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Full search strategy
1. High-normal blood pressure is associated with visit-to-visit blood pressure variability in the US adults.

Authors: Faramawi, Mohammed F; Delongchamp, Robert; Said, Qayyim; Balamurugan, Appathurai; Hassan, Alaa; Abouelenien, Saly; Ismaeil, Mohamed

Source: Blood pressure; Feb 2017; vol. 26 (no. 1); p. 18-23

 Publication Type(s): Journal Article

 PubMedID: 27181884

 Database: Medline

Abstract: OBJECTIVES: High-normal blood pressure and visit-to-visit blood pressure variability are common in clinical settings. They are associated with cardiovascular outcomes. No population based studies have assessed the association between these two phenomena. Our objective was to test the relationship of high-normal blood pressure with visit-to-visit blood pressure variability. DESIGN: A cross-sectional study. METHODS: We used data from the cross-sectional Third National Health and Nutrition Examination Survey to test the relationship between high-normal blood pressure and visit-to-visit blood pressure variability: we conducted multivariable regression analyses to evaluate the relationship between these two variables. RESULTS: The analysis included 6,071 participants. The participants' mean age was 37.16 years. The means of visit-to-visit systolic and diastolic blood pressure variability were 5.84 mmHg and 5.26 mmHg. High-normal blood pressure was significantly associated with systolic and diastolic blood pressure variability (p values <0.05). CONCLUSIONS: High-normal blood pressure is associated with visit-to-visit blood pressure variability. Additional research is required to replicate the reported results in prospective studies and evaluate approaches to reduce blood pressure variability observed in clinical settings among patients with high-normal blood pressure to reduce the subsequent complications of blood pressure variability.

2. Suitability of blood-pressure-to-height ratio as the criterion for high blood pressure in children in an environmental study.

Authors: Paunović, Katarina; Jakovljević, Branko

Source: Current medical research and opinion; Jan 2017; vol. 33 (no. 1); p. 149-154

Publication Date: Jan 2017

Publication Type(s): Journal Article

PubMedID: 27983893

Database: Medline

Abstract: BACKGROUND: Blood-pressure-to-height ratio is considered a simple, accurate, inexpensive and non-age-dependent index for screening high blood pressure in a clinical setting, but its suitability in epidemiological surveys was not taken into consideration. The aim of this study was to test the suitability of blood-pressure-to-height ratio against blood pressure for age percentiles for the identification of high blood pressure in an environmental study. METHODS: The sample consisted of 2195 children, aged 3 to 15 years, whose blood pressure was measured as part of an environmental study in Belgrade, Serbia. High blood pressure was estimated using percentiles (gold standard) and blood-pressure-to-height ratios for systolic and diastolic pressures separately (proposed criterion). The optimal cut-offs of the blood-pressure-to-height ratio (BPHR) were selected based on Youden's index (sensitivity + specificity - 1) calculated from the receiver operator characteristic curve analysis. RESULTS: The proposed criterion identified five times more cases of high blood pressure in the investigated children of all age groups in comparison to the gold standard. The optimal cut-off values were selected based on the sensitivity and specificity values by age groups and gender. CONCLUSIONS: Blood-pressure-to-height ratio can be a reliable criterion for the estimation of high blood pressure in epidemiological studies. This is the first study on the applicability of blood-pressure-to-height ratio in Serbian children, but it may not be easily generalized to other populations due to small sample size across the examined age groups and potential diversities in risk factors for high blood pressure. Applied in epidemiological studies, BPHR would help researchers estimate the role of certain environmental factors on blood pressure in children.

3. Relationship between initial therapy and blood pressure control for high-risk hypertension patients in the UK: a retrospective cohort study from the THIN general practice database.

Authors: Weir, Sharada; Juhasz, Attila; Puelles, Jorge; Tierney, Travis S

Source: BMJ open; Jul 2017; vol. 7 (no. 7); p. e015527

Publication Date: Jul 2017

Publication Type(s): Journal Article

PubMedID: 28756383

Database: Medline

Available at BMJ open from Europe PubMed Central - Open Access
Abstract

OBJECTIVE: To examine the UK practice patterns in treating newly diagnosed hypertension and to determine whether subgroups of high-risk patients are more or less likely to follow particular therapeutic protocols and to reach blood pressure goals. DESIGN: Retrospective cohort study. SETTING: This study examined adults in the Health Improvement Network (THIN) UK general practice medical records database who were initiated on medication for hypertension. PARTICIPANTS: 48131 patients with essential hypertension diagnosed between 2008 and 2010 who were registered with a participating practice for a minimum of 13 months prior to, and 6 months following, initiation of therapy. We excluded patients with gestational hypertension or secondary hypertension. Patients were classified into risk groups based on blood pressure readings and comorbid conditions. PRIMARY AND SECONDARY OUTCOME MEASURES: Odds of receiving single versus fixed or free-drug combination therapy and odds of achieving blood pressure control were assessed using multivariable logistic regression. RESULTS: The vast majority of patients (95.8%) were initiated on single drug therapy. Patients with high cardiovascular risk (patients with grade 2-3 hypertension or those with high normal/grade 1 hypertension plus at least one cardiovascular condition pretreatment) had a statistically significant benefit of starting immediately on combination therapy when blood pressure control was the desired goal (OR: 1.23; 95% CI: 1.06 to 1.42) but, surprisingly, were less likely than patients with no risk factors to receive combination therapy (OR: 0.53; 95% CI: 0.47 to 0.59). CONCLUSIONS: Our results suggest that combination therapy may be indicated for patients with high cardiovascular risk, who accounted for 60.6% of our study population. The National Institute for Health and Care Excellence guideline CG34 of 2006 (in effect during the study period) recommended starting with single drug class therapy for most patients, and this advice does seem to have been followed even in cases where a more aggressive approach might have been considered.


