Supplemental Materials

Supplementary file appendix 1. Urinary cotinine \(^a\) levels in adults (≥18 years) pre and post an indoor hookah-only social event, by smoking status (N=208).

<table>
<thead>
<tr>
<th>Hookah-only Social Event (N=208) ng/mL (^b)</th>
<th>Pre Event</th>
<th>Post Event</th>
<th>Ratio (^c)</th>
<th>(p) (^d)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Hookah Smokers</strong> (n=105)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M ± SD (^e)</td>
<td>157.1 ± 259.5</td>
<td>303.2 ± 354.5</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>GM (95% CI) (^f)</td>
<td>15.2 (8.5-27.0)</td>
<td>135.7 (99.9-184.2)</td>
<td>8.9</td>
<td></td>
</tr>
<tr>
<td>Median (5-95percentile) (^g)</td>
<td>41.3 (0.2-699.9)</td>
<td>146.7 (14.4-984.9)</td>
<td>3.6</td>
<td></td>
</tr>
<tr>
<td>(Minimum-Maximum)</td>
<td>(0.03-1135.0)</td>
<td>(0.2-1733.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% above LOD (Freq/n) (^h,i)</td>
<td>98% (101/103)</td>
<td>100% (104/104)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Daily Hookah Smokers</strong> (n=20)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M ± SD</td>
<td>248.4 ± 246.4</td>
<td>452.3 ± 320.3</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>GM (95% CI)</td>
<td>128.9 (61.8-268.6)</td>
<td>287.9 (147.1-560.9)</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td>Median (5-95percentile)</td>
<td>174.3 (2.7-780.6)</td>
<td>397.5 (17.8-1119.6)</td>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td>(Minimum-Maximum)</td>
<td>(1.6-1032.8)</td>
<td>(1.8-1182.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% above LOD (Freq/n) (^j,k)</td>
<td>100% (20/20)</td>
<td>100% (20/20)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Weekly Hookah Smokers</strong> (n=46)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M ± SD</td>
<td>191.1 ± 288.9</td>
<td>343.5 ± 368.8</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>GM (95% CI)</td>
<td>32.6 (15.1-70.1)</td>
<td>176.0 (117.9-262.9)</td>
<td>5.4</td>
<td></td>
</tr>
<tr>
<td>Median (5-95percentile)</td>
<td>76.8 (0.2-964.5)</td>
<td>158.5 (15.8-959.2)</td>
<td>2.1</td>
<td></td>
</tr>
<tr>
<td>(Minimum-Maximum)</td>
<td>(0.1-1135.0)</td>
<td>(1.8-1182.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% above LOD (Freq/n) (^j,k)</td>
<td>100% (46/46)</td>
<td>100% (46/46)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Occasional Hookah Smokers</strong> (n=39)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M ± SD</td>
<td>65.4 ± 198.97</td>
<td>175.8 ± 318.0</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>GM (95% CI)</td>
<td>1.9 (0.75-4.5)</td>
<td>66.7 (38.9-114.4)</td>
<td>35.1</td>
<td></td>
</tr>
<tr>
<td>Median (5-95percentile)</td>
<td>0.8 (0.03-699.9)</td>
<td>71.6 (10.0-984.9)</td>
<td>89.5</td>
<td></td>
</tr>
<tr>
<td>(Minimum-Maximum)</td>
<td>(0.03-993.8)</td>
<td>(0.2-1709.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% above LOD (Freq/n) (^j,k)</td>
<td>95% (35/37)</td>
<td>100% (38/38)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Non-Smokers</strong> (n=103)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M ± SD</td>
<td>0.9 ± 1.61</td>
<td>2.0 ± 5.44</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>GM (95% CI)</td>
<td>0.3 (0.2-0.4)</td>
<td>0.9 (0.7-1.1)</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Median (5-95percentile)</td>
<td>0.3 (0.03-4.7)</td>
<td>0.9 (0.2-5.1)</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>(Minimum-Maximum)</td>
<td>(0.03-9.9)</td>
<td>(0.03-43.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% above LOD (Freq/n) (^j,k)</td>
<td>83% (85/102)</td>
<td>98% (100/102)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) Cotinine is a metabolite of nicotine.
\(^b\) Cotinine values are not corrected with creatinine (ng/mL).
\(^c\) Ratio = Ratio of post to pre hookah event cotinine GMs and medians.
\(^d\) \(p\) Hookah events: pre vs. post event.
\(^e\) \(p\) values were derived from Wilcoxon signed-rank tests.
\(^f\) M ± SD = Arithmetic mean and Standard Deviation.
\(^g\) GM (95% CI) = Geometric mean and 95% Confidence Interval.
\(^h\) % Above LOD = Percentage of urine samples above the Limit of Detection (LOD); cotinine LOD = 0.1 ng/mL.
\(^i\) Freq/n = Frequency of samples with levels above the LOD / n-size of samples per group.
\(^j\) Missing values due to interference (n=4) or missing urine samples (n=1).
\(^k\) \(p\) values were derived from Mann-Whitney U tests.

