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Evaluation of MyFitnessPal’s Recommended Protein Intake Compared to The United States Recommended Dietary Allowances

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Background

The proliferation of health and fitness mobile applications (apps) has created new avenues for healthcare to improve access to medical support and management outside of a brick-and-mortar facility. MyFitnessPalTM (MFP) is one of the most well-known commercial health and fitness mobile apps with over 50 million downloads as of 2019 on Android™ platforms alone.1 The app provides users with a free-to-use digital medium to track their daily food and water intake and monitor progress towards personalized weight-based goals. Recent national and international surveys have shown an increase in use of MFP in dietician practice.2,4

Currently, only two validation studies have been conducted on MFP with both indicating an underestimation of nutrients when compared to other validated dietary recording methods such as a pen-and-paper dietary record or 24-hour dietary recall.5,6 A recent evaluative study out of Japan created a mobile app using the Academy of Nutrition and Dietetics’ Consumer Health Informatics work group’s 25/7 member app technology survey (published correction appears in J Acad Nutr Diet. 2017 Sep;117(Suppl 5):S1) to assess the accuracy and validity of the dietary tracking application have been brought into question in the clinical and research settings.

This secondary analysis study aimed to evaluate the auto-populated protein recommendations provided through MyFitnessPal against the most current Recommended Dietary Allowances (RDA) established by The National Academies for Science, Engineering, and Medicine (NASEM). This study utilized preliminary data collected from the Dietary, Sleep, and Exercise Habits of Registered Nurses Working Full-Time, 12-Hour Day or Night Shifts study. From the data, researchers discuss the findings, clinical implications, and potential negative consequences of chronic aberrant protein intake at risk populations.

Research Methods

• n = 30 participant MyFitnessPal accounts analyzed
• All participants were currently employed registered nurses in WA, OR, ID, CA, and TX
• All participants’ weight goals were set to “maintain my current weight”
• Participant characteristics are reported in Table 1

Results

• MFP significantly exceeded standard daily protein recommendations by 35.3g to 50.3g (p<0.001)
• The mean protein recommendation from MFP (110.6g, 95% CI [103g-118.2g]) was compared to the mean protein recommendations for the participants using the US RDA 0.8 g·kg⁻¹·d⁻¹ (60.3g, 95% CI [55.2g-65.3g]) and 1 g·kg⁻¹·d⁻¹ (75.3g, 95% CI [69g-81.6g]) in Figure 1
• The mean MFP protein recommendation corresponds to 1.5 g·kg⁻¹·d⁻¹

• MFP exceeded the RDA by 216.6% for underweight participants, 196% for normal weight participants, 193.8% for overweight participants, and 160% for participants with obesity.
• MFP exceeded 1 g·kg⁻¹·d⁻¹ by 173.3% for underweight participants, 156.8% for normal weight participants, 155.1% for overweight participants, and 128% for participants with obesity.

Discussion

The results of this study showed statistically significant overestimation of protein intake recommendations from MFP when compared to the RDA and 1 g·kg⁻¹·d⁻¹. MFP’s default protein recommendation of 20% of calories from protein is within the Acceptable Macronutrient Distribution Range (AMDR) of 10-35% of calories from protein. However, our data demonstrates this results in protein recommendations that significantly exceed the RDA of 0.8 g·kg⁻¹·d⁻¹. These findings raise several key points for consideration if using these tools, such as MyFitnessPal, with patients/clients.

The first consideration is if the protein recommendations from MFP pose adverse health risks from prolonged excessive intake. This is crucial for populations where a high protein diet can lead to a build-up of nitrogenous waste and induce damage to the kidneys. Conditions that are of greatest concern from this form of renal damage are diabetes mellitus (DM), chronic kidney disease (CKD) and end stage renal disease (ESRD). The updated recommended protein intakes are 0.5-0.6 g·kg⁻¹·d⁻¹ for patients with CKD stages III and IV in the absence of DM and 0.6-0.8 g·kg⁻¹·d⁻¹ for those with DM.7 These values are dramatically less than the default protein intake recommended by MFP.

Another consideration with long-term elevated protein intake is the potential deleterious effects on bone health. Literature has demonstrated that excessive protein intake increases urinary calcium excretion.8,9 The surge in urinary calcium losses contribute to bone resorption and can subsequently heighten the risk of orthopedic complications, such as osteopenia, osteoporosis, and bone fractures.10,11 Additionally, excessive urinary calcium losses may increase the risk for developing calcium oxalate nephrolithiasis.12

It is imperative for health care professionals to critically analyze the researched validity, safety, and efficacy of health apps prior to use with patients diagnosed with chronic diseases.

Reference List

2. Sauceda AM, RDN, Frederico C MS, RDN, LDN, Pellechia K RDN, Starin D MS, RDN. Results of the Academy of Nutrition and Dietetics’ Consumer Health Informatics work group’s 25/7 member app technology survey (published correction appears in J Acad Nutr Diet. 2017 Sep;117(Suppl 5):S1) to assess the accuracy and validity of the dietary tracking application have been brought into question in the clinical and research settings.

Table 1. Characteristics of study participants

<table>
<thead>
<tr>
<th></th>
<th>Female Participants</th>
<th>Male Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age (years) (SD)</td>
<td>32.4 (±9.1)</td>
<td>32.4 (±9.1)</td>
</tr>
<tr>
<td>BMI m/kg² (5D)</td>
<td>25.8 (±5.0)</td>
<td>29.7 (±3.6)</td>
</tr>
<tr>
<td>BMI &lt;18.5 m/kg², n (%)</td>
<td>2 (8%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>BMI 18.5-24.9 m/kg², n (%)</td>
<td>9 (36%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>BMI 25.0-29.9 m/kg², n (%)</td>
<td>8 (32%)</td>
<td>3 (12%)</td>
</tr>
<tr>
<td>BMI ≥30.0 m/kg², n (%)</td>
<td>6 (24%)</td>
<td>2 (40%)</td>
</tr>
</tbody>
</table>

Figure 1. Comparison of daily protein recommendations from MyFitnessPal, RDA 0.8 g·kg⁻¹·d⁻¹, and 1 g·kg⁻¹·d⁻¹ with 95% CIs. RDA = Recommended Dietary Allowance. CI = Confidence Interval.

Figure 2. Mean percent differences in MFP protein compared to RDA and 1.0 g·kg⁻¹·d⁻¹ with 95% CI. CI = Confidence Interval.