Medication Adherence and Health Beliefs among Omanis with Hypertension

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Acknowledgement

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Dr. Jia-Rong Wu (Chair)
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Dr. Esra AlKhasawneh
Presentation Outlines

• Problem and Significance
• Problem In Oman
• Objectives/Methods/Findings of the Study
• Limitations
• Implications
HYPERTENSION: **AGLOBAL ISSUE**

Hypertension

Mortality

20 mmHg systolic or 10 mmHg diastolic

- 51% of stroke
- 45% of IHD

WHO, 2013
HYPERTENSION IN OMAN

✧ HTN prevalence is 40%.

✧ World health ranking:
  ➢ 3rd in deaths (111 /100,000 populations)

✧ Ministry of Health:
  ➢ Leading cause of Inpatient morbidity (F > 45 yrs)
  ➢ 2nd leading cause of Inpatient morbidity (M: 45 – 60 yrs)

Al Riyami et al., 2012; Ministry of Health, 2014; World Health Ranking, 2014
HYPERTENSION IN OMAN

National Health Survey

- Uncontrolled BP: 67%
- Severe HTN (≥180/ ≥110): 5%

Al Riyami et al., 2012
Appropriate Use of Antihypertensive Medication (Medication Adherence)

Optimal HTN Management

requires
Medication Adherence

- Optimal BP
- Improve health outcomes
- Better survival
- 10% Reduction of Healthcare expenditure

James et al., 2014; Van Vark et al., 2012; Simon-Tuval et al., 2016
Medication Adherence (cont..)

Despite that

✧ Globally:
  ➢ < 50%

✧ In the Middle East:
  ➢ 32 – 49.5%

WHO, 2013; Al Qasem et al., 2011
Medication Adherence (cont..)

- Uncontrolled BP
- Worsens health outcomes
- Increases mortality/morbidity
- Increases utilization of healthcare resources
Medication Adherence in HTN: **BARRIERS**

- **Patient**
- **Health system/healthcare team**
- **Socioeconomics**
- **Therapy**
- **Condition**

AlGhurair et al., 2012;
Medication Adherence and Health Beliefs

In **HYPERTENSION**

**Beliefs**
- Beliefs about HTN
- Beliefs about antihypertensive

Medication Adherence

*Morisky et al, 2008; Okowookere, 2015; Khan et al., 2014*
Medication Adherence and Health Beliefs in HTN (cont.)

✧ In the **Middle East:**
  - Patients’ beliefs have been related to medication adherence.

✧ In **OMAN:**
  - People hold beliefs related to illness causality (e.g., God, evil eye, envy, supernatural spirits [Jinn])
  - Many studies have focused on understanding HTN risk factors and correlates

Al Qasem et al., 2011; Hodges, 2015; Al-Maqbali et al., 2015
MEDICATION ADHERENCE and PATIENTS’ BELIEFS in HTN (cont.)

However

In OMAN Among patients with HTN

No published studies to date have examined patients’ health beliefs in relation to medication adherence.
Objectives

1) Patients beliefs about HTN, antihypertensive medication, and self-efficacy.

1) Adherence to antihypertensive medication.

1) The relationship between patients’ beliefs and medication adherence.

1) The relationship between medication adherence and BP control.
Significance to Oman

This study is in alignment with:

✔ Research priorities of the Ministry of Health (MOH) in Oman
  ▪ Reducing HTN prevalence, risk factors, and complications as well as improving screening, control, and treatment adherence.

✔ MOH’s Health Vision 2050 that
  ▪ Patient-centered care to improve patients’ involvement in their care and enhance treatment adherence
The Health Beliefs Model

Modifying Factors
- Age
- Gender
- Ethnicity
- Personality
- Socioeconomic Knowledge

Individual Beliefs
- Perceived susceptibility to and Severity of disease
- Perceived Benefits
- Perceived Barriers
- Perceived Self-Efficacy

Perceived Threats

Action
- Individual Behaviors
- Cues to Action

The Study Conceptual Framework

Modifying Factor
- Demographics
- Comorbidities

Individual Beliefs
- HTN Severity
- Medication Necessity
- Medication Concerns
- Medication adherence self-efficacy

Individual Behavior
- Adherence to antihypertensive medication

Clinical Outcomes
- Blood Pressure Control
Methodology

✧ **Design:** Descriptive-Correlation (cross-sectional)

✧ **Setting:** 25 health centers in 14 wilayah (districts) and 6 governorates.

✧ **Sample:** 215

✧ **Data Collection:** (October 2015–January 2016).
Methodology (cont..)

