ORIGINAL ARTICLE

Effectiveness of Pharmaceutical Drugs to Decrease Blood Pressure: Meta-Analysis Study

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ABSTRACT

Background: In the past few decades, studies have increased in the area of blood pressure, its causes and effective treatments, so revision and combination of pharmaceutical and non-pharmaceutial treatments are considered important in this study.
Aim: To quantify effectiveness of combinational studies in the area of specific treatments related to blood pressure and to quantify effectiveness of combinational studies.
Method: Meta-analysis is method used in this study. Scholar used findings of 21 studies with 75 effect sizes. Meta-analysis studies indexed in country database were the statistical society. Sample was chosen by purposive method based on inclusion and exclusion criteria and CMA2 soft-wares were used to analyse data. Funnel diagram, safe indicator of destruction, intercepts of Iger regression and correlation of tao kendall ranks applied to investigate bias of diffusion. Combinational sizes was calculated based on two random models, Q indicators and I square was used to analyse in homogeneity.
Results: Quantity of combinational effect are 33/0 and 30/0 in constant and random models respectively. This amount is considered moderate based on chosen index. Existence of moderator variables was confirmed based on inhomogeneity analysis results. Results showed that other factors affect quantity and process of hypertension beside drugs.
Conclusion: All treatments that are used to control blood pressure, prevent from cardiovascular and other diseases too. Checking blood pressure should be considered to examine impact of these treatments.
Keywords: hypertension ،meta-analysis،pharmaceutical drugs

INTRODUCTION

Hypertension is most prevalent element in affection of cardiovascular diseases and death despite increasing information about hypertensive drugs (libby, Bonow, Mann et al, 2007). likely as age increases, risk of hypertension will increase to the same extent in children below 18, 8-11%, people between 18-65،20-30% and people above 65, 50-65%. (Kasper and Harrison, 2005). Hypertension indicates to constant increase in diastolic to 90mm and systolic blood pressure to 140mm (Fuster, 2004). Blood pessure is a chronic disease, structural and functional disorders will damage sensitive organs (Safiyan & Zabolian, 2013).

Diabetes, hypercholesterolemia and hypertension are three important elements that cause cardiovascular diseases. hypertension is the major risk factor to afflict atherosclerosis based on clinical studies (Parastooyi, Ravanshad, Mostafavi et al, 2005) and when blood pressure decrease, a decrease in cardivascular diseases is the result (Brunström & Carlberg, 2018). even with light hypertension but no timely treatments diseases such as atherosclerosis, dialation in heat cavity, congestive heart failure, Retinopathy, cerebral damages or renal failure can be seen in people. renin-angiotensin-aldosterone system, inflammation, oxidative, stress, vascular endothelial dysfunction and some other factors impress pathophysiology of hypertension (Touyz, 2005). Possible complications of hypertension caused by untreateed hypertension include Aeot rupture, blood vessel injury, brain injury, congestive heart failure, kidney injury, kidney failure, heart attack, stroke and vision loss. hypotension can be the symptom of diseases such as Heart failure, infection, internal gland diseases and dehydration (Hasan adel, Fayazi, Haghigh et al, 2009).

Amount of blood pressure is of utmost importance, it determines start of treatment and to decrease complications. people usually with hypertension above 210mm Hg are classified as of as emergency departments (Brawnwald & Wynne, 2001) and they will be treated by single-drug and multiple-drug methods (Dustkami, Molajavadi et al, 2007). objective of treatment of hypertension is to increase it above natural 150-160 MM Hg. effectiveness of treatment on blood pressure is 4-6 hours (Hasebe et al, 2005). Diuretic Drug Groups (HCl), Methyl dopa, atenolol, hydralazine, captopril and prazosin are preferred to other drugs in treatment of blood pressure(Anderson,2005 &Smith ,1997). many drugs have been used to decrease blood pressure and all of them represent different results (Prudic and Payne, 2009). drugs such as Hydralazine, Labetalol, Nifidepine are used to treat blood pressure, in addition to drugs, nutritional supplements are also used to decrease blood pressure (Kashanian and rayka, 2004) but due to side effects of using drugs in different people, it is necessary to use them with caution (Tabasi, Aghbayi, Samimi et al, 2012). It was indicated in a