Authors: Paulose-Ram, Ryne; Gu, Qiuping; Kit, Brian
Source: NCHS data brief; Apr 2017 (no. 278); p. 1-8
Publication Date: Apr 2017
Publication Type(s): Journal Article
PubMedID: 28463104
Database: Medline

KEY FINDINGS:

Data from the National Health and Nutrition Examination Survey • In 2011-2014, 15.9% of adults with hypertension were unaware of their hypertension. This was a 46% decline since 1999-2002 (29.5%). • A higher percentage of men (19.2%) than women (12.9%) and younger (aged 18-39, 30.8%) than older (aged 60 and over, 12.5%) adults with hypertension were unaware of their condition. • A higher percentage of non-Hispanic Asian (24.7%) and Hispanic (20.2%) adults than non-Hispanic white (14.9%) and non-Hispanic black (14.7%) adults with hypertension were unaware of their condition. • Almost 30% of adults with hypertension who had no health insurance were unaware of their hypertension compared with 14.4% of those with insurance. • As health care visits increased, the percentage of adults with hypertension who were unaware of their status decreased. High blood pressure is a risk factor for multiple diseases, including heart disease, stroke, and kidney disease (1). In 2011-2014, about 29% of U.S. adults had hypertension (2). Adults with hypertension who are undiagnosed and unaware of their hypertension will not be treated, and their blood pressure may remain above normal levels with damaging effects. Therefore, diagnosis and awareness of hypertension are essential for blood pressure management and control. This report presents recent national estimates of adults with hypertension who are unaware of their hypertension, that is, they reported not being told by a doctor or health care provider that they had high blood pressure.

5. Masked Hypertension is Associated with Cognitive Decline in Geriatric Age G-MASH-cog STUDY (Geriatric MASked Hypertension and cognition).

Authors: Esme, Mert; Yavuz, Burcu Balam; Yavuz, Bunyamin; Asil, Serkan; Tun Doğrul, Rana; Sumer, Fatih; Kılıç, Mustafa Kemal; Kızılaraslanoğlu, Muhammet Cemal; Varan, Hacer Dogan; Sağır, Aykut; Balci, Cafer; Halil, Meltem; Cankurtaran, Mustafa Kemal
Source: The journals of gerontology. Series A, Biological sciences and medical sciences; Aug 2017
Publication Date: Aug 2017
Publication Type(s): Journal Article
PubMedID: 28958009
Database: Medline
Abstract

Masked hypertension is described as high ambulatory blood pressure measurements (ABPM) where office blood pressure measurements are normal. Effect of hypertension on cognitive functions is well known. However, the effect of masked hypertension on cognitive functions is unclear. The aim of this study is to examine the relationship between masked hypertension and cognitive functions.

Methods

One hundred-two normotensive patients admitted to the Geriatric Medicine outpatient clinic were included. Exclusion criteria were hypertension, dementia, major depression, and usage of antihypertensive medication. All patients underwent ABPM procedures and average daytime blood pressure, mean blood pressure at night and the 24-hours average blood pressure measurements were recorded. Comprehensive geriatric assessment tests and neuropsychological tests were administered. The diagnosis of masked hypertension was based on the definitions in the 2013 guideline of the European Society of Cardiology (ESC).

Results

44 patients (43%) were diagnosed with masked hypertension. Patients with masked hypertension had significantly lower scores on Mini-Mental State Examination (MMSE) test, Quick Mild Cognitive Impairment Test (QMCI) and Categorical Fluency Test than the normotensive patients (p = 0.011; p = 0.046; and p = 0.004; respectively). Montreal Cognitive Assessment Scale (MOCA) test score was lower in masked hypertension, although this was not statistically significant.

Conclusion

This study may indicate that geriatric patients with masked hypertension, compared to normotensive patients have decreased cognitive functions. Masked hypertension should be kept in mind while assessing older adults. When masked hypertension is detected, cognitive assessment is essential to diagnose possible cognitive dysfunction at early stage.


Authors
Oliveira, E C T; de Menezes, T N; de Olinda, R A

Source
Journal of aging and health; Jun 2017; vol. 29 (no. 4); p. 708-728

Abstract

OBJECTIVE This study aimed to determine the prevalence of high blood pressure (HBP), self-reported hypertension, and associated factors among in elderly enrolled in the Family Health Strategy (FHS) Program. METHOD This is a cross-sectional study with in elderly enrolled in the FHS Program of Campina Grande/Paraíba/Brazil. This study determined the prevalence of HBP and self-reported hypertension and their associations with demographic, socioeconomic variables, lifestyle, and number of self-reported morbidities. Three blood pressure measurements were performed, and the average value was used for analysis. To control possible confounding factors, data were modeled by the method of linear models generalized with Poisson log modeling to determine prevalence ratios and confidence intervals. The SPSS 22.0 statistical application was used, and 5% significance level was adopted. RESULT High prevalence of HBP (80.9%) was observed, which was associated with the number of self-reported morbidities, both in the univariate and multivariate analyses. High prevalence of self-reported hypertension (66.4%) was also observed. In the final model, positive association between hypertension and demographic and socioeconomic variables and lifestyle was verified. DISCUSSION Monitor hypertension should be a priority action given its association with genetic, social and behavioral conditions presented by individuals.


