Hypertension, lifestyle and risk factors: a review

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Abstract

Hypertension is the elevation of blood pressure. The increase in the prevalence of hypertension is associated with the increase in other diseases including cardiovascular diseases. It was reported that hypertension was associated with several risk factors. In this review, we aimed to assess the risk factors of hypertension and associated lifestyle. Scientific websites, such as Pubmed, were used to search for articles related to the current subject. We used several keywords to obtain all possible articles such as hypertension, hypertension risk factors and lifestyle changes. We obtained 25 articles, 18 were excluded and 7 articles were included in this review. The risk factors of hypertension vary with different countries and areas. The key factors to decrease the prevalence of hypertension is lifestyle change and adherence to this change.

**Keywords:** hypertension, lifestyle changes, risk factors, KSA

1. **Introduction:**

Hypertension was defined by the committee on prevention, detection, evaluation, and treatment of high blood pressure (JNC VII) as the elevation in the blood pressure ≥140/90 mmHg [1]. Individuals who have systolic blood pressure (SBO) of 120-139 mmHg and diastolic blood pressure (DBP) of 80-89 mmHg are considered pre-hypertensive and they require monitoring as well as modification in their lifestyle to prevent further progression [2]. Hypertension is one of insidious onset disorder that damage the fragile capillary beds in several organs including kidney and cause hemorrhage in organs by causing rupture of blood vessels [3]. Hypertension is a great
risk factor for cardiovascular diseases and renal as well as neurological disorders [2]. Additionally, hypertension was recently identified as a risk factor for events of coronary heart disease [4]. Hypertension was responsible for 54% of stroke cases, 47% of ischemic heart disease and 7.6 million premature deaths globally [5]. A report about the risk factors of cardiovascular diseases among the Saudi population showed a prevalence of 31.4% for hypertension [6]. It was demonstrated in 2010 that hypertension was identified as the leading risk factor for death in the Kingdom of Saudi Arabia (KSA) [7]. Hypertension is asymptomatic until damage of target organ occurs [2]. Compliance with pharmacological therapy and dietary restrictions is a critical strategy to manage hypertension [2]. It was reported that hypertension prevalence was increasing in Saudi Arabia [8-12], and this was returned to the change in the lifestyle in the Kingdom [2]. The increase in the prevalence of hypertension will lead to an increase in cardiovascular diseases and their consequences [13]. The present review was conducted to overview the prevalence of hypertension and to identify hypertension risk factors and associated lifestyle.

2. Methods:

Online research was used to search for articles associated with the current review objective, the search process included searching in scientific websites including Pubmed, Researchgate and Google Scholar, using several keywords such as hypertension, hypertension prevalence, hypertension risk factors, lifestyle change, KSA. We obtained 25 articles, 12 articles were excluded as they were old and 6 were excluded as they didn’t focus on the objective, 7 articles were included and they were published between the years 2007-2018.
3. Results and Discussion:

3.1. Prevalence of hypertension:

The prevalence of hypertension is increasing significantly with the increase in economic development, population aging, as well as modification in both traditional dietary habits and lifestyle [5]. The prevalence of hypertension is increasing in Saudi Arabia in line with the increase in the world. The worldwide prevalence of hypertension was 26.4% in 2000 and it is expected to increase 2025 to affect 1 among 3 individuals [14]. This means that hypertension will be increased by 24% in developed countries and by 80% in developing countries [14]. A survey based study in Saudi Arabia published in 2007, reported that the prevalence of hypertension was 26.1%, with a significant higher prevalence for males than females at 28.6% Vs 23.9%; respectively, among individuals with 30-70 years old [2], whereas the prevalence was found to be 25.5% among individuals in the age range of 15-64 years old [15,16]. A national survey from Saudi Arabia in 2011 reported that the overall prevalence of hypertension was 25.5% [16]. A national Saudi survey published in 2014 reported that the percents of Saudi who were either hypertensive or borderline hypertensive were 15.2% and 40.6%; respectively [17]. A recent national survey from Saudi Arabia published in 2017, reported that the overall prevalence of hypertension was 20.7% with systolic diastolic hypertension prevalence of 9% [18]. A more recent study was published in 2018 reported that the prevalence of hypertension was 4.9% among all participants from Alkharj, Saudi Arabia [19]. The prevalence of hypertension was reported in several countries with different rates, in Kuwait it ranged from 26.6-28.5%, 16.1-16.3% in Jordan, 24% in Haiti adult populations [20-24], and 26.3% in Egypt [25]. A study from Hungary reported a prevalence of 37% [26], and in China, it was 27.2% [27].
3.2. Risk factors of hypertension:

El Bcheraoui et al reported several risk factors for hypertension including diabetes, male gender, obesity and older age [17]. A national Saudi survey demonstrated that the predictors of hypertension included urbanization, low physical activity, low education, male gender, hypercholesterolemia, obesity and diabetes [16]. A study from Saudi Arabia was conducted on 17,230 individuals and published in 2007, showed that hypertension was significantly more prevalent among males and those living in urban areas, also the increase in weight was found to be significantly associated with increased hypertension prevalence [2]. A recent study in 2018 from Saudi Arabia also reported more prevalence in males than females (6% Vs 4.2%; respectively), and individuals with obesity class (I) had a higher risk of developing hypertension by 3.5 times than non-obese ones [19]. Obesity in KSA is associated strongly with several diseases and conditions including hypertension [28]. Smoking also was reported as a risk factor for hypertension in Japan, it was suggested that smoking had an impact on SBP more than DBP and they concluded that smoking was independently associated with the onset of both systolic hypertension and hypertension [29]. A study from Saudi Arabia demonstrated that overweight, obese and smoker individuals were under higher risk to develop hypertension [30]. A study from Saudi Arabia reported that the educational level was significantly had an impact on the prevalence of hypertension, where illiterate individuals were more prone to suffer hypertension than educated subjects [2]. This may be attributed to the low awareness of dietary habits among illiterate individuals [31], or poor adherence to medical care and treatment [32]. Several previous studies reported that there was an association between hypertension and lower education level in KSA and other Gulf as well as Asian countries [2,33-35]. A study in
Boston reported that lifestyle and diet were risk factors for the incidence of hypertension in females and they added that adherence to low risk dietary and lifestyle factors was associated with lower incidence of hypertension [36].

3.3. **Lifestyle related to hypertension:**

Patient with hypertension should adhere to medication and lifestyle modifications to achieve the desired therapeutic outcomes [37]. It was reported previously that modification in the lifestyle was beneficial in blood pressure reduction [38,39]. Lifestyle modifications that help in decreasing blood pressure include reduction of sodium in diet [40], adequate intake of vegetables and fruits [41], weight reduction in obese and overweight individuals by regular exercise [42], and reduction of fat intake [43]. However, the barrier that can be existed for lifestyle modifications is adherence, it was reported in one study that there was low adherence rate among adults with hypertension especially adherence to physical activity [44]. Another study showed that adherence to lifestyle changes and medications rates were low and the cause of adherence differed according to the difference in the type of adherence [45]. A study from Taif in Saudi Arabia found that there was sub-optimal adherence to diet, exercise and medications among patients with hypertension[37]. One study reported that 57.9% of patients didn’t use their medication, and having poor knowledge of hypertension complications was the only predictor for non-adherence [46]. Several studies from Saudi Arabia reported an association between hypertension and lower level of physical activity[16, 47, 48]. Several factors that affect the compliance of patients including knowledge about hypertension and its management, the beliefs of patients about management of hypertension, the counseling of physicians on healthy lifestyle and self-
care practices [49]. A study from KSA found that less than have of patients with hypertension weren’t aware of their disease at the time of survey [16], and another study reported the same findings [50].

4. Conclusion:

The prevalence of hypertension varies between different countries and different areas according to the difference in risk factors which differ between different areas. Changing lifestyle is the key factor to decrease the prevalence of hypertension, however there was low adherence to lifestyle changes domains especially physical activity. Awareness should be increased among individuals with higher risk for hypertension development.

Conflict of interest:

The authors declare that there is no conflict of interest regarding the publication of this article.

Funding: None

List of abbreviations:

DBP: diastolic blood pressure

KSA: Kingdom of Saudi Arabia

SBO: systolic blood pressure

Consent for publication: Not applicable

Ethical approval: Not applicable
References:


