Evaluation of Knowledge in Hypertensive Saudi Population in Makkah, KSA

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ABSTRACT

Background: Hypertension remains a major health problem, causing high mortality and morbidity all over the world. It is considered a major risk factor for both cerebrovascular accidents (CVAs) and coronary artery disease (CAD).
Objectives: To assess the level of knowledge of hypertensive patients in Makkah City.
Methods: A cross-sectional analytical questionnaire based study among hypertensive patients of Makkah City.
Results: The mean age was 45 years, ranged from 35 to 70 and 63.33% were females and 36.67% were male respondents. The majority of them had college degree and were employed. Most of the respondents had good knowledge about hypertension, risks and treatments. Neither age nor gender showed association with the levels of knowledge in included subjects but education was significantly associated with high levels of knowledge.
Conclusion: The general knowledge score was good with high knowledge about risks and treatments. Doctors were not informative to patients about hypertension. Also, education significantly impacts the knowledge of population about hypertension.
Keywords: Knowledge, Hypertension, Makkah, KSA

INTRODUCTION:

Globally, hypertension is considered as a major cause of morbidity and mortality [1, 2].Uncontrolled high blood pressure could result in serious complications affecting human health as kidney disease, coronary artery disease (CAD), hypertensive heart disease, stroke, myocardial infarction and atherosclerosis [3, 4] .

The economic impact of hypertension greatly affects the loss of human income and productivity as well as increasing the medical costs [5-7]. Previous study showed that the prevalence of hypertension in adult population was 26.4% (972 million subjects) in 2000 [5]. Other national studies declared a burden increase in hypertension prevalence in developing countries and lower rates were found in developed countries [7-9].

In KSA, hypertension was a cofactor resulting in high mortality rates in Saudi population according to the study of the Global Burden of Disease 2010 (GBD 2010) [10]. Also, hypertension resulted in about 1.87 of deaths due to hypertensive endocrine, blood and urogenital diseases and 24% of deaths in circulatory and cardiovascular disease [11]. Other studies showed varied prevalence of hypertension as in 1995-

2000 and in 2005, the prevalence ranged from 26.1% among populatuions 30–70 years [12] to 25.5% in subjects 15–64 years old [13, 14], respectively.

However, being treatable and preventable disease, hypertension is increasing dramatically and it is significantly associated with older age and if left untreated result in life-threatening diseases [15]. The patient's knowledge, attitude and practice must be clarified to enhance the control of hypertension. Thus, this study aimed to understand knowledge of hypertension patients, health beliefs perceptions as well as evaluating the possible associations between demographic characteristics with hypertension.

METHODS

After ethical approval of the committee of Ibn Sina College of Medicine, KSA, a self-administrated questionnaire was distributed among hypertensive patients in Makkah region and their age ranged from 35-70 from Jan. 2017 to March 2017.

Sample

The calculation of sample size was based on web-site calculator [16], according to the total size of Makkah population (1,249,000) [17], with confidence level (95%) and accounting margin error (5%) to be 285. Additional 20 % was added to cover the missing data. The total sample obtained was 360.

Study tool

The design of the questionnaire was based on previous studies with some modifications [18, 19]. Self-administered questionnaire that consists of two parts: The first part included personal characteristics of subjects such as age, gender, education level, and employment. The second part consists of 7 questions for assessment knowledge about hypertension, risk factor and how doctors interact with them. The knowledge score was calculated according to the number of yes and no for each question for each variable and was divided into two parts as good knowledge with scores from 5-7 and poor knowledge score was from 0-4.5.

Statistical analysis

Data were entered into the Statistical Package for Social Sciences (SPSS, version 24, SPSS, Chicago, IL, U.S.A.) and descriptive analysis conducted. The results were reported as percentage (95% confidence interval). **The internal consistency** was assessed using Cronbach's α test. The test results were for the 7 statements of knowledge about hypertension first aid was 0.422. Association of respondents' characteristics with about hypertension, was evaluated using univariate logistic regression. Results were reported showing odds ratio (OR) and 95% confidence interval. Statistical significance was accepted at $p < 0.05$.

RESULTS

Demographics of the studied subjects

As shown in table. 1, the mean age of included subjects was 45 years and 19.3% of them were 35-45 years. The other subjects aged from 46 to 56 were 36.9% and the majority of respondents (43.8%) aged more than 57 years old. A total of 360 subjects were included in the study and answered the questionnaire. Most of participants were females (63.33%) and males were 36.67%.

As for the level of education, the majority of subjects had a college degree (66.6%), 27.5% of them had high school, and 5.9% having post-graduate degree.

About 75.8% of participants were employed, and only 24.2% were unemployed.

Table 1. Socio-Demographic Characteristics of Respondents (n = 360)

	Frequency	Percentage (%)
35.00 - 45.00	69	19.30%
46.00 - 56.00	133	36.90%
57.00+	158	43.80%
Mean±SD (Min.-Max.)	45±14 (35 – 70)	
Female	228	63.33%
Male	132	36.67%
High School	99	27.50%
Collage degree	240	66.60%
Post-graduate	21	5.90%
Employed	273	75.80%
Un Employed	87	24.20%

Responses to questions of knowledge assessment questionnaire

The majority of participants have efficient information about hypertension (87.5%). Also, 68.3 and 76.7% answered that they think hypertension should be assessed by doctors and it has major risk on health, respectively.

As for the treatment of hypertension, most of subjects (95%) said that hypertension treatments have good impact on lowering high blood pressure. But 89.17% of participants said that the majority of doctors underestimate informing patients about the risks of hypertension therapy. Also, doctors don't give respondents adequate information about hypertension (58.6%) but only 41.4% said that their doctors were very informative about hypertension during their treatment period. 88.9% of subjects think that hypertension could result in death if left untreated, and only 11.1% of them don't think about the mortality outcomes of uncontrolled hypertension.

**Table 2. Responses to questions on assessment level of awareness toward hypertension risk**

	No	Yes	Don't Know
Q1: Do you have knowledge about hypertension?	45 (12.50%)	315 (87.50%)	0 (0.0%)
Q2: Do you think that hypertension assessment by doctors are important?	75 (20.80%)	246 (68.30%)	39 (10.80%)
Q3: Do you think that hypertension has risks?	84 (23.30%)	276 (76.70%)	0 (0.0%)
Q4: Do you think treatment of hypertension have an effect on blood pressure?	18 (5.00%)	342 (95.00%)	0 (0.0%)
Q5: Do doctors clarify the impacts of hypertension therapy?	321 (89.17%)	39 (10.83%)	0 (0.0%)
Q6: Do doctors provide adequate information for people about hypertension?	211 (58.60%)	149 (41.40%)	0 (0.0%)
Q7: Do you think hypertension leads to severe complication can cause death?	40 (11.10%)	320 (88.90%)	0 (0.0%)

Assessment of knowledge of participants regarding the risks of hypertension:

Table. 3 showed indicated the total knowledge score for included subjects. The mean knowledge score was 5 and the majority of subjects (60%) have good knowledge scores about hypertension and 40% had poor knowledge score indicating that the overall knowledge in this study was good (Figure. 1).

Table 3. Knowledge of awareness toward hypertension

	Knowledge Score
Mean± SD	5±1.44
Min. - Max.	0-7
Good Knowledge (≥5.69)	216 (60%)
Poor knowledge (<5.69)	144 (40%)
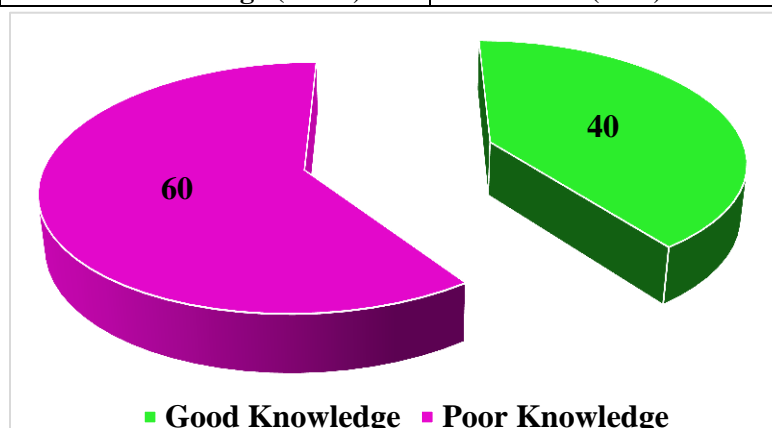
Figure 1. Respondent's Knowledge about hypertension risks

Association between knowledge and demographics of included participants

The association between knowledge scores and demographic variables was conducted using Univariate logistic regression. The age and gender showed no association with knowledge about hypertension. But the education showed highly significant association with hypertension as the higher the education level is, the higher the knowledge among participants. Respondents who had a college degree and postgraduate degree had significantly higher levels of knowledge than those with only high education (Table. 4).

