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Self-reported drinking behaviors and observed violation of state-mandated social restriction and alcohol control measures during the COVID-19 pandemic: Findings from nationally-representative surveys in Thailand

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ABSTRACT
Background: In Thailand, alcohol is consumed in social setting. The Thai government introduced a ban on alcohol sales and other measures at the beginning of COVID-19 lockdown with gradual lifts. However, drinking behaviors, behaviors of community members, and alcohol marketing activities during the ban and lifts have not been described.

Methods: We contracted a survey research firm to conduct four phone-based cross-sectional surveys between April and July 2020 (n = 6239 participants in total). Participants were recruited from all regions and Bangkok. We also summarized alcohol control measures as reported by multiple sources. We analyzed data from Waves 1 thru 4 using descriptive statistics with adjustment for sampling weight.

Results: A total of 6239 persons participated in the 4 waves of surveys. Among survey respondents who were drinkers, half did not drink alcohol during the alcohol sale ban while one-third reported drinking less than usual in the past 30 days. Almost no participant reported drinking more than usual. During the ban (Wave 1), one-sixth of respondents noticed social drinking in their areas while less than 6 percent reported witnessing alcohol sale. Online parties were the predominant alcohol marketing activity, but became less common during Wave 3 compared to Wave 2.

Discussion and conclusions: Ever drinkers either abstained from alcohol or drank less than usual during the ban on alcohol sale. However, social drinking and alcohol sale persisted despite the ban.

1. Introduction

The COVID-19 pandemic has affected all countries and territories worldwide. More than 95 million persons have been infected and nearly 2 million persons have died from the virus (Worldometer, 2021). COVID-19 induced lockdown measures in various countries worldwide, which greatly affect the way of life of most of the population (Parmet and Sinha, 2020).

During the early days of COVID-19, multiple countries reported increase in sales of alcohol in supermarkets in preparation for quarantine measures (European Alcohol Policy Alliance, 2020). Multiple countries also raised concerns with regards to potential increase in domestic violence during quarantine period and the need for support for those suffering from alcohol dependence (Finlay and Gilmore, 2020). In Thailand, alcohol is generally consumed in a social gathering, particularly during the week-long Thai New Year in mid-April (Vichitkunakorn et al., 2020). The Thai New Year also includes mass celebrations and water fights in public places. After the number of new cases per day started to rise in late March 2020, the Royal Thai Government announced a state of emergency on the 25th of March 2020. The government subsequently announced cancellation of the Thai New Year holidays as well as a total ban on alcohol sale between 8th and 30th April 2020 (Post Reporters, 2020). However, province-specific measures were subjected to the decision of each provincial governor. The
measures started to ease in early May 2020, including measures on alcohol control. The government announced the reduction of restriction measures every approximately 30 days, and most entertainment venues reopened in July 2020, including nightclubs and bars (Table 1).

Thailand’s existing alcohol control laws prior to the COVID-19 pandemic included restrictions on hours and days of sale, and a wide array of restrictions of alcohol marketing activities (Department of Disease Control, 2008). However, there were problems with compliance to alcohol control laws (Wichaidit et al., 2019) and regulation of indirect and internet-based marketing. There is currently no report on the extent that drinking behaviors of the Thai population, alcohol sale in the community, social drinking, and alcohol marketing activities changed after the introduction and lifting of alcohol control measures in the context of COVID-19 lockdown. After the announcement of the ban on alcohol sales, the Center for Alcohol Studies, an alcohol control policy think-tank, contracted a Bangkok-based survey research firm (Research Centre for Social and Business Development, also known as SAB) to conduct a series of telephone-based cross-sectional surveys between April to July 2020 on alcohol consumption among Thai adults aged 15 years and over. Descriptive epidemiological data on alcohol consumption, social drinking, alcohol sale, and alcohol marketing activities during different phases of lockdown can provide empirical data for decision-makers who work in alcohol control. The objective of this study was to describe self-reported drinking behaviors, relative quantity of alcohol consumed, and observed violation of state-mandated social restriction and alcohol control measures among Thai population aged 15 years and over during the first 5 months of COVID-19 state of emergency (March–July 2020).