meta-analysis study that use of Hydralazine has more maternal side effects (Hypotension, probability of hysterotomy) and Fetal-neonatal side effects (abnormal fetal heart beats) compared to Labaletol and it should not be used as single-drug (Magee, Cham, Waterman 2003). study of Mazlum and Ansar (2009) showed that use of Alpha - Lipoic Acid has been useful to decrease systolic and Diastolic blood pressure in patients with Diabetes mellitus type 2. Magnesium Sulphate has indicated useful to systolic and dyastolic blood pressure (Honarmand, Safavi hamami, Salehi, 2013).

Although factors such as blood pressure and its consequences has detected in different countries but people are afflicted of cardiovascular diseases due to no timely treatment. many studies have been carried out about high blood pressure in iran recent years and their objective has been different in cities with different population and each one of them investigate incidence of high blood pressure and their relation with other variables, therefore this study is meta-analysis so information about high blood pressure and average blood pressure which are probable cause of Heterogeneity can be combined with ones in other countries. meta-analysis revision is a necessary method to review former studies, to combine results and assess them carefully. many studies have carried out about blood pressure and drug treatments they all had different results and effects which make it impossible to confirm effectivity of one study therefore, this study reaches different effective conclusion and indicates main objective of this study which is effectiveness of drugs related to blood pressure.

METHOD

Statistical findings of different researches are combined with each other, quantities should be modified to common scale (effect size). effect size shows result of every study as standard scores(z) which is index of intensity of effect or differences between groups. objective of this study is to review results of drug treatments on blood pressure so meta-analysis was used in this research. statistical population of this research consists of articles published in scientific-studious journals from 2001 to 2019 based on objective. databases include jihad university base, private bank site of iran journal (Magiran) and noor journal base(Noormags) which investigated treatment of blood pressure. exclusion and inclusion criteria was chose to select sample they include: inclusion criteria and exclusion criteria to carry out meta-analysis study are explained as below: **Inclusion criteria:** Articles and studies published in which one of the main keywords has said in their title; studies that have carried out by valid method about blood pressure; articles with enough findings to measure effect size; studies published in valid journals; articles carried out by master and PHD students, studies inside the country.
Exclusion criteria: Studies that only examined one of the main variables. Similar articles with different titles published in different journals; studies that did not reported enough findings or information in order to measure effect size; studies that examined partial symptoms of blood pressure. keywords related to study should be determined first, then search database in meta-analysis study in order to choose primary studies. keywords that was used for independent variable include: blood pressure, treatment of blood pressure, different drugs for blood pressure, cardiovascular diseases. if studies extracted based on keywords contain main variables of study they would have essential conditions to enter meta-analysis study.
checklist of studious characteristics was used to collect information (Mesrabadi, 2011). data collected by this form has three parts including Bibliography, Methodological Information and necessary information to measure effect size. 21 studies had inclusion criteria in total, based on inclusion and exclusion criteria in this study.

Two graphical methods (Funnel diagram) and one statistical index (safe from destruction) was used to examine diffusion bias in this meta-analysis. considering that meta-analysis consists of two statistical model, constant effect and random effect model, this is why inhomogeneous analysis to prove regulator variables should be used to determine final meta-analysis. cochran's q-statistic and square I was used in this study. existence of regulator variables on treatment of blood pressure was determined after examining both inhomogeneous indexes; this is why random model was used as meta-analysis model. CMA2 was used to measure effect size.

RESULTS

Pervasive search was carried out to find and choose relevant studies by means of keyword; 21 studies was chosen to enter meta-analysis by implementation of inclusion and exclusion criteria; 75 primary effect size was extracted to carry out in next analysis. Abstract of studies and collected sizes is shown in Table 1.

Table 2 shows combinational effect sizes of random and fixed model related to effect of common blood pressure drugs on controlling and reducing it before analysis of sensitivity. as it can be seen amount of effect size of combinational effect on blood pressure is 374/0 in fixed model and 465/0 in random model; both numbers are meaningful statistically(P≤001/0).

