Novel approaches to optimize dietary intake in older adults

Improving nutritional behaviour using e-health

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NOVEL APPROACHES TO OPTIMIZE DIETARY INTAKE IN OLDER ADULTS

Improving Nutritional Behaviour Using e-Health

Teresa Santos
Disclosure for **Teresa Santos**

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Presentation includes discussion of the following off-label use of a drug or medical device: <N/A>
LEARNING OBJECTIVES

• Increasing knowledge on e-Health literacy;

• Know what technological possibilities can be used to influence health behaviour in adults;

• Know some specific examples.
NEW KNOWLEDGE TOOLS & e-HEALTH LITERACY
• Worldwide, **45%** of the population has **access** to the **Internet** (IWS, 2015) and even in a higher rate to **mobile phones** (ITU, 2013);

• Rapidly, the internet allowed to cross **linguistic, political** and **socio-cultural borders** and **barriers**, with a simple “click of a mouse”;

• The application of the **Self-Determination Theory** (Deci & Ryan, 1985), to the use of internet has found that its consumption meets **3 of the main basic human needs:**
  - **autonomy**
  - **competence/self-efficacy**
  - **relationship with others**

  ... and confers feelings of **well-being, vitality, self-esteem** and **positive emotions** (Ryan, Rigby, & Przybylski, 2006)
The **New Technologies of Information and Communication** can be mostly used for:
- Education, science and technology
- Work
- Entertainment and Leisure
- Communication and Interpersonal relationships
- **Search for information**

However, information from the internet can be both an **opportunity** or a **challenge**... depending on its use...

... and the support of **science** on the clarification of such information is crucial.

(Eysenbach, 2001; Ponte, Jorge, Simões, & Cardoso, 2012).
• The interest in **e-Health literacy** arises in the **90's of the last century**, in the scope of **health promotion** and **health education** (Kickbusch, 1997; Loureiro et al., 2012; Nutbeam, 2000);

• In order to keep updated with the widespread availability of technologies...

• the field of **health promotion** started to move towards new delivery modes, such as the Internet and mobile phones, at an ever-increasing pace... (Bennett & Glasgow, 2009);

• ...leading to the development of the so-called **e-health** and **m-health** interventions for various **health behaviors** (Kohl, Crutzen & de Vries, 2013; Murray, 2012).
• **e-Health** is defined as “the use of emerging information and communication technology, especially the Internet, to improve or enable health and health care” (ET, 2001, p. 20);

• The goals are similar to the traditional health care system, once it is based on:
  - prevention;
  - diagnosis and **treatment** of diseases;
  - maintenance and **promotion** of population's health.

  (Etchemendy et al., 2011; Gilmour, 2007; WHO, 2016).
Theoretical e-Health Literacy Liry Model

(Chann & Kaufman, 2011; Norman & Skinner, 2006)
Electronic Health Records
Enabling the communication of patient data between different healthcare professionals

ePrescribing, eAppointments

Decision support tools
(care pathways, guidelines)

Telemedicine & Telecare applications
Physical and psychological treatments at a distance

mHealth
mobile health devices

Internet based technologies and services

E-health
Key application areas
Generally...

- Research has shown that the people who **most uses** internet for health information are the ones with **chronic illness**, those who find the greatest **barriers in accessing health care** services and the ones with **low social support** (Bundorf, Wagner, Singer, & Baker, 2006);

- It is also observed that:
  - **Emotional support** obtained from health professionals;
  - **Satisfaction with information** regarding the disease and with the **communication between doctor-patient**.
  - **Urgency** to satisfy such needs through Internet research.
And so, when the path is done for the appearance of the so called: “Dr. Google”

“More and more patients are going to the Internet for medical advice. To keep my practice going, I changed my name to Dr. Google.”
In fact, it is undeniable that virtual information has changed the relationship between doctor-patient, and also the management of the disease and the patients...

*Bringing several *difficulties* into this relationship*
1. Internet/mobile tools became the first source for health information

“You can’t list your iPhone as your primary-care physician.”
2. Disagreement/Doubting about the diagnosis

“I already have my diagnosis through an online system, but I am here to have a second opinion.”

3. Doctor as a “second opinion” in health

“I think you’ve diagnosed me with the wrong illness. According to this website.”
4. Easiness to get a wrong, and much more serious diagnosis than it is in reality

How to deal with “Dr. Google”? Is the “DON’T USE IT” effective?
MOTIVATIONAL INTERVIEWING PRINCIPLE:
(Miller & Rollnick, 2012)

- Roll with resistance (not confront the client’s resistance)
- Empathy
e-HEALTH TOOLS TO IMPROVE NUTRITIONAL BEHAVIOUR
• **Nutrition-related behaviors** are considered as major contributors to **poor health** and **pre-mature death** around the world (identified in the Global Burden of Disease Study) (Lim et al., 2012);

• The recent “explosion” of available electronic tools and devices allowed to **assess**, **monitor** and **improve nutrition-related behaviors** and **body weight**.

