TECHNOLOGY ENHANCED SELF-MANAGEMENT ACROSS THE ILLNESS TRAJECTORY

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Background

- Self-management impactful on the health of the population with diseases or conditions that require the person to control and/or manage their health conditions over a length of period
- Technology can be useful in supporting or promoting these behaviors

Purpose

- The purpose of this symposium is to present three papers that focus on the review, testing, and evaluation of the use of technology in enhancing self and symptom management

Aims

- At the completion of this program, the learner will be able to describe several web-based and computer interventions used in enhancing self-management.
- The learner will be able to understand the impact of health technology that facilitates self-management.

Methods

- Two systematic reviews and one feasibility study focused on a chronic health condition to promote healthy life styles
- Conditions include fibromyalgia syndrome and hypertension or overweight and obesity
- The reviews included technology used for web based interventions via a smart phone, computer, and an interactive, computed-based program with educational modules
- Outcomes included
  - participant knowledge, self-management, quality of life, symptoms
  - symptom severity, activity, function, and satisfaction
  - anthropometric measurements.

Results

- One review indicated an increase in knowledge, pain, depression and fatigue reduction and a decrease in sleep difficulties over time
- The feasibility study found significant changes in symptom severity, activity and function and mixed results in preference over technology versus health care provider contact
- The other review paper found significant reductions in waist circumferences and a reduction in BMI

Conclusions/Implications

- Outcomes suggest web-based interventions can be effective in delivery of education and support
- Technology can be incorporated as helpful in routine care, but should incorporate social support, feedback, and counseling
- Use of technology can be transformative and useful in remote communities but continue to include patient involvement and the health care provider.

INTERNET BASED INTERVENTION FOR SELF-MANAGEMENT IN FIBROMYALGIA SYNDROME

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Fibromyalgia

- Fibromyalgia (FM) is characterized by prolonged widespread muscle pain, profound fatigue, and sleep disturbance.

- Prevalence: 2-4%in general population and 3 times higher among women than men.

- 5.5 million FM patients visit the ambulatory care per year.

FM patient visits both primary and secondary care nearly twice as many as patient without the condition.

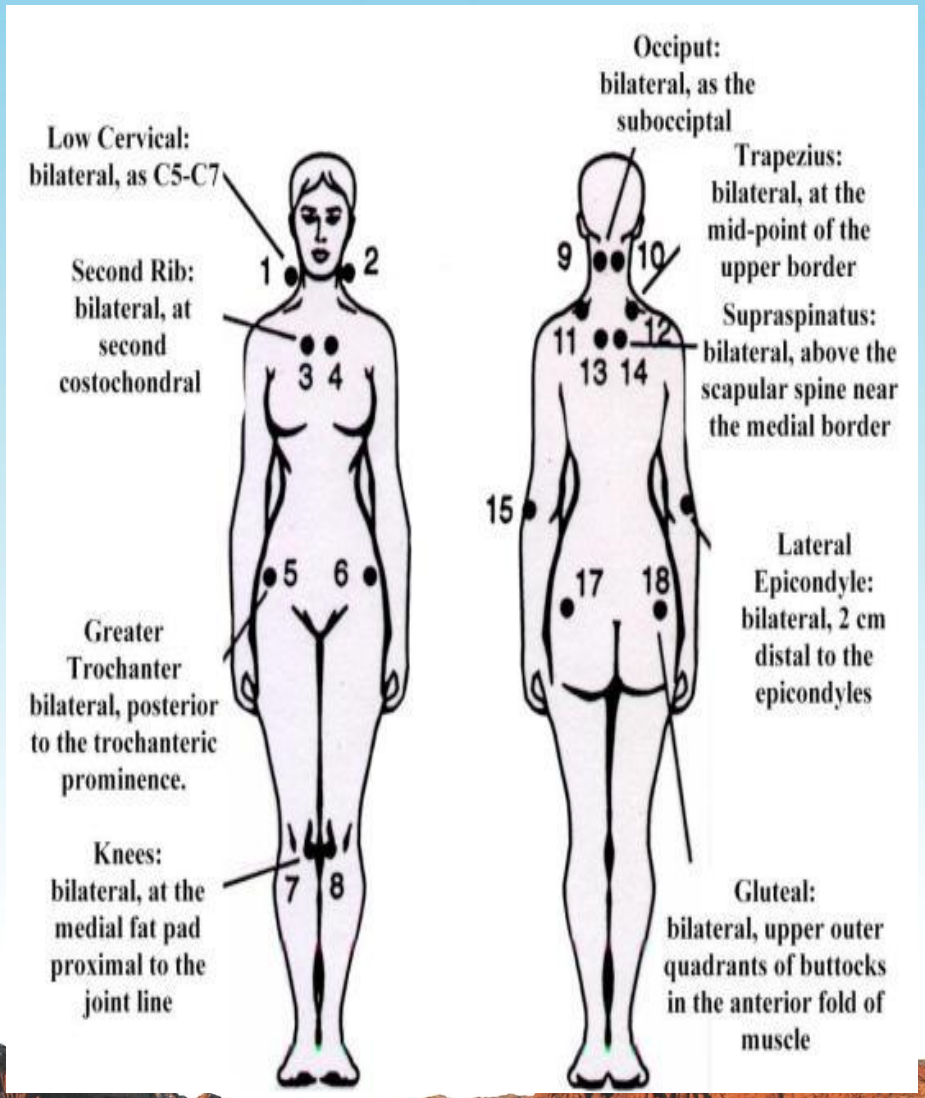
- An average of 6,354 USD annually was spent on health care costs.

