Saiga horn user characteristics, motivations, and purchasing behaviour in Singapore

Background

The saiga is a **Critically Endangered** antelope from **Central Asia**. Its horn is used in **traditional Chinese medicines (TCM)** mainly to treat fever and heatiness (a TCM state of illness with symptoms like nasal congestion and sore throat). Poaching for saigas in the 1990's caused a <95% population decline (Milner-Gulland et al. 2001). Poaching still persists today despite many policy efforts from range states and international bodies (CMS-CITES 2005). Saiga have also been impacted by recent mass bacterial and viral disease outbreaks (Kock et al. 2018). Singapore is recognised as a top saiga consumer country (CITES 2018). Saiga horn is marketed most commonly as ling yang (羚羊) or antelope's horn. Sometimes "Cornu Saiga tataricae" is listed as an ingredient. Common alternatives are barley water, chrysanthemum tea, honeysuckle, and goat's horn.

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Key findings

- 19% of individuals interviewed stated saiga was a product they use *most often*, to treat heatiness or fever in themselves or others.
- Saiga users were significantly more likely to be aged 36-59 years old and to identify as Buddhist or Taoist.
- 47% of individuals who use saiga themselves also buy it for someone else.
- Women aged 35-59 years old were significantly more likely to purchase saiga for someone else.
- Saiga 'cooling water' was the most commonly preferred product form.
- Saiga users were significantly more likely than non-saiga users to think that saiga was common in the wild.

Research overview

In June-July 2017, 2,294 in-person consumer surveys were conducted in Singapore with members of the general Chinese Singaporean population. All participants were aged 18 or over. We ensured balance across age groups, genders, and socio-economic level.

Results

Overall, 438 (19%) of respondents stated that saiga horn was a product they use *most often* to treat heatiness and/or fever in themselves and/or others. Additionally, 47% of individuals who buy saiga horn for themselves stated they also buy it for someone else.

Who uses

Saiga users were significantly more likely to be aged 36 – 59 years old and to identify as Buddhist or Taoist. They were significantly less likely to be under 36 years old. Education level of saiga users did appear in our top statistical models, however, specific associations

between saiga horn use and education level were not significant. Similarly, we found no specific correlation between income level and saiga horn use, though we did find that saiga users were significantly most likely to have been surveyed in our lower socio-economic survey locations. More research is thus needed on this point.

Who Buys for Others

Females were significantly more likely than males to buy saiga horn products for others, as were Buddhists and Taoists, and middle-aged individuals.

What products are used

Saiga horn cooling water is a fully prepared (often served chilled) modern form of the product, and it was preferred by 54% of those using saiga themselves. Cooling water users were significantly most likely to be male. Saiga horn shavings are a more traditional form of the product that requires at-home preparation. It was preferred by 33% of those using saiga themselves, and these individuals were significantly most likely middle-aged and female.

Why is it used

Those who use saiga horn themselves stated that they preferred saiga horn because "It works" (42%), and "Someone recommended it to me" (29%) significantly more often than other reasons. For those that stated saiga was recommended to them, "Family" (56%) and "TCM shopkeeper" (23%) were reported significantly more often than other options.

Where is it purchased

TCM family-owned stores (46%) and TCM chain stores (43%) were the significantly top two reported locations for purchasing saiga horn for oneself. No respondents purchased saiga horn online, and in fact, there were only 12 reports of online purchases for any treatment type chosen by respondents.

How are saigas perceived

Saiga users had a greater overall propensity than non-saiga users for perceiving a given animal used in TCM as being common in the wild. But this difference was specifically significant for saiga.

Policy implications

The most likely saiga users were middle-aged Buddhist or Taoist Chinese Singaporeans, however, saiga horn use was seen across almost all demographics. Our survey asked respondents about their *most commonly* used products, thus, we feel confident that high-level saiga users compose 19% of the sample, and that overall saiga horn use (including less frequent users) is likely to be higher. **It is well possible that a similar proportion of the resident 2.9 million Chinese Singaporeans buy or use saiga horn frequently** (Singapore Department of Statistics 2017). There are likely also saiga users among non-resident Chinese and non-Chinese Singaporeans. **This figure cannot easily be translated into a number of horns per year because the amount of horn per dose is not known. This amount is likely relatively small but varies between product types and stores which prepare their own products.** Some products marketed as saiga do not contain any saiga horn, though the degree to which this occurs is not verified. **Saiga horn use in Singapore is extensive, and non-negligible.**

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Methods

Chinese Singaporeans are the largest users of complementary and alternative medicines (inclusive of TCM) in Singapore (Lim et al. 2005), we thus focused on them. Surveys were conducted in Government demarcated Planning Areas with the largest Chinese Singaporeans populations. Survey sites were specifically chosen to capture a variety of socio-economic levels, and were stratified across day of week and time of day. Researchers wore identifiable Nanyang Technological University shirts.

We used neutral questioning approaches to reduce potential biases, including social desirability bias (i.e. that we inadvertently prompted our respondents to inflate or deflate their saiga horn consumption depending on what they thought we wanted to hear). Surveys were described as assessing heatiness and fever treatment preferences, with no mention of saiga, TCM, or wildlife. Questions were organised into a decision-tree format, allowing respondents to answer general questions first, and further questions only as they were applicable to them. Questions were framed carefully to not prompt respondents into choosing one answer over another.

Statistical analyses included model averaging of generalised linear model regressions with sum contrasts applied, 2-sample z-tests for equality of proportions, and Pearson's chi-squared test for independence.

This research was approved by the ethics committees at Nanyang Technological University, Singapore, and the University of Oxford, United Kingdom.

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