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Sultan Qaboos University

Medication Adherence and Health Beliefs among Omanis with Hypertension

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Acknowledgement

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Presentation Outlines

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- Problem and Significance
- Problem In Oman
- Objectives/Methods/Findings of the Study
- Limitations
- Implications

HYPERTENSION: *AGLOBAL ISSUE*

Hypertension

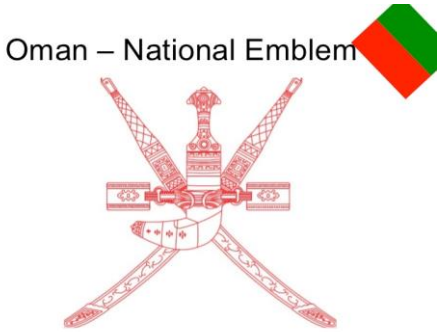
- **51% of stroke**
- **45% of IHD**

Mortality

20 mmHg systolic or 10 mmHg diastolic

WHO, 2013

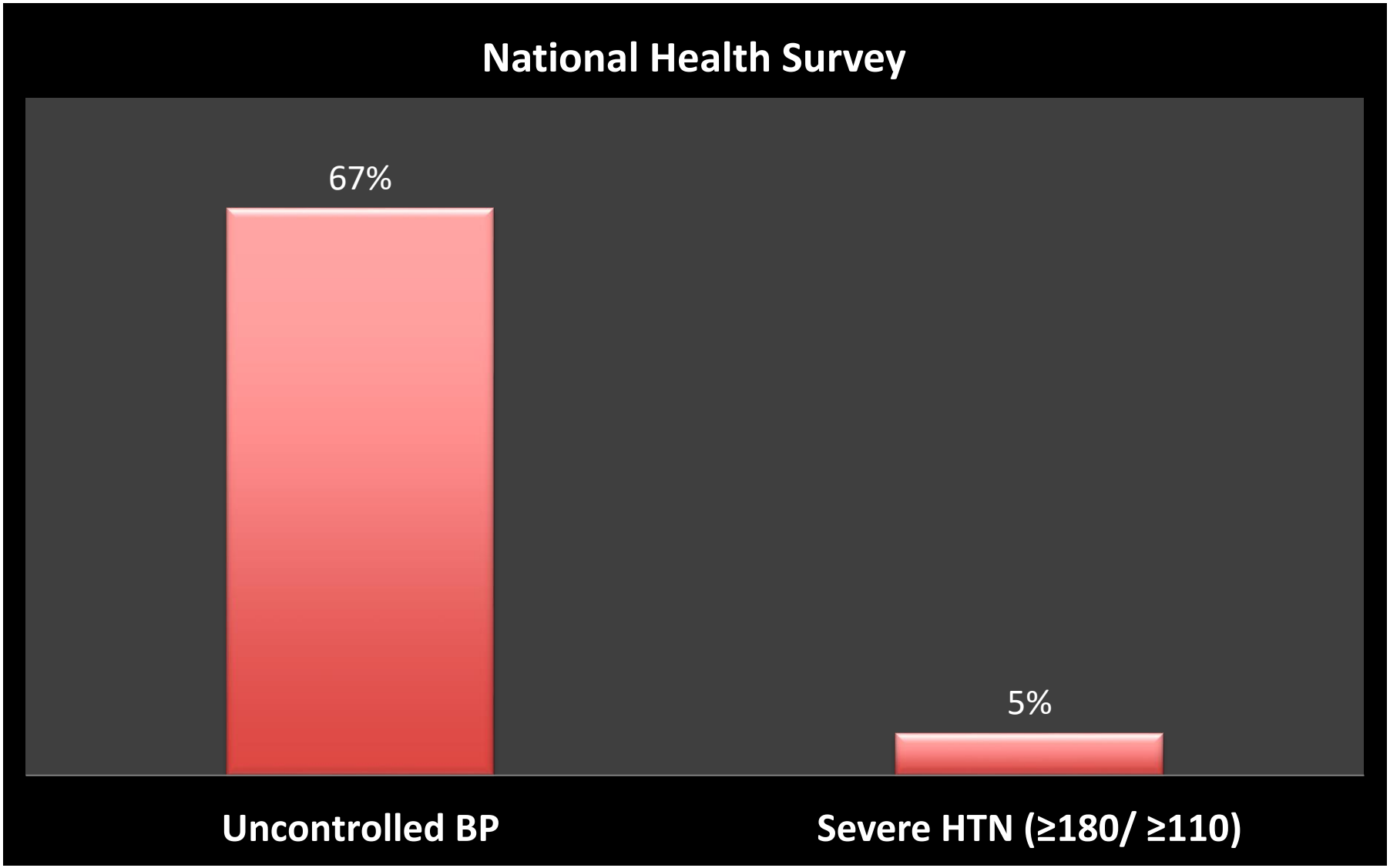
HYPERTENSION IN *OMAN*



- 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*



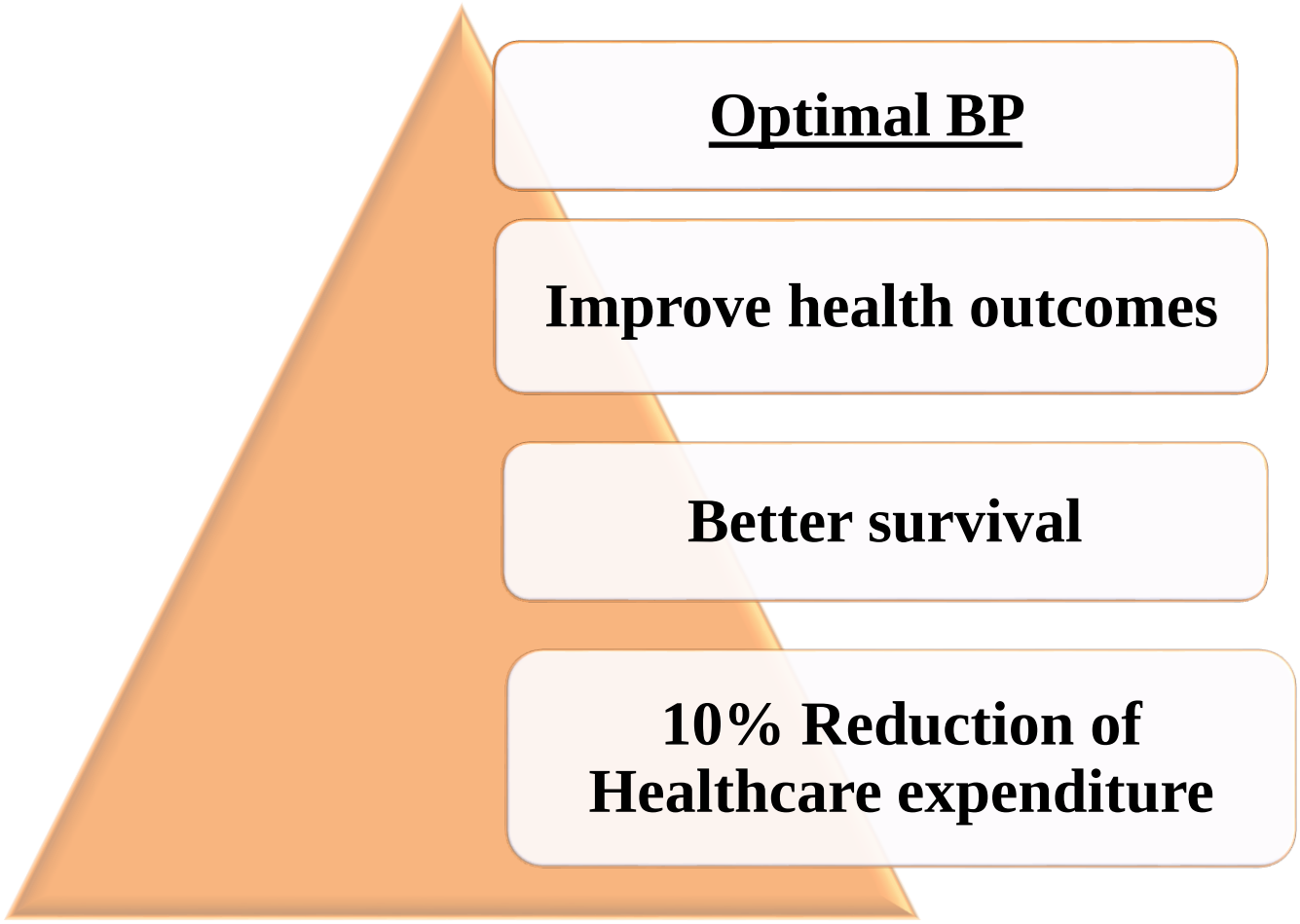
Al Riyami et al., 2012

Appropriate Use of Antihypertensive Medication (Medication Adherence)

