Validation of FFQ Against Food Records for Vitamin D in Qatar Population
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ABSTRACT

Background: Measurement of vitamin D nutritional status through dietary assessment is a cost effective method. The Food frequency questionnaire (FFQ) is usually validated against food records (FR). There is no vitamin D specific FFQ for Qatar population.

Objective: The objective of this study was to develop a vitamin D centric FFQ and validate FFQ against 3-day FR for Qatar population.

Methodology: A quantitative FFQ based on vitamin D containing foods consumed in Qatar was developed. Vitamin D content of foods were gathered from food labels and food composition tables from the USDA. A vitamin D content database was developed for this study purpose. Dietary intakes using FFQ and 3-day FR were collected from 62 participants. Vitamin D intakes from FFQ and 3-day FR were validated with quartile comparison and Bland-Altman (BA) tests.

RESULTS

The level of agreement between the FFQ and the 3-DFR in relation to vitamin D intake within all subjects (n=62) is presented in the Bland Altman plot shown in Figure 1. The mean difference between the FFQ and 3-DFR for vitamin D intake was 152.1 IU. The plot shows the upper agreement level as 551.5, and the lower agreement level which is -247.3. The results were positioned between this limit ranges with a Bland Altman index of 3.23%, indicating an agreement between the two methods.

Table 1. Quartile correlation of vitamin D intake from food frequency questionnaire and 3-day food records

<table>
<thead>
<tr>
<th>Quartile difference</th>
<th>Frequency, n</th>
<th>%</th>
<th>Cumulative, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classified into same quartile</td>
<td>23</td>
<td>37.10</td>
<td>23 (37.1)</td>
</tr>
<tr>
<td>Classified into adjacent quartile (±1)</td>
<td>22</td>
<td>35.48</td>
<td>45 (72.58)</td>
</tr>
<tr>
<td>Classified into distant quartiles (2 quartiles apart)</td>
<td>13</td>
<td>20.97</td>
<td>58 (93.55)</td>
</tr>
<tr>
<td>Classified into opposite quartiles (misclassified)</td>
<td>4</td>
<td>6.45</td>
<td>62 (100)</td>
</tr>
<tr>
<td>Total</td>
<td>62</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Quartile comparison between the vitamin D intakes from FFQ and 3-day FR is presented in Table 1. Out of 62, 45 (=73%) subjects’ vitamin D intake obtained from FFQ and FR tools were categorized into the same or adjacent (±1) quartile. Only 4 out 62 (=6%) participants’ vitamin D intakes were placed in the opposite quartile (misclassified). This quartile classification from both tools indicates a good agreement between these two dietary assessments.

CONCLUSION

In conclusion, an agreement was achieved between the vitamin D intakes of FFQ and 3-day FR based on the results from the BA agreement plot and the quartile classification. This further indicates that the FFQ can be used as a valid dietary method to assess the vitamin D nutritional status for Qatar’s population.

REFERENCES


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