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Allison Greene
Larner College of Medicine at the University of Vermont

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Improving Adolescent Nutrition:
Using Smartphone Applications to Guide Healthy Eating

Allison Greene
Family Medicine Clerkship 2017
Faculty Mentor: Dr. Whitney Calkins
Family Medicine – South Burlington
Problem Identification (1)

- Body Mass Index (BMI) is used to calculate overweight and obesity. In children, this is measured against percentiles matched for sex and age. \(^5\)
  - Overweight is defined as 85\(^{th}\) – 95\(^{th}\) percentile
  - Obese is defined as > 95\(^{th}\) percentile\(^5\)

- Among high school students in the United States, 13.9% are overweight and 16% are obese. \(^7\)

- In Vermont, 12.4% of high school students are obese. \(^9\)

- Among Vermont children ages 2-19, 13.3% are overweight and 11.3% are obese. \(^4\)

- Childhood overweight and obesity have been linked to consumption of sugar sweetened beverages, high calorie foods, and low activity levels. \(^2\)
Problem Identification (2)

Percentage of high school students who had obesity, 2015.

Centers for Disease Control and Prevention[3]
Public Health Costs

• Obesity contributes to many health conditions including hypertension, diabetes, arthritis, and low self esteem. \[^2\]

• Economic effects of childhood obesity are direct and indirect.
  • Direct costs, including medications, emergency room visits, and outpatient appointments total an estimated **$14.1 billion per year**. Costs for inpatient medicine total an additional **$237.6 million**. \[^1, 8\]
  • About half of obese school-aged children will struggle with obesity as adults. Indirect costs associated with decreased employment, job absenteeism, and decreased productivity total **$506** per obese adult worker per year. \[^1, 8\]

• According to the Duke Global Health Institute, childhood obesity is associated with an additional **$19,000** in health care associated costs over the lifetime. \[^6\]
Community Perspective (1)

Dr. Erica Gibson, MD (Adolescent Medicine Specialist)

- Interview highlights:
  - Childhood and adolescent obesity is a significant public health concern
  - Often finds that kids and teens do not really know what healthy eating means
  - Important concepts: portion control, understanding carbs and proteins, healthy fats, hidden sugars
  - It is often helpful for adolescents to track what they are eating
  - It would be interesting to see what smartphone apps are available that might appeal to adolescents since teens frequently use their phones.
Caryl Davidson, RN (South Burlington High School Nurse)

• “Portion sizes are way out of control and this is perpetuated by advertisements for food and drink.
• Often [students] don’t eat any food but will have a very caffeine rich drink... Those drinks are also often loaded with sugar.
• Most of my students will say they didn’t have time to eat. We try to brainstorm fast, healthy snacks they should keep on hand so they can grab it ‘on the go’.
• Students are less physically active than in the past and all this is contributing to the health issues that used to come on perhaps in middle age, i.e. high blood pressure, high cholesterol, type 2 diabetes, to name a few.”
After speaking with health care providers in the community, I created a list of important nutrition topics for teens, including:

- Macronutrient Intake
- Added Sugar
- Portion Control
- Calorie Consumption
- Exercise

Researched iPhone and Android applications (apps) that addressed these issues:
- Informally surveyed providers about favorite apps to use with patients
- Completed Internet search for apps created by nutritionists and physicians
- Downloaded and personally trialed several apps
Intervention & Methodology (2)

• Other criteria for choosing apps:
  • Should not have a dominant focus on weight loss, but should focus on healthy eating habits
  • Visually appealing
  • Free to download
  • Easy to use

• Created a handout for patients highlighting the selected smartphone apps
• Solicited feedback from providers regarding layout and app selection
Results

- The patient handout introduces the following apps:
Tips for Teens: Healthy Eating Made Easy
(Phone and Android Apps)

Fooducate is an easy-to-use app that allows you to scan the barcodes of your favorite foods to learn about their nutritional quality. Each food, from staninov to granola bars to cheeseburgers, gets a grade from A to D and explains why each is a healthy or not so healthy choice. You can also use the "Get Tips" feature to stay informed about nutrition in the news—like how much sugar is really in that Starbucks® Frappacino. (Free)

Waterlog is a simple app that helps you keep track of the amount of water you consume each day. Water is the best choice for staying hydrated — keeping track of your water intake can help you avoid soda and other sugary beverages, which contain excessive amounts of sugar and extra calories. Don’t like the taste of plain water? Try adding sliced lemons, strawberries, or cucumbers for added flavor. (Free)

MyFitnessPal is perfect for those looking to track nutrient intake, portion control, and advances all in one place. It personalizes the number of calories you should aim for each day and allows you to record your meals and physical activity to help you reach your goals. (Free)

It can be hard to decode nutrition labels when it comes to added sugar. Invert sugar, high fructose corn syrup, brown rice syrup are just a few of the names to look out for. The American Heart Association recommends limiting daily added sugar to no more than 6 teaspoons for females and 9 teaspoons for males. Sugar Rush makes it easy to determine the amount of added sugars in packaged foods—just scan the barcode! (Free)

Kurbo uses a "smart light" system to grade foods and allows users to set goals and track their daily intake. Green light for foods like fruits and vegetables—eat lots of these. Yellow light for foods like lean protein and whole grains—healthy, but watch the portion size. Red light for foods that should make you stop and think—try to eat these foods only on occasion. Kurbo offers a one-week free trial, but requires a monthly subscription after that. Subscriptions are fairly expensive ($332 for 3 months), but include one-on-one video coaching, daily text motivation, and games.

Results: Patient Handout
Evaluation of Effectiveness & Limitations

**Effectiveness:**

- Faculty mentor pleased with final product.
- It is difficult to evaluate the effectiveness of the handout without surveying patients – see considerations for future intervention.

**Limitations:**

- No satisfactory app found for providing visual representations of appropriate portion sizes.
- Patients often receive extensive paperwork at the end of their visit; an additional handout may overload patients with printed information.
- There was no budget associated with this project, which limits access to color printing. Handout is less visually appealing in black and white.
- Handout is not available in PRISM, making it less readily available for providers to give to patients.
Future Interventions

- Create PRISM SmartPhrase to easily insert handout into patient instruction sheet, which can be printed at the end of an office visit.
- Survey adolescent patients and their parents regarding the information provided on the handout.
- Collaborate with local schools to schedule a nutrition education presentation or healthy cooking classes.
- Create a new smartphone app which incorporates a greater number of nutrition topics, allowing for fewer downloads.
References


