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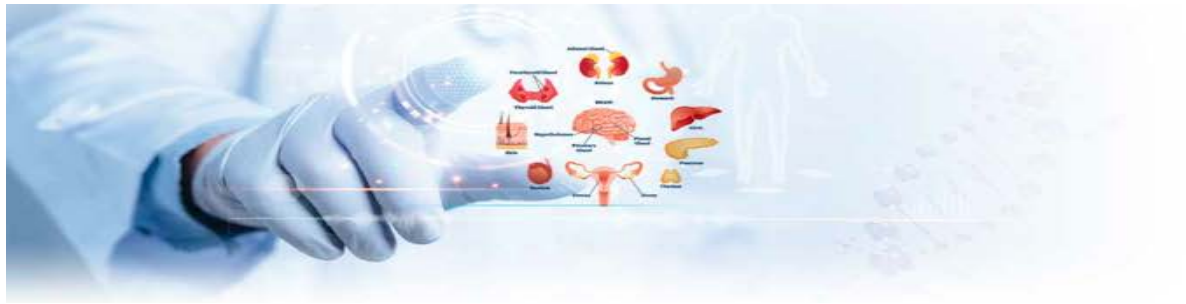

چهاردهمین کنگره بین المللی
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Blood pressure status and quality of life in adults with different disease awareness and treatment adherence

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Introduction

Introduction

- **Hypertension** is responsible for 8.5 million deaths from heart disease, stroke, and end-stage renal disease worldwide (1)
- In **Iran** overall prevalence of hypertension has risen during the past decades and has manifested in about 37% of the adult population (2)
- WHO reported only **42% of adults with hypertension** are diagnosed and treated (3)
- **More than half of the Iranian adult population** were unaware of their disease and were not treated (4)

1. Zhou, B., et al (2021). *The Lancet*, *398*(10304), 957-980., 2. Oori, M. et al. (2019). *Current hypertension reviews*, *15*(2), 113-122., 3. WHO. https://www.who.int/news-room/fact-sheets/detail/hypertension. 16 March 2023. , 4. Afsargharehbagh, et al. (2019). *Current Hypertension Reports*, *21*, 1-13.

Introduction

- Beyond physical complications, blood pressure status is an important indicator of overall mental health and has a significant impact on an individual's quality of life (5-6)
- What is **Health-related quality of life (HRQOL)?**
- commitment to treatment, disease severity, and clinical management (7)
- Studies have shown that the HRQoL of hypertensive patients is not the same as normotensive subjects and their health perception is different based on disease awareness, and treatment adherence (8)

5. Cella, D. F. (1995, April). In *Seminars in oncology* (Vol. 22, No. 2 Suppl 3, pp. 73-81)., 6. Hayes, D. K., et al. (2008). *Journal of hypertension*, *26*(4), 641-647., 7. Youssef, et al. (2005). *EMHJ-Eastern Mediterranean Health Journal, 11 (1-2), 109-118, 2005*., 8. Trevisol, D. J., et al. (2012). *Journal of human hypertension*, *26*(6), 374-380.

Introduction

- Most previous studies have investigated the association of HRQoL in patients with **known hypertension**
- The influence of the treatment of hypertension on quality of life has yet to be investigated in population-based surveys.
- Hence, clarifying whether the reported associations are due to the disease process, therapeutic interventions, and/or the consequences of labeling is essential

Introduction

Relationship between different BP statuses with HRQoL regarding the contribution of disease awareness and commitment to treatment among a large Iranian adult population

Method

TLGS sixth phase
(2014-2017)

Anthropometric measures, Socio-demographic information (age, BMI, education, marital status, occupation), physical activity and smoking, history of chronic diseases (CVD, diabetes, CKD, cancer)

Excluded due to incomplete information on BP data (n=23)

Adults aged ≥ 20 years with completed data on HRQol and BP (n=7918)

Excluded due to incomplete information on at least one covariates data (n=661)

Final study participants regarding HRQoL **(n= 7257)**

Blood pressure: definition and assessment

Systolic BP ≥ 140 mmHg or 2) diastolic BP ≥ 90 mmHg or 3) current use of antihypertensive medication (9)

Participants were divided into four categories regarding their BP status

1) Normotensive: the reference category- participants who had normal systolic and diastolic BP at the assessment time, had no history of hypertension, and not taking anti-hypertensive medications

2) Undiagnosed hypertension: subjects with systolic blood pressure ≥140 mmHg and/or diastolic blood pressure ≥90 mmHg, at the time of assessment, without previous treatment or diagnosis