✧ **Inclusion Criteria:**
  ✧ *Omanis* diagnosed with **HTN** for at least **3** months
  ✧ **21** years or older
  ✧ Taking at least **one antihypertensive** medication.

✧ **Exclusion:**
  ✧ Did not speak or understand Arabic.
Methodology: Measures

1. Brief Illness Perception Questionnaire (BIPQ)

1. Medication Adherence Self-efficacy Scale (MASES-R)

1. Beliefs about Medicine (BMQ)
   - BMQ-C (concern)
   - BMQ-N (Necessity)

1. Morisky Medication Adherence Scale (MMAS-8)
   - MMAS-8 score of $\geq 6$ (High Adherence)

Broadbent et al., 2006; Fernandez et al., 2008; Horne, Weinman, & Hankins, 1999; Morisky et al., 2008
Translation Process* of the BIPQ and MASES-R Questionnaires

Step 1: Tool translation to Arabic by professional bilingual Arabic translator

Step 2: Arabic translation reviewed by professional bilingual Arabic Omani translator

Step 3: Back translation to English by professional bilingual English translator

Step 4: Back-translated version checked against original English by professional translation team

Step 5: Pilot testing the tool on Omani patients with HTN

Figure 2. BIPQ = Brief Illness Perception Questionnaire; MASES-R = Medication Adherence Self-Efficacy Scale-Revised. *Translation of the BIPQ and MASES-R was done by a professional international translation agent
5. Blood Pressure

- SBP ≥ 140 mmHg and/or DBP ≥ 90 mmHg is considered as un-controlled BP.

6. Charlson Comorbidity Index (CCI)

- Comorbidity Burden

Charlson, Pompei, Ales, & MacKenzie, 1987; James et al., 2014
1. EMR screening

2. Eligible subject approached by RN

3. Study purpose explained by the PI

4. Informed consent signed by subjects

5. Complete the questionnaires - 15-40 min

6. Obtain BP & CCI from EMR

Recruitment Procedure
# Findings

<table>
<thead>
<tr>
<th>Variable</th>
<th>n (%)</th>
<th>Mean (SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>53.6 (3.1)</td>
<td>21 - 86</td>
<td></td>
</tr>
<tr>
<td>Years with HTN</td>
<td>7.9 (7.4)</td>
<td>3m – 40y</td>
<td></td>
</tr>
<tr>
<td>Number of antihypertensive medications</td>
<td>1.8 (0.86)</td>
<td>1 - 5</td>
<td></td>
</tr>
<tr>
<td>Frequency of daily dose</td>
<td>1.5 (0.67)</td>
<td>1 - 4</td>
<td></td>
</tr>
<tr>
<td>SBP (mm Hg)</td>
<td>140.8 (19.1)</td>
<td>102 – 200</td>
<td></td>
</tr>
<tr>
<td>DBP (mm Hg)</td>
<td>81.3 (11.3)</td>
<td>49 – 110</td>
<td></td>
</tr>
<tr>
<td>CCI</td>
<td>1.6 (0.98)</td>
<td>1 - 7</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>141 (65.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>151 (70.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uncontrolled BP</td>
<td>133 (63)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controlled</td>
<td>78 (37)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. SBP = Systolic BP; DBP = Diastolic BP; CCI = Charlson Comorbidity Index.
Findings

Antihypertensive Medication Adherence

<table>
<thead>
<tr>
<th>Series 1</th>
<th>High Adherence</th>
<th>Low Adherence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>68%</td>
<td>32%</td>
</tr>
</tbody>
</table>
Antihypertensive Medication Adherence (cont..)

Did not take medication on the day before the study

11%

Sometime forgot to take medications over the past 2 weeks

16%
Findings

Reasons for non-adherence

- Feeling well & that BP is controlled: 17%
- Feeling hassled about sticking to medication: 22%
- Forgetting medications when leaving home: 24%
- Difficulty Remembering to take medication: 30%
Findings

1. Beliefs About HTN Severity

✧ The overall total score of the BIPQ 0–70.

✧ Participants’ BIPQ total score (0–56).

✧ Mean score of 25.8 ($SD = 12.2$).

