



Mobilizing Nutrition Education-Is There An App For That?

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Today's Presenters

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- Teaching Assistant Professor
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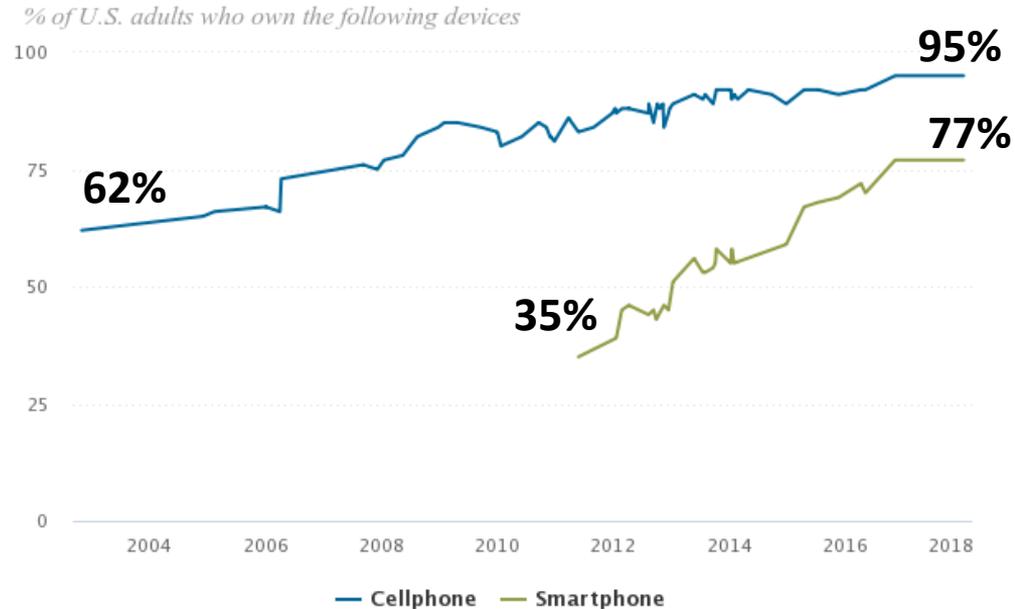


Learning Objectives:

After this presentation, participants should be able to:

1. Analyze the **benefits and limitations of app use** in nutrition interventions based on the research evidence.
2. **Appraise app quality** in order to guide app selection and incorporation into nutrition interventions.
3. Explain **current developments and future directions** for nutrition educators.

US Adult Phone Users

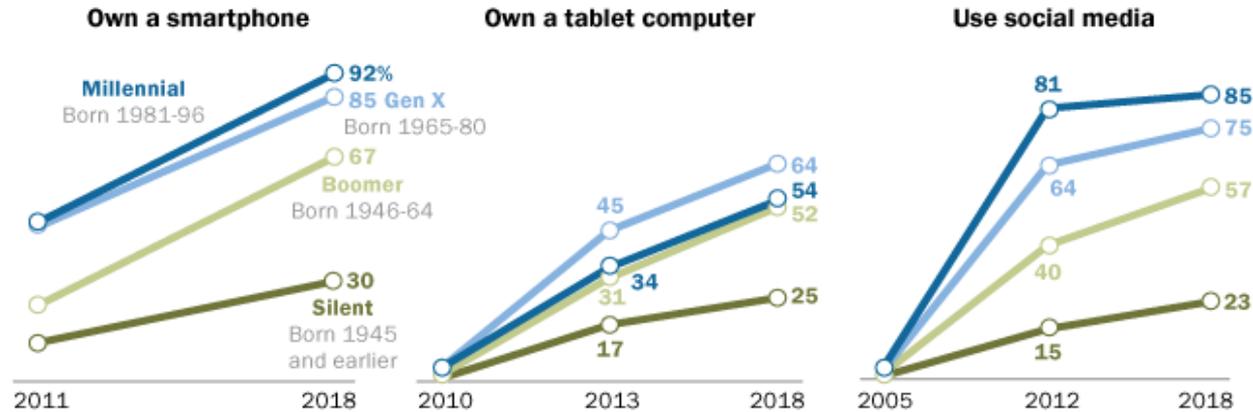


Source: Surveys conducted 2002-2018.
PEW RESEARCH CENTER

Technology Use Across the Generations

Millennials lead on some technology adoption measures, but Boomers and Gen Xers are also heavy adopters