Diagnostic Criteria for FM

- **1990 American College of Rheumatology (ACR) Criteria**

1. History of chronic widespread pain

2. Pain in at least 11/18 tender point sites on digital palpation



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Diagnostic Criteria for FM

2010 ACR Criteria

1. Widespread Pain Index (WPI) ≥ 7 **and** Symptom Severity (SS) Scale score ≥ 5

or

2. WPI = 3-6 and SS ≥ 9

3. Symptoms present at similar level for ≥ 3 months

4. No other disorder explaining the pain

FIGURE 2. **FIBROMYALGIA PROPOSED DIAGNOSTIC CRITERIA, 2010**

ASSESSMENT

1. WIDESPREAD PAIN INDEX (WPI)

In the past week, where has the patient had pain?

(Check all that apply.)

	☐ Neck	
	☐ Chest	
	☐ Abdomen	
	☐ Upper Back	
	☐ Lower Back	
Left		Right
☐	Jaw	☐
☐	Shoulder	☐
☐	Upper Arm	☐
☐	Lower Arm	☐
☐	Hip (buttock, trochanter)	☐
☐	Upper leg	☐
☐	Lower leg	☐

Total number of places patient has had pain in the last week_____(0-19).

2. SYMPTOM SEVERITY (SS) SCALE SCORE

A. Indicate the severity of the symptoms below during the past week using the following scale below.

0 = No problem

1 = Slight or mild problems, generally mild or intermittent

2 = Moderate, considerable problems, often present and/or at a moderate level

3 = Severe: pervasive, continuous, life-disturbing problems

Fatigue	0	1	2	3
Waking unrefreshed	0	1	2	3
Cognitive symptoms	0	1	2	3

Score, part A_____(0-19).

B. Considering somatic* symptoms in general, indicate whether the patient has:

0 = No problem

1 = Slight or mild problems, generally mild or intermittent

2 = Moderate, considerable problems, often present and/or at a moderate level

3 = Severe: pervasive, continuous, life-disturbing problems

No symptoms	0
Few symptoms	1
A moderate number of symptoms	2
A great deal of symptoms	3

Score, part B_____(0-3)

Total SS scale score (parts A + B)_____(0-12)

***Somatic symptoms include:**
Bladder spasms, blurred vision, chest pain, constipation, depression, diarrhea, dizziness, dry eyes, dry mouth, easy bruising, fatigue/tiredness, fever, hair loss, headache, hearing difficulties, heartburn, hives/welts, insomnia, irritable bowel syndrome, itching, loss of appetite, muscle pain, muscle weakness, nausea, nervousness, numbness/tingling, oral ulcers, pain in the upper abdomen, pain/cramps in the abdomen, rash, Raynaud's phenomenon, ringing in ears, seizures, shortness of breath, sun sensitivity, taste changes/loss of taste, thinking or remembering problem, urination that is frequent or painful, vomiting, wheezing.

3. DOES THIS PATIENT SATISFY THE DIAGNOSTIC CRITERIA FOR FIBROMYALGIA?

WPI_____SS_____WPI + SS_____

A patient satisfies diagnostic criteria for fibromyalgia if the following 3 conditions are met:

☐ WPI ≥7 and SS ≥5 **or** WPI 3-6 and SS ≥9.

☐ Symptoms have been present at a similar level for at least 3 months.