✧ 75th percentile at 39, indicating that

A large majority of the participants had a lower perception regarding HTN severity.
Findings

2. Beliefs About Necessity of Medication

- **BP medication protects health from becoming worse**: 85% Strongly Agree/Agree
- **Current health depend on BP medication**: 70%
- **Future health depend on BP medication**: 54%
Findings

3. Concerns about Medication

- We were not worried about the long-term effects of BP medication (49%)
- We were not worried about becoming dependent on BP medication (59%)
- Medication did not give them unpleasant side effects (70%)
- Medication did not disrupt their life (86%)
Findings

4. Self-efficacy regarding Medication Adherence

- Very Confident
  - busy at home: 70%
  - did not have symptoms: 67%
  - traveling: 65%
  - made them urinate: 52%
## Findings

### Relationship: Medication Adherence X Beliefs

Multivariate Logistic Regression Predicting Likelihood of High Medication Adherence based on Beliefs and Age Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>SE</th>
<th>Wald</th>
<th>df</th>
<th>p-value</th>
<th>Odds Ratio</th>
<th>95% CI for Odds Ratio</th>
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<tr>
<td><strong>Self-efficacy</strong></td>
<td>.95</td>
<td>.27</td>
<td>12.80</td>
<td>1</td>
<td>&lt; .001</td>
<td><strong>2.59</strong></td>
<td>1.54, 4.37</td>
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<tr>
<td><strong>Necessity</strong></td>
<td>.68</td>
<td>.25</td>
<td>7.48</td>
<td>1</td>
<td>.006</td>
<td><strong>1.98</strong></td>
<td>1.21, 3.23</td>
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<tr>
<td><strong>Concerns</strong></td>
<td>-</td>
<td>.268</td>
<td>16.48</td>
<td>1</td>
<td>&lt; .001</td>
<td><strong>0.34</strong></td>
<td>0.20, 0.57</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>.06</td>
<td>.02</td>
<td>15.44</td>
<td>1</td>
<td>&lt; .001</td>
<td><strong>1.06</strong></td>
<td>1.03, 1.10</td>
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Note. BMQ-C = Beliefs about Medicine Questionnaire-Concern; BMQ-N = Beliefs about Medicine Questionnaire-Necessity; MASES-R = Medication Adherence Self-Efficacy Scale-Revised.
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<td>Age</td>
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Findings

Relationship: Medication Adherence X BP control

Multivariate Logistic Regression Predicting Likelihood of BP Control Based on Medication Adherence*

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<tr>
<th>Variable</th>
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<th>df</th>
<th>p</th>
<th>Odds Ratio</th>
<th>95% CI for Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past SBP#</td>
<td>0.04</td>
<td>.01</td>
<td>16.56</td>
<td>1</td>
<td>&lt; .001</td>
<td>1.04</td>
<td>1.02, 1.06</td>
</tr>
<tr>
<td>High Medication Adherence</td>
<td>- .73</td>
<td>.35</td>
<td>4.47</td>
<td>1</td>
<td>.04</td>
<td>0.48</td>
<td>0.24, 0.95</td>
</tr>
</tbody>
</table>

Note. SBP = Systolic BP.

* This model used backward elimination method. Model included variables: Beliefs about medication concern (BMQ-C), Morisky medication adherence (MMAS-8), Charlson comorbidity index (CCI), past SBP and DBP.

# SBP of the previous visit
Summary of Findings, Limitations, and Implications
The Health Beliefs Model

Modifying Factors
- Age
- Gender
- Ethnicity
- Personality
- Socioeconomic Knowledge

Individual Beliefs
- Perceived susceptibility to and Severity of disease
- Perceived Benefits
- Perceived Barriers
- Perceived Self-Efficacy

Action
- Perceived Threats
- Perceived Necessity
- Perceived Concerns
- Cues to Action
- Individual Behaviors

Consistent
Limitations

✧ Limited **generalizability**
  ✧ Convenience sample.

✧ Limited **causal relationship** and examination of medication adherence over time
  ✧ Cross-sectional design correlational design

✧ Use of **Self-report** Measure of Adherence
Implications: Practice

✧ Assess and incorporate patients’ beliefs into practice.
✧ Maximize positive beliefs about medications’ necessity and self-efficacy
✧ Reduce concerns related to antihypertensive medication.
✧ Designing appropriate education and counseling regarding HTN and the necessity of its medication.
Implications: **Research**

- Investigate other **unique cultural beliefs** that could influence medication adherence among patients with HTN
  - Qualitative approach

- **Longitudinal** designs and **random** sampling

- Design and implement **personalized interventions** (e.g., educational, behavioral, and technological) incorporating beliefs
Implications: Policy

- Incorporate medication adherence statistics into annual health reports, national health surveys, and the healthcare databases.

- Need to increase awareness related to HTN and its medications.
  - Increasing the number of community programs that are supported by the Ministry of Health

- Collaborative effort to improve medication adherence
References


References


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Thank you