Introduction

Eating high added sugar-containing foods has recently increased among Saudis of all ages (1). This is expected to have a negative effect on their health and quality of life. This research investigated the relationship between the increased added-sugar intake and the quality of sleep among university female students. The researchers hypothesized that there will be an association between the added-sugar consumption and the quality of sleep.

Methodology

Hundred randomly-selected female participants (18 to 25 years old) from all specialties of the college of applied studies and community service at IAU participated in the study. Participants who are pregnant, lactating, diabetic, obese (BMI >30 kg/m²) or taking sleeping pills have been excluded.

The included participants were given a food frequency questionnaire; sleep quality questionnaire and 24-hour dietary recall for 2 days. The protocol was approved by the Institutional Review Board of Imam Abdulrahman Bin Faisal University in Dammam, Saudi Arabia (IRB-UGS014-03-2019).

Data were analyzed using IBM SPSS Statistics 25. Bar plot was used for graphical representation. Chi-square test was used for measuring the association between added-sugar intake and sleep quality. p<0.05 was considered as statistically significant.

Discussion

This study shows that there is a significant effect of added-sugar consumption on the quality of sleep in non-caffeine-consuming participants based on 24-hour dietary recall. The group that consumed high added sugar (more than 10% of their total energy intake) was observed to have poor quality of sleep. Such effect was not significant in the caffeine-consuming group.

Studying the relationship between sleep duration and the consumption of sugar-sweetened beverages (SSBs) among adolescents (11-20 years old), Sampasa-Kanyinga et al. (2018) found that short sleep duration was associated with consumption of SSBs in school students (2). This supports the final result of this research.

Results

Table 1: Association between added sugars and sleep quality based on 24-hour dietary recall in caffeine consuming participants (n=66).

<table>
<thead>
<tr>
<th>24 hr recall data</th>
<th>Good Sleep</th>
<th>Poor Sleep</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caffeine ≥50 cal</td>
<td>52%</td>
<td>48%</td>
<td></td>
</tr>
<tr>
<td>Add sugar ≥10 cal</td>
<td>41%</td>
<td>59%</td>
<td></td>
</tr>
<tr>
<td>Add sugar ≥10 and cal ≥60</td>
<td>35%</td>
<td>65%</td>
<td>0.480</td>
</tr>
</tbody>
</table>

Table 2: Association between added sugars and sleep quality based on 24-hour dietary recall in non-caffeine consuming participants (n=34).

<table>
<thead>
<tr>
<th>24 hr recall data</th>
<th>Good Sleep</th>
<th>Poor Sleep</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caffeine ≥50 cal</td>
<td>50%</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td>Add sugar ≥10 cal</td>
<td>31%</td>
<td>69%</td>
<td></td>
</tr>
<tr>
<td>Add sugar ≥10 and cal ≥60</td>
<td>31%</td>
<td>69%</td>
<td>0.014</td>
</tr>
</tbody>
</table>

Clinical relevance

High intake of added sugars has negative effects on blood pressure, diabetes, hyperactivity and overall health. Excessive consumption of some carbohydrate further showed negative effects on the sleep onset [3-4]. Inadequate sleeping has been associated with weight gain, stress and insulin resistance [5-6]. Good sleep, however, has positive effect on human health. This study confirms the negative effects of high added-sugar consumption on sleep quality and duration and recommends reducing its consumption for better health and life quality.

Conclusion

To the best of our knowledge, this is the first study to address several aspects of assessing the quality of sleep and report on the effect of higher intake of added sugars. The study concludes that the poor sleep quality was significantly related to higher added sugar intake.

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References