3) Diagnosed, committed to treatment: patients with known hypertension who had declared that they take antihypertensive drugs regularly

4) Diagnosed, non-committed to treatment: patients with known hypertension, who had reported low adherence to antihypertensive medications such as never taking medications or taking irregularly

9. Lenfant, C., et al. (2003). *Hypertension*, *41*(6), 1178-1179

Health-related quality of life

HRQoL ➡ reliable and validated Persian version of the short-form 12-item health survey version 2 (SF-12v2) (10)

- **Physical dimension with four subscales:** physical functioning, role physical, bodily pain, and general health.
- **Mental dimension with four subscales:** vitality, social functioning, role emotional, and mental health

10. Montazeri, A., et al. (2011). *Health and quality of life outcomes*, *9*(1), 1-8.

HYPERTENSION

Health-Related Quality of Life

Most participants were normotensive (78.3% of females and 75.7% of males).

Hypertension was more common in women (17.0% vs. 14.7%).

The men had less commitment to treatment (2.8% vs. 1.6%).

The prevalence of undiagnosed hypertension was higher in men (9.6% vs. 4.8%).

Table 1. Participants' characteristics and health-related quality of life across different blood pressure groups and sex

	Male (n=3315)					Female (n=3942)				
	Normotensive (n=2510)	Diagnosed Hypertensive		Undiagnosed hypertension (n=318)	P-value	Normotensive (n=3085)	Diagnosed Hypertensive		Undiagnosed hypertension (n=189)	P-value
		Commitment to treatment (n=395)	Non-commitment to treatment (n=92)				Commitment to treatment (n=606)	Non-commitment to treatment (n=62)		
Age (years)	43.67±14.74	63.51±11.29	53.79±14.14	50.95±14.10	**<0.001**	43.09±12.84	62.22±9.08	55.66±10.71	54.24±12.23	**<0.001**
BMI (kg/m²)	26.95±4.22	28.33±4.25	29.47±4.32	29.53±4.84	**<0.001**	27.70±5.07	31.59±5.07	31.47±4.67	31.10±5.30	**<0.001**
Marital status					**<0.001**					0.553
Unmarried	641 (25.5)	17 (4.3)	8 (8.7)	41 (12.9)		768 (24.9)	154 (25.4)	12 (19.4)	41 (21.7)	
Married	1869 (74.5)	378 (95.7)	84 (91.3)	277 (87.1)		2317 (75.1)	452 (74.6)	50 (80.6)	148 (78.3)	
Education (years)					**<0.001**					**<0.001**
0-6	191 (7.6)	90 (22.8)	18 (19.6)	38 (11.9)		324 (10.5)	298 (49.2)	22 (35.5)	53 (28)	
7-12	1298 (51.7)	205 (51.9)	45 (48.9)	174 (54.7)		1587 (51.4)	268 (44.2)	33 (53.2)	102 (54)	
≥ 13	1021 (40.7)	100 (25.3)	29 (31.5)	106 (33.3)		1174 (38.1)	40 (6.6)	7 (11.3)	34 (18)	
Occupation status					**<0.001**					**<0.001**
Employed	1953 (77.8)	182 (46.1)	65 (70.7)	235 (73.9)		702 (22.8)	20 (3.3)	7 (11.3)	18 (9.5)	
Low/mod	1491 (59.4)	256 (64.8)	56 (60.9)	202 (63.5)		1814 (58.8)	422 (69.6)	37 (59.7)	126 (66.7)	
High	1019 (40.6)	139 (35.2)	36 (39.1)	116 (36.5)		1271 (41.2)	184 (30.4)	25 (40.3)	63 (33.3)	
Chronic disease	787 (31.4)	330 (83.5)	54 (58.7)	154 (48.4)	**<0.001**	1402 (45.4)	545 (89.9)	43 (69.4)	140 (74.1)	**<0.001**

Normotensive participants had a significantly lower mean age, BMI, and chronic disease prevalence than the other studied groups.

Normotensive participants were also more likely to have higher levels of education and employment.