Authors
Caligiuri, Stephanie P B; Austria, Jose Alejandro; Pierce, Grant N

Source
American journal of hypertension; Mar 2017; vol. 30 (no. 3); p. 236-239

Abstract

High prevalence of HBP (80.9%) was observed, which was associated with the number of self-reported morbidities, both in the univariate and multivariate analyses. High prevalence of self-reported hypertension (66.4%) was also observed. In the final model, positive association between hypertension and demographic and socioeconomic variables and lifestyle was verified. MONITOR hypertension should be a priority action given its association with genetic, social and behavioral conditions presented by individuals.
Abstract

BACKGROUND Hypertension is a major cause of mortality and morbidity today. The "silent" nature of hypertension makes it critical to determine its prevalence and its severity in the general public and to identify strategies to identify people unaware of its presence. A mobile hypertension awareness campaign was created to: (i) determine the prevalence and types of hypertension in an urban North American center, (ii) increase hypertension awareness, and (iii) identify reasons for lack of therapy adherence. METHODS Mobile clinics were provided at shopping malls, workplaces, hospitals, and community centres to measure blood pressure in the public. Blood pressure recordings were done on a voluntary basis. RESULTS Of 1097 participants, 50% presented with high blood pressure which was higher than expected. Of particular clinical significance, an unexpectedly large number of participants (2%) exhibited a hypertensive urgency/emergency. Most of these people were not adherent to medications (if their hypertension was detected previously), were unaware of their hypertensive state, and/or unwilling to acknowledge or ignored the clinical significance of the extremely high blood pressure readings. Reasons for lack of adherence included: denial, being unaware of health consequences, and proper management of hypertension. CONCLUSION A relatively large segment of an urban population lives unaware of severe emergency levels of hypertension. A public mobile hypertension clinic provides a valuable strategy for identifying hypertension in the general public and for knowledge translation of hypertension management.

8. Updated Guideline May Improve the Recognition and Diagnosis of Hypertension in Children and Adolescents; Review of the 2017 AAP Blood Pressure Clinical Practice Guideline.

Authors Dionne, Janis M
Source Current hypertension reports; Oct 2017; vol. 19 (no. 10); p. 84
Publication Date Oct 2017
Publication Type(s) Journal Article Review
PubMedID 29035421
Database Medline

Abstract

PURPOSE OF REVIEW Hypertension in children and adolescents is under-recognized and under-diagnosed in clinical practice. The 2017 AAP Clinical Practice Guideline for Screening and Management of High Blood Pressure in Children and Adolescents provides updated recommendations that may improve hypertension identification and management. RECENT FINDINGS The AAP blood pressure guideline recommends annual screening for hypertension in children at preventive care visits and targeted routine screening in high-risk populations. A simplified blood pressure screening table is provided for easier recognition of blood pressures that may require attention. Normative blood pressure tables have been revised to include only data from normal-weight children as more representative of a healthy population. Classification of blood pressure in adolescents has been simplified to threshold values consistent with adult guidelines. The updated AAP blood pressure guideline has clarified and simplified recommendations for hypertension screening, diagnosis, and management based on a systematic review of current best evidence.


Authors Rehm, Jürgen; Anderson, Peter; Prieto, Jose Angel Arbesu; Armstrong, Iain; Aubin, Henri-Jean; Bachmann, Michael; Bastus, Nuria Bastida; Brotons, Carlos; Burton, Robyn; Cardoso, Manuel; Colom, Joan; Duprez, Daniel; Gmel, Gerrit; Gual, Antoni; Kraus, Ludwig; Kreutz, Reinhold; Liira, Helena; Manthey, Jakob; Møller, Lars; Okruhlica, Lubomír; Roepecke, Michael; Scafato, Emanuele; Schulte, Bernd; Segura-Garcia, Lidia; Shield, Kevin David; Sierra, Cristina; Vyshinskiy, Konstantin; Wojnar, Marcin; Zarco, José
Source BMC medicine; Sep 2017; vol. 15 (no. 1); p. 173
Publication Date Sep 2017
Publication Type(s) Journal Article
PubMedID 28954635
Database Medline

Available at BMC medicine from BioMed Central
Available at BMC medicine from Europe PubMed Central - Open Access
Abstract

BACKGROUND: Hazardous and harmful alcohol use and high blood pressure are central risk factors related to premature non-communicable disease (NCD) mortality worldwide. A reduction in the prevalence of both risk factors has been suggested as a route to reach the global NCD targets. This study aims to highlight that screening and interventions for hypertension and hazardous and harmful alcohol use in primary healthcare can contribute substantially to achieving the NCD targets.

METHODS: A consensus conference based on systematic reviews, meta-analyses, clinical guidelines, experimental studies, and statistical modelling which had been presented and discussed in five preparatory meetings, was undertaken. Specifically, we modelled changes in blood pressure distributions and potential lives saved for the five largest European countries if screening and appropriate intervention rates in primary healthcare settings were increased. Recommendations to handle alcohol-induced hypertension in primary healthcare settings were derived at the conference, and their degree of evidence was graded.

RESULTS: Screening and appropriate interventions for hazardous alcohol use and use disorders could lower blood pressure levels, but there is a lack in implementing these measures in European primary healthcare. Recommendations included (1) an increase in screening for hypertension (evidence grade: high), (2) an increase in screening and brief advice on hazardous and harmful drinking for people with newly detected hypertension by physicians, nurses, and other healthcare professionals (evidence grade: high), (3) the conduct of clinical management of less severe alcohol use disorders for incident people with hypertension in primary healthcare (evidence grade: moderate), and (4) screening for alcohol use in hypertension that is not well controlled (evidence grade: moderate). The first three measures were estimated to result in a decreased hypertension prevalence and hundreds of saved lives annually in the examined countries.

CONCLUSIONS: The implementation of the outlined recommendations could contribute to reducing the burden associated with hypertension and hazardous and harmful alcohol use and thus to achievement of the NCD targets. Implementation should be conducted in controlled settings with evaluation, including, but not limited to, economic evaluation.