Bias dispersion is one of the most important parts in meta-analysis study. sensitivity analysis is used to inform this matter in meta-analysis study. sensitivity analysis can be carried out by two graphical method “funnel diagram ”amount of safe from destruction”.

Figures 1 and 2 show primary effect size before and after sensitive analysis. horizontal line is representative of amount s of primary effect size and vertical line is standard error in funnel diagram. asymmetry represent dispersion bias. asymmetry of amounts is obvious in figure 1 however, unconventional effect sizes was deleted and figure 2 was final result which is more Symmetric and more balanced compared to figure 1.

Amount of safe from destruction (NF=S) was also 2520 after sensitivity analysis. this parameter is representative of after entering 2520 nonmeaningful studies, measured effect size would be meaningful.

Table 3 shows effect sizes of combinational fixed model and random model related to common blood pressure drugs to control and decrease it after sensitivity analysis. as it can be seen amount of effect size of combinational effect on blood pressure is 30/0 in fixed model and 33/0 in random model; both numbers are statist

ically meaningful(P≤001/0). it can be seen that effect size of studies in both random and fixed model are indicated in table 2 and 3 and one model should be considered as final model. random model was considered final model because square index I is higher in this mode; inhomogeneity could be related to regulator variables which shows impact of different drugs on blood pressure.

Table 1: abstract of primary information studies and quantity of collected effect sizes

study code(amount of collected size effects)	authors(year)	kind of drug(independent varibale)	effect size	sex	number of sample
D1(1)	Kashaniyan&Rayka(2004)	supplement calcium	259/0*	female	400
D2(2)	Adel& et al(2009)	Nifedipine	213/0*	male and female	160
D3(2)	Tarighat et al(2011)	Hydroalcoholic extract of nettle	71/1*	male and female	50
D4(2)	Mazlum&Ansar(2009)	α-lipoic acid	476/0*	male and female	57
D5(3)	Zabihi et al(2012)	Furosemide and Hydralazine	822/0* 16/1*	female	100
D6(8)	Barjiyan et al(2006)	Clonidine	-214/0*	male and female	50
D7(10)	Kazerani&Hajimoradi(2008)	Capoten	008/0	male and female	101
D8(2)	Mirfatahi et al(2012)	Arg	260/0*	male and female	38
D9(1)	Setude asl(2010)	medication	594/0	male and female	40
D10(4)	Azizi et al(2015)	Eicosapentaenoic acid Hexanoic acid	039/0 019/0	male and female	45
D11(2)	Bagheri et al(2013)	CoQ10	140/0*	male and female	60
D12(2)	Safarpur&Mohamdi	Calcitriol	214/0*	male and female	90
D13(2)	Dehghan et al(2014)	Inulin Inulin enriched with oligo fructose	04/1* 928/0*	female	76
D14(2)	Moazen et al(2013)	CoQ10	83/1*	male and female	52
D15(2)	Noori et al(2009)	Lip0oic and pyridoxine	474/0*	male and female	38
D16(2)	Mohamadi et al(2013)	α-lipoi1c acid	487/0*	male	58
D17(2)	Fakhrzade et al(2009)	Folic acid	784/0*	male and female	24
D18(2)	Honarmand et al	Tramadol	631/0*	male and female	180
D19(4)	Ebdali et al (2010)	Aspirin	870/0*	female	64
D20(4)	Tafazoli et al(2010)	Lidocaine Mypavacaine	113/0* 731/0*	male and female	70
D21(15)	Razavi et al(2003)	Captopril	571/0*	male and female	40

explanation: effect sizes mentioned in table are random combinational effect size model in each one of studies
meaningful effect sizes(P**≤001/0)**

Table 2: amount of combinational effect of blood pressure drugs to decrease blood pressure

Model	Number of effect size	size of combinational effect	confidence interval %95		Z	P
			lower limit	upper limit		
fixed	75	374/0	328/0	419/0	83/16	001/0
random	75	465/0	328/0	603/0	63/6	001/0