Table. 4: Association between hypertension knowledge and socio-demographic variables:

	Good Knowledge (n=216)	Poor Knowledge (n=144)	P-value
35.00 - 45.00	60 (87%)	9 (13%)	0.955
46.00 - 56.00	107 (80.5%)	26 (19.5%)	0.527
57.00+	49 (31%)	109 (69%)	0.791
Female	108 (47.3%)	120 (52.7%)	0.115
Male	108 (81.8%)	24 (18.2%)	
High	33 (33.3%)	66 (66.7%)	< 0.0001
Collage degree	193 (80.1%)	47 (19.9%)	< 0.0001
Post-graduate	17 (81%)	4 (19 %)	< 0.0001
Employed	145(53.1%)	128(46.9 %)	0.431
Un Employed	71(81.6%)	16(18.4%)	

DISCUSSION AND CONCLUSION

The public awareness about hypertension is increasing with regarding the month of May as the national awareness month about blood pressure [20]. Too much was done for providing Saudi population information and control of hypertension but further studies are needed to assess the knowledge of Saudi patients about hypertension [21-23]. The awareness of blood pressure was good among the studied population and poor in 40% of studied populations. However, other studies showed contrast results as poor score of knowledge was found among hypertensive patients and this could be attributed to illiteracy and low socioeconomic status of the participants [18, 24]. Also, in KSA, there was suboptimal awareness about hypertension and its risks with low adherence to the treatment among Saudi health professionals [19].

In the present study, doctors didn't provide patients with effective information about the disease and this may be due to they are always busy in describing the medication and taking care of other patients. Thus health care professionals and doctors should exert much effort and communication with patients to control hypertension and decrease its related complications.

The hypertension was more prevalent in population aged more than 46-70 years old and females were more than males. In consistence, higher rates of hypertension were found in subjects advancing age in both sexes and this could be due to aging process resulting in loss in elasticity and

thickening of arteries and arising of hypertension [25-27]. On the other hand, males showed higher rates of hypertension than women [12, 28].

Higher education levels were significantly associated with higher knowledge between patients which was in agreement with our results [29, 30].

This study has some limitations including that small sample size and the majority had college degree, and doesn't represent the whole population of Makkah City thus the results can't be generalized.

In conclusion: the general knowledge score was good with high knowledge about risks and treatments. Doctors were not informative and thus there is need for enhancing health care education about hypertension. Also, national studies should be conducted to assess the general knowledge, attitude and practice of hypertensive patients to decrease the economic loss.

REFERENCES

1. **Wang H, Dwyer-Lindgren L, Lofgren KT, Rajaratnam JK, Marcus JR, Levin-Rector A et al.(2012) :** Age-specific and sex-specific mortality in 187 countries, 1970-2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet (London, England), 380:2071-94.

2. **Lozano R, Naghavi M, Foreman K, Lim S, Shibuya K, Aboyans V et al. (2012):** Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet (London, England), 380:2095-128.

3. **Singh TK, Arya V and Navaratnarajah N (2014):** Chronic kidney disease and cardiovascular disease: a focus on primary care. Cardiovascular & hematological disorders drug targets,14:212-8.

4. **El Bcheraoui C, Memish ZA, Tuffaha M and Daoud F (2013):** Hypertension and its associated risk factors in the kingdom of Saudi Arabia: a national survey. International Journal of Hypertension, 2014:1-8.

5. **Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK and He J (2005).** Global burden of hypertension: analysis of worldwide data. Lancet (London, England), 365:217-23.

6. **Mills KT, Bundy JD, Kelly TN, Reed JE, Kearney PM, Reynolds K et al (2016):** Global Disparities of Hypertension Prevalence and Control: A Systematic Analysis of Population-Based Studies From 90 Countries. Circulation, 134:441-50.

7. **Basu S and Millett C (2013):** Social epidemiology of hypertension in middle-income countries: determinants of prevalence, diagnosis, treatment, and control in the WHO SAGE study. Hypertension, 62:18-26.

8. **Danaei G, Finucane MM, Lin JK, Singh GM, Paciorek CJ, Cowan MJ et al (2011):** National, regional, and global trends in systolic blood pressure since 1980: systematic analysis of health examination surveys and epidemiological studies with 786 country-years and 5.4 million participants. Lancet (London, England), 377:568-77.

9. **Devi P, Rao M, Sigamani A, Faruqui A, Jose M, Gupta R et al (2013):** Prevalence, risk factors and awareness of hypertension in India: a systematic review. Journal of human hypertension, 27:281-7.