10. Low levels of plasma galanin in obese subjects with hypertension.

Authors: Fang, P; Yu, M; Gu, X; Shi, M; Zhu, Y; Zhang, Z; Bo, P

Source: Journal of endocrinological investigation; Jan 2017; vol. 40 (no. 1); p. 63-68

Abstract: Obesity is strongly linked to increased blood pressure, which increases the risk of cardiovascular diseases. To our knowledge, little literature reported the information about galanin levels in obese individuals with hypertension. Therefore, the aim of this study was to investigate the possible involvement of galanin in the pathogenesis of obese subjects with hypertension.

METHODS: We measured body mass index and blood pressure of 38 obese patients with hypertension, 44 obese controls with normal blood pressure and 44 lean controls with normal blood pressure. Blood samples from all cases were collected at 8:00 a.m. after an overnight fast to determine the fasting plasma concentration of galanin, glucose, insulin, triglyceride, total cholesterol, high- and low-density lipoprotein cholesterol.

RESULTS: We found that plasma galanin levels were significantly decreased in obese patients with hypertension compared with the obese control group, whereas the galanin levels were significantly increased in obese controls compared with lean controls. Furthermore, in both obese groups the galanin levels were negatively correlative to diastolic blood pressure and positively correlative to insulin and triglyceride levels, but not to heart rate.

CONCLUSIONS: Low galanin levels were one of the characteristics of obese patients with high blood pressure, and this level may be taken as a novel biomarker to predict the development of high blood pressure in obese patients.

11. The association between high blood pressure, physical fitness and fatness in adolescents.

Authors: Gontarev, Seryozha; Kalac, Ruzdija; Zivkovic, Vujica; Velickovska, Lence A; Telai, Besnik

Source: Nutricion hospitalaria; Feb 2017; vol. 34 (no. 1); p. 35-40

Abstract: Obesity is strongly linked to increased blood pressure, which increases the risk of cardiovascular diseases. To our knowledge, little literature reported the information about galanin levels in obese individuals with hypertension. Therefore, the aim of this study was to investigate the possible involvement of galanin in the pathogenesis of obese subjects with hypertension.

METHODS: We measured body mass index and blood pressure of 38 obese patients with hypertension, 44 obese controls with normal blood pressure and 44 lean controls with normal blood pressure. Blood samples from all cases were collected at 8:00 a.m. after an overnight fast to determine the fasting plasma concentration of galanin, glucose, insulin, triglyceride, total cholesterol, high- and low-density lipoprotein cholesterol.

RESULTS: We found that plasma galanin levels were significantly decreased in obese patients with hypertension compared with the obese control group, whereas the galanin levels were significantly increased in obese controls compared with lean controls. Furthermore, in both obese groups the galanin levels were negatively correlative to diastolic blood pressure and positively correlative to insulin and triglyceride levels, but not to heart rate.

CONCLUSIONS: Low galanin levels were one of the characteristics of obese patients with high blood pressure, and this level may be taken as a novel biomarker to predict the development of high blood pressure in obese patients.
INTRODUCTION Hypertension is a health problem that is of national importance. It is a major risk factor for the occurrence of atherosclerosis and cardiovascular, cerebrovascular and renal diseases that are leading or among the leading causes of mortality and morbidity as in ours, as in the most developed and less developed countries.

OBJECTIVE The purpose of this study is to analyze the relation of cardiorespiratory fitness and obesity, blood pressure and hypertension for adolescents.

MATERIAL AND METHODS The research was realized on a sample of 4,051 boys and girls at the age of 11 to 14 years. Cardiorespiratory fitness was assessed by using a three minute step test, while the percentage of body fat was determined by bioelectrical impedance method. Blood pressure was measured three times at intervals of 60 seconds, and the result was the median value of the three measurements. The measurements were performed in a separate room with optimum ambient conditions. The relation between hypertension, cardiorespiratory fitness and fat was determined by correlation and multi-nominal logistic regressive analysis.

RESULTS Boys had higher systolic pressure and lower diastolic pressure compared to girls. The low level of cardiorespiratory fitness and high percentage of body fat were independently associated with an increased risk of blood pressure and hypertension for both boys and girls. The interaction was established between the percentage of body fat and fitness.

CONCLUSION The results should be taken into account for building strategies and recommendations for improvement of lifestyle and health for adolescents.

12. The number of visits and blood pressure measurements influence the prevalence of high blood pressure in adolescents.

Authors de Oliveira, Luciano Machado Ferreira Tenório; da Silva, Alison Oliveira; Diniz, Paula Rejane Beserra; Farah, Breno Quintella; Pirau, André Luiz Torres; de Lima Neto, Antônio José; Feltosa, Wallacy Milton do Nascimento; Tasitano, Rafael Miranda; Ritti-Dias, Raphael M

Source Journal of the American Society of Hypertension: JASH; Jun 2017; vol. 11 (no. 6); p. 343-349

Abstract The aim of this study was to analyze the influence of the number of visits and the number of blood pressure (BP) measurements on the prevalence of high blood pressure (HBP) in adolescents. A cross-sectional epidemiologic study with 481 adolescents (14-19 years old) selected using a random cluster sampling strategy. We measured the BP three times in a first visit. Adolescents with HBP performed subsequent visits. The final calculation of BP followed four strategies: the 1st measure, mean of 1st and 2nd measurements, mean of all three measurements, and averaging the 2nd and 3rd measurements. The prevalence of HBP in the first and second visits was 6.4% and 1.9%, and the prevalence of hypertension (after three visits) was 1.7%. The prevalence of HBP varied from 8.6%-18.6% for boys and 4.6%-9.2% for girls, using the average 2nd and 3rd measurements and the 1st measurement, respectively. In all strategies, HBP and hypertension were more prevalent in boys and students attending the nocturnal shift. The number of visits and number of measurements affect the prevalence of HBP and hypertension in adolescents. Thus, clinicians and researchers should consider these aspects when assessing BP in adolescents aged 14-19 years old.

