An eHealth intervention to improve patient-provider interaction in adults with hypertension

Marym Alaamri, MSN, RN
Ronald Hickman, PhD, RN, FAAN
Corresponding Author: Marym Alaamri, MSN, RN
Address: 2120 Cornell Road, Cleveland, OH 44106-4904
Telephone: 216 368-4979
Email: mma99@case.edu

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Learning objectives:
1. Summarize the current state of science related to hypertension self-management
2. Describe the eSMART-HTN intervention and its theoretical components
3. Discuss the effect of the eSMART-HTN on the quality of patient-provider interaction in adults with hypertension
Background

• Hypertension (HTN) affects approximately 80 million Americans

• More than half of patients with HTN do not have their blood pressure under control with medication

• HTN self-management is a set of behaviors that help to achieve blood pressure control

• The quality of patient-provider interaction is a driver of HTN self-management and blood pressure control
Background

- Prior interventional research in HTN self-management has examined strategies to improve medication adherence, blood pressure monitoring, and diet

- Numerous interventional studies that have employed various forms of technology

- Few eHealth interventions have targeted the patient-provider interaction, which is linked to improve self-management behaviors across clinical population
Significance

• There is a significant need to help patients manage their blood pressure

• eHealth interventions for self-management interventions using serious game technology offers a new opportunity to help improve the quality of the patient-provider
Purpose

• Evaluate the effects of two electronic hypertension self-management interventions on the quality of the patient-provider interaction among adults with HTN
Methods

• Nonblinded randomized controlled trial
• eSMART-HTN vs. attention control
• Community-based sampling methods
Experimental Conditions

eSMART-HTN

• 22-inch touchscreen computers
• Audio delivered
• 20-minutes
• Content: communication structure (SBAR^3), educational information about HTN management, and behavioral reinforcement)
• Interactive, simulations with virtual healthcare providers and a behavior coach to rehearse self-management skills
SBAR3

• S: Share your story

• B: Bring your background

• A: Ask for what you want and/or need

• R: Review the plan

• R: Reflect on whether it is “right for me?”

• R: Repeat the plan
Hello, how are you today doctor?

Fine, I'm here because I need to follow up.

I'm tired of waiting.

Hi, how are you today doctor?

Hello, how are you today?
I'm here for my follow-up.

I'm having trouble with my breathing.

I just don't feel good.

Just here for my regular checkup.

Overall, nothing else to add.

Doctor I wanted to let you know I was in the ER.

I wanted to let you know I was in the hospital.

I want to let you know my other doctor ordered more tests.

I'm doing OK. It's been pretty busy. What brings you in today?

Can make a plan that will work for you. Is there anything else I should know?
Experimental Conditions

**Attention control**

- 22-inch touchscreen computers
- Audio delivered
- 20 minutes
- Passive
- Content (general information about HTN, stress and symptom management, and dietary practices)
Eligibility Criteria

• **Inclusion Criteria**
  • ≥ 18 years
  • Diagnosed with hypertension, as evidenced by prescription for an anti-hypertensive medication or known to have arterial blood pressures that exceeded 140/90 mm Hg were included in the study
  • Read and understand English

• **Exclusion Criteria**
  • Profound vision/hearing loss
  • Unable to understand English
  • No access to primary care provider
Procedures

• IRB approval

• Data collection
  • T1: at baseline
  • T2-T4: monthly across three months

• Instruments
  • Demographic items
  • Questionnaire on the Quality of the Patient-Provider Interaction (QQPPI)
  • Blood pressure measurements
Data Analysis

• Descriptive statistics

• RM-ANCOVA to assess the change in dependent variable (QQPPI scores) across four time points
  • While adjusting for covariates (i.e., health literacy, age [in years], and systolic blood pressure)
Results: Sample Characteristics ($N = 109$)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intervention ($n=75$)</th>
<th>Attention control($n=34$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years</td>
<td>52.59 (10.75)</td>
<td>50 (11.68)</td>
</tr>
<tr>
<td>Baseline SPB, mmHg</td>
<td>144.65 (24.39)</td>
<td>141.29 (24.91)</td>
</tr>
<tr>
<td>Baseline DPB, mmHg</td>
<td>88.59 (15.74)</td>
<td>87.41 (16.42)</td>
</tr>
<tr>
<td>Baseline QQPPI</td>
<td>50.48 (15.38)</td>
<td>51.76 (14.36)</td>
</tr>
</tbody>
</table>
## Results: Sample Characteristics (N = 109)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intervention (n=75)</th>
<th></th>
<th>Attention control(n=34)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Gender: Female</td>
<td>43</td>
<td>57.3</td>
<td>21</td>
<td>61.8</td>
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<tr>
<td>Employed: No</td>
<td>44</td>
<td>58.7</td>
<td>22</td>
<td>64.7</td>
</tr>
<tr>
<td>Race, Nonwhite</td>
<td>52</td>
<td>96.3</td>
<td>26</td>
<td>76.5</td>
</tr>
<tr>
<td>Education level</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>5</td>
<td>6.7</td>
<td>6</td>
<td>17.6</td>
</tr>
<tr>
<td>High school/GED</td>
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<td>30.7</td>
<td>8</td>
<td>23.5</td>
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<tr>
<td>Some college</td>
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<td>28</td>
<td>10</td>
<td>29.4</td>
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<tr>
<td>College graduate</td>
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<tr>
<td>Graduate degree</td>
<td>10</td>
<td>13.3</td>
<td>3</td>
<td>8.8</td>
</tr>
</tbody>
</table>
Results: Primary Analysis

• No significant difference in QQPPI scores between experimental conditions across time ($F = .34$, $P = .56$)

• A statistically significant interaction between experimental condition (within-group) and time ($F = 2.72$, $P = .04$); where
  • subjects assigned to eSMART-HTN had a 5-point increase in their QQPPI scores across time
  • subjects assigned to the attention control had no change in QQPPI scores across time
Discussion

• eSMART-HTN is a promising strategy to improve the quality of the patient-provider interaction

• subjects exposed to eSMART-HTN demonstrated significant improvements in the quality of the patient-provider interactions across time (within-group change across time)
Discussion

• The present study consisted mostly of women and individuals who had low socioeconomic status and identified themselves as African American

  • not representative of the general population
  • individuals who participated in the study were from vulnerable and underrepresented subgroups of adults living with HTN who are often hard to engage in research
Limitations

• Sample size

• eSMART-HTN components
Conclusions

- eSMART-HTN is promising strategy to enhance the quality of the patient-provider interaction

- Further evaluation of eSMART-HTN
  - decompose the components & evaluate efficacy
  - examine the effects on HTN self-management
Thank you!