requires

Optimal HTN Management

Medication Adherence



James et al., 2014; Van Vark et al., 2012; Simon-Tuval et al., 2016

Medication Adherence *(cont..)*

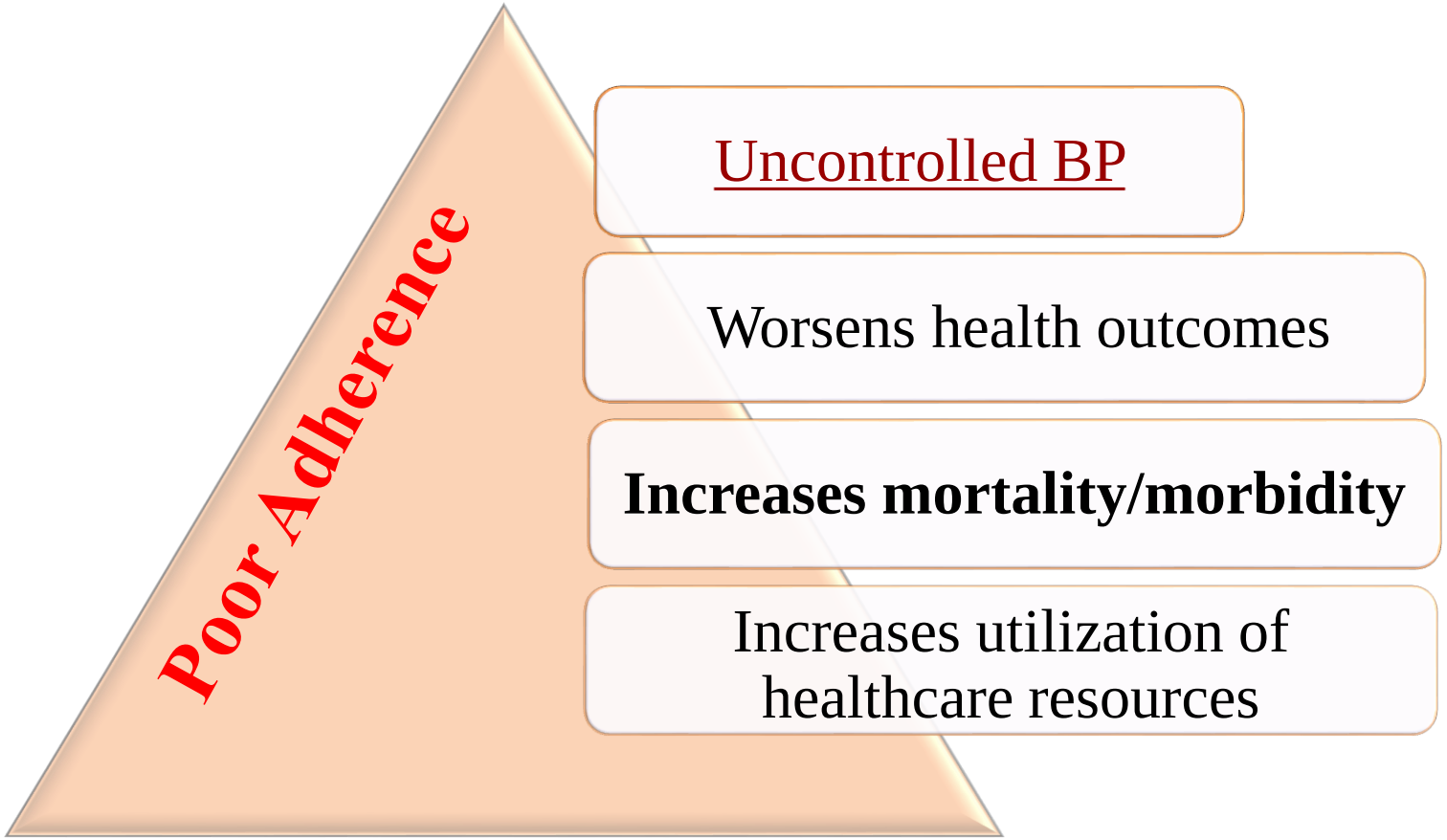
Despite that

- Globally:
  - < 50%

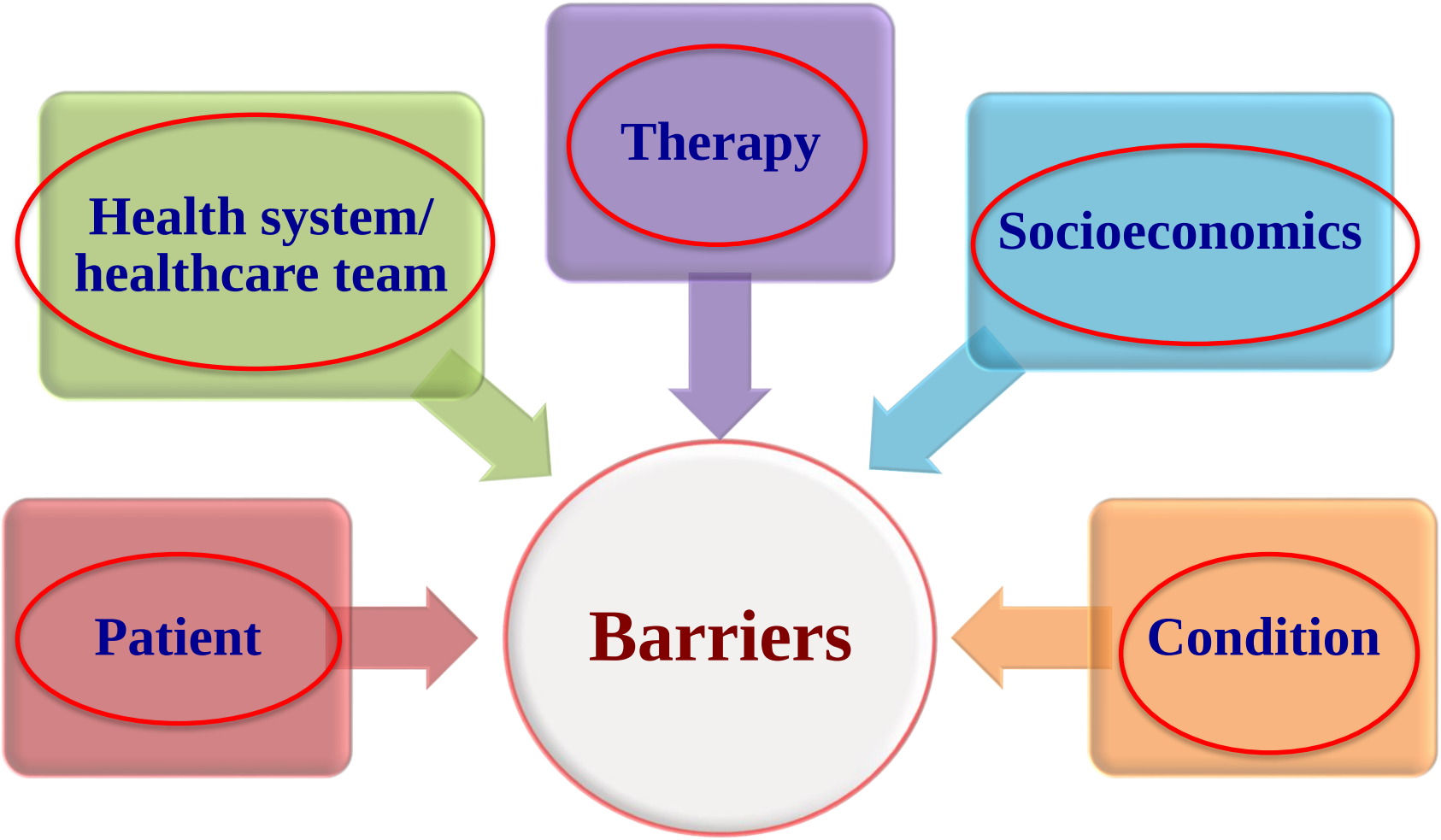
- In the Middle East:
  - 32 – 49.5%

WHO, 2013; Al Qasem et al., 2011