☐ The patient does not have a disorder that would otherwise explain the pain.

Source: Wolfe F, Clauw DJ, Fitzcharles MA, et al. The American College of Rheumatology preliminary diagnostic criteria for fibromyalgia and measurement of symptom severity. *Arthritis Care Res* (Hoboken). 2010;62(5):600-610.

Fibromyalgia Treatment

- The current treatment for FMS includes antidepressants, anticonvulsant drugs
- Self-management with the non-pharmacological interventions effectiveness in managing the physical symptoms among fibromyalgia patients
- Many FM patients used the internet as a supporting sources

Self-management

- Self-management is the education and supportive interventions provided by health care staffs that aim to increase a person's skills, confidence in self-managing their health problems, regularly assessing the progress of those problems, setting goals, and problem solving (Institute of Medicine: IOM)
- Internet is used as a service delivery platform for self-management

Purpose

- The purpose of this systematic review was to (a) identify web-based self-management interventions for adult patients with FMS, and (b) the effectiveness of these interventions.

Methods

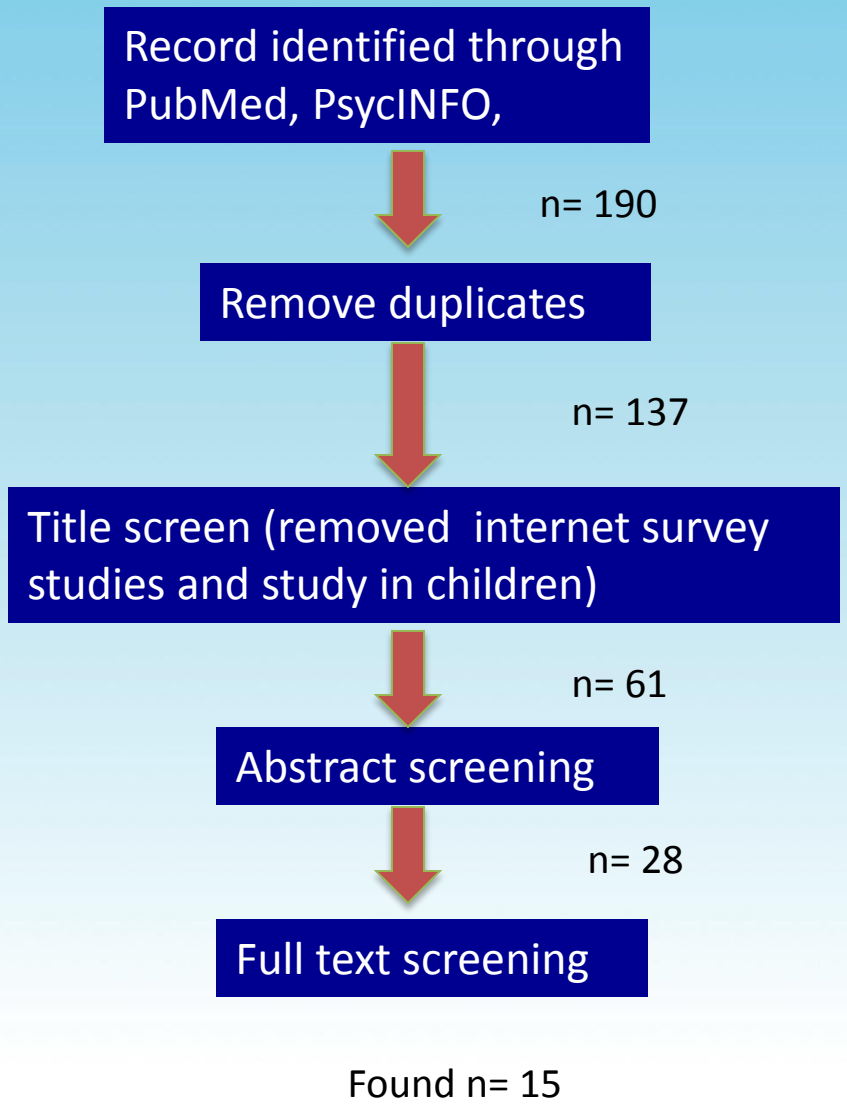
- A literature search was performed using PubMed and PsyINFO, for internet- or web-based interventions and fibromyalgia. After the initial results of 96 articles, studies that included children and/or used a descriptive study design were excluded from this review. Inclusion criteria included (a) interventions were delivered through the web or internet, (b) participants were adult (age 18 or older) diagnosed with fibromyalgia.