13. The Role of Agonistic Striving in the Association Between Cortisol and High Blood Pressure.

Authors Ewart, Craig K; Elder, Gavin J; Jorgensen, Randall S; Fitzgerald, Sheila T

Source Psychosomatic medicine; May 2017; vol. 79 (no. 4); p. 416-425

Abstract OBJECTIVE A social action theory of chronic stress proposes that agonistic striving (seeking to influence or control others) impairs cardiovascular health by magnifying the impact of high adversity-induced cortisol levels on blood pressure. We tested three predictions of social action theory: (1) the social action theory taxonomy of regulatory strivings characterizes young adults from high-adversity neighborhoods; (2) high cortisol levels predict high blood pressure more reliably in the subgroup with the agonistic striving profile than in subgroups with other profiles; (3) the association of higher cortisol and higher blood pressure with agonistic striving is not explained by negative affect (depressive symptoms/dysphoria, anger, hostility). METHODS Participants were young adults (N = 198, mean [SD] age = 32 [3.4] years); 71% female; 65% black) from disadvantaged urban neighborhoods. Motive profiles (including agonistic strivings) were assessed using the Social Competence Interview. Cortisol levels were derived from saliva samples; blood pressure level was obtained during two days of ambulatory monitoring. Psychological measures of negative affect were assessed using questionnaires.

RESULTS The predicted taxonomy of regulatory strivings was replicated in this sample; the interaction between cortisol and motive profile was significant (F(2, 91) = 6.72, p = .002); analyses of simple effects disclosed that higher cortisol levels predicted higher ambulatory blood pressure only in individuals who exhibited agonistic striving. Depressive symptoms/dysphoria, trait anger, and hostility were not correlated with agonistic striving, cortisol, or blood pressure.

CONCLUSION Agonistic striving may represent a distinctive (and novel) social-cognitive mechanism of toxic stress and cardiovascular risk.

Authors: Sarkar, Subhankar; Sinha, Aditi; Lakshmy, Ramakrishnan; Agarwala, Anuja; Saxena, Anita; Hari, Pankaj; Bagga, Arvind

Source: Indian journal of pediatrics; Jan 2017; vol. 84 (no. 1); p. 31-35

Publication Date: Jan 2017

Publication Type(s): Journal Article

PubMedID: 27538980

Database: Medline

Abstract: OBJECTIVES To screen patients with frequently relapsing nephrotic syndrome (FRNS) for the presence of ambulatory hypertension and left ventricular hypertrophy. METHODS Following ethical and parental approvals, consecutive patients with FRNS of ≥2 y duration were enrolled. Those with estimated glomerular filtration rate <60 ml/min/1.73 m² and known familial hypercholesterolemia or diabetes mellitus were excluded. Clinic blood pressure was measured by oscillometry and 24-h ambulatory blood pressure was recorded by Spacelab 90207; echocardiography was done for left ventricular mass. Ambulatory hypertension was defined as the presence of clinic blood pressure >95th centile for age, sex and height, and systolic blood pressure load exceeding 25%. RESULTS Of 99 patients, 73 were boys; their median (IQR) age was 120 (84-156) mo. Clinic blood pressure was >95th percentile in 63 (63.6%) patients. Ambulatory hypertension was present in 33 (33.3%), including 14 patients with severe hypertension; 16 (16.1%) had masked hypertension and 30 (30.3%) had white coat hypertension. Non-dipping was seen in 72 and 55 patients had high nocturnal systolic blood pressure load. Of 21 patients with increased left ventricular mass index, 9 (42.9%) had ambulatory hypertension, 3 (14.3%) had masked hypertension and 6 (28.6%) patients had white coat hypertension. Compared to those with normal blood pressure, patients with ambulatory hypertension were younger at onset of nephrotic syndrome (odds ratio, OR 0.94; 95% CI 0.91-0.98; P = 0.002), longer duration of frequently relapsing disease (OR 1.05; 95% CI 1.00-1.10; P = 0.034) and higher body mass index (BMI) (OR 1.61; 95% CI 1.07-2.40; P = 0.020). BMI was positively correlated with 24-h systolic blood pressure load (r = 0.23; P = 0.020) and with the left ventricular mass index (r = 0.57; P = 0.001). CONCLUSIONS Many patients with FRNS showed high prevalence of clinic, ambulatory and white coat hypertension, emphasizing the need to carefully screen these patients in order to ensure their appropriate management. While clinic blood pressure monitoring detects most patients with hypertension, it misses a significant proportion with masked hypertension, underscoring the need for ambulatory blood pressure monitoring and screening for end organ damage. High BMI was the chief risk factor for hypertension, suggesting that control of overweight and hypertension might improve cardiovascular outcomes.

15. Prospective associations between problematic eating attitudes in midchildhood and the future onset of adolescent obesity and high blood pressure.

Authors: Wade, Kaitlin H; Kramer, Michael S; Oken, Emily; Timpson, Nicholas J; Skugarevsky, Oleg; Patel, Rita; Bogdanovich, Natalia; Vilchuck, Konstantin; Davey Smith, George; Thompson, Jennifer; Martin, Richard M

Source: The American journal of clinical nutrition; Feb 2017; vol. 105 (no. 2); p. 306-312

Publication Date: Feb 2017

Publication Type(s): Randomized Controlled Trial Multicenter Study Journal Article

