area:

Shop ID:

Section 1: Price and Taxation

List all Naswar brands sold in the shop, and enter responses to the following questions against each product.

	1. Smokeless tobacco product (s)	Name:	Name:	Name:	Name:	Name:
1.1	1.1 What is the minimum unit of sale?					
	a) By quantity? or					
	b) By weight?					
1.2	1.2 What is the unit price that the customer pays? (state whether by quantity or weight)					
1.3	1.3 What is the unit price that the retailer pays? (state whether by quantity or weight)					
1.4	1.4 Is any tax paid on this product? if N go to 1.5					
	a) Yes					
	b) No					
	c) Don't know					
1.4.1	1.4.1 What is the amount of tax paid per unit?					
	a) By the supplier or manufacturer					
	b) By the seller (retailer)					
	c) VAT?					
	d) Don't know					
1.5	1.5 How your business will be affected by putting tax or increasing tax on SLT packet?					
	a) Increase your business					
	b) decrease your business					
	c) no effect on your business					
1.6	1.6 What is the total number of units sold per day? (state whether by quantity or weight)					

Section 2: Tobacco product display, contents and disclosures

List all Naswar brands sold in the shop, and enter responses to the following questions against each product.

	2 Name of smokeless tobacco product:	1.	2.	3.	4.	5.
2.1	2.1 Is a licence required to sell it?					
	a) Yes					
	b) No					
	c) Don't know					
2.2	2.2 Who decides where to place the product in the shop?					
2.3	2.3 Are there any promotions or discounts offered to the customers?					
	a) Yes					
	b) No					
2.3.a	c) If yes, what are these?					

1						
2						
3	2.3.b	d) If yes, are these offered by you or the suppliers?				
4						
5						

Section 3: Packaging and labelling – see observations section at the end for other Questions of this section.

7	3.1	3.1 How your business will be affected by putting details of ingredients on Naswar pack?
8		a) Increase your business
9		b) decrease your business
10		c) no effect on your business
11	3.2	3.2 How your business will be affected by putting a written health warning on Naswar pack?
12		a) Increase your business
13		b) decrease your business
14		c) no effect on your business
15	3.3	3.3 How your business will be affected by putting a pictorial health warning on Naswar pack?
16		a) Increase your business
17		b) decrease your business
18		c) no effect on your business
19	3.4	3.4 if you come to know that Naswar is dangerous for health, how will it affect your sales
20		a) (gradually) decrease your sale
21		b) Stop its sale
22		c) No change in sale

Section 4: Supplies

28	4.1	4.1 Where do you get your supplies? (Tick all that apply)
29		a) Wholesalers (Cash and carry)
30		b) Manufacturers
31		c) Importers
32		d) Unknown source
33		e) Others (Please state)
34		
35		
36	4.2	4.2 Where are your suppliers based?
37		a) In-land
38		b) Abroad
39	4.2.a	c) If abroad, where?
40	4.2.b	d) Do you have their contact details? (Y/N)
41	4.2.c	e) If yes, please provide. (we want to interview them as well)
42		
43		
44	4.3	4.3 Are there any incentives to purchase it from a particular supplier?
45		a) Yes
46		b) No – go to section 4.5
47		c) If yes, what is the nature of the incentive? (Tick all that apply)
48	4.3.a	(i) Discount
49	4.3.b	(ii) Promotional goods
50	4.3.c	(iii) Point-of-sale displays
51	4.3.d	(iv) Free sample
52	4.3.e	(v) pay after sale of products
53	4.3.f	(vi) Others (please state)
54	4.4	4.4 Where was the product manufactured?
55		a) In-land
56		b) Abroad
57		c) Don't know

4.4.a	d) If abroad, please state where					
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Section 5: Tobacco advertising, promotion and sponsorship-see observations section at the end for other Questions of this section.

5.1	5.1 how do you market new Naswar brands? [Probes for Interviewer: Offer discounts, Offer promotional goods, Offer credit lines, Free sample, Advertisement (like; billboards, banners, posters), keep visible, we don't sell new products]		
5.1.1	5.1.1 Are these offered by		
	a) You (the retailer)		
	b) Supplier		
	c) Manufacturer		
5.2	5.2 How do you try to retain your Naswar customers? Tick all that apply.		
5.2.a	a) Offer discounts	Yes	No
5.2.b	b) Offer promotional goods	Yes	No
5.2.c	c) Offer credit lines	Yes	No
5.2.d	d) Free sample	Yes	No
5.2.e	e) Good customer relationships	Yes	No
5.2.f	f) Other ways (please state)		