Methods

Search terms: “self management” and “web” or “internet” and “Fibromyalgia”

Inclusion criteria:

- Sample age >18
- Language: English
- Excluded: review paper, case study, qualitative study, and dissertation



Methods

- Two reviewers independently evaluated the quality of studies

- The JADAD Scoring of Quality of Reports of Randomized Clinical Trials instrument was used
  - Scores ranged from 0 to 13 with higher scores = better quality

Results

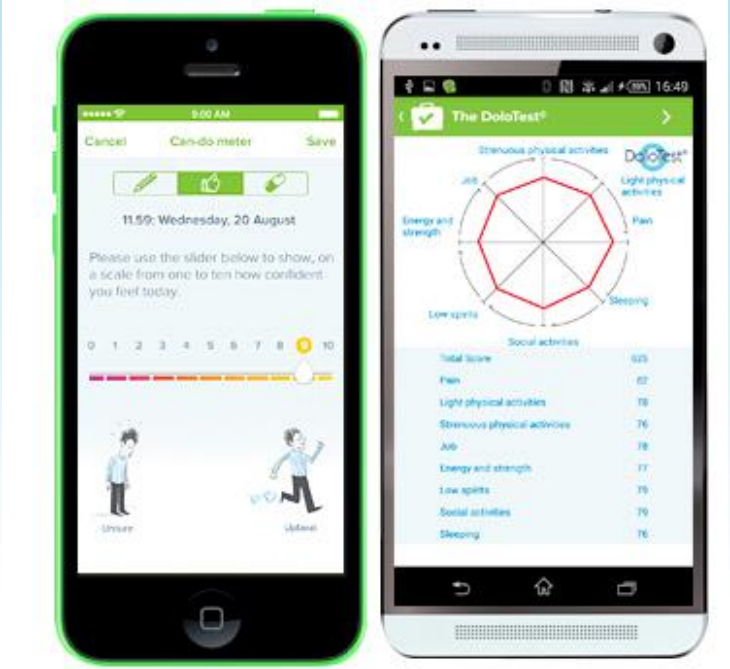
- JADAD scores ranged from 5 to 11
- The earliest publication on the topic was 2008 (from 2008-2015)
- 2,308 FM patients included
- Majority of the subjects were female, aged 17-49 years
- Two reviewed articles were qualitative and observation research

Interventions

- **Most often non pharmacological interventions were delivered through web/internet for the FM patients**
  - **Support group/online peer support (47%)**
  - **Education (27%)**
  - Mindfulness awareness/acceptance (13%)
  - Exercise and behavioral self-management program (1%)
  - Home telemedical surveillance system (1%)

Delivering Methods

- Through computer internet-based (87%)
- Through a smart-phone (13%)



Effectiveness

- Increase patient's knowledge
- Empower patients to seek help
- Improve health status and decrease negative outcomes
- Increase self-efficacy and motivation for the self-management
- Reduce the use of medications
- Improve pain or other physical symptoms but not significant

Conclusions/Implications

- Web-based interventions are cost-effective, have low attrition rate, and high patient satisfaction
- Internet or web can be an effective platform for the delivery of patient education and support
- Impact the global health care system by becoming a tool to deliver support for self-management

Conclusions/Implications

- During program developing phase, patient involvement would be needed
- Intervention should be tailored to meet individual needs
- The educational program should be validated
- This self-management program using a smart phone application should be validated
- The real time measurements of symptoms should be used
- Longitudinal study should be done

FIBROMYALGIA: IMPLEMENTATION OF HEALTH INFORMATION TECHNOLOGY IN ROUTINE CARE

Pilot Study

- No Conflict of Interest
- Authors:

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Learning Objectives

- Understand the impact of health information technology that facilitates self-management in fibromyalgia treatment
- Understand from a patient perspective the role that health information technology plays in assisting self-management that potentially leads to symptom reduction and improved function

Background: Fibromyalgia

- Global chronic condition
- High rate of comorbidities
- High burden
- Variances in clinical practice guidelines
- Shift from specialists to generalists
- Use of health information technology for self-management (Vanderboom et al., 2014)

Fibromyalgia has become more of a clinical problem less seen in specialty clinics and more commonly managed by Advanced Practice Nurses in primary care and other acute care settings

Purpose

- Implement an evidenced based self-management computer program into routine fibromyalgia care
- Evaluate the impact of health information technology before and after implementation
- Understand the patients' perspective on using health information technology to assist in self-management