Medication Adherence (cont..)



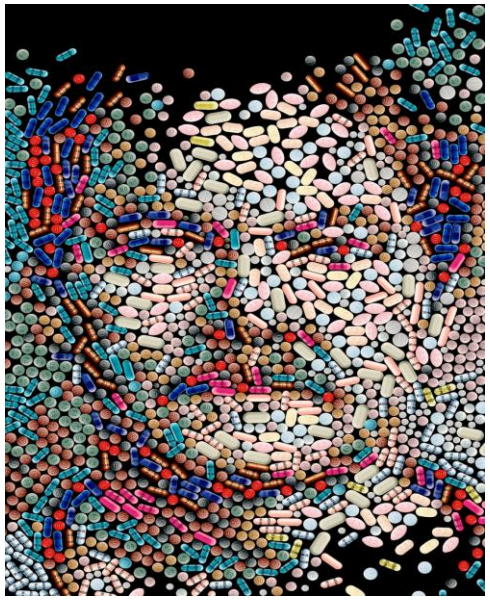
Medication Adherence in HTN: BARRIERS



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

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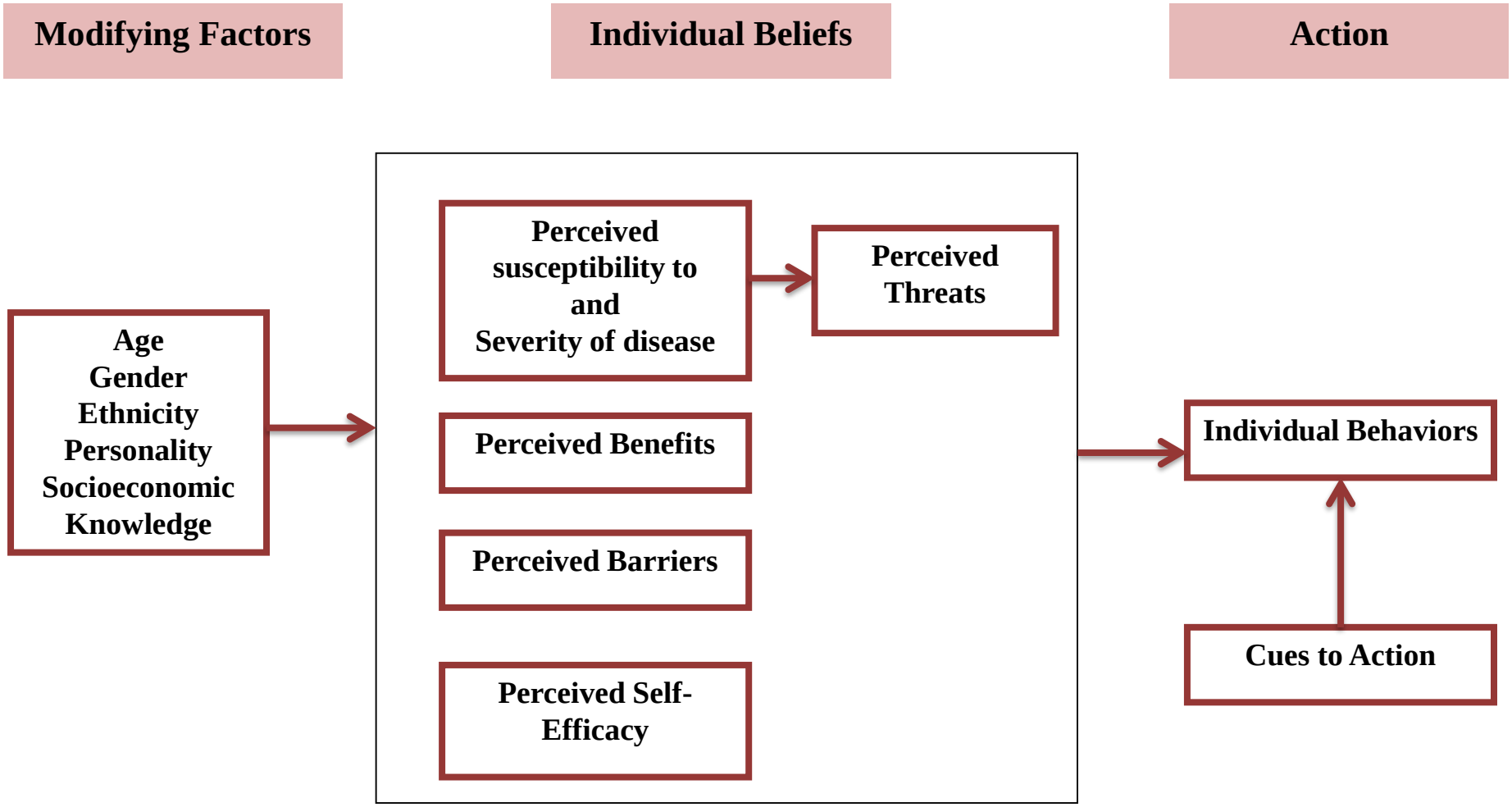
This study is in alignment with:

- ✓ 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.