2. Materials and methods

2.1. Study design and setting

Four similarly-structured cross-sectional surveys (each survey referred as a “Wave”) were conducted by telephone-based interviews using structured questionnaires. Participants included residents of various provinces in the 4 regions of Thailand and the Bangkok Metropolitan Area.

2.2. Sample size calculation and sample selection

The investigators contracted a Bangkok-based survey research firm, to conduct the surveys. The method for sample size calculation in this study was similar to what the survey research firm routinely used for nationally-representative public opinion polls. Survey research firm investigators assumed 50 % prevalence of the outcome, 95 % level of confidence, 3% precision, design effect of 1.2, and a response rate of 80 % for sample size calculation. The final sample size was determined to be 1537 persons in each survey. In each survey (“Wave”), the survey research firm investigators selected participants by stratified two-stage sampling with the defined geographic regions (Bangkok Metropolitan Area, Central, North, Northeast, and South) as the first stratum. Sampling probability was proportional to size of the Thai population aged over 15 years in each region. Survey investigators selected samples of provinces within each region, and selected residents in each province using systematic sampling of the database of registered mobile phone numbers of the three main telecommunication operators (AIS, TrueMove, DTAC). Approximately 88.2 percent of the Thai population aged 6 and above reported that they used a mobile phone (National Statistical Office, 2017). Thai laws required all mobile phone users in the country to register their phone number using either the national ID or a passport when purchasing a SIM card to access a service network.

2.3. Measurement of recent alcohol consumption, behaviors of community members, and exposure to alcohol marketing activities

In Waves 1, 3, and 4, survey enumerators asked participants about alcohol consumption in the past 30 days, and the relative amount of consumption within the past 30 days. In Wave 2, survey investigators asked participants about alcohol consumption since the 1st of May, and the relative amount of consumption since the date. Survey enumerators also asked participants in Wave 1 about social drinking and alcohol sales in their communities, and asked participants in Waves 2 and 3 about exposure to alcohol marketing activities. Survey enumerators were instructed to administer the questions as they appear in order to reduce potential for interviewer bias. All information was self-reported. We have included details of each question and possible answer choices in Supplementary Table 1.

2.4. Summary of alcohol control measures

We summarized quarantined and alcohol control measures by searching various websites of the Royal Thai Government such as the Ministry of Foreign Affairs and the Royal Gazette, as well as Thailand-based newspaper, for information related to COVID-19 quarantine and alcohol control measures.

2.5. Data collection

The telephone-based surveys were conducted 4 times (4 waves) during the following periods: (i) 17–20 April 2020; (ii) 15–18 May 2020; (iii) 19–21 June 2020; and (iv) 17–20 July 2020. Wave 1 included 1566 participants, Wave 2 included 1563 Participants, Wave 3 included 1557 participants, and Wave 4 included 1553 participants. During a survey session, a survey enumerator would call a sampled number, assessed the eligibility of the potential participant, informed the potential participant about the study and asked for verbal consent. In case of acceptance, the enumerator would start the phone-based interview. In case of refusal to participate, ineligible cases, or unreachable number, the enumerator would sample another number on the list until the required sample size
2.6. Statistical analyses

We calculated sampling weights specific to each wave and region of the respondent’s residence based on the size of the Thai population aged over 15 years in each region and adjusted for sampling weights using the Survey package in R (Lumley, 2010). We summarized data from the 4 surveys using descriptive statistics and plotted the prevalence of alcohol consumption behavior on a timeline alongside announcement of various quarantine measures. We also disaggregated the prevalence of alcohol consumption in each wave by sex, age group, and geographic region of the respondents. We assessed the presence of a linear trend in alcohol consumption among all participants and in disaggregated sub-groups (by order of the wave of survey) using p-for-trend in a logistic regression model with adjustment for sampling weights. Missing data were excluded from analyses.