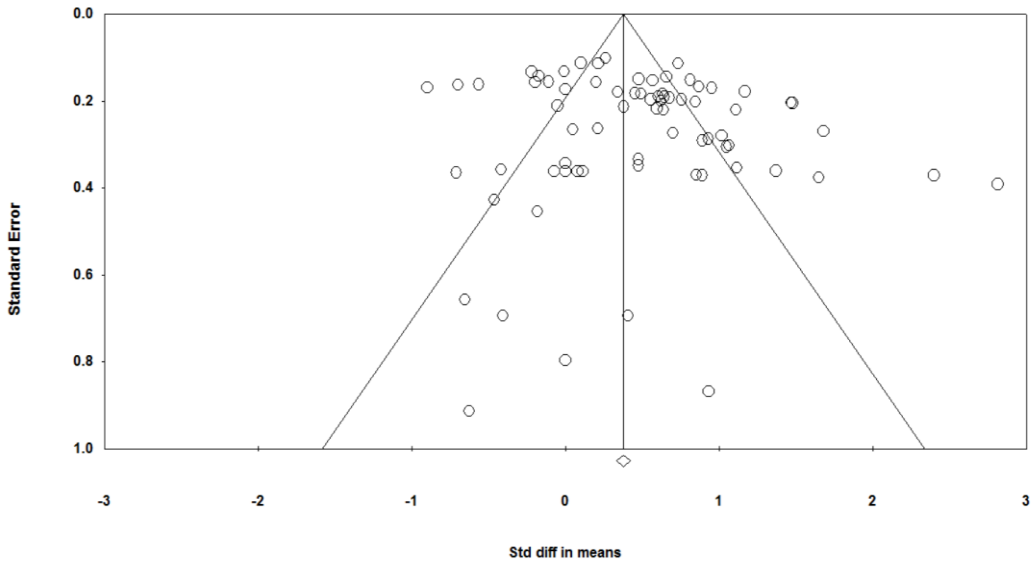


Figure 1. funnel diagram: effect sizes of primary studies before sensitive analysis(88/87 =)

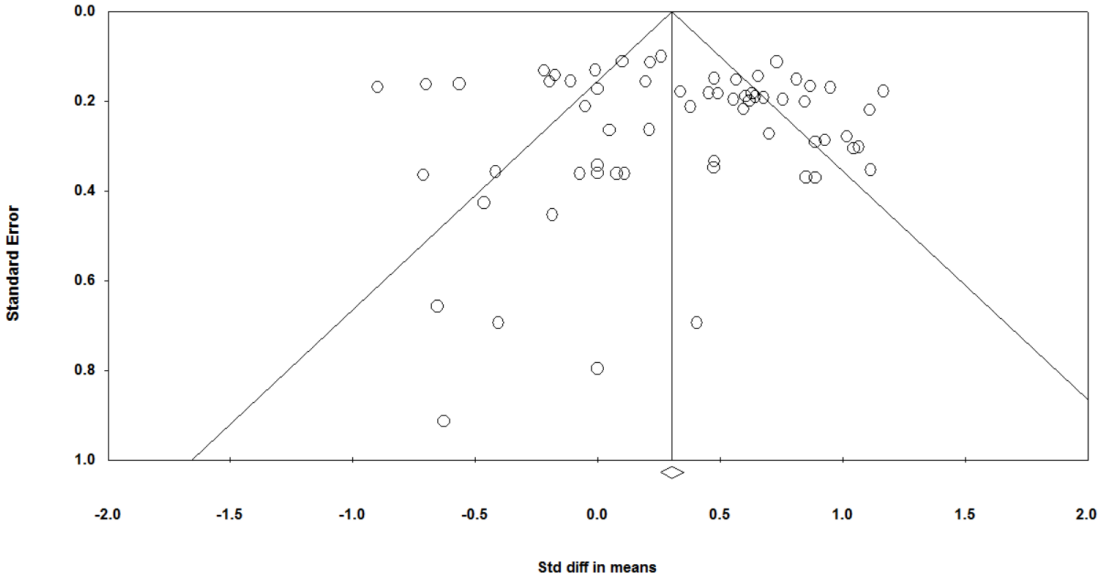


figure 2. funnel diagram: effect sizes of primary studies after sensitive analysis(88/87 =)