Clinical Practice Guidelines

FibroCollaborative in 2010

- Education begins @ diagnosis and sets the stage for effective self-management
- Integrating health information technology into practice
- FibroGuide ©

Canadian Pain Society in 2012

- Emphasizes management in the primary care setting
- Focus on symptom reduction and level of function
- Patient-focused management

FibroGuide© (Williams et al., 2010)

- 6-month Randomized Controlled Trial
- Significant pain reduction (*P*, < .008)
- Improved physical function (*P < .002)*
- Secondary outcomes: sleep, fatigue, anxiety, and mood
- Higher global impression of improvement

Theoretical Frameworks

- Lewin's Change Theory
  - *Unfreeze*
  - *Movement*
  - *Refreeze*
- Empowerment Informatics Framework
  - *Self-management within the context of each patients' characteristics and individual goals*

Methods

- Descriptive Design; Quantitative
- Setting
- Participants
- Instruments
- Procedures
- Implementation
- Data Collection
- Data Analyses

Results

- *N* = 35
- Age (51); Married (31.4%), Females (91.4%); Caucasian (88.6%); Dx (9.5 yr); Ed > 14 yrs (48.6%); Employed (48.6%); Computer/internet (>90 %); Online health information (2.26 days/mo)
- Revised Fibromyalgia Impact Questionnaire (FIQR)

  pre-intervention (51.3)

  post-intervention (48.7)

  Wilcoxon Sign-Ranked test (*p*= .017)

Results (Cont)

- Six Open-Ended Questions

  FibroGuide© assisted in self-management(40%)

  FibroGuide© application (31.4%)

  FibroGuide© barriers: time (25.7%)

  FibroGuide© in the future (17.1%)

  Computer platform (42.9%)

  Education preference: provider (37.1%)

Results

- Activity Log
- Time (10%) Average 15 minutes
- Modules

  Communicating & thinking differently

  Understanding FM

  Sleep & Pacing self

  Time & Being Active

  Setting goals & Fibro Fog

Conclusion

Health Information Technology has global implication as a promising adjunct to clinical management of fibromyalgia. However, larger longitudinal studies are essential evaluating both statistical and clinical significance, while decreasing barriers to participant use of health information technology to facilitate engagement and sustain self-management.

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Thank you very much!

Examining the Outcomes of Web-Based Interventions on Anthropometric Measurements

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Background

Web-based interventions offer low cost and practical strategies to promote self-care for adult individuals

Technology based interventions including Internet-based weight management tools, social media, apps for smartphones, active online video games have exploded recently

Web-based Interventions

- Home Internet Interventions
- Interactive websites
- Social Media Platform

Web-based and Anthropometric Measurements

What are the interventions that work best that are associated with significant anthropometric outcomes?

Purpose and Specific Aims

Purpose: To summarize the current literature in examining the effectiveness of web-based interventions to promote self-care of lifestyles related to anthropometric measurements in adults with various conditions.

Aims:

- To identify recent RCT studies that used web-based interventions that address changes in anthropometric indicators as one of the outcomes
- To conduct a quality appraisal of selected RCT studies using Jadad scoring system

Methods

- PubMed
- Ovid
- MEDLINE
- CINAHL
- Goggle Scholar
- 2009-2014
- Keywords: *anthropometric measurements, web-based technology effectiveness, web-based interventions, e-health, self care, adults,* and *randomized controlled trial*

Inclusion and Exclusion

- RCT published in English
- Utilized web-based interventions
- Adult populations with health related conditions
- Actual measured anthropometric indicators
- 2009-2014 recent studies
- Excluded: pregnancy, children, psychiatric diseases, serious health conditions
- Yielded 52 articles
- 10 articles were selected

Outcome variables

- All studies were double reviewed for eligibility using the Jadad Scoring system
- Six studies met the criteria in this review
- Primary outcomes: Weight related measures (waist circumference, BMI, BMI z-score)
- Secondary outcomes: percentage of body fat, physical activity level, dietary intake, and psychosocial variables
- The effects of the interventions were evaluated in terms of anthropometric measurements (BMI, weight, waist circumference)

Health Conditions

- Hypertension
- Hyperlipidemia
- Type 2 diabetes
- Obesity
- Overweight
- Mixed conditions

Description of the Studies

- Intervention Characteristics
- Duration- 1 month to 12 months
- Content- differed but identifiable

