

LIFESTYLE OF HYPERTENSIVE PATIENTS AND THEIR DRUG COMPLIANCE

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يتزايد اكتشاف مرض ارتفاع ضغط الدم في الأردن الى حد مثير للاهتمام. وقد تمت هذه الدراسة ولأول مرة في الأردن بمساعدة مريض بارتفاع ضغط الدم حيث تم تصميم استبانة خاصة لهذا الغرض اعتمدت فيها عدة متغيرات ، بخلفية المريض الصحية ونمط حياته والنتائج الاكلينيكية والادوية المستعملة والمعالجات البديلة الاخرى ومدى اذعان المريض للعلاج. وقد أظهرت الدراسة بعد التحليل الشامل أن أهم عوامل الخطورة الملازمة بين مرضى ارتفاع الضغط تتعلق بالتاريخ العائلي والتدخين والاجهاد والسمنة وازدياد العمر ومرض السكري وارتفاع الدهون ونمط الحياة الجلوسي. كما تم التعرف على نسبة الاستعمال لكل دواء بين الادوية المستخدمة الاخرى لتكون معلومة قد يستفيد منها الطبيب أو الصيدلي أو صانعي الادوية أو مستورديها في الاردن سواء كان لغايات المعالجة أو للتعرف على نسبة استعمال أي دواء في السوق الدوائي الاردني. الخلاصة: أن ازدياد انتشار ارتفاع ضغط الدم في الاردن كان مرتبطاً مع التقدم في العمر ومع السمنة ومع الاجهاد ومع الاستمرار في نمط الحياة الجلوسية. وقد تم عمل التوصيات المبينة على هذه النتائج وتوجيه النداء الى جميع العاملين في مجال الرعاية الصحية، من أجل تقديم النصح والارشاد المناسب للمرضى لخفض انتشار هذا المرض ومضاعفاته.

Hypertension is increasing at an alarming rate in Jordan. The present study was done with the help of 100 hypertensive Jordanian patients. A questionnaire designed specifically for this new study in Jordan was used. The independent variables were: patient background and lifestyle, clinical findings, medications used, alternative therapies and drug compliance. The results were analyzed thoroughly and the findings showed that family history, smoking, stress, obesity, age, diabetes, hyperlipidemia and sedentary lifestyle were the major concomitant risk factors among hypertensive patients. The proportion of each antihypertensive drug prescribed by physicians was mentioned. Such result serve as a reference for physicians, pharmacists, drug manufacturers, and drug distributors, in order to find the place of any studied drug either in the therapy or in the drug marketing in Jordan.

Conclusions: The increase in prevalence of hypertension in Jordan was associated with aging, stress factors, obesity and a more sedentary lifestyle. Recommendations on basis of the results were made and the Jordanian health care providers, particularly pharmacists, were asked to improve their roles in the health care team, by counseling patients and providing optimal information in order to reduce the development of hypertension and its complications.

INTRODUCTION

Hypertension, or high blood pressure, is usually a lifelong disease that causes very few symptoms until it is very advanced.^{1,2} Over the past half century scientific data supported the strong relationship between the manner a person or population lives and the risk for developing or dying from cardiovascular diseases (CVDs). While heredity can be a major factor for some people, their personal health habits and environmental/cultural

exposure are more important factors. CVDs, are associated with a very high rate of morbidity and mortality among peoples in the industrialized societies as in the united states. Such data was the motivation to initiate the present study in Jordan. Primary and secondary prevention measures suggested by other workers will help reduce cardiovascular events and increase the overall health of the patient population.^{3,4} Elucidation of lifestyle-related and environmental risk factors for hypertension holds the promise of prevention.⁵ Many risk

factors are readily modifiable: not smoking, being physically active, eating healthy diet, staying reasonably lean, and avoiding major stress and depression which are the major components of an effective CVD prevention program.^{6,7} A healthy lifestyle at older ages is positively related to a reduced mortality risk and to a delay in the deterioration in health status.⁸