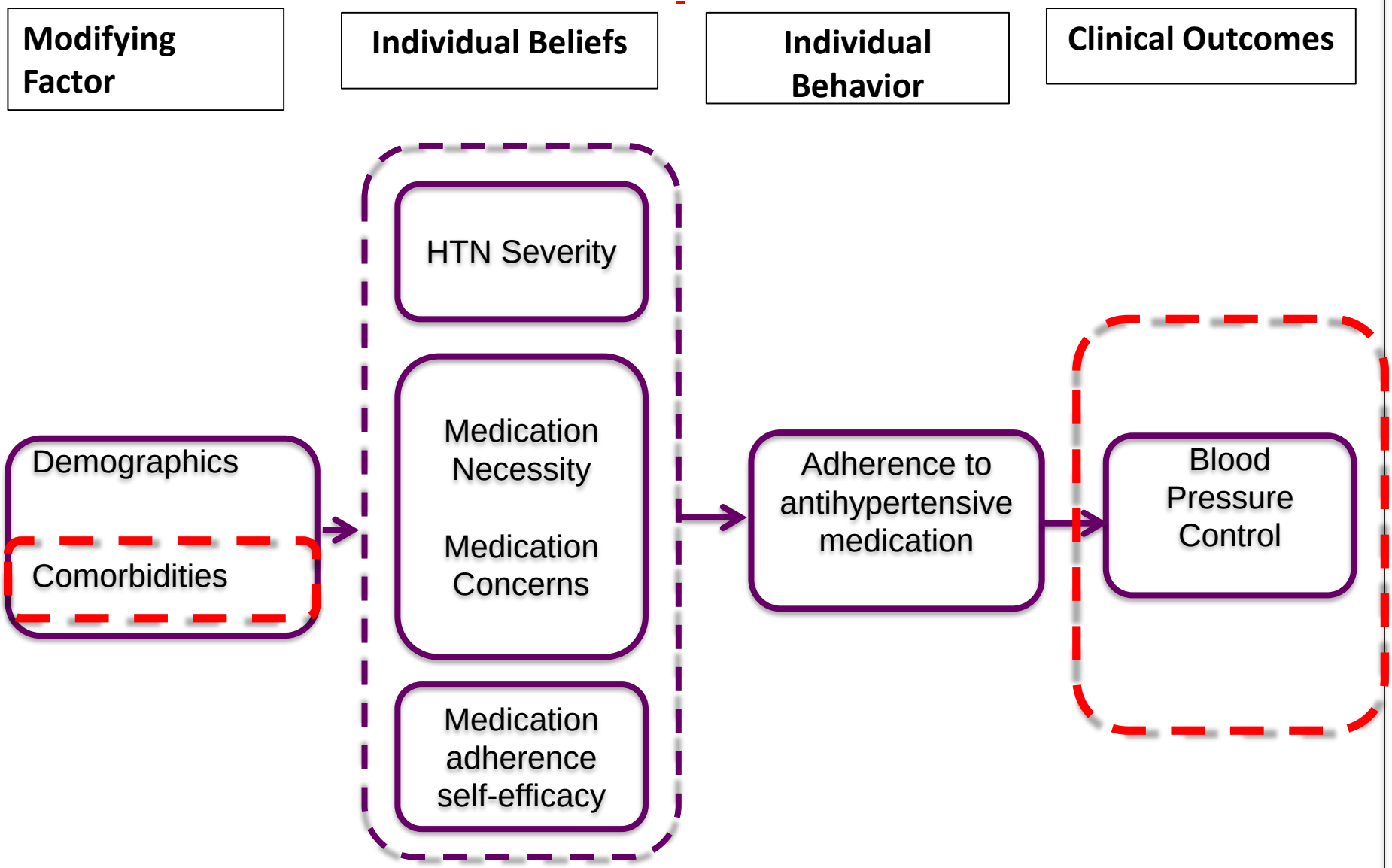
- ✓ MOH's Health Vision 2050 that
  - Patient-centered care to improve patients' involvement in their care and enhance treatment adherence

The Health Beliefs Model



Source: Glanz K, Rimer BK, Viswanath K, eds. 2008. *Health Behavior and Health Education: Theory, Research, and Practice (4th ed)*. San Francisco: Jossey-Bass.

The Study Conceptual Framework



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 ≥ 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

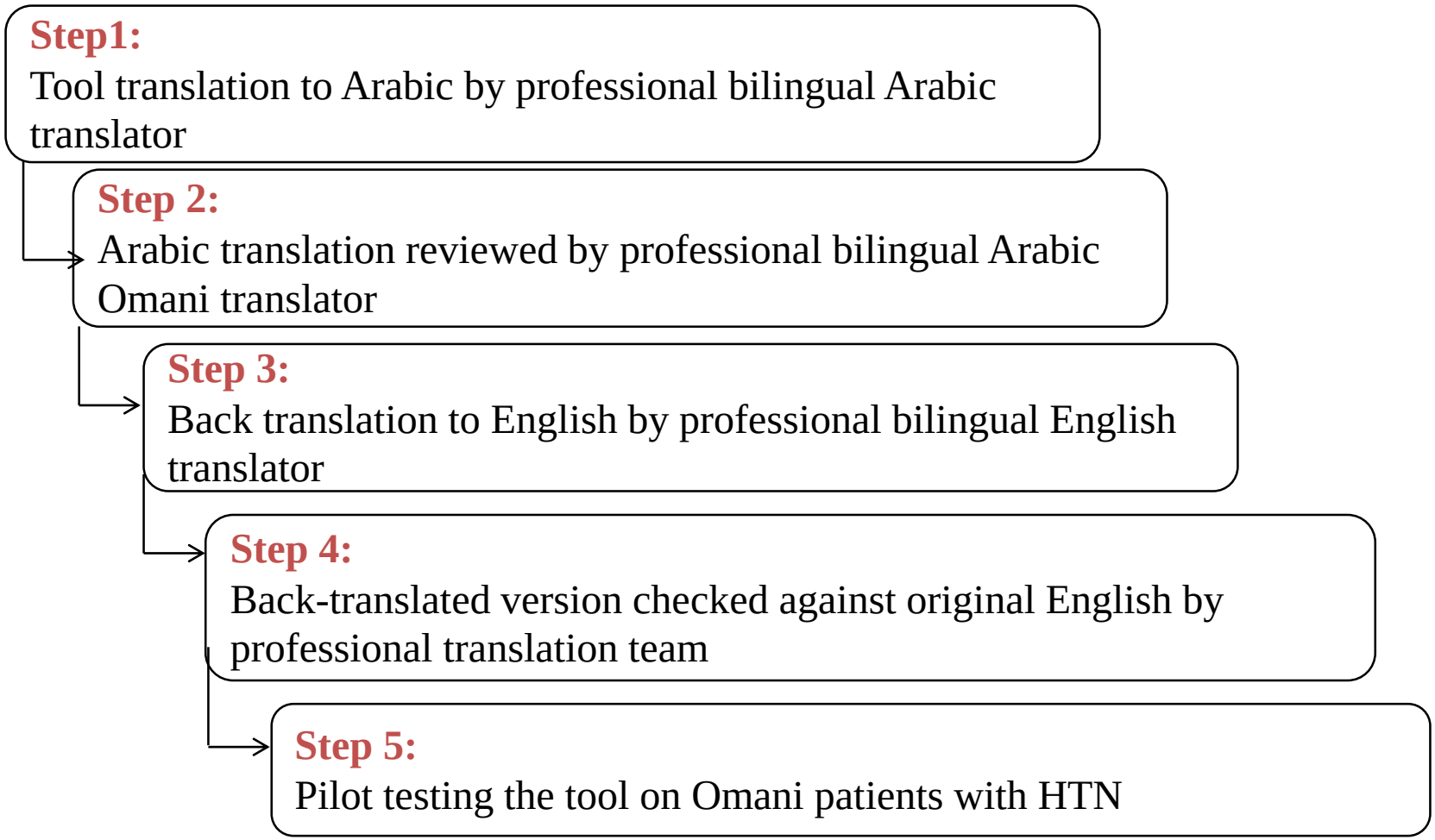


Figure 2. BIPQ= Brief Illness Perception Questionnaire; MASES-R= Medication Adherence Self-Efficacy Scale-Revised.
*Translation of the BIPQ and MASES-R was done by a professional international translation agent

Methodology: Measures (Cont..)