• Therefore, e-Health interventions have been also applied to **nutritional behaviour**, and different generations can be distinguished (Olson, 2012):

  ✓ **“Second-generation”**: direct interaction with technology, including websites, email, and CD-ROM programs;

  ✓ **“Third-generation”**: included mobile technologies, such as mobile phones and hand-held computers, which may enhance the potential for timely feedback and assessment.
Advantages (Murray, 2012):
- interactive
- tailored
- cost-effectiveness

Challenges:
- to change dietary behaviors appears to be more difficult, than other behaviours (Murray, 2012);
- high attrition rates (Kohl LFM, Crutzen R, de Vries NK. 2013);
- equity in terms of internet access;
- interventions' efficacy? (Olson, 2016)

But before starting to design or implement interventions, it is needed to look at what have been already done...
Evidenced-based behavioral nutrition interventions conducted using e- or m-Health technologies (Olson, 2016)

- Studies (2005-2009) were mainly centered on:
  - decreasing fat intake
  - increasing fruit and vegetable intake

  and approximately 75% of trials presented positive effects;

- By 2010:
  - computer interventions highly tailored changed to personalized electronic interventions, more focused on self-monitoring of body weight and nutrition-related behaviors as key features;
  - more diverse target population participated and mobile components were added;
  - progress was done from self-reported to objective assessment measures.
Main features of the successful interventions... (Olson, 2016)

- highly structured, self- or semi-self-guided;
- tailored to individual’s needs and to it’s behavioral and psychosocial characteristics;
- provided assessment and personalized feedback based on behavioral theories;
- length can be highly varied;
- interactive (graphics, animations, audio and/or video), using electronic media and technologies such as the Internet, chat rooms, iPods, and cell phones.
- most samples were conducted with middle-aged, highly educated and females;
- satisfaction was not directly assessed in most studies and the participant’s dropout rate was used as a proxy indicator.
Examples of interventions

1. **Alexander et al., 2010** conducted a three-arm randomized clinical trial in which they compared the effects on fruit and vegetable consumption of (a) an **online untailored program**, (b) an **online tailored behavioral intervention**, and (c) an online tailored behavioral intervention plus motivational interviewing–based counseling via email.

2. **Carter et al., 2013** conducted a pilot randomized trial of the smartphone app **My Meal Mate** and found that adherence to self-monitoring was significantly longer ($p < 0.001$) in the app group compared to the website and paper diary groups.

3. **Herring et al., 2014** conducted a study with obese, ethnic minority, socioeconomically disadvantaged mothers in the first year postpartum were randomly assigned to receive either **usual care** or a **technology-based intervention** that included biweekly phone-based health coaching, text messaging, and a Facebook support group.

4. **Turner-McGrievy & Tate, 2011** compared a **podcast-only weight-loss intervention** with a **podcastplus-mobile intervention**, which included diet and physical activity monitoring on mobile devices, and interaction with study counselors and with other study participants on Twitter.
What can we learn from successful interventions that could guide the implementation of future ones?

1. To focus on **dietary behaviors** and also on **other health-related behaviors**;

2. To be **tailored** to **individual’s needs** and **personalized** to the user;

3. To implement **objective measures**, specifically for **dietary outcomes** (using food purchase receipts, food frequency questionnaire, for example) and **body weight**;

4. To provide **follow-up** and **feedback**.

(Olson, 2016; Ritterband & Thorndike, 2006)
The future of e-Health

• Literature has shown that many eHealth technologies may be **not successful** and **sustainable** because they often ignore the interdependencies between:
  - **technology + human characteristics + socio-economic environment.**

• To overcome this difficulty, a new **holistic approach** to the development of e-health technologies is suggested, which should take into account:
  - the complexity of **health care**;
  - the **daily life activities** of the patient;
  - the **habits, beliefs and values** of the patient and his relatives;
  - the **integration** and **involvement** of the patients during the development of interventions.
Take-home messages

- **Internet** and new **technologies** are “here for good” and **health promotion needs** to **update** its **interventions** for several **health behaviours** (including nutrition) accordingly;

- **e-Health literacy** has become an **up-to-date concept**;

- Generally, in daily routine health professionals have to **deal with “Dr. Google”** and the consequent changes to **doctor-patient relationship**;

- Specifically, **behavioral nutrition interventions** using **e-Health technologies** need to be **interactive**, add **other health-related behaviours**, **tailored** to **personalize** needs, assessed with **objective measures** and provide **feed-back** and **follow-up**;

- **Future challenges:**
  - How can these interventions be **evaluated** for **efficacy** and **effectiveness** in a rigorous scientific way? And then **disseminated** in a peer review process?
  - **Humanize** and **personalize** e-Health tools/interventions?
References


**Additional References:**


THANK YOU
FOR YOUR ATTENTION

ANY QUESTIONS?

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