

Systemic Review: Effect Of Weight Reduction On Decreasing Of BP

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ABSTRACT

Background: Lowering the blood pressure could decrease the risks of cardiovascular morbidity and mortality rates and showed an association between lowering the body weight and management of blood pressure levels in people with hypertension. This study aimed at reviewing the effects of weight loss on blood pressure and hypertension. **Methods:** 29 studies were included in this review. This systemic review showed that significant reduction in body weight either by dietary or non-dietary intervention could lower the blood pressure among hypertensive patients undergoing medications. However the extent effects are uncertain and have not been demonstrated on long term effects.

Keywords: Weight Reduction, Blood Pressure, Prevention, Management, Hypertension.

INTRODUCTION

Hypertension, overweight and obesity are major public health hazards affecting the whole population around the world⁽¹⁾. They have a central role in progression of cardiovascular and a common risk factor for premature death exceeding 9 million per year. Hypertension is one of the well-known complications of obesity as about 30% of hypertensive patients suffer from obesity⁽²⁾.

During the last decades new non-pharmacological interventions have been used for treatment of hypertension including weight loss. Some studies have shown that lowering the blood pressure could decrease the risks of cardiovascular morbidity and mortality rates and showed an association between lowering the body weight and management of blood pressure levels in people with hypertension⁽³⁾.

The INTERSALT study showed a correlation between lowering the systolic and diastolic blood pressure and the body mass index among more than 10 thousand subjects aged from 20-60 years old⁽⁴⁾. Also, obesity is considered as a significant risk factor for induction of hypertension. In a long term follow up study showed that the long term and medium term weight loss are related with decreasing the blood pressure among hypertensive patients⁽⁵⁾.

Other studies showed that the central fat distribution and the waist-hip ratio are associated with the blood pressure levels thus decreasing the amount of visceral adipose tissue was associated with lowering the blood pressure level⁽⁶⁾ this suggests that lowering the internal fat could reduce the risk of hypertension among obese populations.

However, there is still an argument around the actual effects of lowering body weight on blood pressure thus this review aimed at studying the effects of weight loss on blood pressure and hypertension.

METHODS

Information sources and search strategy

The data were collected after searching all the electronic database related to the issue of lowering body weight and blood pressure from 2000 up to April 2018.

Results of the search and discussion

On the initial research more than 9734 studies were yielded from which 2917 were excluded for duplicates and the remaining 6817 were excluded for incomplete data and were not relevant to the research question. Only 20 studies were included after reviewing their abstracts.

Participants and interventions:

About 2000 hypertensive patients participated in the included studies with an age ranged from 40-70 years who were diagnosed with hypertension and their treatment duration ranged from 6 months to many years. Most of the participants received dietary or non-dietary interventions for body weight reduction.

Excluded studies:

Many studies were excluded due to lack of complete data, sufficient results and don't answer the article question. Some studies also included hypertensive and non-hypertensive subjects and have very short duration.

Changes in blood pressure

29 studies identified the effect of lowering body weight either through diet, non-diet interventions and restricted caloric method. One study showed that reducing the body weight by 3-5% is insufficient to reduce the blood pressure but could affect the glycemic state and triglycerides level⁽⁷⁾ however another study showed that losing more than 5% of body weight can significantly affect the blood pressure and normalize it in obese subjects on antihypertensive drugs⁽⁸⁾. Some other studies showed a strong correlation between lowering blood pressure

and decreasing weight and changing the lifestyle interventions with enhancing the glycaemic state⁽⁹⁾.

Another study also found an association between lowering the fat mass of the body and improving the blood pressure⁽¹⁰⁾. Some studies showed that dietary restrictions could lower both systolic and diastolic blood pressure as well as the mean arterial pressure and the glycaemic state among hypertensive patients of both genders^(11, 12). Also, some other short term studies showed significant difference on the blood pressure after dietary restrictions^(13,14).

However, some studies found failure to improve or no change in the blood pressure after duration of 6 months or more and this could be attributed to high carbohydrate in diet⁽¹⁵⁻²⁰⁾.

Long term changes in blood pressure:

There is a lack of evidence of long-term benefits of weight loss on hypertension. Some nonsurgical studies and studies with lifestyle management interventions showed a significant reductions in weight is correlated with decreasing the blood pressures⁽²¹⁾.

Also, a surgical intervention study showed that more than 20 kg loss in body weight would significantly associated with blood pressure reduction among obese populations⁽²²⁾.

Also, another review showed that losing weight for more than 2 years showed that for each 10 kg weight loss resulted in the diastolic blood pressure was decreased by 4.6 mm Hg and 6.0-mm Hg decrease in systolic blood pressure⁽²³⁾.

Another review of randomized control trials showed that for each kilogram weight loss, there was a diastolic reduction of 0.92 mm Hg⁽²⁴⁾.

However, some other surgical studies showed that the weight reduction was not proportional blood pressure reductions and this could be attributed to that the blood pressure relationship with weight loss among obese subjects losing too much weight may not be direct⁽²⁵⁾.

Secondary outcomes

Mortality:

None of the included studies was able to identify the effects of weight loss on long term mortality even with diet interventions or non-dietary interventions.

Adverse events

None of the studies included in this review showed any serious adverse effects on the health of the patients.

CONCLUSION

This systemic review showed that significant reduction in body weight either by dietary or non-dietary intervention could lower the blood pressure among hypertensive patients undergoing medications. However the extent effects are uncertain and have not been demonstrated on long term effects.

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