Systolic and Diastolic Hypertension Among Dubai Population, Utilizing Household Survey Data, Risk Approach Analysis, 2019

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Abstract

Background: Hypertension is a strong risk factor for cardiovascular as well as renal and neurological disorders. Objectives: To study hypertension profile among Dubai population, to link hypertension risk to cardiovascular morbidities Methodology: Across-sectional, cluster stratified sample of 1984 individual selected randomly and responded, as part of Dubai health survey setting carried out in emirate of Dubai 2019, different age, gender and nationalities as members of visited families, or visited labor camps from 6th Feb-29 of March 2019, interviewed by data collection questionnaire as well as exposed to three-time measuring and reporting of blood pressure both systolic and diastolic blood pressure by highly trained (25) nurses from Dubai Health authority, at individuals and families houses, sphygmomanometer used were adequately caliber and checked out data directly administered to the electronic questionnaire on IPad equipment's connected to Dubai statistics center collecting point, for auditing, quality checking and adding to statistical database of the health survey, data entry, data coding, data cleaning, weighing and data analysis using Stata 12 version software. American heart association operational definitions and cut off points has been utilized (as for diastolic blood pressure considered being first stage hypertension in BP (80-90) second stage diastolic hypertension (>100MH) as for systolic blood, pressure (130-139) considered as first stage systolic hypertension, (>14) second stage hypertension Findings: The study revealed that the total prevalence of diastolic hypertension was 41.90% of the totalsample, while total prevalence of systolic hypertension was 34%, First stage systolic hypertension in the first reading was 18.1% while the second stage hypertension was 18.2%, study showed as well that first stage Diastolic hypertension first measurement was 28.5% while second stage hypertension was 17.4%, The existing study reflected that the third measurement, first stage hypertension was 16.6% while second stage hypertension was 17.4%, In addition, the diastolic hypertension first stage in the third measurement was 29.0% and second stage hypertension was 12.7%, the study showed that more than 50% of systolic hypertension was among younger age groups below 40 years old. Conclusions: The vast majority of sample have normal blood pressure. On the other hand, the prevelance of "Stage 1 systolic hypertension" and "Stage 2 systolic hypertension" were higher among the group age 18-29 years compared to other age group. such high impact factor will stand as strong risk for cardiovascular morbidities and mortalities consequences for a big segment of population, will put more burdens and pressures upon services demand, expenditure and health system.

Keywords

Hypertension, Dubai Population, Risk Analysis, Survey Data

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1. Introduction

Hypertension is a strong risk factor for cardiovascular as well as renal and neurological disorders. Recently, hypertension was identified as the most common risk factor for coronary heart disease events [1]. One important feature of hypertension is being symptomatic until target organ damage has ensued, at which time intervention is already too late. Ironically, despite the increased prevalence of hypertension and its associated complications, studies have shown that control of the disease is far from adequate [2, 3]. It is important for health care providers to know that adequate control of hypertension is a target that is likely to be difficult to achieve. Enforcing compliance with dietary restrictions and pharmacological therapy is a pivotal step in the management of hypertension. However, our knowledge of mortality contributing to coronary heart disease (CHD), stroke, and kidney failure as well as premature death and disability [1]. In 2008, the World Health Organization (WHO) approximated that 40% of adults, aged $\geq$ 25 years, had been diagnosed with HTN with the prevalence highest in Africa (46%) and lowest in the USA (35%). In the WHO Eastern Mediterranean Region, the prevalence of HTN was estimated at 42% [2, 3]. There has been a progressive increase in the prevalence of HTN in Oman in the last few decades. Recent data from the Oman World Health Survey estimated the prevalence of HTN in Oman at 41.5% [4]. Compared to 27% reported by the national Blood Pressure Survey, which was conducted in 1991 [5]. This increased prevalence is in parallel with increases in obesity and other cardiometabolic diseases as a sequel for aging and changes in diet and lifestyle [1]. Reducing BP by 10/5 mmHg lowers the risk of CHD events by 22% and strokes by 41% [6]. A number of studies have been conducted in Oman to determine BP goal attainment of the population [7, 8, 9, 10]. BP goal attainment has remained largely low ranging from 39%9 to 55% [8]. With diabetics faring the worst at 30% [11]. Various hypotheses have been put forward to explain such discrepant low goal attainment numbers. Because of the asymptomatic nature of HTN, up to 60% of patients have been reported to discontinue treatment. Other reasons include forgetfulness, side effects, complex regimens, cost of medication, and a lack of patient knowledge [12].

Objectives

To study hypertension profile among Dubai population. In addition, link hypertension risk to cardiovascular morbidities

2. Methodology

Across-sectional, cluster stratified sample of 1984 individual selected randomly and responded, as part of Dubai health survey setting carried out in emirate of Dubai 2019, different age, gender and nationalities as members of visited families, or visited labor camps from 6th Feb-29 of March 2019, interviewed by data collection questionnaire as well as exposed to three-time measuring and reporting of blood pressure both systolic and diastolic blood pressure by highly trained (25) nurses from Dubai Health Authority (DHA) at individuals and families houses, sphygmomanometer used were adequately caliber and checked out. data directly administered to the electronic questionnaire on IPad equipment's connected to Dubai statistics center collecting point, for auditing, quality checking and adding to statistical database of the health survey, data entry, data coding, data cleaning, weighting, and data analysis using Stata 12 version software. American Heart Association (AHA) operational definitions and cut off points has been utilized (as for diastolic blood pressure considered being first stage hypertension in BP (80-90) second stage diastolic hypertension (>100MH) as for systolic blood, pressure (130-139) considered as first stage systolic hypertension, (>14) second stage hypertension.

3. Results

The present study revealed that First stage systolic hypertension in the first reading was 18.1% while the second stage hypertension was 18.2% as shown in table 2.
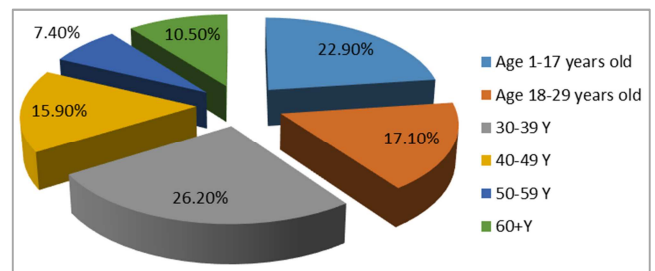

Figure 1. Age distribution of study population Household Survey Dubai 2019.

Table 1. Age distribution of study population Household Survey Dubai 2019.

Age Group		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-17 Y	753	22.9	25.6	25.6
	18-29 Y	561	17.1	19.1	44.6
	30-39 Y	861	26.2	29.3	73.9
	40-49 Y	523	15.9	17.8	91.7

Age Group	Frequency	Percent	Valid Percent	Cumulative Percent
50-59 Y	245	7.4	8.3	100.0
60+ y	346	10.51		
Total	3289	100.0	100.0	

Table 2. Systolic blood pressure distribution among household Dubai population 2019 first reading.