Treatment often begins with non-pharmacological means such as dietary sodium restriction or weight loss. Sodium restriction is effective in about 50% of patients with mild hypertension.⁹ Patients should avoid processed foods and adding table salt during cooking or at meals. Weight reduction is effective in reducing blood pressure in up to 75% of overweight patients with mild to moderate hypertension.⁹ Pharmacological interventions are usually implemented in steps. Diuretics are the first drug group used with sodium restriction and thiazide diuretics are very effective in patients with mild to moderate hypertension. Loop diuretics are used when the kidneys are not functioning properly and spironolactone may be used in cases of hyperaldosteronism. Drugs, such as beta-blockers, that alter sympathetic nervous system effects on blood pressure are often a second stage treatment. Vasodilators, angiotensin converting enzyme inhibitors, angiotensin II antagonists, and calcium channel blockers are very effective treatments for various forms of hypertension.⁹

OBJECTIVES

The present work was composed of a screening study among Jordanian hypertensive patients, and the objectives of the study were to:

- 1- Screen the prevalence of hypertensive complications and associated risk factors among Jordanian patients.
- 2- Highlight the implication of non-compliance to diet or medication that may aggravate hypertension and their related risk factors.
- 3- To assess the effectiveness of lifestyle interventions in reducing cardiovascular disease risk factors among working age adults.

- 4- To find the most commonly anti-hypertensive drugs used in Jordan.
- 5- Participate within the national health care programs in order to improve the quality of life of patients, so that, they can have as normal life as possible.

METHODS

A questionnaire was specifically designed in Jordan based on previously developed instruments that was found to be reliable and valid for hypertensive patients.^{3,10} Some modifications to the questionnaire were introduced to suit the present study. The independent variables and interventions include: the patient background, lifestyle, clinical findings, low lipid intake, smoking cessation, blood pressure control, exercises, drugs used, alternative therapies, drug compliance and drug adherence. Data were collected among 100 randomly chosen hypertensive patients over a four-month period at the end of 2003. Both females and males of different ages and social classes visiting cardiology clinics in Jordanian hospitals and other private clinics located in Amman were invited to participate in this study. The patients were given a brief description of the study and an assurance of confidentiality. Lastly we get the acceptance of 45 females and 55 males. Frequency analysis was performed and the collected data were analyzed using SPSS version-10 program. We used cronpach alpha to test the reability of scale and we found that the alpha values were greater than 60%, which is an accepted percent.

RESULTS AND DISCUSSION

One of the main objectives of the management of hypertension is to improve the quality of life of patients, so that, they can have as normal life as possible. Successful management depends on the extent to which the patients behavior in term of keeping check-up appointment, taking medication and making lifestyle changes coincides with the medical advice given.²

The results of screening of 100 hypertensive participants in the questionnaire showed that 12% of them were working less

than 6 hours daily, 57% of them were working 8 hours daily and 31% of them were working more than 10 hours a day. The age variation showed that 7% of them were less than 30 years age, 23% within (31-40) years age, 24% within (41-50) years age, 28% within (51-60) years age and 18% of them were > 60 years age.

Family history, smoking, stress, obesity, age, diabetes, and hyperlipidemia are all positive risk factors for hypertension.¹¹ Table 1 reveals that 42% of participants were smokers. Such result is alarming for Jordanians as it was suggested that People with hypertension who smoke have two to three folds greater incidence of stroke and coronary heart disease than hypertensives with comparable blood pressures.¹² Table 1 also reveals that 61% of participants were obese and overweight, and 71% were sedentary. Obesity and physical inactivity are among the most important factors in the emergence of hypertension as a mass phenomenon.^{13,14} A weight reduction program must be made for Jordanian hypertensive patients can be very beneficial as it was suggested by other workers for lowering blood pressure and improving the efficacy of antihypertensive medications.¹⁵ The sleeping hours of participants were insufficient being less than 6 hours for 67% of patients. Those patients should be programmed to increase the sleeping hours to suit their ages in order to reduce this stress factor. Stress factors as it was suggested by other works leads to both increased salt intake and high blood pressure and that stress may therefore be the fundamental cause of the rise in blood pressure with age.¹⁶