PubMedID: 27974308

Database: Medline
BACKGROUND Clinically diagnosed eating disorders may have adverse cardiometabolic consequences, including overweight or obesity and high blood pressure. However, the link between problematic eating attitudes in early adolescence, which can lead to disordered eating behaviors, and future cardiometabolic health is, to our knowledge, unknown. OBJECTIVE We assessed whether variations in midchildhood eating attitudes influence the future development of overweight or obesity and high blood pressure. DESIGN Of 17,046 children who participated in the Promotion of Breastfeeding Intervention Trial (PROBIT), we included 13,557 participants (79.5% response rate) who completed the Children’s Eating Attitudes Test (ChEAT) at age 11.5 y and in whom we measured adiposity and blood pressure at ages 6.5, 11.5, and 16 y. We assessed whether ChEAT scores ≥85th percentile (indicative of problematic eating attitudes) compared with scores <85th percentile at age 11.5 y were associated with new-onset overweight, obesity, high systolic blood pressure, or high diastolic blood pressure between midchildhood and early adolescence. RESULTS After controlling for baseline sociodemographic confounders, we observed positive associations of problematic eating attitudes at age 11.5 y with new-onset obesity (OR: 2.18; 95% CI: 1.58, 3.02), new-onset high systolic blood pressure (OR: 1.34; 95% CI: 1.05, 1.70), and new-onset high diastolic blood pressure (OR: 1.25; 95% CI: 0.99, 1.58) at age 16 y. After further controlling for body mass index at age 6.5 y, problematic eating attitudes remained positively associated with new-onset obesity (OR: 1.80; 95% CI: 1.28, 2.53); however, associations with new-onset high blood pressure were attenuated (OR: 1.14; 95% CI: 0.89, 1.45 and OR: 1.09; 95% CI: 0.86, 1.39 for new-onset systolic and diastolic blood pressure, respectively). CONCLUSIONS Problematic eating attitudes in midchildhood seem to be related to the development of obesity in adolescence, a relatively novel observation with potentially important public health implications for obesity control. PROBIT was registered at clinicaltrials.gov as NCT01561612 and isrctn.com as ISRCTN37687716.

16. Hypertension in Obesity and the Impact of Weight Loss.

Authors Cohen, Jordana B
Source Current cardiology reports; Aug 2017; vol. 19 (no. 10); p. 98
Publication Date Aug 2017
Publication Type(s) Journal Article Review
PubMedID 28840500
Database Medline
Abstract PURPOSE OF REVIEW Several interrelated mechanisms promote the development of hypertension in obesity, often contributing to end organ damage including cardiovascular disease and chronic kidney disease. RECENT FINDINGS The treatment of hypertension in obesity is complicated by a high prevalence of resistant hypertension, as well as unpredictable hemodynamic effects of many medications. Weight loss stabilizes neurohormonal activity and causes clinically significant reductions in blood pressure. While lifestyle interventions can improve blood pressure, they fail to consistently yield sustained weight loss and have not demonstrated long-term benefits. Bariatric surgery provides more permanent weight reduction, corresponding with dramatic declines in blood pressure and attenuation of long-term cardiovascular risk. Hypertension is closely linked to the prevalence, pathophysiology, and morbidity of obesity. There are multiple barriers to managing hypertension in obesity. Surgical weight loss offers the most promise in reducing blood pressure and decreasing end organ damage in this patient population.

17. High Blood Pressure in the Young: Why Should We Care?

Authors Flynn, Joseph T
Source Acta paediatrica (Oslo, Norway : 1992); Oct 2017
Publication Date Oct 2017
Publication Type(s) Journal Article
PubMedID 28986990
Database Medline
Abstract While primary hypertension clearly occurs in children and adolescents, the approach of many providers to such patients can best be described as ambivalent: the condition may be recognized, but is not acted upon. Such ambivalence may stem from incomplete understanding of the effects of high blood pressure in the young, which in turn is related to the shortage of information on long-term outcomes of primary childhood hypertension. However, other evidence on the short and long-term effects of blood pressure elevation in childhood clearly show that it is not a benign condition at all CONCLUSION: Childhood hypertension warrants action to prevent adult cardiovascular disease. This article is protected by copyright. All rights reserved.


Authors Saiz, Luis Carlos; Gorricho, Javier; Garjón, Javier; Celaya, Mª Concepción; Muruzábal, Lourdes; Malón, Mª Del Mar; Montoya, Rodolfo; López, Antonio
Source The Cochrane database of systematic reviews; Oct 2017; vol. 10 ; p. CD010315
Publication Date Oct 2017
Publication Type(s) Journal Article Review
PubMedID 29020435
BACKGROUND Hypertension is a prominent preventable cause of premature morbidity and mortality. People with hypertension and established cardiovascular disease are at particularly high risk, so reducing blood pressure below standard targets may be beneficial. This strategy could reduce cardiovascular mortality and morbidity but could also increase adverse events. The optimal blood pressure target in people with hypertension and established cardiovascular disease remains unknown.

OBJECTIVES To determine if ‘lower’ blood pressure targets (≤ 135/85 mmHg) are associated with reduction in mortality and morbidity as compared with ‘standard’ blood pressure targets (≤ 140 to 160/90 to 100 mmHg) in the treatment of people with hypertension and a history of cardiovascular disease (myocardial infarction, angina, stroke, peripheral vascular occlusive disease).

SEARCH METHODS The Cochrane Hypertension Information Specialist searched the following databases for randomized controlled trials up to February 2017: the Cochrane Hypertension Specialised Register, the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE (from 1946), Embase (from 1974), the World Health Organization International Clinical Trials Registry Platform, and ClinicalTrials.gov. We also searched the Latin American and Caribbean Health Science Literature Database (from 1982) and contacted authors of relevant papers regarding further published and unpublished work. There were no language restrictions.

SELECTION CRITERIA We included randomized controlled trials (RCTs) with more than 50 participants per group and at least six months follow-up. Trial reports needed to present data for at least one primary outcome (total mortality, serious adverse events, total cardiovascular events, cardiovascular mortality). Eligible interventions were lower target for systolic/diastolic blood pressure (≤ 135/85 mmHg) compared with standard target for blood pressure (≤ 140 to 160/90 to 100 mmHg). Participants were adults with documented hypertension or who were receiving treatment for hypertension and cardiovascular history for myocardial infarction, stroke, chronic peripheral vascular occlusive disease or angina pectoris.