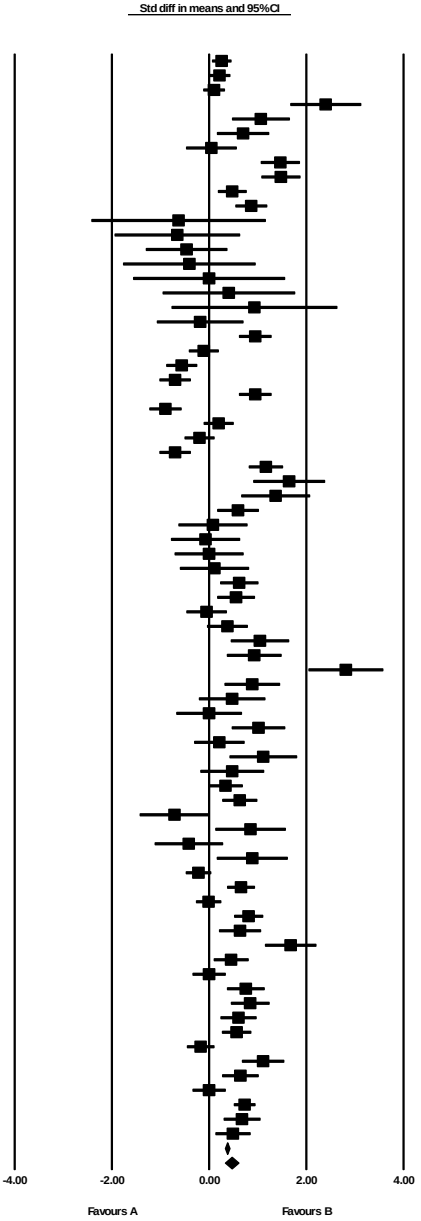
Table 3. amount of combinational effect of blood pressure drugs to decrease blood pressure (after sensitivity analysis)

model	Number of effect size	size of combinational effect	confidence interval %95		Z	P
			lower limit	upper limit		
fixed	66	303/0	265/0	350/0	73/12	001/0
random	66	330/0	203/0	458/0	07/5	001/0