Employment of Web-based Technology

- Online learning modules
- Self-report diaries of physical activity and dietary experiences
- Support system: peer support, dietician, coach support

Findings on Anthropometric Outcomes

- Four studies found a significant decrease in BMI or percentage of body fat after the intervention
- Four Internet-based intervention studies and two active online video game-based interventions reported that participants in the intervention group had significantly reduced BMI and or percentage body fat immediately after the intervention or up to 9 months post intervention
- Short term effects were also found (less than 12 months of follow –up) in all six studies
- One study found no beneficial effect on BMI assessment 2 years post base line

Findings on Anthropometric Outcomes

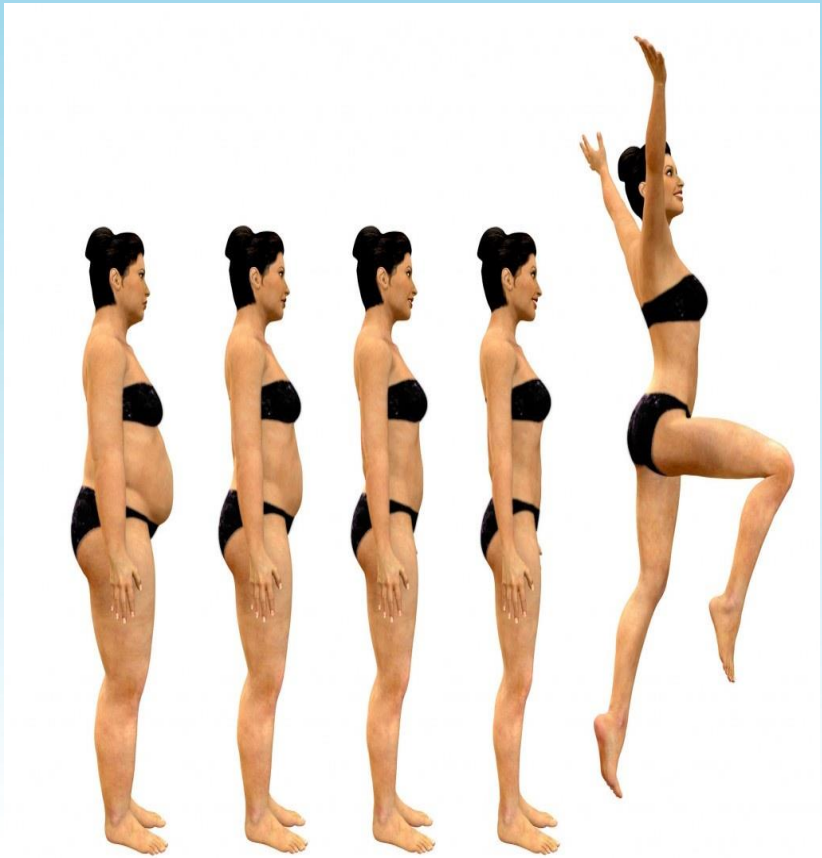
- Four studies involving participants with obesity and overweight conditions experienced overall body weight reductions
- One study showed reduction of waist circumference of participants with diabetes
- One study showed reduction in BMI on obese participants
- Four out of six studies used combination of social support, feedback, counseling in addition to web-based health promotion interventions

Findings on Physical Activity and Diet

- Four out of six studies found improved physical activity outcomes (all internet based intervention)
- Three studies assessed dietary outcomes indicating improvement in dietary behaviors (i.e., increased fruit and vegetable intake, decreased sugary drinks and snacking)

Findings on Psychosocial Outcomes

- Five studies assessed the impact on psychosocial outcomes (i.e., self-efficacy, weight concern, peer support, and self-competence)
- One study found that participants in their intervention group reported fewer weight and body shape concerns



Components of Effective Interventions

- All effective interventions used dietary and physical activity strategies as part of the intervention components
- All effective interventions required weekly logins

Discussion

- Physical activity and healthy eating habit as key components
- Each of the interventions had a short term impact on weight management
- No report on improvement of health conditions
- No optimal dose was identified
- No clarity on length of intervention
- No clarity that one format is effective than another
- Still not sustainable

Implications

- Limited interventions on lifelong lifestyle modifications
- Sources must be ongoing in order to see sustainability
- The use of appropriate technology has potential to assist health care providers and researchers especially when interventions are focus on both physical activity and dietary behaviors

Future Research

- Future research should include rigorous evaluation of cost effectiveness as well as mediating and moderating factors associated with effective technology interventions
- More long term follow-up

Thank You!