2.7. Ethical considerations

The contracted survey research firm routinely conducted public opinion polls on behalf of various government agencies and academic institutions. Obtaining ethical approval prior to data collection was deferred as the surveys were part of the firm’s routine practice. Prior to the phone-based data collection, enumerators of the firm informed the potential participants of the identity of the firm and the investigator’s organization, and the objective of the phone call. Enumerators also informed the potential participants that the interview would take approximately 5 min, that information provided by the respondents and the respondents’ identity would be kept confidential, and that data would only be presented as aggregates for research purpose. Enumerators then asked the participant for verbal consent prior to beginning data collection. Before sending the data to the investigators, the research firm ensured that the data sets sent to the investigators were completely de-identified and anonymized in order to ensure privacy and confidentiality. The investigators have applied for amendment of protocols for analyses of anonymized secondary data to also include the four waves of study surveys (Faculty of Medicine Human Research Ethic Committee, Prince of Songkla University; REC. 62-054-18-1).

3. Results

A total of 6239 persons participated in the four waves of surveys. Of all sampled telephone numbers, about 50 % (range 37–60 % in all selected provinces) could be reached and respondents agreed to answer the interview after first contact. We found a gradual decrease in the proportion of those who did not drink in the past 30 days from one wave to another (Fig. 1), with a statistically significant p-for-trend (p-for-trend < 0.001). Almost no participant reported drinking more than usual in all surveys.

Sub-group analyses regarding recent consumption of alcohol showed that the reduction in recent drinking was statistically significant in both male and female respondents, among participants aged 20–49 years, and also varied by geographical region (Table 2). With regard to observed behavior of community members and exposure to alcohol marketing activities, observation of social drinking was more commonly reported than observation of alcohol sales during the ban, and online parties were the most common alcohol marketing activity. No other marketing activities was reported by more than 5 percent of participants (Table 3). We found large variations in the outcomes between regions during Waves 1 and 2, but not during Wave 3 except exposure to online parties.

4. Discussion

In this study, we summarized the quarantine and alcohol control measures during the first four months of the COVID-19 public health state of emergency in Thailand and reported prevalence of recent drinking, observed behaviors of community members, and exposure to alcohol marketing activities among randomly sampled mobile phone users across the country. Both quarantine and alcohol control measures...
Table 2
Prevalence of recent consumption of alcohol* during Waves 1 thru 4 of the surveys, stratified by sex, age group, and region of the respondents (Percent ± SE).

