Could Motivational Interviewing Unlock the Potential of Cellular Texting?
An Evidence Review of Text Messages Influencing Behavior Change

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Abstract

Cellular text messaging is an emerging technology that influences patients' decisions on health care. Text messaging offers a cost-effective method to improve management for diseases or conditions associated with high morbidity and mortality. This systematic review examined the current published literature to evaluate the evidence behind using cellular texting to motivate behavior changes in patients.

Background

- Of the top 10 causes of death, 6 have a behavioral risk factor component[1]
  - Tobacco use, unhealthy diet, insufficient physical activity, alcohol overuse
- Cell phone subscriptions globally (2014): 6.9 billion[2]
- Text messages globally (2010): 6.1 trillion[3]
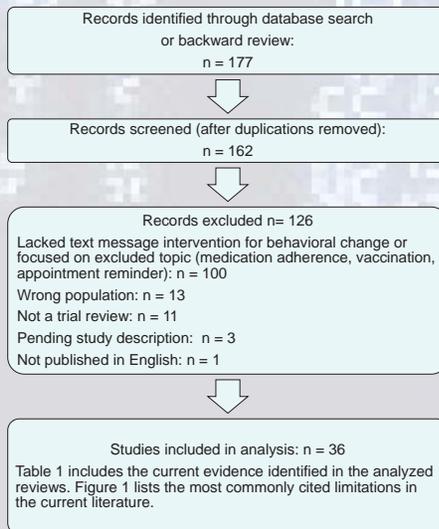- Motivational Interviewing is an effective method to influence patients' behavior choices[4]

Research Objectives

1) Evaluated the scientific evidence to determine the effectiveness of cellular text messaging on influencing behavior changes in patients.
2) Determined if a specific disease or behavior was more conducive to change through text message intervention.
3) Determined if there was a difference in effectiveness if text message was created within a specific behavioral change theory or framework.

Methods

- Evidence-based review of published literature in MEDLINE, Cochrane Library, Google Scholar, and PubMed databases
- Reviews published from 2005 to 2015
- English publications in peer-reviewed journals
- Exclusion criteria: appointment reminders, medication adherence, trials outside of the United States/wealthy countries

Screening Process Flow Chart

Records identified through database search or backward review:
n = 177

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Records screened (after duplications removed):
n = 162

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Records excluded n= 126
Lacked text message intervention for behavioral change or focused on excluded topic (medication adherence, vaccination, appointment reminder): n = 100
Wrong population: n = 13
Not a trial review: n = 11
Pending study description: n = 3
Not published in English: n = 1

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Studies included in analysis: n = 36
Table 1 includes the current evidence identified in the analyzed reviews. Figure 1 lists the most commonly cited limitations in the current literature.

Results

Table 1. *Systematic Review of the Evidence**

	Positive Results with Texting Intervention	No Change or Insufficient Evidence for Text Intervention
Meta Reviews (n = 3)	Asthma: symptom scores, peak flow Diabetic self-management (16), A1C values Physical activity/weight loss (13) Smoking cessation (6)	Diabetes: weight, cholesterol values, A1C value Hypertension: Body weight Physical activity/weight loss (8) Smoking cessation (2)
Cochrane Reviews (n = 5)	Asthma: pooled symptom scores (1), peak flow (1) Tobacco cessation (2)	Asthma: hospitalizations, symptom scores (1) Children: physical activity, sugar sweetened beverage intake, screen time (1) Diabetes: A1C reduction, BMI, weight loss, blood pressure control (4) Pregnancy/post-partum females: smoking cessation (1)
Systematic Reviews with Meta-Analysis (n = 5)	Diabetes: A1C values (2 meta-analyses, 9 studies) Physical activity (1 meta-analysis) Smoking cessation (2 meta-analyses) Weight loss (2 meta-analyses)	Diabetes: A1C values (2 studies) Weight loss (2 studies)
Systematic Reviews (n = 23)	Adolescents: risky sexual behavior (2), sexually transmitted infection screening (1) Asthma peak flow (1) Child screen time (2) Blood pressure (2) Bulimia (1) Depression (1) Diet (3) Diabetes: A1C values (23), physical activity (3), self-management (13), weight loss (8) Gestational diabetes (1) HIV retest rate (1) Physical activity (26) Schizophrenia (2) Self-breast exam (1) Sunscreen use (1) Tobacco cessation (15), in pregnancy (4) Weight loss (38)	Adolescents: risky sexual behaviors (1), infection screening (1), physical activity (3) Asthma (1) Bulimia (1) Cholesterol Depression Diabetes: A1C value (7) Diet (2) Gestational diabetes (1) Men who have sex with men: high risk sexual behavior (1) Physical activity (4) Tobacco cessation (3), in pregnancy (2) Weight loss/BMI (8)

*Note. Number in parenthesis is the number of studies listing the preceding result in a review. If no number listed, the review did not specifically delineate the number of studies citing that finding. Duplicate studies were not removed.
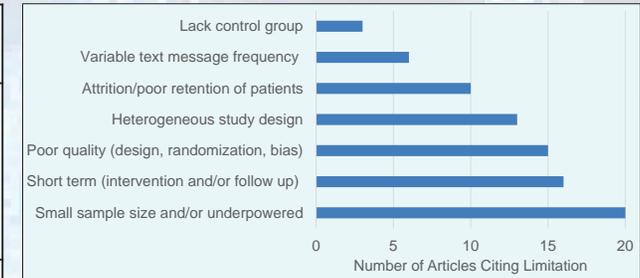
Results (cont'd)

Figure 1. **Most frequently cited limitations in current literature.**

Discussion

This review found:
1) Moderate to high quality evidence for text message intervention in smoking cessation;
2) Lower quality evidence or positive trends for text message intervention in diabetes, asthma, and weight loss;
3) Mixed results for physical activity levels, diet, and mood disorders;
4) Mixed results when using a behavioral change theory to frame text messages;
5) No use of Motivational Interviewing in text messaging trials.

Recommendations

1) Motivational interviewing has not been applied to text messaging despite being a known effective technique for motivating behavioral change in patients.
2) Text messaging is an emerging field with promising data in multiple behaviors that should consider constructing text messages based in Motivational Interviewing.
3) Improve quality of research in this field to include: randomized controlled trials, increased sample size with sufficient power to detect changes between the intervention and controlled groups, more structured text message protocols. Also, evaluate text messaging across populations to determine if there is a change in text messaging effectiveness.

References
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