Meta Analysis

Model	Study name	Subgroup within study	Outcome	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
	D1	calsiom	PI-hypertension	0.259	0.100	0.010	0.062	0.456	2.577	0.010
	D2-1	nifedipine-sub	hypertension	0.213	0.113	0.013	-0.008	0.435	1.887	0.059
	D2-2	nifedipine-chew	hypertension	0.101	0.112	0.013	-0.119	0.320	0.899	0.368
	D3-1	Hydro-alcoholic Nettle Extract	Blood Pressure(Systolic)	2.398	0.371	0.138	1.671	3.125	6.467	0.000
	D3-2	Hydro-alcoholic Nettle Extract	Blood Pressure(Diastolic)	1.065	0.302	0.091	0.473	1.658	3.525	0.000
	D4-1	Alpha-Lipoic Acid	Blood Pressure(Systolic)	0.699	0.273	0.074	0.164	1.234	2.562	0.010
	D4-2	Alpha-Lipoic Acid	Blood Pressure(Diastolic)	0.048	0.265	0.070	-0.471	0.567	0.181	0.856
	D5-1	Furosemide	Blood Pressure(Systolic)	1.467	0.204	0.042	1.067	1.866	7.199	0.000
	D5-2	Hydralazine	Blood Pressure(Systolic)	1.477	0.204	0.042	1.076	1.878	7.223	0.000
	D5-3	Furosemide	Blood Pressure(Diastolic)	0.476	0.149	0.022	0.184	0.769	3.191	0.001
	D5-4	Hydralazine	Blood Pressure(Diastolic)	0.867	0.166	0.028	0.542	1.192	5.227	0.000
	D6-1	clonidine	Blood Pressure(Systolic-2min)	-0.628	0.914	0.835	-2.419	1.163	-0.687	0.492
	D6-2	clonidine	Blood Pressure(Systolic-8min)	-0.654	0.657	0.432	-1.942	0.634	-0.995	0.320
	D6-3	clonidine	Blood Pressure(Systolic-10min)	-0.463	0.426	0.182	-1.299	0.373	-1.086	0.278
	D6-4	clonidine	Blood Pressure(Diastolic-2min)	-0.406	0.694	0.482	-1.766	0.955	-0.584	0.559
	D6-5	clonidine	Blood Pressure(Diastolic-4min)	0.000	0.796	0.633	-1.560	1.560	0.000	1.000
	D6-6	clonidine	Blood Pressure(Diastolic-6min)	0.406	0.694	0.482	-0.955	1.766	0.584	0.559
	D6-7	clonidine	Blood Pressure(Diastolic-8min)	0.932	0.869	0.754	-0.770	2.635	1.073	0.283
	D6-8	clonidine	Blood Pressure(Diastolic-10min)	-0.184	0.453	0.206	-1.073	0.704	-0.406	0.684
	D7-1	Captopril	Blood Pressure(Systolic-120min)	0.950	0.170	0.029	0.617	1.283	5.595	0.000
	D7-2	Captopril	Blood Pressure(Systolic-15min)	-0.109	0.155	0.024	-0.414	0.195	-0.703	0.482
	D7-3	Captopril	Blood Pressure(Systolic-20min)	-0.564	0.161	0.026	-0.880	-0.248	-3.496	0.000
	D7-4	Captopril	Blood Pressure(Systolic-60 min)	-0.699	0.163	0.027	-1.019	-0.380	-4.290	0.000
	D7-5	Captopril	Blood Pressure(Systolic-90min)	0.950	0.170	0.029	0.617	1.283	5.595	0.000
	D7-6	Captopril	Blood Pressure(Diastolic-120min)	-0.898	0.168	0.028	-1.228	-0.568	-5.339	0.000
	D7-7	Captopril	Blood Pressure(Diastolic-15min)	0.197	0.156	0.024	-0.108	0.502	1.265	0.206
	D7-8	Captopril	Blood Pressure(Diastolic-20min)	-0.197	0.156	0.024	-0.502	0.108	-1.265	0.206
	D7-9	Captopril	Blood Pressure(Diastolic-60min)	-0.699	0.163	0.027	-1.019	-0.380	-4.290	0.000
	D7-10	Captopril	Blood Pressure(Diastolic-90min)	1.168	0.177	0.031	0.820	1.516	6.583	0.000
	D8-1	L Arginine	Blood Pressure(Systolic)	1.647	0.375	0.141	0.911	2.383	4.387	0.000
	D8-2	L Arginine	Blood Pressure(Diastolic)	1.369	0.360	0.130	0.663	2.076	3.798	0.000
	D9	Drug Therapy	hypertension	0.594	0.217	0.047	0.169	1.020	2.740	0.006
	D10-1	Eicosapentaenoic acid	Blood Pressure(Systolic)	0.079	0.361	0.130	-0.629	0.787	0.219	0.827
	D10-2	Docosahexaenoic acid	Blood Pressure(Systolic)	-0.073	0.361	0.130	-0.780	0.635	-0.202	0.840
	D10-3	Eicosapentaenoic acid	Blood Pressure(Diastolic)	0.000	0.361	0.130	-0.707	0.707	0.000	1.000
	D10-4	Docosahexaenoic acid	Blood Pressure(Diastolic)	0.111	0.361	0.130	-0.597	0.819	0.308	0.758
	D11-1	Coenzyme-Q10	Blood Pressure(Systolic)	0.620	0.199	0.040	0.229	1.011	3.110	0.002
	D11-2	Coenzyme-Q10	Blood Pressure(Diastolic)	0.555	0.196	0.038	0.170	0.939	2.828	0.005