Table 2. Adjusted regression coefficient (95% CI) for the association of blood pressure groups with physical health-related quality of life according to the sex

		Male (n=3315)		Female (n=3942)	
Health-related quality of life	**Blood pressure status**	**β* (95% CI)**	**P-value**	**β (95% CI)**	**P-value**
Physical component summary	**Commitment to treatment**	**-1.76 (-2.60, -0.92)**	**<0.001**	**-1.53 (-2.36, -0.70)**	**<0.001**
	Non-commitment to treatment	-1.43 (-2.92, 0.05)	0.059	-0.19 (-2.26, 1.88)	0.855
	Undiagnosed hypertension	0.41 (-0.44, 1.26)	0.343	0.23 (-0.99, 1.46)	0.710
Physical function	**Commitment to treatment**	**-4.18 (-6.61, -1.76)**	**<0.001**	**-3.69 (-6.29, -1.09)**	**0.005**
	Non-commitment to treatment	-2.37 (-6.66, 1.92)	0.279	-3.02 (-9.40, 3.46)	0.361
	Undiagnosed disease	1.02 (-1.43, 3.46)	0.414	0.89 (-2.94, 4.72)	0.649
Role physical	**Commitment to treatment**	**-3.38 (-5.68, -1.08)**	**0.004**	**-3.71 (-6.08, -1.34)**	**0.002**
	Non-commitment to treatment	-2.24 (-6.30, 1.83)	0.281	-3.21 (-9.11, 2.69)	0.286
	Undiagnosed hypertension	2.03 (-0.09, 5.55)	0.069	1.84 (-1.66, 5.33)	0.303
Bodily pain	**Commitment to treatment**	-2.28 (-4.06, 0.20)	0.062	**-2.71 (-5.27, -0.16)**	**0.037**
	Non-commitment to treatment	-1.88 (-6.26, 2.51)	0.401	-0.34 (-6.71, 6.02)	0.916
	Undiagnosed disease	1.08 (-1.42, 3.58)	0.396	0.06 (-3.71, 3.83)	0.975
General health	**Commitment to treatment**	**-5.77 (-8.35, -3.19)**	**<0.001**	**-5.27 (-7.39, -3.15)**	**<0.001**
	Non-commitment to treatment	**-5.25 (-9.82, -0.69)**	**0.024**	-2.90 (-6.03, 0.23)	0.069
	Undiagnosed hypertension	-1.17 (-3.77, 1.43)	0.377	-2.90 (-8.18, 2.38)	0.281

Individuals with undiagnosed hypertension, regardless of sex, did not experience any impairment in physical HRQoL

Table 3. Adjusted regression coefficient (95% CI) for the association of blood pressure groups with mental health-related quality of life according to the sex

		Male (n=3315)		Female (n=3942)	
Health-related quality of life	**Blood pressure status**	**β* (95% CI)**	**P-value**	**β (95% CI)**	**P-value**
Mental component summary	Commitment to treatment	-0.41 (-1.61, 0.79)	0.505	-0.73 (-1.86, 0.39)	0.201
	Non-commitment to treatment	0.11 (-2.02, 2.23)	0.923	**-3.56 (-6.36, -0.76)**	**0.013**
	Undiagnosed hypertension	0.03 (-1.19, 1.24)	0.965	-0.79 (-2.44, 0.87)	0.352
Vitality	Commitment to treatment	**-3.29 (-6.15, -0.43)**	**0.024**	-2.48 (-5.12, 0.17)	0.066
	Non-commitment to treatment	-1.15 (-6.21, 3.92)	0.657	-6.17 (-12.76, 0.42)	0.067
	Undiagnosed hypertension	2.56 (-0.33, 5.44)	0.082	0.80 (-3.10, 4.70)	0.688
Social function	Commitment to treatment	-1.68 (-4.49, 1.14)	0.242	-1.41 (-4.19, 1.38)	0.322
	Non-commitment to treatment	-1.28 (-6.26, 3.70)	0.614	**-9.46 (-16.40, -2.52)**	**0.008**
	Undiagnosed hypertension	-1.61 (-4.45, 1.22)	0.265	-3.64 (-7.75, 0.47)	0.082
Role emotional	Commitment to treatment	-1.69 (-4.18, 0.81)	0.184	-1.63 (-4.05, 0.80)	0.189
	Non-commitment to treatment	0.82 (-3.59, 5.23)	0.716	-5.55 (-11.60, 0.50)	0.072
	Undiagnosed disease	1.66 (-0.85, 4.18)	0.195	-0.40 (-3.98, 3.18)	0.825
Mental health	Commitment to treatment	-0.84 (-3.31, 1.63)	0.505	**-2.67 (-4.93, -0.41)**	**0.021**
	Non-commitment to treatment	-0.86 (-5.23, 3.51)	0.699	-5.43 (-11.06, 0.20)	0.059
	Undiagnosed hypertension	-0.61 (-3.10, 1.88)	0.629	-1.06 (-4.39, 2.27)	0.533