DATA COLLECTION AND ANALYSIS Two review authors independently assessed search results and extracted data using standard methodological procedures expected by The Cochrane Collaboration.

MAIN RESULTS We included six RCTs that involved a total of 9795 participants. Mean follow-up was 3.7 years (range 1.0 to 4.7 years). Five RCTs provided individual patient data for 6775 participants. We found no change in total mortality (RR 1.05, 95% CI 0.90 to 1.22) or cardiovascular mortality (RR 0.96, 95% CI 0.77 to 1.21; moderate-quality evidence). Similarly, no differences were found in serious adverse events (RR 1.02, 95% CI 0.95 to 1.11; low-quality evidence). There was a reduction in fatal and non-fatal cardiovascular events (including myocardial infarction, stroke, sudden death, hospitalization or death from congestive heart failure) with the lower target (RR 0.87, 95% CI 0.78 to 0.98; ARR 1.6% over 3.7 years; low-quality evidence). There were more participant withdrawals due to adverse effects in the lower target arm (RR 8.16, 95% CI 2.06 to 32.28; very low-quality evidence). Blood pressures were lower in the lower target group by 9.5/4.9 mmHg. More drugs were needed in the lower target group but blood pressure targets were achieved more frequently in the standard target group.

AUTHORS’ CONCLUSIONS No evidence of a difference in total mortality and serious adverse events was found between treating to a lower or to a standard blood pressure target in people with hypertension and cardiovascular disease. This suggests no net health benefit from a lower systolic blood pressure target despite the small absolute reduction in total cardiovascular serious adverse events. There was very limited evidence on adverse events, which lead to high uncertainty. At present there is insufficient evidence to justify lower blood pressure targets (≤ 135/85 mmHg) in people with hypertension and established cardiovascular disease. More trials are needed to answer this question.

19. Left ventricular functional, structural and energetic effects of normal aging: Comparison with hypertension.

Authors Parikh, Jehill D; Hollingsworth, Kieren G; Wallace, Dorothy; Blamire, Andrew M; MacGowan, Guy A
Source PloS one; 2017; vol. 12 (no. 5); p. e0177404
Publication Date 2017
Publication Type(s) Journal Article
PubMedID 28493996
Database Medline
Available at PloS one from Public Library of Science (PLoS)
Available at PloS one from Europe PubMed Central - Open Access
OBJECTIVES Both aging and hypertension are significant risk factors for heart failure in the elderly. The purpose of this study was to determine how aging, with and without hypertension, affects left ventricular function.

METHODS Cross-sectional study of magnetic resonance imaging and 31P spectroscopy-based measurements of left ventricular structure, global function, strains, pulse wave velocity, high energy phosphate metabolism in 48 normal subjects and 40 treated hypertensive patients (though no other cardiovascular disease or diabetes) stratified into 3 age deciles from 50-79 years. RESULTS Normal aging was associated with significant increases in systolic blood pressure, vascular stiffness, torsion, and impaired diastolic function (all $P<0.05$). Age-matched hypertension exacerbated the effects of aging on systolic pressure, and diastolic function. Hypertension alone, and not aging, was associated with increased left ventricular mass index, reduced energetic reserve, reduced longitudinal shortening and increased endocardial circumferential shortening (all $P<0.05$). Multiple linear regression analysis showed that these unique hypertensive features were significantly related to systolic blood pressure ($P<0.05$). CONCLUSIONS (1) Hypertension adds to the age-related changes in systolic blood pressure and diastolic function; (2) hypertension is uniquely associated with changes in several aspects of left ventricular structure, function, systolic strains, and energetics; and (3) these uniquely hypertensive-associated parameters are related to the level of systolic blood pressure and so are potentially modifiable.

20. Office Pulse Pressure Is a Predictor of Favorable Outcome in Young- to Middle-Aged Subjects With Stage 1 Hypertension.

Authors
Saladini, Francesca; Fania, Claudio; Mos, Lucio; Mazzer, Adriano; Casiglia, Edoardo; Palatini, Paolo

Source
Hypertension (Dallas, Tex. : 1979); Jul 2017

Publication Date
Jul 2017

Publication Type(s)
Journal Article

PubMedID
26739974

Database
Medline

Abstract
The role of pulse pressure in young individuals remains controversial. The aim of the present study was to investigate the clinical significance of elevated pulse pressure in young- to middle-aged subjects screened for stage 1 hypertension. We examined 1241 subjects (mean age, 33.1±8.4 years) from the HARVEST (Hypertension Ambulatory Recording Venetia Study), during a median follow-up of 12.1 years. To evaluate the predictive value of pulse pressure and mean blood pressure for future hypertension needing treatment and for cardiovascular events, participants were grouped into pressure tertiles. Significant determinants of pulse pressure were male sex ($P=0.029$), younger age ($P=0.001$), physical activity ($P=0.003$), heart rate ($P<0.001$), systolic white coat effect ($P<0.001$), and stroke volume ($n=829$; $P=0.001$). During follow-up, 65.1% of participants developed hypertension requiring pharmacological treatment and 5.1% experienced a cardiovascular event. Participants in the highest pulse pressure tertile had a reduced risk of incident hypertension compared with those of the bottom tertile (hazard ratio, 0.75; 95% confidence interval, 0.62-0.91; $P=0.003$). In contrast, participants in the top mean blood pressure tertile had an increase in risk (1.91; 1.57-2.33; $P<0.001$). In addition, participants in the highest pulse pressure tertile had a reduced risk of cardiovascular events (0.35; 0.17-0.73; $P=0.005$) and those in the top mean blood pressure tertile had an increase in risk (3.06; 1.32-7.09; $P=0.009$). Our data show that in subjects <45 years, only mean blood pressure is a predictor of adverse outcome whereas high pulse pressure even carries a reduced risk.