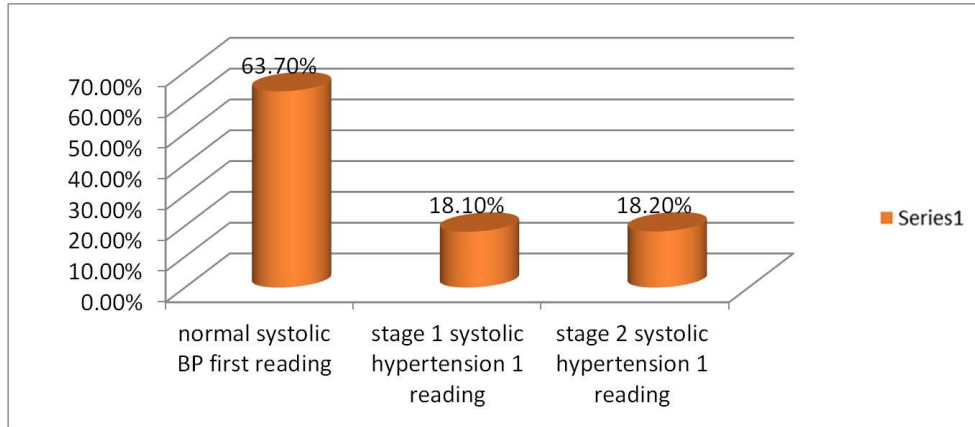| Systolic Blood pressure 1st reading	Frequency	Percent	Valid Percent	Cumulative Percent
Normal BP	1263	63.7	63.7	63.7
Stage 1 systolic Hypertension	359	18.1	18.1	81.8
Stage 2 Systolic Hypertension	362	18.2	18.2	100.0
Total	1984	100	100.0	

Figure 2. Systolic hypertension among Dubai household survey population 2019.

The study showed as well that first stage Diastolic hypertension first measurement was 28.5% while second stage hypertension was 17.4% as reflected by table 3.

Table 3. Diastolic hypertension among Dubai Household survey population 2019 first reading.

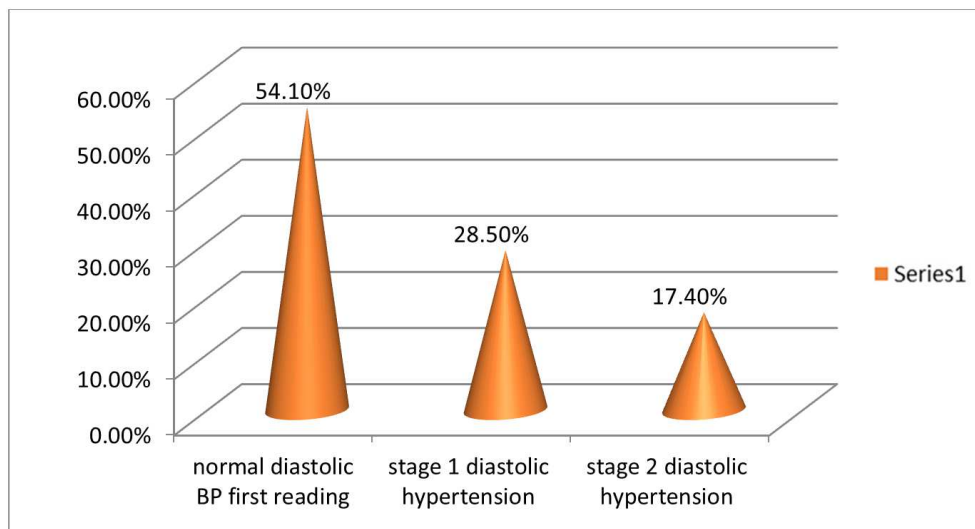| Diastolic Blood pressure 1st reading	Frequency	Percent	Valid Percent	Cumulative Percent
Normal diastolic BP	1126	54.1	54.1	54.1
Stage 1 diastolic hypertension	593	28.5	28.5	82.6
Stage 2 diastolic hypertension	362	17.4	17.4	100.0
Total	2081	100	100.0	

Figure 3. Diastolic hypertension among Dubai household survey population 2019 first reading.

The existing study reflected that the third measurement, first stage hypertension was 16.6% while second stage hypertension was 17.4% as shown by table 4.

Table 4. Systolic hypertension among Dubai household survey population 2019 in the third reading.