Individuals with undiagnosed hypertension, regardless of sex, did not experience any impairment in mental HRQoL

DISCUSSION

1. Individuals with undiagnosed hypertension, regardless of sex, did not experience any impairment in HRQoL compared to those with previously diagnosed hypertension

- These findings are consistent with previous studies conducted on multi-ethnic Asian (11) and Spanish populations (12)
- Contradictory to investigations in Thai (12) and Chinese (13) populations, which found higher and lower HRQoL among those with undiagnosed hypertension, respectively

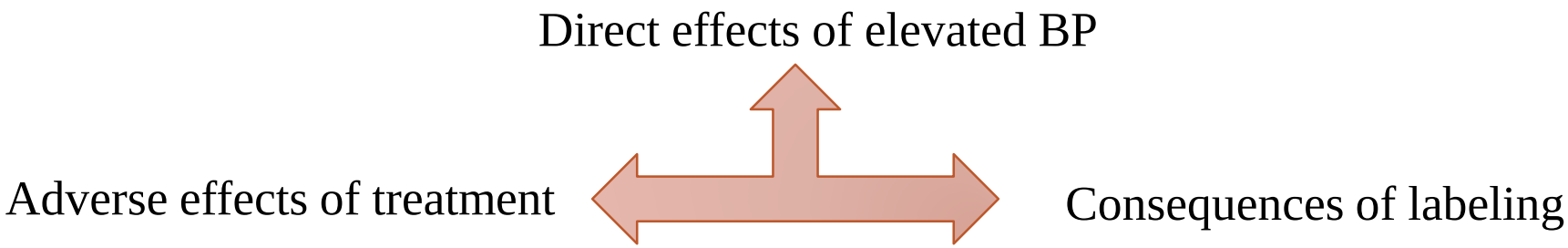
1. Asymptomatic nature of hypertension: many individuals with undiagnosed hypertension may not experience any symptoms related to high BP

2. Factors associated with hypertension diagnosis, such as labeling (awareness of being hypertensive).

11. Mena-Martin, F. J., et al. (2003). Journal of hypertension, 21(7), 1283-1289., 12. Venkataraman, K., et al. (2014). *PLoS One*, *9*(11), e113802., 13. Vathesatogkit, P., et al. (2012). *PLoS One*, *7*(11), e49921., 14. Li, W., et al. (2005). *Journal of Hypertension*, *23*(9), 1667-1676.

2. Hypertensive patients with high adherence to medication reported poorer physical HRQoL compared to other study groups

- These findings are consistent with a previous population-based survey that showed poorer quality of life in hypertensive patients who were controlled by medication (15).
- However, it was inconsistent with the result of two previous studies in a developed and developing country, the USA (16) and India (17).



15. Trevisol, D. J., et al. (2012). *Journal of human hypertension*, *26* (6), 374-380., 16. Patil, M., et al. (2023). *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, *60*, 00469580231167010., 17. Peacock, E., et al. (2021). *Journal of hypertension*, *39*(1), 153.

3. Mental aspects of HRQoL were more affected in women with low medication adherence compared to men

- Consistent with a longitudinal study among older hypertensive patients, which found that low medication adherence could hurt mental HRQoL
- Inconsistent with a 2016 systematic review and meta-analysis, which indicated that good adherence to medications improves the mental HRQoL of hypertensive patients

- Impaired mental HRQoL in women with low medication adherence may be partially attributed to their greater strictness and sensitivity towards healthy behaviors and practices.
- Several studies have confirmed that women are generally more health-conscious, seek medical care more frequently, and have better adherence to treatment (18-19).
- Therefore, it is plausible to hypothesize that poor medication adherence is associated with reduced mental HRQoL in women with known hypertension.

18. T Thompson, A. E., et al (2016). *BMC family practice*, *17*(1), 1-7., 19. Warner, D., et al. (2007). *Journal of Health Communication*, *12*(8), 787-814.

Conclusion

- The individuals with undiagnosed disease have similar HRQoL compared to the normotensive participants, which may explain why these individuals do not seek medical care.
- The declined physical perception of health in hypertensive patients with high adherence to medications compared with those with low medication adherence and undiagnosed disease implied the prognostic value of commitment to treatment compared to disease awareness on physical HRQoL.
- Hypertension awareness was significantly associated with reduced mental HRQoL


THANK YOU
FOR YOUR
ATTENTION