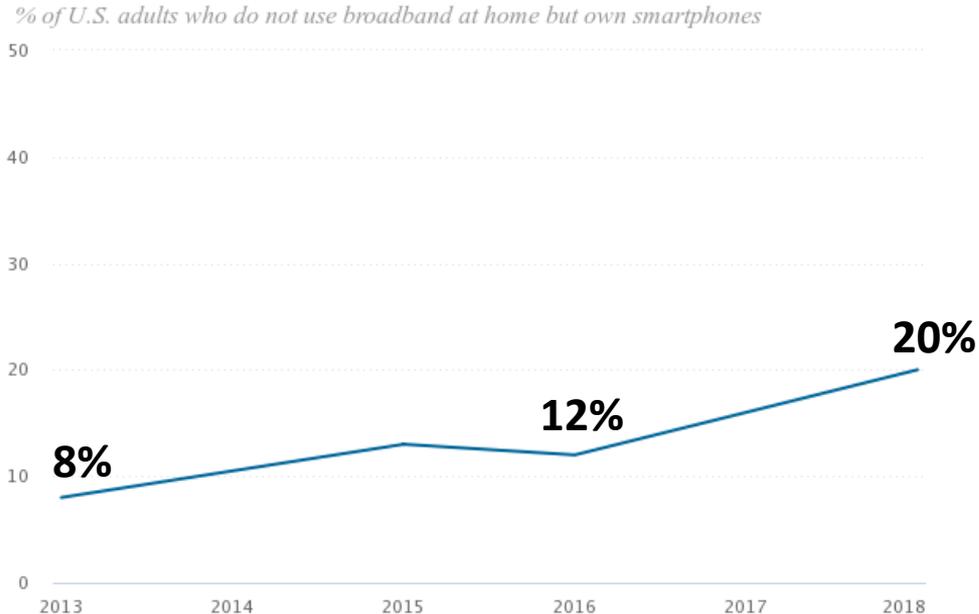
% of U.S. adults in each generation who say they ...



Source: Survey conducted Jan. 3-10, 2018. Trend data are from previous Pew Research Center surveys.

PEW RESEARCH CENTER

“Smartphone Dependency” by US Adults



Source: Surveys conducted 2013–2018. Data for each year based on a pooled analysis of all surveys containing broadband and smartphone questions fielded during that year.
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Apps for Special Populations



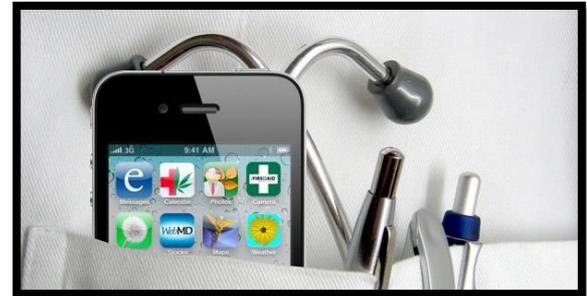
- mHealth has potential to *reduce* the incidence & prevalence of health disparities.
- mHealth messages need to meet:
 - literacy, language, cultural & motivational needs of the target population.
- SMS text-messaging interventions have proven successful in low income populations.
- More research is needed on health apps in underserved populations.

Health Apps

- **100,000 health apps** currently available in App stores
- **58% of US mobile phone users** have downloaded a mobile health app¹

Most common reasons to download a health app:

- **Track physical activity (52.8%)**
- **Track diet (46.6%)**
- **For weight loss (46.8%)**
- **To learn new exercises (34.0%)²**



(¹Carroll et al., 2017; ²Krebs & Duncan, 2015)

Characteristics of Health App Users

- Young, urban, educated, English-speaking females
- Report excellent health & meet PA guidelines
- Have intentions to:
 - Improve fruit & veg intake
 - Increase physical activity
 - Lose weight¹



Most Popular Diet Health Apps in the US



myfitnesspal



Weight Watchers Mobile



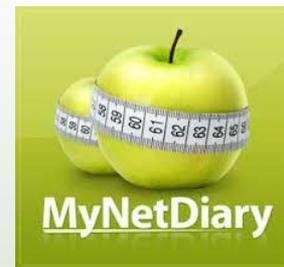
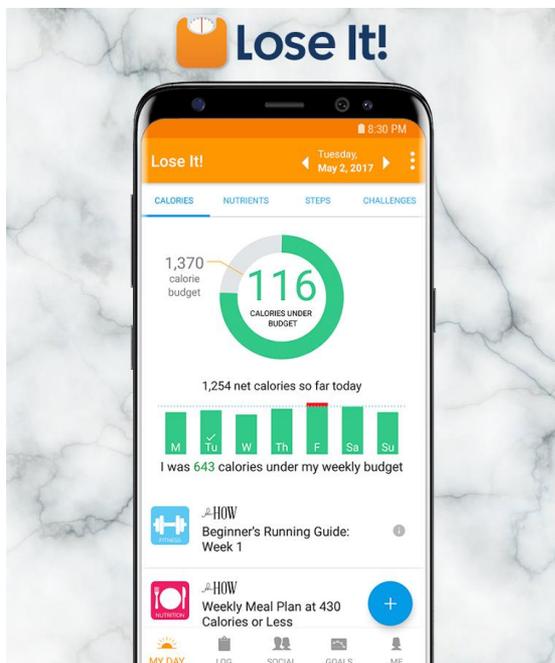
Track



Cook



Calculate



Why use health apps?