	D12-1	calciteriol	Blood Pressure(Systolic)	-0.051	0.211	0.044	-0.464	0.362	-0.243	0.808
	D12-2	calciteriol	Blood Pressure(Diastolic)	0.378	0.213	0.045	-0.039	0.794	1.775	0.076
	D13-1	Inulin	Blood Pressure(Systolic)	1.046	0.305	0.093	0.449	1.643	3.432	0.001
	D13-2	Oligofructose-Enriched Inulin	Blood Pressure(Diastolic)	0.928	0.286	0.082	0.367	1.490	3.241	0.001
	D14-1	CoQ10	Blood Pressure(Systolic)	2.813	0.391	0.153	2.047	3.580	7.192	0.000
	D14-2	CoQ10	Blood Pressure(Diastolic)	0.888	0.291	0.085	0.318	1.458	3.056	0.002
	D15-1	Lipoic acid & B6	Blood Pressure(Systolic)	0.474	0.348	0.121	-0.208	1.155	1.362	0.173
	D15-2	lipoic acid & B6	Blood Pressure(Diastolic)	0.000	0.343	0.118	-0.672	0.672	0.000	1.000
	D16-1	Alpha-Lipoic Acid	hypertension(systolic)	1.017	0.279	0.078	0.470	1.564	3.643	0.000
	D16-2	Alpha-Lipoic Acid	hypertension(Diastolic)	0.211	0.263	0.069	-0.305	0.727	0.801	0.423
	D17-1	folic acid	hypertension(systolic)	1.114	0.353	0.125	0.421	1.807	3.151	0.002
	D17-2	folic acid	hypertension (Diastolic)	0.476	0.334	0.111	-0.178	1.129	1.426	0.154
	D18-1	Tramadol 1 mil	Blood Pressure(Systolic)	0.338	0.179	0.032	-0.013	0.690	1.885	0.059
	D18-2	Tramadol 2 mil	Blood Pressure(Systolic)	0.631	0.183	0.033	0.274	0.989	3.459	0.001
	D19-1	Aspirin (morning use)	Blood Pressure(Systolic)	-0.712	0.365	0.133	-1.426	0.003	-1.952	0.051
	D19-2	Aspirin (night use)	Blood Pressure(Systolic)	0.852	0.369	0.136	0.128	1.575	2.307	0.021
	D19-3	Aspirin (morning use)	Blood Pressure(Diastolic)	-0.417	0.357	0.128	-1.118	0.283	-1.168	0.243
	D19-4	Aspirin (night use)	Blood Pressure(Diastolic)	0.889	0.371	0.137	0.162	1.615	2.398	0.016
	D20-1	Lidocaine	Blood Pressure(Systolic)	-0.218	0.132	0.018	-0.478	0.041	-1.648	0.099
	D20-2	Mepivacaine	Blood Pressure(Systolic)	0.656	0.144	0.021	0.373	0.939	4.544	0.000
	D20-3	Lidocaine	Blood Pressure(Diastolic)	-0.010	0.131	0.017	-0.267	0.246	-0.080	0.936
	D20-4	Mepivacaine	Blood Pressure(Diastolic)	0.813	0.151	0.023	0.517	1.109	5.382	0.000
	D21-1	Captopril(12.5)	Blood Pressure(Systolic-5min)	0.637	0.219	0.048	0.207	1.067	2.905	0.004
	D21-2	Captopril(12.5)	Blood Pressure(Systolic-20min)	1.679	0.269	0.072	1.152	2.205	6.244	0.000
	D21-3	Captopril(12.5)	Blood Pressure(Systolic-45min)	0.453	0.182	0.033	0.097	0.810	2.493	0.013
	D21-4	Captopril(12.5)	Blood Pressure(Systolic-90min)	0.000	0.173	0.030	-0.339	0.339	0.000	1.000
	D21-5	Captopril(12.5)	Blood Pressure(Systolic-120min)	0.756	0.196	0.039	0.371	1.141	3.848	0.000
	D21-6	Captopril(12.5)	Blood Pressure(Diastolic-5min)	0.845	0.202	0.041	0.450	1.241	4.189	0.000
	D21-7	Captopril(12.5)	Blood Pressure(Diastolic-20min)	0.604	0.188	0.035	0.235	0.974	3.209	0.001
	D21-8	Captopril(12.5)	Blood Pressure(Diastolic-45min)	0.566	0.152	0.023	0.268	0.865	3.718	0.000
	D21-9	Captopril(12.5)	Blood Pressure(Diastolic-90min)	-0.174	0.142	0.020	-0.453	0.105	-1.220	0.222
	D21-10	Captopril(25)	Blood Pressure(Systolic-5min)	1.110	0.220	0.048	0.679	1.542	5.042	0.000
	D21-11	Captopril(25)	Blood Pressure(Systolic-20min)	0.643	0.190	0.036	0.270	1.016	3.381	0.001
	D21-12	Captopril(25)	Blood Pressure(Systolic-90min)	0.000	0.173	0.030	-0.339	0.339	0.000	1.000
	D21-13	Captopril(25)	Blood Pressure(Diastolic-5min)	0.732	0.113	0.013	0.511	0.952	6.499	0.000
	D21-14	Captopril(25)	Blood Pressure(Diastolic-20 min)	0.677	0.192	0.037	0.301	1.054	3.527	0.000
	D21-15	Captopril(25)	Blood Pressure(Systolic-90min)	0.490	0.183	0.034	0.131	0.850	2.675	0.007
Fixed				0.374	0.023	0.001	0.328	0.419	16.183	0.000
Random				0.465	0.070	0.005	0.328	0.603	6.634	0.000