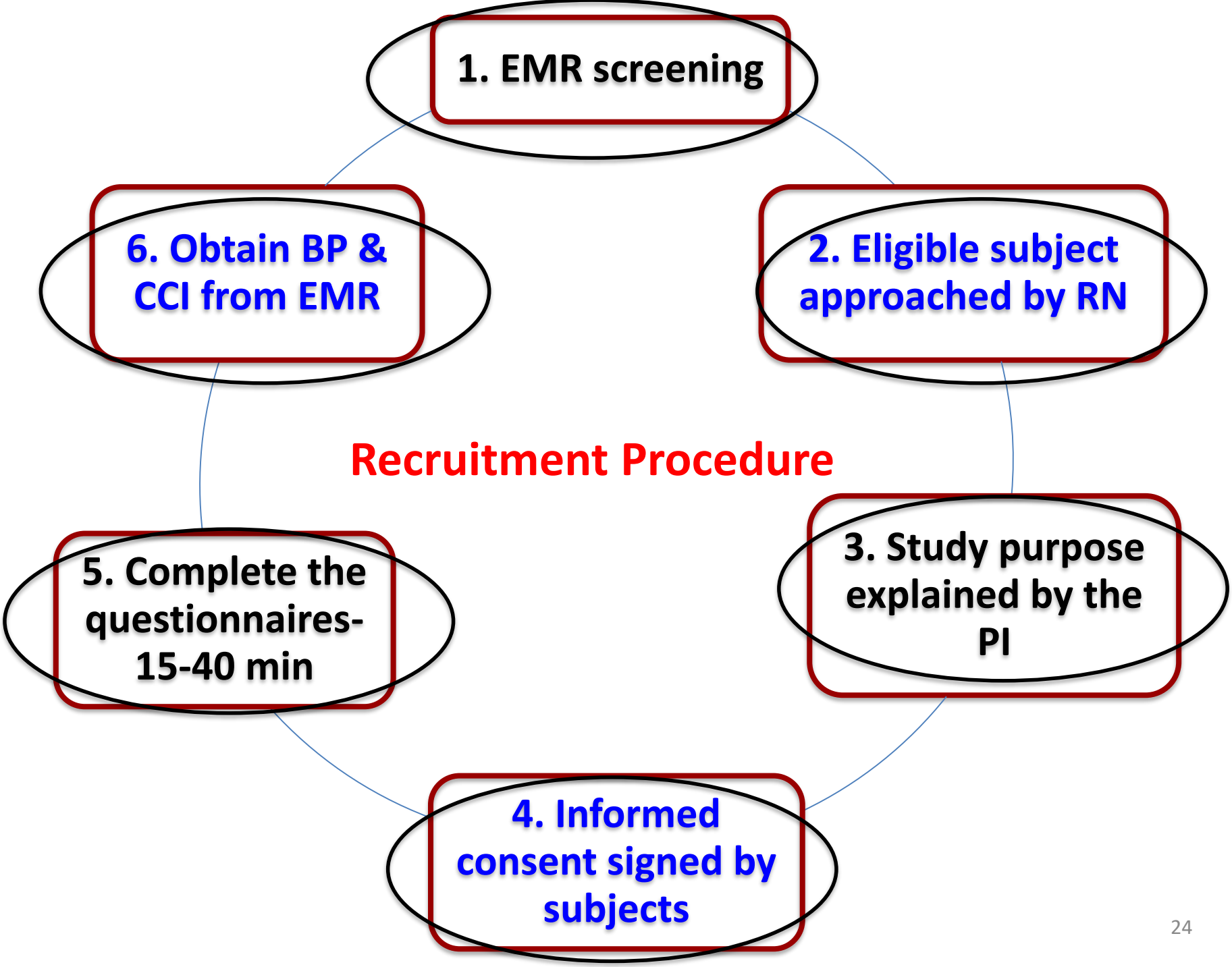
5. Blood Pressure

- **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

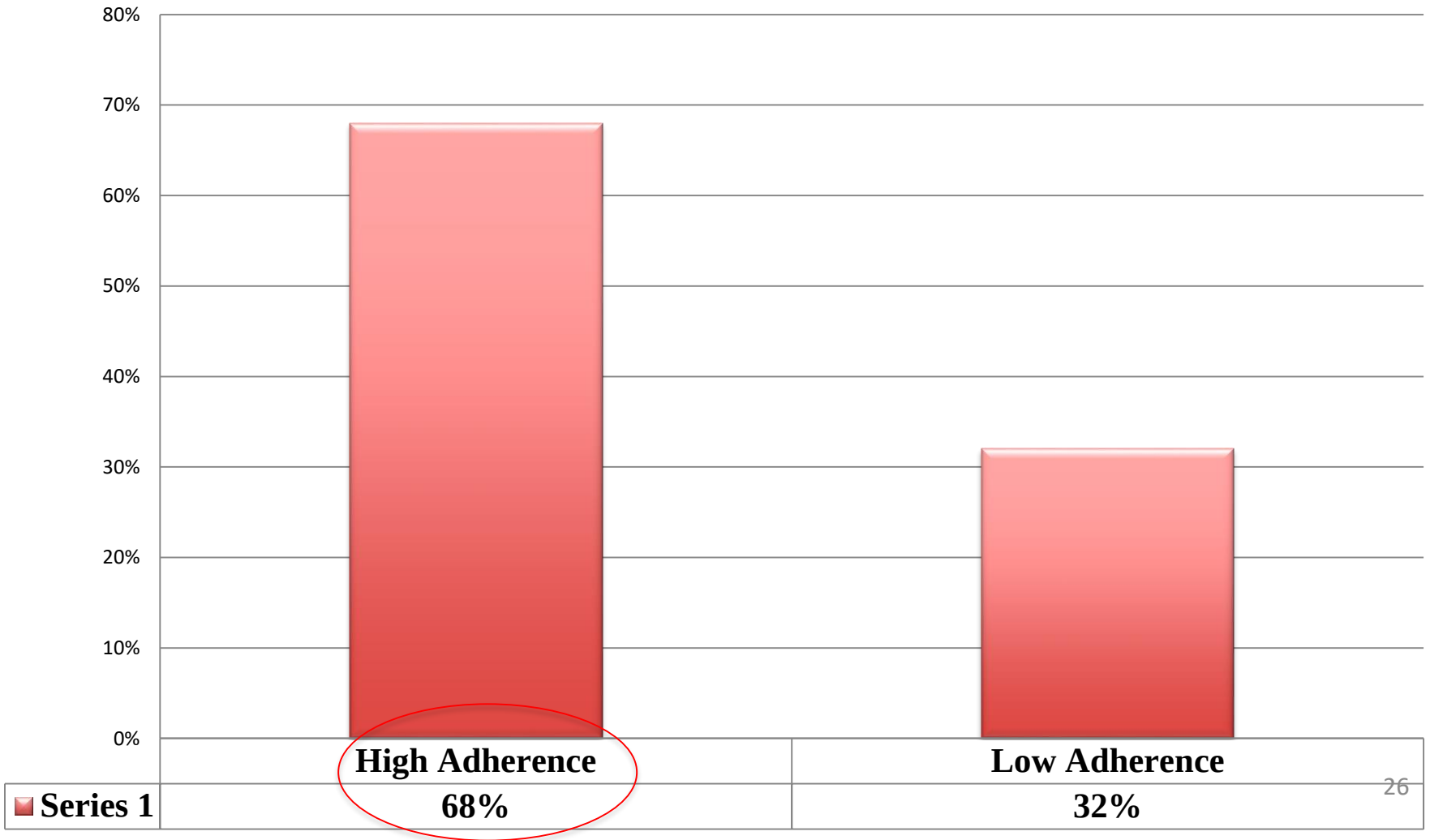
Findings

Variable	n (%)	Mean (SD)	Range
Age (years)		53.6 (13.1)	21 - 86
Years with HTN		7.9 (7.4)	3m – 40y
Number of antihypertensive medications		1.8 (0.86)	1 - 5
Frequency of daily dose		1.5 (0.67)	1 - 4
SBP (mm Hg)		140.8 (19.1)	102 – 200
DBP (mm Hg)		81.3 (11.3)	49 – 110
CCI		1.6 (0.98)	1 - 7
Female	141 (65.6)		
Married	151 (70.2)		
Uncontrolled BP	133 (63)		
Controlled	78 (37)		

