



ISSN NO. 2320-5407

Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/2455
DOI URL: <http://dx.doi.org/10.21474/IJAR01/2455>



INTERNATIONAL JOURNAL OF
ADVANCED RESEARCH (IJAR)
ISSN 2320-5407
Journal homepage: <http://www.journalijar.com>
Journal DOI:10.21474/IJAR01

RESEARCH ARTICLE

AWARENESS OF HYPERTENSION AMONG SAUDI POPULATION IN ALMADINAH ALMOUNAWWARA: AN ANALYTICAL CROSS-SECTIONAL STUDY.

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Manuscript Info

Manuscript History

Received: 20 October 2016
Final Accepted: 22 November 2016
Published: December 2016

Key words:-

Hypertension; prevalence; awareness;
Al-Madinah Almounawwara; Saudi
Arabia.

Abstract

Introduction: Hypertension is one of the top non communicable disease in Saudi Arabia. The prevalence of hypertension was 26.1% in crude terms. For males, the prevalence of hypertension was 28.6%, while for females; the prevalence was significantly lower at 23.9%. Patients' awareness is important in the early diagnosis and treatment of many diseases including hypertension. This study contributes in exploring the awareness of hypertension among Saudis population in Al-Madinah Al-Muonawwara.

Objective: To estimate prevalence, awareness, treatment adherence and associated factors of hypertension among Saudi aduly population in Al-Madinah.

Methods: Cross-sectional design with multistage cluster stratified sampling was used to include 451 Saudi adults participants in the study. Self administered questionnaire was piloted and used to collect the required data. Data were analyzed using SPSS version 16. Univariate analysis was done and cross tabulation was used to summarize the frequency and percentage of the variables. Chi-square was used as an appropriate statistical test and $P \leq 0.05$ was used as a statistical significant level. Multiple regression was used to control for confounders and assess the risk factors.

Results: 15% of the participants has hypertension. Among those with hypertension 77% (50/65) has good knowledge and awareness of hypertension. Approximately half of the participants had changes their life style, 43% (28/65), and had irregular follow up with their doctors, but one third of them did not adhere to their treatment. After adjustment of the confounding factors, hypertension was increased two times by existing of family history of hypertension and higher level of education (PhD holders), (odds ratio =1.99, 95%CI (1.002, 3.96) and (2.05, 95%CI=1.06, 3.99) respectively.

Conclusion: Hypertension prevalence was high in Al-Madinah community. Those with hypertension have good awareness about the disease but one third of them did not adhere to third treatment. A control program of hypertension is of utmost important to be established in Al-Madinah.

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Introduction:-

The importance of high blood pressure as a major cause of common serious diseases and deaths has been recognized in most countries particularly Western countries [1]. Hypertension affects more than a quarter of the global adult population including Kingdom of Saudi Arabia (KSA).

The prevalence of hypertension was 26.1% in crude terms. For males, the prevalence of hypertension was 28.6%, while for females; the prevalence was significantly lower at 23.9% ($p < 0.001$). [4].

It is projected in year 2025 to increase by 24% in developed countries and 80% in developing countries [2]. The increase is expected to be much higher than these projections [3].

National surveys of prevalence, awareness, treatment, and control provide basis for assessing the burden of hypertension in the community. These surveys showed that many hypertensives were unaware of their disease, many of the aware were not on treatment, and many of the treated are not controlled particularly in developing countries [4-5].

The increase in hypertension prevalence will invariably lead to dramatic rises in the incidence of cardiovascular diseases and their consequences, which has the potential to overwhelm health care systems. [6] It will also have financial implications for provincial drug plans because there is increasing evidence that the majority of patients with hypertension will require two or more drugs to achieve blood pressure control [7]. It will also have financial implications for provincial drug plans because there is increasing evidence that the majority of patients with hypertension will require two or more drugs to achieve blood pressure control. [8] Hence it is vital to assess the burden of hypertension and associated risk factors as a prerequisite for meaningful prevention and control strategies. The present study aims at assessing the prevalence, level of awareness, treatment, control, and identification of risk factors and significant predictors of hypertension among Saudi adults.