Section 6: Sale to/ by minors

6.1	6.1 Do you have any sales assistants under the age of 18 years? (if no skip to 6.2)	
	a) Yes	b) No
6.1.a	c) If yes, what are their ages? Please list.	
6.1.1	6.1.1 Are they allowed to sell Naswar or other SLT products?	
	a) Yes	b) No
6.2	6.2 Do you ever sell any smokeless tobacco products to young people under the age of 18?	
	a) Yes	b) No
6.2.a	c) If no, why not?	
6.3	6.3 How your business will be affected by stopping sale of SLT to minors?	
	a) Increase your business	
	b) decrease your business	
	c) no effect on your business	
6.4	6.4 Reference to Q-1.6 how many units do you sell to minors per day	

Section 7: Education and Public Awareness

7.1	7.1 Are you aware of any health harms of smokeless tobacco (Y/N = 0, 1)	
	Yes	No
7.1.1	If yes, please specify	
7.2	7.2 Are you aware of the different laws and regulations regarding tobacco control?	
	Yes	No
7.2.1	7.2.1 If yes which ones (Choose all that apply)	
7.2.1.a	Ban on Sale to and by minors	7.2.1.b) Pictorial warning
7.2.1.c	Written warning	7.2.1.d) Contents disclosure
7.2.1.e	Ban on advertisement in public places	7.2.1.f) Ban on Advertisement at point of sale
7.2.1.g	Ban on sale of tax-free products	7.2.1.h) Increase in taxes
7.2.1.i	Others (Please specify)	
7.3	7.3 Do you have to disclose the contents of smokeless tobacco products to any statutory body?	
	a) Yes	b) No

1	7.3.1	7.3.1 If yes to which bodies?	
2	7.4	7.4 Do you have to send SLT products to a laboratory, for testing?	
3		a) Yes	b) No
4	7.4.1	7.4.1 If yes which laboratory?	
5	7.5	7.5 Are you visited by any inspector or regulator to inspect and/or test your smokeless tobacco products?	
6		a) Yes	b) No
7	7.5.1	7.5.1 If yes, what did they ask for?	
8	7.5.1.a	a) Inspect products	Yes No
9	7.5.1.b	b) Test products	Yes No
10	7.5.1.c	c) Check your licence or registration	Yes No
11	7.5.1.d	d) How many visits did you have in the last 3 years?	
12	7.5.1.e	e) What happens after the inspection?	
13	7.5.1.e.1	(i) If found not in compliance, there is a penalty	Yes No
14	7.5.1.e.2	(ii) If found not in compliance, nothing happens	Yes No
15	7.5.1.e.3	(iii) If found in compliance, you are given a certificate	Yes No
16	7.5.1.e.4	(iv) If found in compliance, nothing happens	Yes No
17	7.5.1.e.5	(v) Any other consequences?	

Section 8: General Questions

8.1 Shop/Store type: (Choose one)

- Convenience store
- Grocery store
- Mass merchandiser
- Tuck shop
- Exclusive Tobacco shop
- Other (specify)

8.2 For how long this seller/shop is selling smokeless tobacco?

8.3

PROFIT	Amount in local currency
8.3.a Roughly what amount of profit do you make from daily sales	No idea=1
8.3.b What percentage of this profit comes from cigarettes sale	
8.3.c What percentage of this profit comes from smokeless tobacco sale	

8.4 What is the maximum level of education of the Sales person and/or shop owner?

Response to the editors

Comments of editors

After considering your manuscript, we would be pleased to accept it for publication, providing you attend to the following minor changes to the abstract (for clarity).

1. In the results section: Most vendors (70%) were aware of tobacco-related harms of naswar. Although educated vendors were more aware of tobacco control policies, the greatest awareness was for a ban on sales to/by minors (21% overall). The majority of vendors (76%) violated this policy (measured by self-report), and violations were more common among rural than urban vendors (OR:2.27, 95% CI:1.05-4.96). Most vendors (71%) violated a ban on promotion of naswar. Vendors perceived tax increases and sales ban to/by minors as most detrimental for business.
2. Conclusion. There was poor awareness...
3. ...reduce urban/rural disparities in implementation of and compliance with tobacco control laws.

Response by Authors

Thank you for the suggestions on abstract. All of these suggestions have now been incorporated in the abstract of manuscript.

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3 Dear editorial team,
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6 I am pleased to resubmit an original research article titled “Awareness, perceptions of and
7 compliance with tobacco control policies among Naswar vendors in Khyber Pakhtunkhwa
8 Pakistan (Total Word count: 3439 without a title page, abstract, tables, statements of;
9 contributions, what this paper adds, ethical approval, and funding note). This manuscript is a
10 revised version addressing all the comments of the reviewers. The decision on the previous version
11 Manuscript ID tobaccocontrol-2020-056377.R2 was received on 14th April 2021.
12
13

14
15
16 Comments by editors and responses to them are submitted in a separate document, as suggested.
17
18 Moreover, changes can be seen in the separate marked copy as track changes.
19

20
21 Thank you for your consideration.
22

23 Sincerely,
24

25 Dr. Fayaz Ahmad
26 Faculty, Institute of Public Health & Social Sciences
27 Khyber Medical University
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