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

Findings

Antihypertensive Medication Adherence



Findings

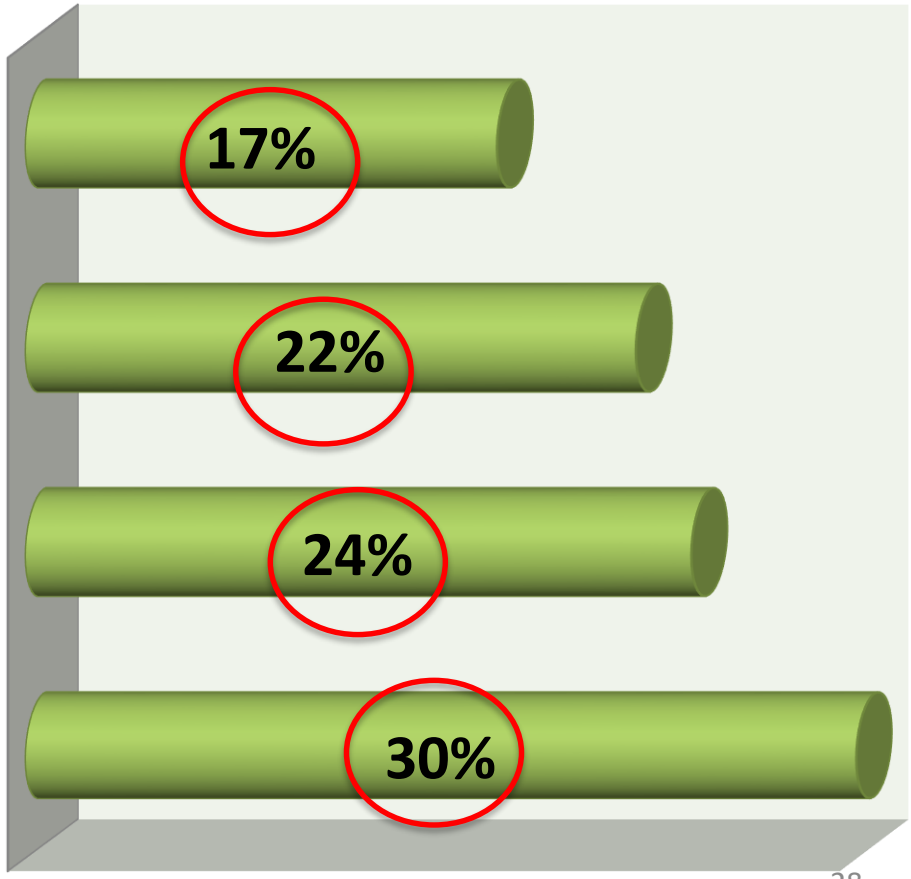
Antihypertensive Medication Adherence (cont..)

Did not take medication on the day before the study

Sometime forgot to take medications over the past 2 weeks

Findings

Reasons for non-adherence



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

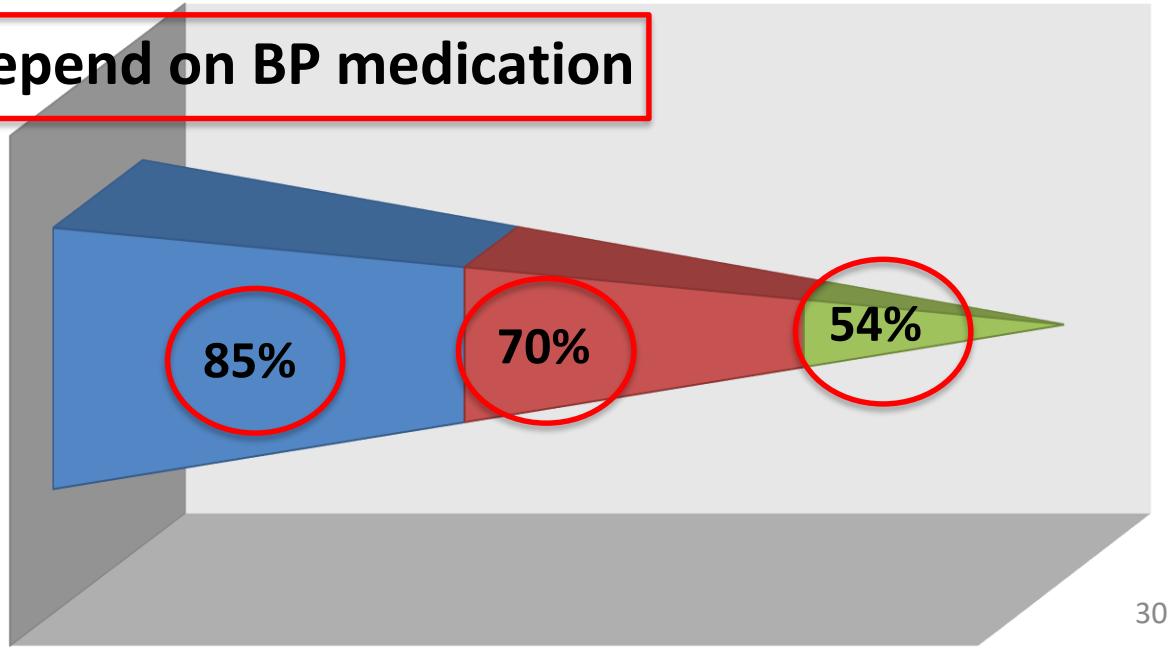
A large majority of the participants had a *lower perception regarding HTN severity*.

Findings

2. Beliefs About Necessity of Medication

- BP medication protects health from becoming worse
- Current health depend on BP medication
- Future health depend on BP medication