Statistics for each study



Meta Analysis

DISCUSSION

general objective of this study is to examine effectiveness of special blood pressure drugs and to estimate its effectiveness. drugs studied by scholars in meta-analysis and they were examined and compared to other studies in order to determine effect size of each one of drugs; this would lead to one exact effect size. cohen presented a general explanatory categorization to comparative importance of effect sizes in d effect sizes the amounts of 30/0, 50/0, 80/0 respectively to show small, medium and large effect size (cohen, 1988). combinational random effect size showed an amount which cohen estimated this effect size as medium effect size based on 75 effect sized extracted from 21 studies. It has been said that resistance of systemic vessels increases following a raise in level of Vascular constrictor including Angiotensin in critical blood pressure that leads to Vascular endothelial injury and fibrinoid necrosis in the arteries. Therefore disorder occurs in self-regulation of vessels and ischemia of lower limbs; this irregular cycle repeats by easing Vasoactive substances (Varon J, Marik, 2000).

Malohetra, Montesi and Edwards (2012) carried out a meta-analysis with more than 32 studies about blood pressure in which they showed how to decrease blood pressure by different treatments. Xie, X., Atkins (2016) showed how decreasing blood pressure causes a decrease in cardiovascular diseases, brain attack, Infarction, Albuminuria and other diseases. Athid, Emdin et al (2016) thought decreasing blood pressure causes huge decrease in vascular vessels in different levels of blood pressure. Naci, Salcher-Konrad et al (2019) confirmed amount of decreasing blood pressure by other drugs and other methods. Webb & Fischer (2016) claimed impact of treatments on blood pressure can show difference of anti - blood pressure drugs at the risk of brain attack independently. in fact impact of different blood pressure drugs has examined in different studies to various ways. Cote, Grégoire, Moison (2000) Fletcher, Bulpitt and chess et al (1992) say that drug treatment is not the only way to treat abnormal blood pressure. it should be said that there are not any obvious symptoms in patients to prove this fact ; however overuse of Propranolol, Atenolol, Aprile Seal and Verapamil leads to negative perspective. drug treatments only affect blood pressure quickly but they do not cause negative perspective and natural feeling. combination of these effects with different effect sizes was discussed in this study. common denominator between all anti blood pressure drugs is to qualify amount of them (McManus, Franssen, Mant et al, 2018), this decreases most prevalent symptoms including pulse headache or feeling of heaviness in head among blood pressure patients. Shen, Lin, Chang et al (2018) showed that anti blood pressure drugs such as Clonidine and Hydralazine can tempt producing systemic Cytokines which is an Anti-inflammatory while Furzemide and diazoxide restrain producing Cytokines and other pre-inflammatory Cykotines in palcenta and Peripheral blood mononuclear cells. If drugs used are aligned with nutritional methods and psychological treatments; it would be effective to decrease and control blood pressure.

CONCLUSION

Present study estimated all effect sizes carefully and found operational effect size eventually. this meta-analysis carried out to examine effectiveness of different kind of drugs and find their differences by effect sizes. considering there are different factors that affect blood pressure therefore, scholars should recognize these factors and examine them more carefully. single-drugs should not be considered as an absolute solution but different drugs are related to each other and they should be considered in the research. it is also recommended to investigate more about non-drug and psychological treatments.

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