10. **IHME (2013):** GBD arrow Diagram, Saudi Arabia. Risk of deaths.1990–2010. Institute for Health Metrics and Evaluation (IHME), University of Washington, Seattle, Wash, USA, http://wwwhealthmetricsandevaluationorg/gbd/visualizations/gbd-arrow-diagram.

11. **IHME (2013):** Stacked bar chart, Saudi Arabia. Deaths. 1990–2010. Institute for Health Metrics and Evaluation, University of Washington, Seattle, Wash, USA, http://viz.healthmetricsandevaluation.org/gbd-compare/.

12. **Al-Nozha MM, Abdullah M, Arafah MR, Khalil MZ, Khan NB, Al-Mazrou YY et al (2007):** Hypertension in Saudi Arabia. Saudi medical journal, 28:77-84.

13. **Al-Hamdan N, Saeed A, Kutbi A, Choudhry AJ and Nooh R (2011):** Characteristics, risk factors, and treatment practices of known adult hypertensive patients in Saudi Arabia. Int J Hypertens., 2010:168739.

14. **Saeed AA, Al-Hamdan NA, Bahnassy AA, Abdalla AM, Abbas MA and Abuzaid LZ (2011):** Prevalence, Awareness, Treatment, and Control of Hypertension among Saudi Adult Population: A National Survey. Int J Hypertens., 2011:174135.

15. **Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo JL, Jr et al (2003):** The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: the JNC 7 report. JAMA., 289:2560-72.

16. **http://www.calculator.net/sample-size-calculator.html?type=1&cl=95&ci=5&ps=3%2C976%2C000&x=37&y=6.**

17. **Statistical Yearbook 50 (2014): Central Department Of Statistics & Information.**

18. **Mahajan H, Kazi Y, Sharma B and Velhal G (2012):** Assessment of KAP, risk factors and associated co-morbidities in hypertensive patients. IOSR Journal of Dental and Medical Sciences, 1:06-14.

19. **Mitwalli AH, Harthi AA, Mitwalli H, Juwayed AA, Turaif NA and Mitwalli MA (2013):** Awareness,

attitude, and distribution of high blood pressure among health professionals. Journal of the Saudi Heart Association, 25:19-24.

20. **Awareness BP:** Information about Blood Pressure Awareness Month. http://new-fitness.com/Blood_Pressure/month.html.

21. **Al Wakeel JJ, Hammad DD, Isnani AA, Mitwalli AA, Al Suwaida AA and Al Harbi AA (2010).** Hypertension In Diabetic Nephropathy Patients In Saudi Arabia: Antihypertensive Medication And Outcome. Journal of hypertension, 28:506-07.

22. **Alwakeel J and Hammad D (2012):** Long term effects of Ace-inhibitors on the renal outcome in Type 2 diabetes mellitus patients. Journal of human hypertension, 26:639-40.

23. **Alwakeel J and Hammad D (2012):** Burden of cardiovascular disease attributable to diabetes mellitus patients with diabetic nephropathy. Journal of human hypertension, 26:639.

24. **Williams MV, Baker DW, Parker RM and Nurss JR (1998):** Relationship of functional health literacy to patients' knowledge of their chronic disease. A study of patients with hypertension and diabetes. Archives of internal medicine, 158:166-72.

25. **Son PT, Quang NN, Viet NL, Khai PG, Wall S, Weinehall L et al (2012):** Prevalence, awareness, treatment and control of hypertension in Vietnam-results from a national survey. Journal of human hypertension, 26:268-80.

26. **Arnaout MS, Almahmeed W, Ibrahim M, Ker J, Khalil MT, Van Wyk CT et al (2011):** Hypertension and its management in countries in Africa and the Middle East, with special reference to the place of β-blockade. Current medical research and opinion, 27:1223-36.

27. **Singh RB, Fedacko J, Pella D, Macejova Z, Ghosh S, de Amit K et al (2011):** Prevalence and risk factors for prehypertension and hypertension in five Indian cities. Acta cardiologica., 66:29-37.

28. **Erem C, Hacihasanoglu A, Kocak M, Deger O and Topbas M (2009):** Prevalence of prehypertension and hypertension and associated risk factors among Turkish adults: Trabzon Hypertension Study. Journal of public health (Oxford, England), 31:47-58.

29. **Kilic M, Uzunçakmak T and Ede H (2016):** The effect of knowledge about hypertension on the control of high blood pressure. International Journal of the Cardiovascular Academy, 2:27-32.

30. **Levinthal BR, Morrow DG, Tu W, Wu J and Murray MD (2008):** Cognition and health literacy in patients with hypertension. J Gen Intern Med., 23:1172-6.