
Poster

Utilization of an Embodied Conversational Agent in an Integrative Medical Group Visit for Patients with Chronic Pain and Depression

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Abstract

Background: This abstract will report on the feasibility of introducing an innovative eHealth technology called an Embodied Conversational Agent (ECA) into a diverse patient population with chronic pain and depression.

Objective: The Integrative Medical Group Visit (IMGV) is a 9-week curriculum designed for patients with chronic pain and depression. The IMGV consists of 9 weekly group medical visits during which patients learn self-management for chronic pain and depression. Tablet computers with an ECA are given to each participant to reinforce the curriculum and self-care practices. The ECA reviews material covered in IMGV sessions and allows for participants to set healthy nutritional, exercise, and mindfulness goals. This clinical trial is ongoing across 3 sites in Boston, MA.

Methods: Patients were recruited from Boston Medical Center, Codman Square Community Health Center, and DotHouse Health. Demographic characteristics collected include age, gender, race, ethnicity, and sexual orientation. Patients in the intervention were given a Dell tablet with an ECA for the duration of the study and were encouraged to interact with the ECA on a regular basis. The ECA reviewed material covered during group medical visits and served as a tool for participants to practice self-management and stress reduction techniques. Usage data were collected from the tablets at 9-weeks and at 21-weeks post enrollment.

Results: In total, 75 patients were enrolled in the intervention. The majority of patients were female (83%), 60% identified as black/African American, and nearly 90% identified as non-Hispanic. The mean age in this sample was 50 years old. Approximately half of patients reported regular computer use prior to the study (56%). For this abstract, usage data and pain and depression outcomes are reported on. Patterns of utilization will be assessed from tablet usage data. This data will be used to assess potential associations between demographic data, amount of time spent using ECA, and content delivered by ECA.

Conclusions: ECAs may represent one strategy to encourage patient use of self-management for pain and depression.

ClinicalTrial: Clinicaltrials.gov NCT02262377; <https://clinicaltrials.gov/ct2/show/NCT02262377> (Archived by WebCite at <http://www.webcitation.org/6maRgLIT7>).

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KEYWORDS

integrative medicine; embodied conversational agent; group visits

This poster was presented at the Connected Health Symposium 2016, October 20-21, Boston, MA, United States. The poster is displayed as an image in [Figure 1](#) and as a PDF in [Multimedia Appendix 1](#).

Figure 1. Poster.

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Utilization of a Tablet Computer with an Embodied Conversational Agent in an Integrative Medical Group Visit Study

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BACKGROUND

- 133 million Americans live with at least one chronic illness.
- Their medical care accounts for >75% of health care spending.
- Most chronic illness care takes place in primary care offices, with limited time spent with a provider.
- Evidence Based Integrative Medicine (EBIM) is also used to manage symptoms of chronic illness.
- Group Medical Visits are being used for an increasing number of chronic illnesses to manage symptoms and improve outcomes.

METHODS

- Study Sites**
 - Boston Medical Center, Dorchester House Health and Codman Square Community Health Center.
 - Three cohorts determined by timing of the groups, two at Dorchester House and Codman and three at BMC.
- Data Collection**
 - Patients completed questionnaires at Baseline and at 9-weeks.
 - Amount of time spent using Gabby was assessed.

RESULTS

Variable	Baseline Intervention (N=80)	Baseline Control (N=79)	P value
BPI Interference (0-10 scale)	μ=7 (sd=2.2)	μ=6 (sd=2.3)	.47
BPI Severity (0-10 scale)	μ=6 (sd=1.8)	μ=7 (sd=1.8)	.98
PHQ-9 (0-27 scale)	μ=13 (sd=5.6)	μ=11 (sd=5.3)	.06

*Results are statistically significant at alpha of 0.05.

AIMS

- To report the preliminary findings of a 9-week Integrative Medical Group Visits (IMGV) curriculum (combines principles of Mindfulness Based Stress Reduction and Evidence Based Integrative Medicine techniques with a group medical visit) for patients with chronic pain and depression and their usage of an Embodied Conversational Agent (ECA)

INTEGRATIVE MEDICAL GROUP VISITS

- Randomized controlled trial of IMGV versus usual care for patients with chronic pain and depression (control = primary care visits).
- One 2.5 hour group session each week including:
 - Mindfulness meditation
 - EBIM activities (massage, acupressure, yoga, nutrition)
 - Patient health topic discussions (stress, BP, glycemic index, cholesterol)
 - Individual visits with the physician
 - 8-inch tablets provided to intervention participants
 - Website with tools and materials for home practice
 - Embodied Conversational Agent application
 - Healthy meal at the end of each visit.
- Group co-led by integrative medicine physician and meditation instructor.
- Participants invited to do home practice (daily meditations, yoga and journaling exercises) on a weekly basis.

RESULTS

Table 1: Patient Characteristics

Variable	Total Baseline (N=159)	
	n	%
Age (22-84)	μ=50 (sd=12.2)	
Sex		
Male	23	14
Female	136	86
Race		
Black	91	57
White	30	19
Other	38	24
Ethnicity		
Non-Latino/a	136	86
Latino/a	23	14
Study Site		
Boston Medical Center	71	45
Dorchester House Health Center	41	26
Codman Square Health Center	47	29
Annual Household Income		
Less than \$5,000	20	13
\$5,000-\$29,999	77	48
Greater than \$30,000	15	9
Refused/Don't Know/No income	47	30

CONCLUSIONS AND FUTURE DIRECTIONS

- Participants in this RCT represent a population that does not often get access to integrative medicine services.
- The ECA appears to be an acceptable tool for delivering information and health coaching, based on the majority of participants using this tool.
- We will continue to analyze patient preferences in using this tool.

Multimedia Appendix 1

Poster.

[\[PDF File \(Adobe PDF File\), 636KB-Multimedia Appendix 1\]](#)

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