- Familiar
- Low to no cost
- Accessible
- 24-7 availability
- Provides different types of support
 - a. Self-monitoring behaviors
 - b. Social support

(Hingle & Patrick 2016)

- Improved **scalability & feasibility** of health services
 - Decreased health care costs & burden
- Frequent **engagement**
 - Consistency
 - Convenience
 - Feedback w/ pts

*****Superior *effectiveness on health outcomes & behaviors?***

(Redman & Sutton 2016)

Apps efficacy to improve Diet & PA

Significant improvements in diet & PA behaviors in interventions that included:

- Single health behavior interventions
- Sample sizes > 90 participants
- Durations > than 8 weeks

Behavior change techniques included:

- Goal setting
- Self-monitoring with performance feedback
- Motivational, tailored messages
- Gamification
- Social support
- Team challenges



2018 Effectiveness of Apps for Lifestyle Improvements Systematic Review

- **Assess the effectiveness of app-based interventions > than 3 months**
- **1228 screened, 9 included in systematic review**
 - **In 8/9 studies, apps more effective for improving lifestyle**
 - **In 6/9 studies, app group had statistically sig improvements in lifestyle**
- **Further research needed on app interventions besides diabetes**

Client Perceptions of Health Apps



- **42% downloaded more than 5 health apps¹**
- **Nutrition & fitness apps are most popular w/ daily use**
 - Trust in accuracy & in data safety high
 - Perceived improved health
- **Preferred App Features:**
 - HCP communications, reminders, tracking, progress charts, view medical records, personalized recs
- **Barriers to App Use: cost, data entry burden, attrition²**
- **App-supported learning can promote behavior change, even in older adults without previous app experience³**

Barriers to Using Apps



- **Evidence-based app quality poor¹**
 - **Rate of app dissemination outpaces research**
- **Lack of personalization, health care expert involvement, behavior theory, & scientific evaluation in apps**
- **Time consuming data entry & analysis-decreases engagement**
 - **Slow results, dislike & complexity of tracking**
 - **On-going support, goal setting, photos, motivational messages wanted**
- **High level of health & technology literacy by both clients & educators**

App Safety & Privacy Precautions

- **Lack of awareness of privacy & security aspects of mobile health apps by nutrition education community**
 - Absence of personal data encryption, privacy policies, etc.¹
- **FDA Regulates Apps that:**
 - Are intended for use as an accessory to a regulated medical device (ex. Glooko Device System)
 - Transform a mobile platform into a regulated medical device
- **FDA DOES NOT Regulate:**
 - Sale or general consumer use of smartphones
 - Apps that function as an electronic/personal health record system (EHR)²
- **Mobile Health Apps Interactive Tool**
 - Federal laws for mobile health app developers³



Justine's Take Home Messages

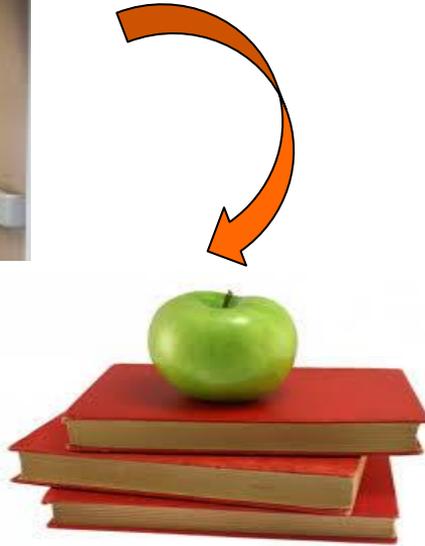
- Many **popular diet/physical activity apps** available for use
 - Can improve engagement & augment behavior change techniques in nutrition interventions
- Interventions employing apps may produce superior results for:
 - Improving **Diet Quality**
 - Increasing **Physical Activity**
 - Decreasing **Sedentary Behavior**
 - **Weight Loss**
 - Reducing **HbA1c**
- Many issues with **safety & privacy** of health apps, more research needed!