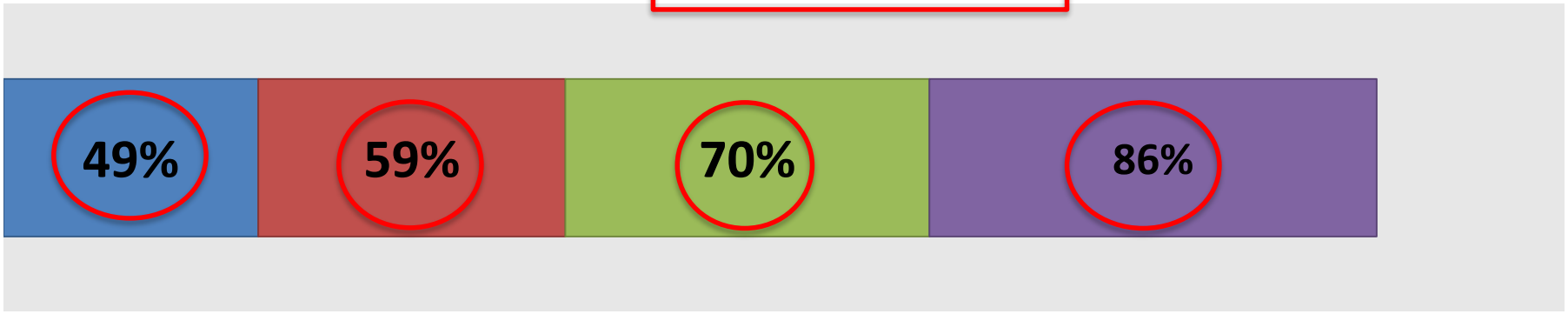
Strongly Agree/Agree



Findings

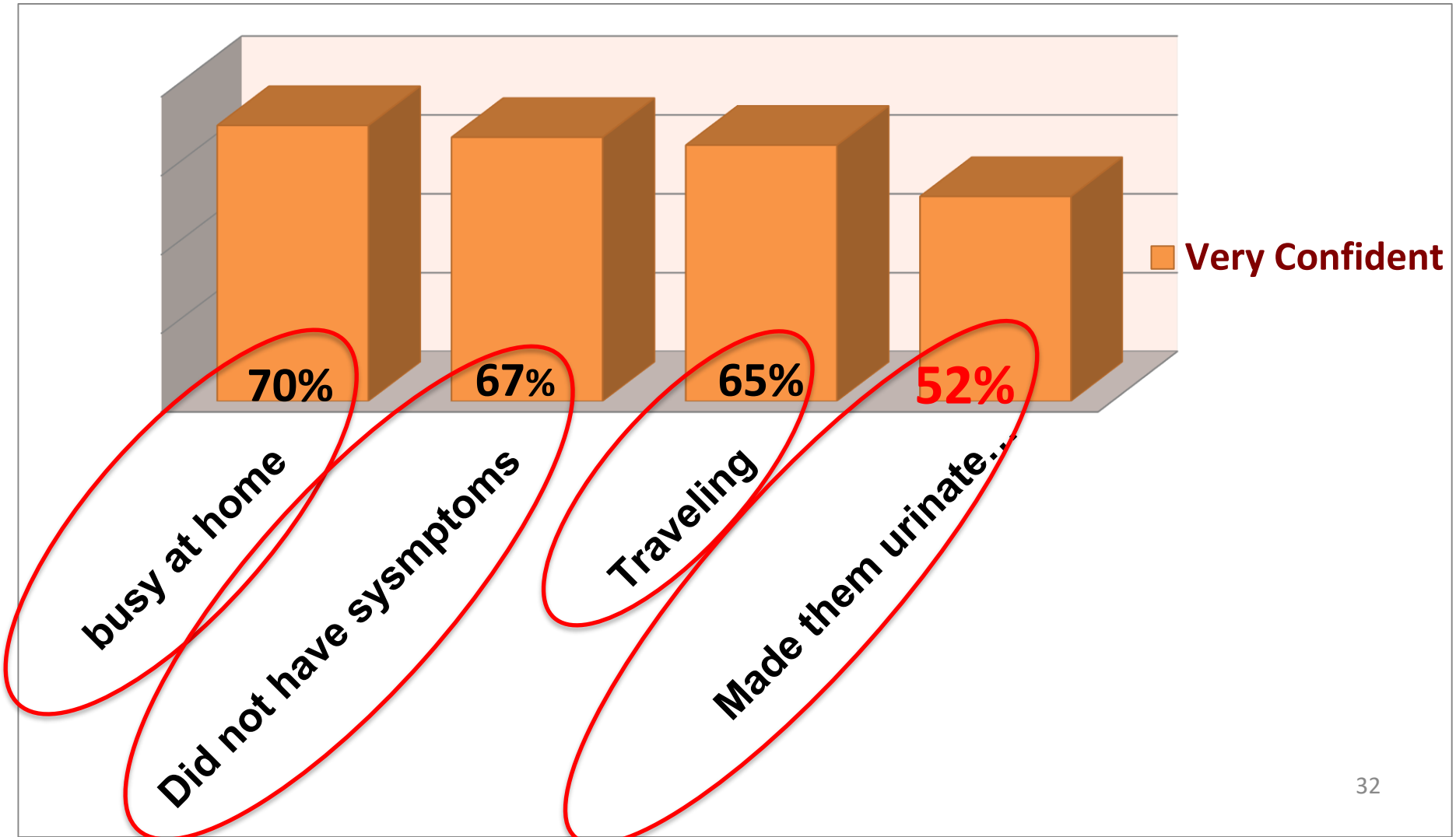
3. Concerns about Medication

- Were not worry about long-term effects of BP medication
- Were not worry about becoming dependent on BP medication
- Midecation did not give them unpleasant side effects
- Medication did not disrupt their Life



Findings

4. Self-efficacy regarding Medication Adherence



Findings

Relationship: Medication Adherence X Beliefs

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

Variable	*B*	SE	Wald	*df*	*p-value*	Odds Ratio	95% CI for Odds Ratio
Self-efficacy	.95	.27	12.80	1	**< .001**	**2.59**	1.54, 4.37
Necessity	.68	.25	7.48	1	**.006**	**1.98**	1.21, 3.23
Concerns	-1.09	.268	16.48	1	**< .001**	**0.34**	0.20, 0.57
Age	0.06	.02	15.44	1	**< .001**	**1.06**	1.03, 1.10

Note. BMQ-C = Beliefs about Medicine Questionnaire-Concern; BMQ-N = Beliefs about Medicine Questionnaire-Necessity; MASES-R = Medication Adherence Self-Efficacy Scale-Revised.

Findings

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48%

Findings

Relationship: Medication Adherence X Beliefs

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

37 %

Variable	*B*	SE	Wald	*df*	*p-value*	Odds Ratio	95% CI for Odds Ratio
Self-efficacy	.95	.27	12.80	1	**< .001**	**2.59**	1.54, 4.37
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Findings

Relationship: Medication Adherence X BP control

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

3 %

Variable	*B*	SE	Wald	*df*	*p*	Odds Ratio	95% CI for Odds Ratio
Past SBP#	0.04	.01	16.56	1	**< .001**	**1.04**	1.02, 1.06
High Medication Adherence	- .73	.35	4.47	1	**.04**	**0.48**	0.24, 0.95

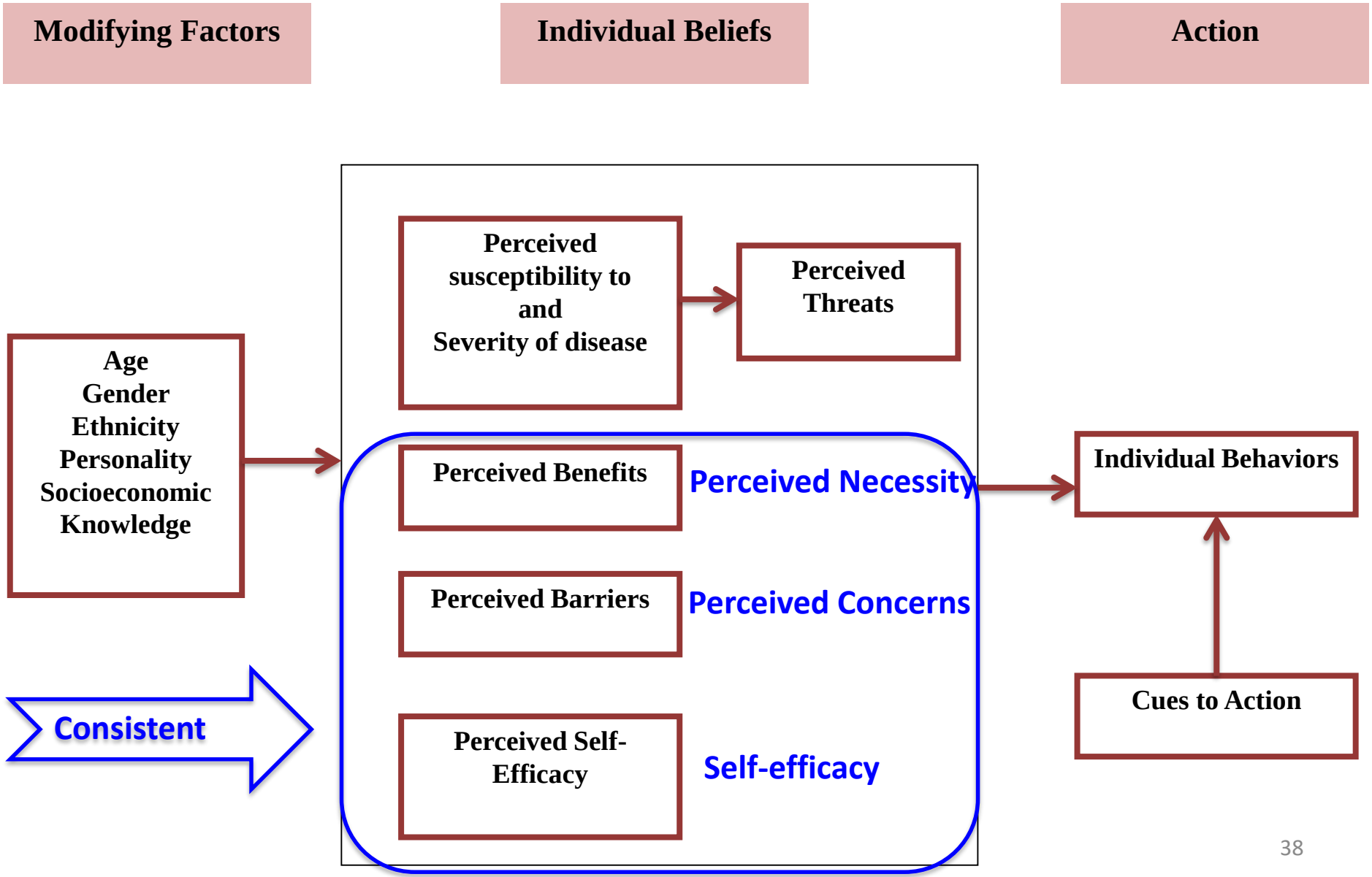
Note. SBP = Systolic BP.