Methods:-

An analytical cross sectional study was conducted during a period of three months (December to February 2016), to explore the knowledge regarding risk factors, management, preventions of hypertension complications among Saudi population in Almadinah Almonawrah with a population of more than one million. Age above 18 years old of both males and females with and without hypertension were included in the study. Those who did not agree to participate or did not sign the consent form were excluded. Due to difficulty and cultural constraints in conducting house to house survey, this study was conducted in public malls. Malls in Almadinah were divided into four distinct geographical areas, north, south, east and west, one mall from each area was randomly selected.

An anonymous questionnaire that comprised 34 questions covering, personal information, sociodemographic characteristics, history of hypertension, symptoms and signs of hypertension, follow up and compliance to treatment, knowledge about hypertension risk factors and awareness of hypertension complications. To ensure validity of the questionnaire, two academic staff at Taibah University reviewed the components of all questions. Pilot study was conducted on one of the malls that was not included in the study with 30 participants, to ensure the clarity of the questions and to improve the reliability of the questionnaire.

Data were analyzed using SPSS. Univariate analysis was applied. Qualitative data were summarized using frequency and proportion. Chi-square test was used to assess the statistical significance difference between hypertensive and normotensive group. Logistic regression analysis was done to assess the risk factors and control for confounders. Crude and adjusted odds ratios were then reported. Statistical significant level was considered at $P \leq 0,05$.

Ethical considerations:-

An ethical approval was obtained from ethical committee of Taibah University and all participants were fully informed about the study, which was clearly explained to them and all participants signed the consent form to be involved.

Results:-

Socio-demographic characteristic of the participants:

The study included 451 individuals with 98.9% response rate. The male participants represent 51% (231/451). Almost 60% (266/451) were middle age (between 19 to 34 years) and majority of them were married 59% (268/451), with approximately two third of them 64%(290/451) at university level of education and 42% (187/451) were clerks. Table 1.

Table (1):-Socio-demographic characteristic of the participants:. (N= 423)

<i>Personal Data</i>		Frequency	Percent
<i>Gender</i>	Male	231	51.2
	Female	220	48.8
<i>Age</i>	Less than 18	16	3.5
	19 - 34	266	59.0
	35 - 50	132	29.3
	50 - 65	34	7.5
	More than 65	3	0.7
<i>Educational level</i>	Primary or less	2	0.4
	Intermediate	18	4.0
	secondary	121	26.8
	University level	290	64.3
	Postgraduates	20	4.4
<i>Occupation</i>	Students	136	30.2
	Clerks	187	41.5
	Private	17	3.8
	Reared	35	7.8
	Housewife	61	13.5
	Others	14	3.2
<i>Monthly income</i>	Less than 5000 rs	172	38.1
	5000 - 10000 rs	153	33.9
	10000 - 15000 rs	90	20.0
	15000 - 20000 rs	29	6.4
	More than 20000 rs	7	1.6
<i>Social status</i>	Single	173	38.4
	Married	268	59.4
	Divorced	10	2.2
<i>Hypertension</i>	Yes	65	15.0
	No	358	85.0

Table 2 shows the participant's' distribution according to their hypertension problem, 15% of the participants has hypertension. Approximately half of the participants had changes their life style, 43% (28/65), and had irregular follow up with their doctors, but one third of them did not adhere to their treatment. Majority of those with hypertension 37.5 % (24/65) had high lipid profile followed by others 30%(19/65) and diabetes 23% (17/65).

Table2:-Distribution and practice of hypertensive participants:

	Frequency	Percent
Changing life style:		
No	37	56.9
Yes	28	43.1
Adhered to treatment:		
No	24	37
Yes	41	63
Regular follow up with doctors:		
No	35	54
Yes	30	46
Complications:		
DM	17	23.4

Glaucoma	3	10.8
High lipid	24	37.5
Renal problem	1	1.6
Others	19	29.7

Table 3 describes awareness of hypertensive participants versus those who do not have hypertension among participants. Among those with hypertension 77% (50/65) correctly defined hypertension as increase of systolic blood pressure above 120 and diastolic blood pressure by more than 80 , while only 55%(196/358) of those who did not have hypertension had correct answers, the difference was statistically significant(P=0.002. Majority of the participants with hypertension and those without had correct concept that hypertension is increasing with age 58% (36/65) and 67% (239/358), and the difference was not statistically significant (p=0.06).