Authors
Talukder, Mohammad Radwanur Rahman; Rutherford, Shannon; Huang, Cunrui; Phung, Dung; Islam, Mohammad Zahirul; Chu, Cordia

Source
Archives of environmental & occupational health; May 2017; vol. 72 (no. 3); p. 126-138

Publication Date
May 2017

Publication Type(s)
Meta-analysis Journal Article Review

PubMedID
27064986

Database
Medline

Abstract
We summarized epidemiological studies assessing sodium in drinking water and changes in blood pressure or hypertension published in English from 1960 to 2015 from PubMed, Scopus, and Web of Science. We extracted data on blood pressure level or prevalence of hypertension and calculated pooled estimates using an inverse variance weighted random-effects model. The pooled standardized mean difference (SMD) in 7 studies (12 data sets) comparing the low and high water sodium exposure groups for systolic blood pressure (SBP) was 0.08 (95% CI, -0.17 to 0.34) and for diastolic blood pressure (DBP) was 0.23 (95% CI, 0.09-0.36). Of the 3 studies that assessed the association between high water sodium and odds of hypertension, 2 recent studies showed consistent findings of higher risk of hypertension. Our systematic review suggests an association between water sodium and human blood pressure (more consistently for DBP) but remain inconclusive because of the small number of studies (largely in young populations) and the cross-sectional design and methodological drawbacks. In the context of climate-change-related sea level rise and increasing saltwater intrusion into drinking water sources, further research is urgently warranted to investigate and guide intervention in this increasingly widespread problem.
### 22. Does Potassium Deficiency Contribute to Hypertension in Children and Adolescents?

**Authors** Falkner, Bonita  
**Source** Current hypertension reports; May 2017; vol. 19 (no. 5); p. 37  
**Publication Date** May 2017  
**Publication Type(s)** Journal Article Review  
**PubMedID** 28451848  
**Database** Medline  
**Abstract** The increasing prevalence of cardiovascular risk factors in children and adolescents has been largely, but not entirely, related to the childhood obesity epidemic. Among the noted risk factors detectable in children is elevated blood pressure. Emerging findings indicate that in addition to overweight and obesity, sodium intake is associated with elevated blood pressure in youth. Moreover, dietary sodium intake is quite high and well above recommended levels throughout childhood. In adults, the relationship of sodium consumption with hypertension is well established, and there is evidence from both population and clinical studies that potassium intake is also associated with blood pressure. Higher potassium intake is associated with lower blood pressure; and potassium deficit leads to an increase in blood pressure. Findings on relationships of potassium intake with blood pressure in childhood are sparse. There are some reports that provide evidence that a dietary pattern that includes potassium-rich foods is associated with lower blood pressure and may also lower blood pressure in adolescents with elevated blood pressure. Considering the secular changes in dietary patterns throughout childhood, it is prudent to encourage a diet for children that is high in potassium-rich foods.

### 23. Management of severe hypertension in the newborn.

**Authors** Dionne, Janis M; Flynn, Joseph T  
**Source** Archives of disease in childhood; Jul 2017  
**Publication Date** Jul 2017  
**Publication Type(s)** Journal Article Review  
**PubMedID** 28739634  
**Database** Medline  
**Abstract** Blood pressure is considered a vital sign, as values too low or too high can be related with serious morbidity and mortality. In neonates, normal blood pressure values undergo rapid changes, especially in premature infants, making the recognition of abnormal blood pressures more challenging. Severe hypertension can occur in neonates and infants and is a medical emergency, often manifesting with congestive heart failure or other life-threatening complications. The cause or risk factors for the hypertension can usually be identified and may guide management. Most classes of antihypertensive medications have been used in the neonatal population. For severe hypertension, intravenous short-acting medications are preferred for a controlled reduction of blood pressure. In this article, we focus on identification, aetiology and management of severe hypertension in the newborn.


**Authors** Furberg, Curt D; Sealey, Jean E; Blumenfeld, Jon D  
**Source** American journal of hypertension; Sep 2017; vol. 30 (no. 9); p. 857-860  
**Publication Date** Sep 2017  
**Publication Type(s)** Journal Article  
**PubMedID** 28482060  
**Database** Medline  
**Abstract** BACKGROUND About one-half of all hypertensive adults do not have their blood pressure controlled. They are often prescribed medications that conform to national guidelines but they continue to have elevated blood pressure. This public health problem might be improved by applying plasma renin guided therapy. RESULTSA contributor to the public health problem of unsuccessfully treated hypertension is that the circulating renin-angiotensin system (RAS) is not recognized in treatment guidelines as clinically relevant for the treatment of hypertension or as important as the body salt status for determining blood pressure levels. Another contributor to the problem is the lack of specificity in the package inserts for antihypertensive drugs. They do not specifically state under the heading “Indications” that RAS blockers are primarily most effective in hypertensive subjects with medium and high plasma renin levels; by contrast, natriuretic drugs are most effective in those with low plasma renin levels. METHODS Literature review. CONCLUSION To address the problem of unsuccessfully treated hypertension, we recommend that the “Indications” section of package inserts for antihypertensive drugs be more specific. The primary indication for RAS blockers ought to be hypertension with medium and high plasma renin levels, and natriuretic agents for those with low plasma renin levels. Similar language ought to be added to treatment guidelines. Additionally, 3 other reasons for lack of blood pressure control also need to be addressed: failure to prescribe antihypertensive drugs to hypertensive subjects, failure of patients to fill prescriptions, and low drug adherence.
# Search Strategy

**Hypertension**

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