* 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.

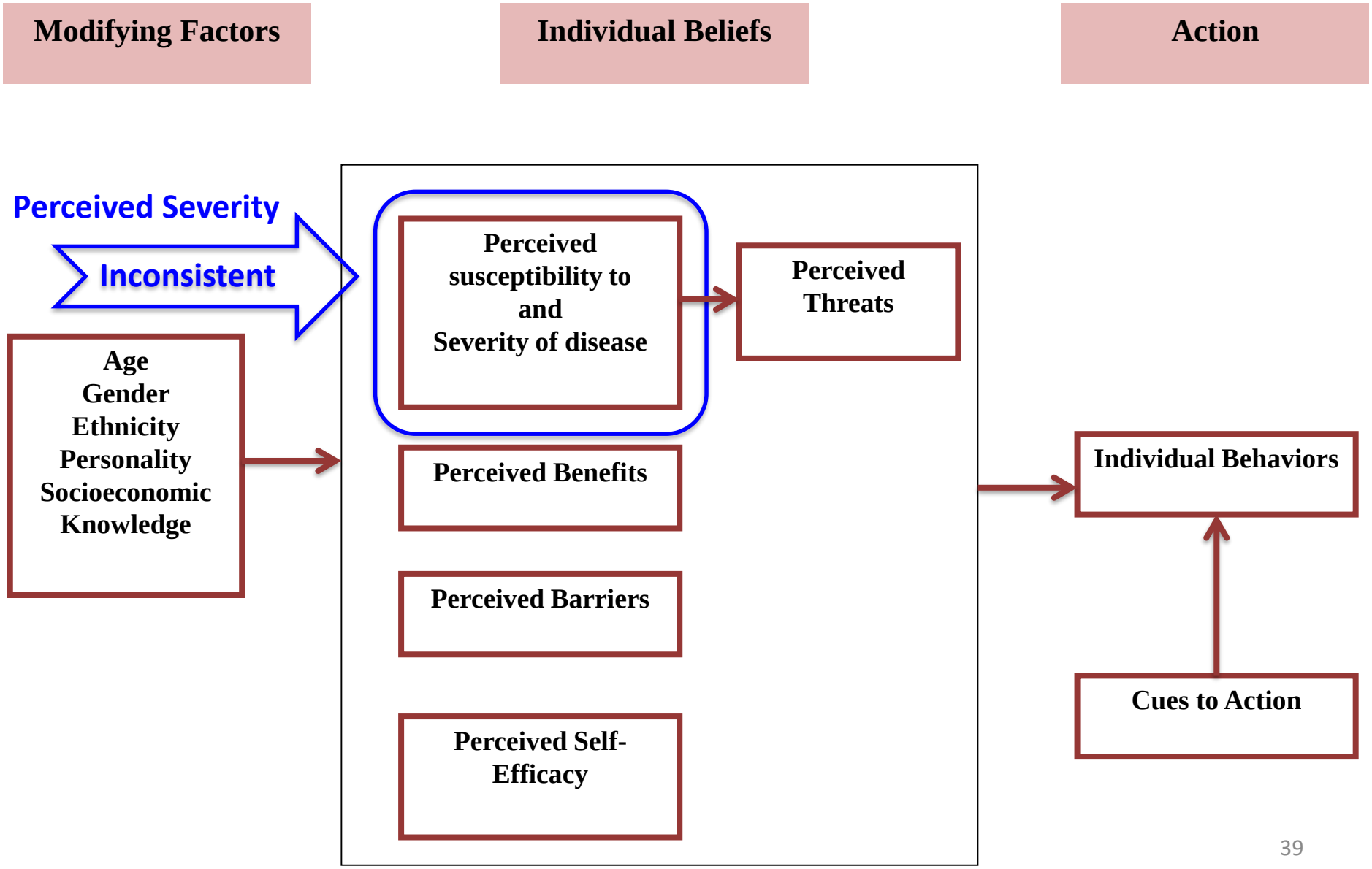
SBP of the previous visit

Summary of Findings, Limitations, and Implications

The Health Beliefs Model



The Health Beliefs Model



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

- Al Qasem, A., Smith, F., & Clifford, S. (2011). Adherence to medication among chronic patients in middle eastern countries: Review of studies.
- Al Riyami, A., Elaty, M. A., Morsi, M., Al Kharusi, H., Al Shukaily, W., & Jaju, S. (2012). Oman world health survey: Part 1-methodology, sociodemographic profile and epidemiology of non-communicable diseases in oman. *Oman Med J, 27*(5), 425-443.
- AlGhurair, S. A., Hughes, C. A., Simpson, S. H., & Guirguis, L. M. (2012). A systematic review of patient Self-Reported barriers of adherence to antihypertensive medications using the world health organization multidimensional adherence model. *The Journal of Clinical Hypertension, 14*(12), 877-886.
- Al-Maqbali, A. A., Temple-Smith, M., Ferler, J., & Blackberry, I. (2013). Prevalence and determinants of pre-hypertension among omani adults attending non-communicable disease screening program in primary care setting in sohar city. *Oman Medical Journal, 28*(5), 316-323.
- Hodges, R. (2015). Negotiating culture and care: Challenges and opportunities in mental health and reproductive health care in the sultanate of oman.
- James, P. A., Oparil, S., Carter, B. L., Cushman, W. C., Dennison-Himmelfarb, C., Handler, J., . . . Ogedegbe, O. (2014). 2014 evidence-based guideline for the management of high blood pressure in adults: Report from the panel members appointed to the eighth joint national committee (JNC 8). *Jama, 311*(5), 507-520.

References

- Ministry of Health. (2014). *Annual health report 2013.* (Annual). Oman: Ministry of Health.
- Morisky, D. E., Ang, A., Krousel-Wood, M., & Ward, H. J. (2008). Predictive validity of a medication adherence measure in an outpatient setting. *The Journal of Clinical Hypertension, 10*(5), 348-354.
- World Health Organization. (2013). A global brief on hypertension, silent killer, global public health crisis. 2013. *URL: Http://Apps.Who.Int/Iris/Bitstream/10665/79059/1/WHO_DCO_WHD_2013.2_eng.Pdf [Accessed 2013-07-17][WebCite Cache ID 6IBqAI2eN],*
- Simon-Tuval, T., Triki, N., Chodick, G., & Greenberg, D. (2016). The association between adherence to cardiovascular medications and healthcare utilization. *The European Journal of Health Economics, 17*(5), 603-610.
- van Vark, L. C., Bertrand, M., Akkerhuis, K. M., Brugts, J. J., Fox, K., Mourad, J. J., & Boersma, E. (2012). Angiotensin-converting enzyme inhibitors reduce mortality in hypertension: A meta-analysis of randomized clinical trials of renin-angiotensin-aldosterone system inhibitors involving 158,998 patients. *European Heart Journal, 33*(16), 2088-2097. doi:10.1093/eurheartj/ehs075 [doi]

- World Health Rankings. (2014). World health rankings live longer live better. health profile: Oman. Retrieved from from http://www.worldlifeexpectancy.com/country-health-profile/oman

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Thank you