Table 3:-Awareness about hypertension among participants

	Yes		No or don't know		P value
	No	%	No	%	
Correct definition of HT:	5	8	38	8	0.002
No	50	77	196	55	
Yes	10	15	132	37	
Do not know					
Increasing hypertension with age					0.06
No	10	25	47	13	
Yes	38	58	239	67	
Do not know	11	17	72	20	

In table 4, categories, those with hypertension and those without thought that smoking, drinking coffee, stress and diabetes mellitus were risk factors for hypertension. The difference were not statistically significant (P=0.44, 0.11, 0.13 and 0.11 respectively).

Table 4:-Believes about some risks of hypertension and complications

	Yes		No or don't know		P value
	No	%	No	%	
Do you think Smoking is a risk factor of hypertension	5	8	23	6	0.44
No	40	62	249	70	
Yes	20	30	20	24	
Do not know					
Do you think obesity is a risk factor of hypertension					0.002
No	2	3	18	8	
Yes	55	85	269	55	
Don Inow	8	12	71	37	
Do you think High cholesterol in diet is a risk factor of hypertension	6	9	21	7	0.05
No	51	79	245	68	
Yes	8	12	92	25	
I do not know`					
Increasing salt in diet:	0	0	14	4	0.03
No	61	94	289	81	
Yes	4	6	55	15	
I do not know					
Drinking coffee	17	26	58	16	0.11
No	27	42	188	53	
Yes	21	32	112	31	
I do not know					
Stress					0.13
No	0	0	5	2	

Yes	64	98	327	91	
I don't know	1	2	26	7	
DM	17	26	58	16	0.11
	27	42	188	53	
	21	32	112	31	
Stroke	2	3	4	1	0.04
No	57	88	227	77	
Yes	6	9	77	22	
I do not know					
Renal problem	8	12	35	10	0.001
No	47	72	171	48	
Yes	10	16	152	42	
I do not know					
Eye problem	9	6	25	7	0.44
No	47	72	230	64	
Yes	14	22	103	29	
I do not know					

	Yes		No or don't know		P value*
	No	%	No	%	
Age:	13	20	250	70	<0.001
14-34	32	49	92	26	
35-50	20	31	16	4	
>51	358		65		
Gender	34	52	188	52	0.98
Male	31	48	170	48	
Female					
Marital status:	4	1.1	4	1.1	<0.001
Divorced	56	86.2	201	65.2	
Married	5	7.7	153	47.7	
Single					
Educational level:	1	1	1	0.3	0.001
Primary	8	12	9	2.5	
Intermediate	22	34	90	25.2	
Secondary	31	48	242	67.6	
University level	2	3	13	3.6	
Master degree	1	2	3	0.8	
PhD					
Income:	18	27.7	141	39.4	0.02
<0	18	27.7	126	35.2	
5-10	18	27.7	66	18.4	
11-15	9	13.9	20	5.6	
16-20	2	3.1	5	1.4	
>20					
Occupation					<0.001
Unemployment	4	6.2	13	3.6	
Students	2	3.8	123	34.5	
Clerks	27	41.5	141	41.7	
Retired	11	16.9	22	6.2	
Others	5	7.7	6	1.7	
Housewife	16	24.6	44	12.3	
Family H. of hypertension	15	23	142	40	0.01
No	50	77	216	60	
Yes					

Table 5:-Socio-demographic Risk factors associated with hyperextension among the study participants.

* chi-square

Majority of those who had hypertension among participants had thought that obesity, increasing salts in diet and high cholesterol in diets were risk factors for hypertension compared to those without hypertension, 85% (55/65), compared 55% (269/358), 94%(61/65) compared to 81% (289/325) and 79%(51/65) compared to 68% (245/358) , P= 0.002, 0.03, and 0.05 respectively.

Most of those who had hypertension and those who did not have were similar in thinking that eye problems (retinal de-attachments) and heart problems were two complications of hypertension, 72% (47/65) compared to 64% (230/358), p value= 0.44, for eye problems and 85%(56/65) compared to 805 (286/358) respectively.

Table 6:- Crude and adjusted odds ratios of risk factors associated with hypertension using logistic regression.