Today's Second Presenter:

Kristen DiFilippo, PhD, RDN, LDN
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Changing Food Choice Behavior

Goals of Nutrition Interventions

SHORT-TERM

Knowledge

Attitudes

Self-efficacy

Beliefs

Skills



LONG-TERM

Body weight

Biochemical indices

Health outcomes

Cost savings

Quality of life

Potential Activities

Knowledge

- Games

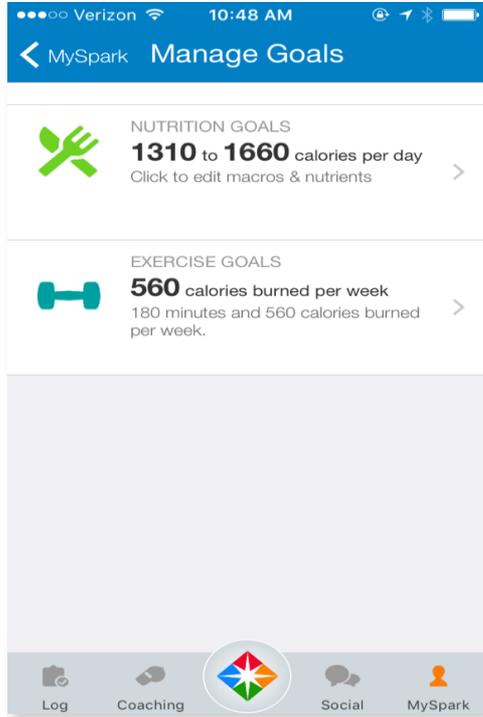
Skill-related (procedural knowledge)

- Demonstration videos
- Practice



Most Common Behavior Change Techniques

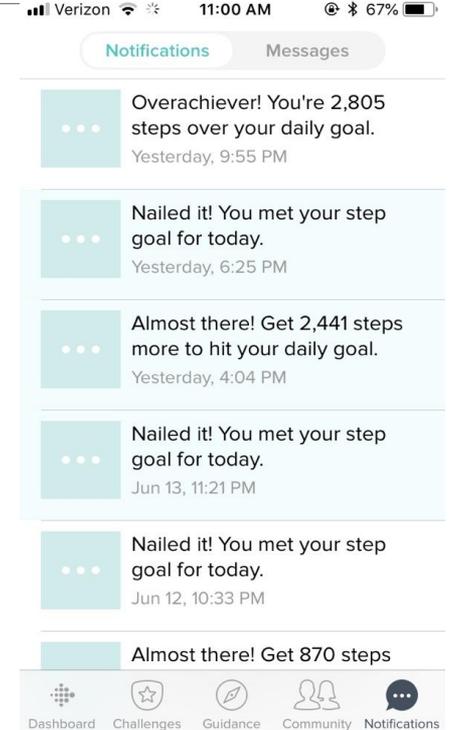
Goal setting



Self-monitoring



Feedback



Apps & Nutrition Education

Systematic Review of Literature

Will nutrition apps result in

- increased knowledge or**
- improved nutrition behavior?**

•Specifics:

- Adults**
- Without disease**
- Intervention included nutrition app**



Apps & Nutrition Education

Systematic Review of Literature

- **Very few published studies exploring behavior and knowledge outcomes**
 - **3 high quality studies identified from 17,032 reviewed titles**
 - **All focused on weight loss**

Knowledge Measures

- **Only *one* study reviewed measured *knowledge***
- ***No change in knowledge* found**

Behavior Change Measures

- No app = less willing to continue diet¹
- App = higher participant retention²
- App = increased use of intervention tools²
- App = more user control³
- App = recorded twice as many days³

Take home:

People are more likely to remain engaged with your recommendations with the support of an app.

Weight Change Measures

- **But does this mean they lose weight?**
- **Yes:**
 - **Weight loss with app was similar or greater than the same diet education without app^{1,2,3}**
 - **Weight change at 6 months²**
 - **With app: -4.6 kg (10 pounds)**
 - **With paper diary: -2.9 kg (6 pounds)**
 - **With website: -1.3 kg (3 pounds)**
- **Same results found in another review⁴**

Quality of Weight Management Apps

- **Moderate overall**
- **Higher in functionality & aesthetics**
- **Lowest in information quality**

App Evaluation

- **Thousands of apps available**
- **Aspects to consider when evaluating apps**
 - **Quality of content**
 - **Technology**
 - **Usability**

App Evaluation

- **App Quality Evaluation Tool (AQEL)**
 - Quantitative tool for nutrition professionals to use for nutrition app evaluation
 - Allows for comparison of apps based on various aspects of app content, design, and function