Table 2 showed that the incidence of hypertension among relatives of the participants was high (55%). This percent coincides with other workers where the hereditary factor was considered as a risk factor for hypertension. Individuals of consanguineous parents and those having family history of hypertension were found to be much more likely to develop hypertension.¹⁷ Table 3 represents blood tests among participants and shows that: 34% of the hypertensive participants were diabetics, and 22% of participants were hyperlipidemics. This finding coincide with other workers suggesting that high blood pressure rarely occurs in the

absence of other risk factors such as dyslipidemia, obesity and diabetes, which interact synergistically to multiply cardiovascular risk.²

Table 1: Lifestyle of the Jordanian hypertensive participants

Lifestyle	Details	Cases %
Obesity	Obese	61
	Tried to lose weight	35
	Tried anti-obesity drugs	4
Practicing Exercise	Randomly	17
	Daily	12
	Not at all	71
Smoking	Smokers	42
	Non-somkers	58
Café intake	Extensive	61
	Fair	19
	Rarely	20
Sleeping hours	<6 hr/day	67
	6-8 hrs/day	28
	> 8 hrs/day	5

Table 2: Incidence of hypertension among the relatives of hypertensive participants.

Relation	Incidence%
Parents	32
Brothers	15
Siblings	3
Uncles	5
Non relatives	45

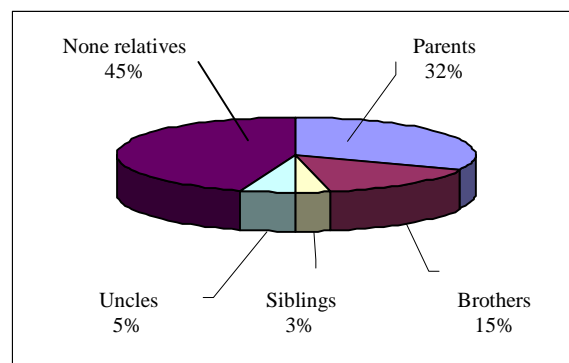


Table 3: Clinical findings (Blood laboratory tests) among the (100) hypertensive participants.

Test	Finding	Reference range	No. of cases tested	No. of cases within reference range	No. of abnormal cases
Electrolyte	Sodium	135-150 mmol/l	100	91	9
	Potassium	3.5-5.3 mmol/l	100	90	10
	Calcium	8-10.4 mmol/l	100	99	1
Nitrogen	Creatinine	0.5-1.2 mg/dl	100	91	9
Fasting Blood sugar	Glucose	70-110 mg/dl	100	66	34
Hyperlipidemia	Cholesterol	140-200 mg/dl	100	78	22
	Triglyceride	35-185 mg/dl	100	95	5
	LDL	Low risk <130 mg/dl	100	78	3
		Moderate risk 131-160 mg/dl	100	78	18
		High risk >160 mg/dl	100	78	1
HDL	Male 29-60 mg/dl Female 38-75 mg/dl	100	99	1	

Diagnosis and classification of hypertension is based on pressure readings and not on symptoms. The blood pressure findings among the 100-hypertensive participants (Table 4) shows that 19% of them were with mild pressure, 41% with moderate pressure, and 40% with severe pressure, such figures are high and need serious preventive programs where the usual levels of blood pressure are directly and continuously related to the risk of both stroke and coronary heart disease across the entire distribution of blood pressure. A small downward shift in mean population blood pressure, achievable by public policy and lifestyle changes, should lead in Jordan as in other countries to sizeable reduction in the incidence of stroke and coronary heart disease.¹⁸

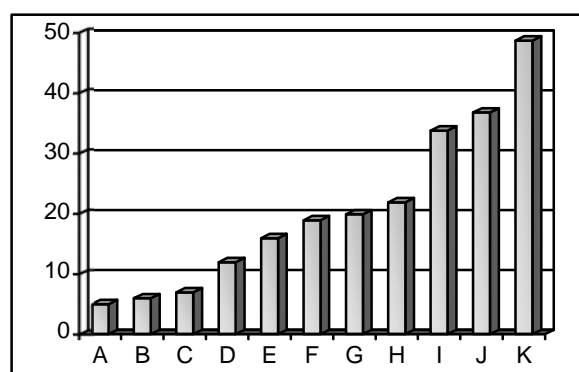
Table 4: Ranges of blood pressure among the hypertensive participants