	Yes		No or don't know		Crude odds ratio (95% CI)	Adjusted odds ratio (95% CI)
	No	%	No	%		
Marital status:						
Divorced	4	1.1	4	1.1		
Married	56	86.2	201	65.2	1	1
Single	5	7.7	153	47.7	0.27(0.07, 1.14)	0.59(0.13, 2.73)
Educational level:						
Primary	1	1	1	0.3		
Intermediate	8	12	9	2.5	1	1
Secondary	22	34	90	25.2	1.2(0.25, 5.57)	0.61(0.10, 3.67)
University level	31	48	242	67.6	6.9(2.49, 19.30)	4.28(1.35, 13.60)
Master degree	2	3	13	3.6	2.61(0.26, 25.70)	0.71(0.04, 10.10)
PhD	1	2	3	0.8	7.81(0.47, 12.97)	6.63(0.35, 12.7)
					1.91(1.04, 3.47)	2.05(1.05, 3.99)
Income:						
<0	18	27.7	141	39.4		
5-10	18	27.7	126	35.2	1	1
11-15	18	27.7	66	18.4	1.65(0.64, 4.23)	1.43(0.50, 4.11)
16-20	9	13.9	20	5.6	0.52(0.26, 1.07)	0.67(0.30, 1.46)
>20	2	3.1	5	1.4	0.47(0.23, 0.96)	0.75(0.29, 1.96)
					1.47(0.26, 8.20)	2.34(0.34, 16.0)
Occupation						
Unemployment	4	6.2	13	3.6	1	1
Students	2	3.8	123	34.5	2.2(0.61, 8.56)	3.56(0.83, 15.2)
Clerks	27	41.5	141	41.7	1.38(0.55, 3.46)	1.87(0.63, 5.56)
Retired	11	16.9	22	6.2	0.50(0.25, 1.00)	0.95(0.39, 2.30)
Others	5	7.7	6	1.7	0.04(0.09, 0.20)	0.16(0.31, 0.88)
Housewife	16	24.6	44	12.3	0.84(0.24, 2.98)	1.67(0.41, 6.83)
Family H. of hypertension						
No	15	23	142	40		
Yes	50	77	216	60	1	1
					2.19(1.12, 5.05)	1.99(1.002, 3.96)

Stroke and renal failure were determined by the majority of those who had hypertension compared to those who did not have, 88%(57/65) compared to 77%(277/358) and 72%(47/65) compared to 48%(171/358) (P value = 0.04, and 0.001) respectively.

Table 6 represented the crude and adjusted odds ratios of risk factors. After adjustment of the confounding factors, hypertension was increased two times by existing of family history of hypertension and higher level of education (PhD holders), (odds ratio =1.99, 95%CI (1.002, 3.96) and (2.05, 95%CI=1.06, 3.99) respectively.

Discussion:-

The estimated self reported prevalence of hypertension was 15%, which was similar to the previously estimated prevalence of hypertension from a national survey among Saudi population [9].

The study result revealed that 43% (28/65) of hypertensive cases had irregular follow up of their hypertension with medical doctors, while one third of them did adhere to the treatment, compared to 22% of irregular follow up and 12% of patients who did not adhere to the treatment among health professionals in a similar study in Saudi Arabia [10].

Awareness of hypertension among hypertensive patients in this study was high (77 %), which is less than awareness in other study conducted in south Nigeria, where awareness is very high (92%) [11]. While both categories of participants (hypertensive and non hypertensive) aware that smoking, drinking coffee, stress and diabetes mellitus were risk factors for hypertension, but the awareness of those without hypertension was lower than those who had hypertension with regard to the role of obesity, salt diet and cholesterol as risk factors of hypertension, table4.

In accordance with other studies [6-10], Increasing age, Marital status, higher education, high income, clerks occupation, and family history of hypertension were crude factors that significantly associated with hypertension in the current study (P values < 0.01). Results of logistic regression of the current study revealed that master degree occupation, other occupation (not defined), and family history of hypertension were associated factors of hypertension after controlling of other confounders, table 5 and 6.

Limitation of the study: Cause and effect relationship could not be assessed using cross-sectional design and this is one of the important limitations of this study and instead associated factors were determined. External validity of the result was limited by conducting this study in one geographical area, so the result could not be generalized to all adult Saudi population in other areas.

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