| Measure       | Wave 1 (mid-April) | Wave 2 (mid-May) | Wave 3 (late July) | Wave 4 (n = 600) | P-for-trend* |
|---------------|---------------------|------------------|--------------------|------------------|-------------|
| (n = 637)     | (n = 600)           | (n = 600)        | (n = 602)          |                  |             |
| Sex           |                     |                  |                    |                  |             |
| Male          | 44.3 ± 5.5          | 43.7 ± 5.5       | 29.8 ± 5.5         | 36.5 ± 5.5       | <0.001      |
| Female        | 2.4 ± 0.7           | 2.4 ± 0.7        | 2.2 ± 0.6          | 2.3 ± 0.7        |             |
| Age group     |                     |                  |                    |                  |             |
| 15–19 years   | 66.5 ± 2.1          | 61.5 ± 2.4       | 52.6 ± 2.4         | 44.4 ± 2.8       | 0.272       |
| (underaged)   | 13.6 ± 2.4          | 13.5 ± 1.1       | 11.5 ± 1.1         | 16.6 ± 2.7       |             |
| 20–29 years   | 45.8 ± 5.7          | 55.7 ± 5.4       | 34.7 ± 5.2         | 37.2 ± 5.6       | 0.023       |
| (underaged)   | 3.7 ± 0.4           | 4.0 ± 0.4        | 4.4 ± 0.4          | 4.1 ± 0.7        |             |
| 30–39 years   | 49.0 ± 5.3          | 43.2 ± 5.1       | 32.9 ± 5.5         | 36.9 ± 5.7       | 0.005       |
| 40–49 years   | 46.9 ± 3.7          | 47.5 ± 3.5       | 35.6 ± 3.2         | 33.2 ± 3.7       | 0.003       |
| 50–59 years   | 4.1 ± 0.3           | 3.9 ± 0.3        | 3.8 ± 0.3          | 3.7 ± 0.4        | 0.466       |
| 60 years or   | 5.6 ± 0.4           | 5.4 ± 0.4        | 4.4 ± 0.4          | 4.9 ± 0.7        |             |
| older         | 58.8 ± 8.8          | 38.8 ± 6.4       | 36.4 ± 6.0         | 40.5 ± 6.7       | 0.090       |
| Region        |                     |                  |                    |                  |             |
| Bangkok       | 40.4 ± 5.2          | 52.6 ± 5.1       | 34.2 ± 5.2         | 29.5 ± 5.8       | 0.034       |
| Metropolitan  | 5.2 ± 0.5           | 5.7 ± 0.5        | 5.4 ± 0.7          | 5.1 ± 1.1        |             |
| Area          | Central             | 54.7 ± 4.0       | 40.7 ± 4.5         | 55.6 ± 4.7       | 0.237       |
| North         | 4.8 ± 0.4           | 4.4 ± 0.4        | 5.2 ± 0.4          | 5.2 ± 0.4        |             |
| Northeast     | 55.4 ± 4.3          | 43.9 ± 4.9       | 19.4 ± 4.5         | 45.4 ± 4.9       | <0.001      |
| South         | 3.8 ± 0.4           | 3.4 ± 0.4        | 4.4 ± 0.4          | 4.4 ± 0.4        |             |
| Region        | 43.1 ± 4.4          | 44.7 ± 4.2       | 37.9 ± 4.0         | 38.0 ± 4.7       | 0.155       |
| Bangkok       | 3.5 ± 0.3           | 3.8 ± 0.3        | 3.3 ± 0.3          | 3.3 ± 0.3        |             |
| Metropolitan  | 48.6 ± 5.9          | 59.3 ± 5.4       | 34.5 ± 5.2         | 28.2 ± 5.8       | 0.001       |
| Area          | South               | 6.0 ± 0.5        | 5.5 ± 0.5          | 5.1 ± 1.1        |             |

Table 3
Observed behaviors of community members and exposure to social drinking and alcohol marketing activities during Waves 1 thru 3 of the surveys (Percent ± SE).

| Measure                      | Overall (n = 230) | Bangkok Metropolitan Area (n = 231) | Central (n = 281) | North (n = 526) | Northeast (n = 211) | South (n = 525) | P-value * |
|------------------------------|------------------|------------------------------------|-------------------|----------------|---------------------|----------------|-----------|
| Respondent noticed alcohol sale in their community/village during the ban (yes %) | 5.8 ± 0.6 | 15.2 ± 2.4 | 4.7 ± 1.2 | 1.4 ± 0.7 | 4.6 ± 0.9 | 6.2 ± 1.7 | <0.001 |
| Respondent noticed social drinking in their community/village during the ban on alcohol sale (yes %) | 15.7 ± 0.5 | 30.7 ± 3.0 | 12.7 ± 1.7 | 14.9 ± 1.6 | 10.8 ± 1.2 | 17.1 ± 1.7 | <0.001 |