Range of blood Pressure	Cases %
Mild (95-104)	19
Moderate (105-114)	41
Severe (> 115)	40

A variety of coexisting one or more clinical disorders were found among Jordanian patients, Table 5 shows that 5% of them were with peripheral arterial disease, 6% with angina, 7% with neuropathy, 12% with nephropathy, 16% with left ventricular hypertrophy, 19% with sexual dysfunction, 22% were hyperlipidemics, 34% were diabetics, 37% with retinopathy, and 49% with extremities edema. Similar findings were also mentioned by other workers¹¹ that also coincide with the present results and call for preventive measures.

Table 5: Prevalence of associated risk factors and other health complications among Jordanian Patients.

Clinical disorder		No. of cases
A	Peripheral arterial disease	5
B	Angina	6
C	Neuropathy	7
D	Nephropathy	12
E	Left ventricular hypertrophy	16
F	Sexual dysfunction	19
G	Stroke	20
H	Hyperlipidemia	22
I	Diabetes mellitus	34
J	Retinopathy	37
K	Extremities edema	49



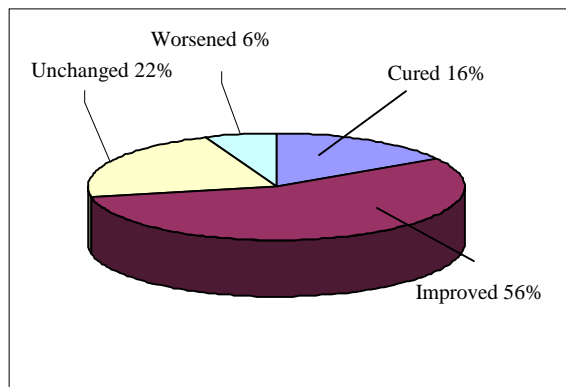
Antihypertensive therapy were used by our participants. Table 6 shows that 14% of them uses diuretics. 14% uses beta-blockers, 17% uses diuretics with beta-blockers, 26% uses calcium channel blockers, 19% uses ACEI, and 10% uses angiotensin II receptor blockers. Such distribution may have a value for physicians, to start or to continue treatment with their patients. Drug manufacturers or distributors may have other value in relation to the place of their products in the Jordanian therapy. Alternative therapies, were used by 32 of participants, herbals were selected by the patients themselves and used without being prescribed to them by any medical authority. Table 7 shows that 21 patients have used garlic, 6 used karkade (hibiscus or red sorrel), 4 used chamomile and one patient has used green onion. Comments about the outcome of such treatment were 16% cured, 56% improved, 22% unchanged and 6% worsened. Such finding was not reliable because patients were under pharmacological treatment.

Table 6: Antihypertensive drugs used by hypertensive participants.

Drug category	Drug category %	Generic Name	Total no. of patient
Diuretics	14	Thiazid diuretics: Cholorthalidone	6
		Potassium sparing diuretics: Amiloride	2
		Loop-diuretics: Furosemide	6
Diuretics & β -Blockers	17	Atenolol + Chlorothalidone	17
β -Blockers	14	Propranolol	1
		Atenolol	13
Calcium channel blockers	26	Amlodipine	18
		Nifedipine	8
Angiotensin converting enzyme inhibitors	19	Lisinopril	3
		Captopril	4
		Quinapril	2
		Enalapril	10
Angiotensin II receptor blockers	10	Candesartan	3
		Telmisartan	7

Table 7: Alternative therapy (herbals) used by (32) hypertensive participants:

Herbal	32 Cases
Garlic	21
Karkade	6
Chamomile	4
Green Onion	1



The awareness to hypertension among participants collected in Table 8 showed that 63% feels the hypertension symptoms, and 47% depend on others to remind them to take their medication. Their major source of antihypertensive information were taken from physicians (84%) while (8%) depend on pharmacists. Hence, pharmacist should improve their role in the health care team, at all levels of the care.¹²

Table 8: Awareness and management of hypertension among participants.