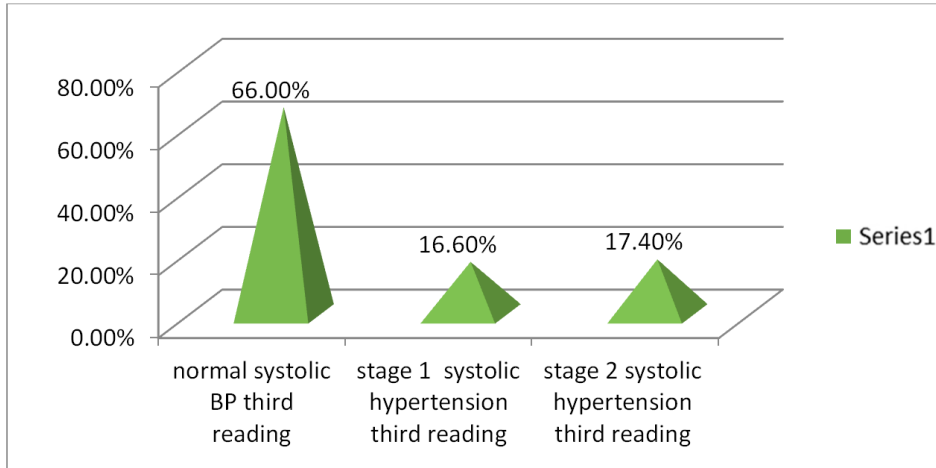| Systolic BP 3rd reading	Frequency	Percent	Valid Percent	Cumulative Percent
Normal systolic BP	1364	66.0	66.0	66.0
Stage 1 systolic hypertension	342	16.6	16.6	82.6
Stage 2 systolic hypertension	360	17.4	17.4	100.0
Total	2066	100	100.0	

Figure 4. Systolic hypertension among Dubai household survey population 2019 third reading.

In addition, the diastolic hypertension first stage in the third measurement was 29.0% and second stage hypertension was 12.7% as reflected by table 5.

Table 5. Diastolic hypertension among Dubai household survey population 2019 third reading.

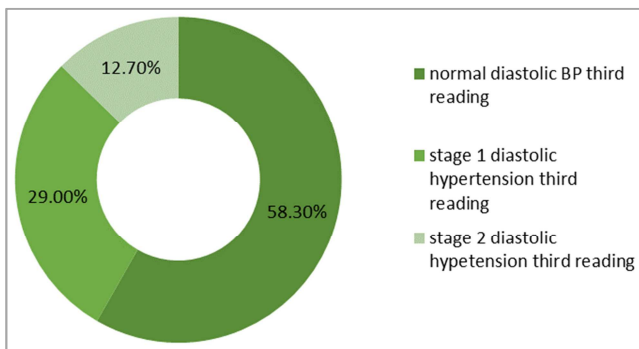| Diastolic BP third reading	Frequency	Percent	Valid Percent	Cumulative Percent
Normal Diastolic BP	1213	58.3	58.3	58.3
First stage diastolic hypertension	603	29.0	29.0	87.3
2nd stage diastolic Hypertension	265	12.7	12.7	100.0
Total	2081	100	100.0	

Figure 5. Diastolic hypertension among survey participant.

In term of distribution of the systolic blood pressure among ages, the results revealed that the vast majority 523 (28.6%) participants had a normal systolic blood pressure among the age (18-29), then 366 (20%) among the age (1-17), followed by 282 (15.5%) among the age (30-39) and 100 (15.4%) among the age (40-49). Regarding the stage 1 systolic hypertension, the majority 100 (5.4%) were among the age group (18-29), and the minority 41 (6.2%) were among the age group (40-49). While the distribution of the stage 2 systolic hypertension are 97 (5.3%), 73 (3.9%), 59 (3.2%) and 42 (2.3%) retrospectively. Table 6.

Table 6. Age distribution of systolic Blood pressure Dubai household survey 2019.