Participants seen / exposed to marketing activities since the start of the outbreak

| Wave 2 (mid-May 2020) (n = 1563) | (n = 1563) | (n = 315) | (n = 281) | (n = 525) | (n = 212) |
|----------------------------------|------------|-----------|-----------|-----------|-----------|
| Online parties                   | 12.5 ± 0.8 | 9.6 ± 1.9 | 7.3 ± 1.5 | 18.5 ± 2.3 | 13.9 ± 1.5 | 11.8 ± 2.2 | <0.001 |
| Concert / live music event       | 5.1 ± 0.6  | 1.3 ± 0.7 | 2.9 ± 0.9 | 3.2 ± 1.1 | 5.9 ± 1.0 | 12.7 ± 2.3 | <0.001 |
| Sweepstakes                      | 2.1 ± 0.4  | 0.0 ± 0.0 | 1.3 ± 0.6 | 0.4 ± 0.4 | 0.6 ± 0.3 | 11.8 ± 2.2 | <0.001 |
| Online / Social media promotion  | 2.6 ± 0.4  | 2.6 ± 1.1 | 1.3 ± 0.6 | 5.3 ± 1.3 | 0.2 ± 0.2 | 6.6 ± 1.7 | <0.001 |
| Promotion of ‘responsible drinking’ | 4.7 ± 0.5 | 0.9 ± 0.6 | 4.1 ± 1.1 | 7.5 ± 1.6 | 4.2 ± 0.9 | 7.1 ± 1.8 | 0.004 |

Wave 3 (mid-June 2020) (n = 1557) | (n = 1558) | (n = 224) | (n = 282) | (n = 520) | (n = 215) |
|----------------------------------|------------|-----------|-----------|-----------|-----------|
| Online parties                   | 8.1 ± 0.7  | 2.2 ± 1.0 | 9.8 ± 1.7 | 12.4 ± 2.0 | 7.3 ± 1.4 | 7.9 ± 1.8 | <0.001 |
| Concert / live music event       | 4.0 ± 0.5  | 2.2 ± 1.0 | 5.7 ± 1.3 | 3.2 ± 1.0 | 4.6 ± 0.9 | 3.3 ± 1.2 | 0.248 |
| Sweepstakes                      | 0.8 ± 0.2  | 0.4 ± 0.4 | 1.6 ± 0.7 | 1.1 ± 0.6 | 0.0 ± 0.0 | 1.4 ± 0.8 | 0.656 |
| Online / Social media promotion  | 1.2 ± 0.2  | 0.0 ± 0.0 | 1.6 ± 0.7 | 1.4 ± 0.6 | 0.0 ± 0.0 | 4.2 ± 1.4 | 0.073 |
| Promotion of ‘responsible drinking’ | 2.4 ± 0.4 | 0.4 ± 0.4 | 1.6 ± 0.7 | 4.6 ± 1.3 | 2.7 ± 0.7 | 1.9 ± 0.9 | 0.027 |

* Pearson’s chi-square with Rao & Scott adjustment for differences between regions; bold numbers denote statistical significance after Bonferroni correction for multiple comparisons.
reported and prone to inaccuracy due to social desirability. Secondly, we asked only the Wave 1 participants about behaviors of their community members, thus we did not have information on changes in social gatherings during subsequent periods. Thirdly, exposure to alcohol marketing activities was quantified only with regards to never vs. ever in this study, and did not include details regarding each encounter. Lastly, the interview was done only among respondents in possession of mobile phones, thus the generalizability of our findings may be limited.

5. Conclusion

In conclusion, we summarized changes in drinking behaviors, observed behaviors of community members, and alcohol marketing activities in Thailand amidst introduction and repeal of quarantine and alcohol control measures. We observed that the behaviors of Thai drinkers varied according to the introduction or easing of alcohol control measures. However, social drinking and alcohol sale persisted in a small proportion of communities and villages despite the ban on alcohol sale. A number of caveats regarding data collection methods should be taken into consideration when interpreting our study findings.

Contributors

WW prepared the tables and figures, performed additional literature review, and drafted the manuscript.

MS performed the search and review of the quarantine measures, analyzed the survey data, edited the manuscript, and approved the final manuscript for submission.

PV and SA conceptualized the study and coordinated activities among the authors, edited the manuscript, and approved the final manuscript for submission.

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The study was a non-funded research project.

Declaration of Competing Interest

None.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi: https://doi.org/10.1016/j.drugalcdep.2021.108607.

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