Awareness		Response	
		Yes %	No %
1	Does hypertension worry you?	47	53
2	Are you feeling the hypertension symptoms	63	37
3	Depends on others to remind you to take your medication	47	53
4	Are you informed about hypertension	48	52
5	The physician as a source of your information	84	16
6	The pharmacist as a source of your information	8	92

Regarding patients compliance, Table 9, shows that: 67% of participants were compliant to diet and 80% were attending regular medical checkouts. The frequency of blood pressure measurements was variable, where 15% do it daily, 54% weekly and 31% monthly. Concerning medications: 93% were found to submit to the prescribed dose, 82% take their medication regularly, and 74% take their medication on time. When patients were asked what would they do if they skip a dose, 60% responded that they would take the drugs as soon as they remember, 25% would double the next dose and 15% would do nothing about it. Self-care should be considered strategic for the management of hypertension. Health professionals should recognize this fact and the need for education of every patient with hypertension. Communication with each patient should be established at diagnosis and continued during follow-up visits. Other

Table 9: Compliance among (100) hypertensive participants.

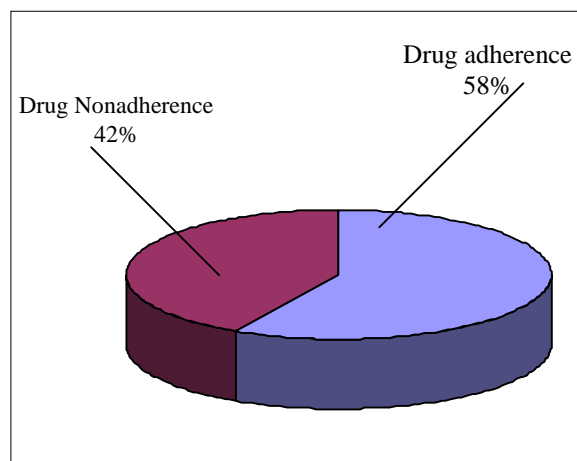
Compliance to:	Details	Compliance %
Diet	Regimen	67
Kinds of food	Vegetables as 1st priority	86
	Proteins as 2nd priority	59
	Carbohydrates as 3rd priority	54
	Salts as 4th priority	82
	Fats as 5th priority	93
Attending medical checkout	Regular	80
	Irregular	20
Blood pressure measurements	Daily	15
	Weakly	54
	Monthly	31
Medication	Submit to the prescribed dose	93
	Taking medication on time	74
	Taking medication regularly	82
Behavior after Forgetting the drug dose	Take it directly when remembered	60
	Multiple the dose	25
	Simply do nothing	15

members of family should also be involved in the education process, particularly in issues related to dietary treatment and other non-pharmacological measures.¹²

Adherence of patients to drug therapy was measured within the closest 30 days previous to the questionnaire filling. Those responding without any missed dose were considered as adherent and the others as non-adherent. Table 10 shows that 58% of participants were found to be adherent meanwhile 42% of them were found to be non-adherent. Non-adherence may also be a grave risk factor that may lead to hypertension complications.

Table 10: Drug adherence within the previous closest 30 days to the questionnaire filling by hypertensive participants.

Details	No. of participants
Adherence (without any missed dose)	58
Nonadherence (with some missed dose)	42



In recent years, there has been progress all over the world in the development of strategies to modify the lifestyle behaviors. More effective health promotion should be planned according to the needs of the practice population. The low rate of lifestyle advice received by the patients implies that more preventive advice should be provided in primary care settings.¹⁹ Pharmacists are readily accessible sources of information and they can

provide education to patients about the improvement of lifestyle as a routine component of pharmaceutical care.²⁰ Pharmacists as physicians are in an excellent position to motivate patients to make lifestyle changes and comply with drug therapies, to advocate better risk management in the hospital and the community, and to call for increased resources for preventive cardiology.²¹

Conclusion

- 1- Family history, smoking, stress, obesity, age, diabetes, and hyperlipidemia are all associated risk factors for hypertension in Jordan.
- 2- The incidence of hypertension as 55% among Jordanian relatives seems high and needs consideration.
- 3- The Jordanian health care providers including pharmacists should design appropriate preventive programs for the good management of hypertension that must be available at all levels of the care.

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