AQEL

(abbreviated version)

My Fitness Pal AQEL

	Mean Score / 10
Behavior Change Potential	6.4 / 10
Knowledge Acquisition	6.4 / 10
Skill Development	6.7 / 10
Function	7.5 / 10
App Purpose	8.3 / 10
Appropriate for Adults	9.7 / 10
Appropriate for Weight Loss	6.4 / 10

DASH Apps (scores out of 10)

	DASH Diet Guide	DASH Diet Food Tracker	HeartBP	DASH Diet for Healthy Weight Loss
Behavior Change Potential	2.9	4.8	4.4	1.3
Knowledge Building	4.2	7.8	6.4	3.8
Skill Building	3.6	8.2	5.6	2.9
Function	6.7	8.1	9.2	6.8
App Purpose	9.0	8.7	8.7	6.3
Appropriate for Adults	7.2	8.0	9.8	6.6
Appropriate for DASH	6.5	7.3	4.0	6.5

DASH Apps (scores out of 10)

	DASH Diet Guide	DASH Diet Food Tracker	HeartBP	DASH Diet for Healthy Weight Loss
Behavior Change Potential	2.9	4.8	4.4	1.3
Knowledge Building	4.2	7.8	6.4	3.8
Skill Building	3.6	8.2	5.6	2.9
Function	6.7	8.1	9.2	6.8
App Purpose	9.0	8.7	8.7	6.3
Appropriate for Adults	7.2	8.0	9.8	6.6
Appropriate for DASH	6.5	7.3	4.0	6.5



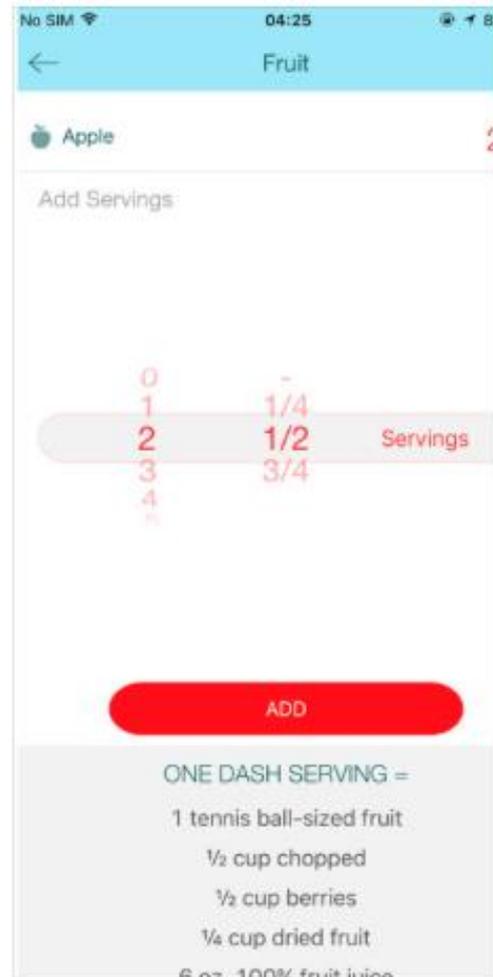
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TODAY | FRUIT | VEGETABLES |

Apple	3 1/2 (Fruit)
Beets	3 1/2 (Vegetables)
Barley	5 1/2 (Grain)
Almond milk	1 1/2 (Dairy)
Bacon	1 (Meat)
Brownies	1/4 (Sweets)
Cashews	1/4 (Nuts/Seeds)
Butter	1 (Fat)



App Resources for Nutrition Educators

NutriCare Tools Mobile App

- The NutriCare Tools app offers evidence, research, and knowledge based tools that a registered dietitian nutritionist can use in nutrition assessment and intervention of patients and clients.

NutriGuides Mobile App

- This app provides nutrition recommendations at your fingertips and highlights evidence-based recommendations from the Academy's Evidence Analysis Library.

App Reviews by the Academy of Nutrition and Dietetics

- <http://www.eatrightpro.org/resources/media/trends-and-reviews/app-reviews>

Dietitians Toolbox, MyDietitian, Healthie Mobile Apps

DASH Diet Food Tracker

App Quality Evaluation (AQEL)

- https://illinoisaces.co1.qualtrics.com/jfe/form/SV_3gY2i3sP113ehAV

Diabetes Advanced Network Access (DANA)



Conclusions



- **Apps show promise for:**
 - Supporting nutrition education
 - Promoting behavior change
 - Improving health outcomes
- **Careful evaluation and selection of apps is warranted before use**

Questions



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