Systolic BP		age				Total
		1-17 years	18-29 years	30-39	40-49	
Nsystolic 3rd reading	Normal systolic BP	366	523	282	100	1271
		20%	28.6%	15.5%	15.4%	69.6%
	Stage 1 systolic hypertension	66	100	77	41	284
		3.6%	5.4%	4.2%	6.2%	15.5
	Stage 2 systolic hypertension	42	97	73	59	271
		2.3%	5.3%	3.9	3.2%	14.8%
Total		474	720	432	200	1826
		25.9%	39.4%	23.6%	10.9%	100%

4. Discussions

The prevalence of hypertension in Oman was estimated to be 41.5%. Of those who were hypertensive, three-quarters of them (75.7%) were unaware of being hypertensive and 65.5% of them had inadequately controlled hypertension. Male sex, higher wealth, and paying fewer visits to health facilities were found associated with high proportions of unawareness and a high proportion of uncontrolled hypertension [4].

Overall, higher prevalence of hypertension among adult Saudi population clearly, hypertension is a major risk factor affecting large portion of the Saudi community and makes them vulnerable of acquiring CVD, PVD, as well as renal and cerebrovascular diseases. the reported prevalence of hypertension in Saudi Arabia is in keeping with the increasing prevalence of hypertension worldwide. Studies from various parts of the world showed that hypertension is affecting 26.6-28.5% of adults in Kuwait, 16.1-16.3% of adults in Jordan (according to old definition of hypertension ≥160/90), and 24% of adults in Haiti [13-17].

Another study from Germany looking at a population over the age of 65 years found that 34% of patients with hypertension were unaware of the diagnosis [18]. However, a Japanese Study reported 54% of the studied population was unaware of having hypertension (N=11,302 and mean age=55 years), that is similar to our finding [19].

A more recent study from Japan reported a 32.8% unawareness rate among studied population (N=11.726, age 25–64 years) [20]. The awareness of hypertension in China Was shown to be similar to our results as it was reported that 55.3% of studied Population (N=15,838, age 35-74 years) were unaware of having hypertension [21]. Among the Korean population, a rather higher rate of unawareness of hypertension was reported reaching 75.4% of the studied population (N=4,226, age 18-92 years) [22].

It is obvious that as the prevalence of hypertension is increasing, the unawareness rate remains to be steady that dictate more aggressive screening of hypertension at a younger age group. Other parts of the world reported different figures on the lack of awareness of having hypertension among studied populations, as the unawareness was 53.9% in Portugal, 57.4% in China, and 35% in Spain [23-25]. Moreover, it is clearly shown from our data the relationship between hypertension and CAD, as significant correlation was established in keeping with the well-known fact that hypertension is an important risk factor for CAD. Furthermore, we found an important association between hypertension and DM as well as MS. The vulnerability of an individual to MS clearly increases the risk of other well-known risk factors to CAD. Probably, the common denominator here is obesity that was definitely shown to be correlated to the development of hypertension in a direct linear relation. Ironically, we found that large number of our studied population, who reported hypertension that is under medical care by history.

5. Conclusions

The vast majority of sample have normal blood pressure. On the other hand, the prevalence of "Stage 1 systolic hypertension" and "Stage 2 systolic hypertension" were higher among the group age 18-29 years compared to other age group. Such high impact factor standing as strong risk for cardiovascular morbidities and mortalities consequences for big segment of population and can be fatal among the young pateints. Which increase the burdens and pressures upon services demand, expenditure and health system. National policies needs to be updated to address the population at high risk of hypertension. Behaviour at the population level (e.g. low salt intake or increased physical activity) can produce benefit across the whole spectrum of blood pressure distribution. Because a significant number of adults have blood pressure above the optimal level, even a small reduction in blood pressure level can bring about a significant decrease in cardiovascular risk. At the individual level, primary prevention of hypertension consists of adopting healthy lifestyles at an early age.

Ethical Issues

Ethical standards being adhered to during all stages while carrying out the study

Conflict of Interest

All authors dealer that no conflict of interest.

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