Significant levels are bolded; two-tailed alpha level \(p < 0.05\).
Supplementary file appendix 2. Urinary levels of cotinine\(^a\) pre and post hookah-only indoor social events at hookah-lounges vs. at home, by smoking status (N=208).

<table>
<thead>
<tr>
<th></th>
<th>Hookah Lounge</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hookah-only Social Event (n=108)</td>
<td>Hookah-only Social Event (n=100)</td>
</tr>
<tr>
<td></td>
<td>ng/mL</td>
<td>ng/mL</td>
</tr>
<tr>
<td>Pre Event</td>
<td>Post Event</td>
<td>Ratio(^b)</td>
</tr>
<tr>
<td>All Hookah Smokers (n=105)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M ± SD(^f)</td>
<td>136.4 ± 242.9</td>
<td>300.3 ± 348.2</td>
</tr>
<tr>
<td>GM (95% CI)(^g)</td>
<td>12.3 (5.5-27.4)</td>
<td>139.4 (92.0-211.4)</td>
</tr>
<tr>
<td>Median (5-95percentile)</td>
<td>30.2 (0.2-699.5)</td>
<td>133.4 (15.3-959.2)</td>
</tr>
<tr>
<td>(Minimum-Maximum)</td>
<td>(0.03-1083.5)</td>
<td>(0.2-1709.9)</td>
</tr>
<tr>
<td>% above LOD (^b) (Freq/n)(^i,j)</td>
<td>98% (52/53)</td>
<td>100% (54/54)</td>
</tr>
<tr>
<td>Non-Smokers (n=103)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M ± SD(^f)</td>
<td>0.9 ± 1.7</td>
<td>3.1 ± 7.5</td>
</tr>
<tr>
<td>GM (95% CI)(^g)</td>
<td>0.3 (0.2-0.5)</td>
<td>1.2 (0.9-1.7)</td>
</tr>
<tr>
<td>Median (5-95percentile)</td>
<td>0.3 (0.03-4.7)</td>
<td>1.1 (0.3-14.8)</td>
</tr>
<tr>
<td>(Minimum-Maximum)</td>
<td>(0.03-9.8)</td>
<td>(0.2-44.0)</td>
</tr>
<tr>
<td>% above LOD (Freq/n)</td>
<td>85% (44/52)</td>
<td>100% (52/52)</td>
</tr>
</tbody>
</table>

\(^a\) Cotinine is a metabolite of nicotine. Cotinine values are not corrected with creatinine (ng/mL).

\(^b\) Ratio = Ratio of post to pre hookah event cotinine GMs and medians.

\(^c\) \(^p\) Hookah lounge: pre vs. post event.

\(^d\) \(^p\) Home: pre vs post event.

\(^e\) \(^p\) values were derived from Wilcoxon signed-rank tests; two-tailed alpha level \(p < 0.05\).

\(^f\) \(^p\) Change in cotinine, hookah lounge vs. home.

\(^g\) \(^p\) values were derived from Mann-Whitney U tests; two-tailed alpha level \(p < 0.05\).

\(^h\) M ± SD = Arithmetic mean and Standard Deviation.

\(^i\) GM (95% CI) = Geometric mean and 95% Confidence Interval.

\(^j\) % Above LOD = Percentage of urine samples above the Limit of Detection (LOD); cotinine LOD = 0.1 ng/mL.

\(^k\) Freq/n = Frequency of samples with levels above the LOD / n-size of samples per group.

\(^l\) Missing values: interference (n=4), missing samples (n=1).

Significant levels are bolded.