The prevalence of overweight and obesity amongst hypertensive and diabetic adult patients in primary health care

Yousef A. Al-Turki, *ABFM.*

ABSTRACT

Objective: To estimate the prevalence of overweight and obesity amongst hypertensive and diabetic adult patients in primary health care centers, Riyadh, Saudi Arabia.

Method: A retrospective review of the medical records of 3186 adult hypertensive and diabetic patients in 10 primary health care centers in Riyadh, from August to October 1999.

Results: Nineteen percent of the patients were their ideal weight (body mass index < 25 kg/m^2), while 35% were overweight (body mass index 25-29.9 kg/m^2). Forty one percent were moderately obese (body mass index 30-40 kg/m^2) and 5% were morbidly obese (body mass index > 40 kg/m^2).

Conclusion: Overweight and obesity are coexisting risk factors amongst hypertensive and diabetic adult patients, and are an important focus for treatment and prevention of high blood pressure and diabetes.

Keywords: Hypertension, diabetes, obesity, primary care.

Saudi Medical Journal 2000; Vol. 21 (4): 340-343

Diabetes and hypertension are frequent concomitant diseases.[1] Hypertension (blood pressure ≥ 140/90) has been reported to affect more than 20% of adults.[2] Prevalence of hypertension was surveyed in south-western Saudi Arabia, the overall prevalence was 11% and the age adjusted prevalence was 10.6% in men and 11.4% in women, prevalence increased significantly by age.[3] The prevalence of diabetes mellitus among adults in Saudi Arabia is 12-16%.[4,5] Diabetes is a costly condition by virtue of its high prevalence and high per person costs. Large proportions of these costs are related to treating complications of diabetes.[6] In Saudi Arabia, obesity and diabetes became major causes of morbidity in big cities in the last 2 decades, apparently it is due to the sudden changes in life style as a result of economic development, urbanization and competitive life.[7] Obesity is an important risk factor for the development of non-insulin dependent diabetes mellitus, hypertension, hyperlipidemia, coronary heart disease, stroke and gall bladder disease.[8] The relationship between obesity and cardiovascular disease is thought to be mediated by adverse changes in serum lipoprotein,elevated blood pressure and insulin level. In adults the adverse metabolic effects that accompany obesity depend on the regional distribution of adipose tissue, central or truncal obesity relates strongly to cardiovascular disease risk parameters in children and adults.[9] The present study was designed to estimate the prevalence of overweight and obesity amongst hypertensive and diabetic adult patients in primary health care centers (PHCC), Riyadh, Saudi Arabia.

From the Department of Family Medicine, King Khalid University Hospital, College of Medicine, King Saud University, Riyadh, Kingdom of Saudi Arabia.

Received 15th November 1999. Accepted for publication in final form 5th January 2000.

Address correspondence and reprint request to: Dr. Y. Al-Turki, Consultant in Family Medicine, KKUH, Clinical Assistant Professor, College of Medicine, KSU, PO Box 28054, Riyadh 11437, Kingdom of Saudi Arabia. Tel. +966 (1) 4670836. Fax. +966 (1) 4671967.

Table 1 - Body mass index among hypertensive and diabetic adult patients attending primary health care centers.

Body Mass Index (kg/m2)	Number of patients	Frequency %
< 25%	591	19
25 - 29.9%	1108	35
30 - 40%	1315	41
> 40%	172	5
TOTAL	**3186**	**100**

Table 3 - Body mass index among female hypertensive and diabetic adult patients attending primary health care centers.

Body Mass Index (kg/m2)	Number of patients	Frequency %
< 25%	145	9
25 - 29.9%	474	28
30 - 40%	923	54
> 40%	155	9
TOTAL	**1697**	**100**

Methods. A retrospective review of 3186 medical records for hypertensive and diabetic adult patients of both sex in 10 PHCC chosen randomly from 2 different region sectors in Riyadh, during the period from August to October 1999. Weight and height recorded by a nurse working in the selected PHCC, and body mass index (BMI) calculated as weight (kg)/(height in meter)^2. The study population was hypertensive or diabetic adult patients at different age groups of both sex who attended the PHCC. Primary health care physicians used ministry of health Quality Assurance guidelines for diagnosing and management of hypertension and diabetes.[10] Body mass index of 25 kg/m^2 was taken as a cut off point between ideal body weight and overweight.

Results. A total of 3186 hypertensive and diabetic adult patients attending the PHCC were included in this study (47% men, 53% women). The distribution of BMI among the participating patients in the study is shown in Tables 1, 2 and 3.

Discussion. The BMI is widely accepted as providing a convenient measure of a person' fatness. It gives an index that is broadly independent of height and equally applicable to men and women. A few individuals who are exceptionally muscular may be misclassified as overweight or obese, but otherwise the BMI provides a rather robust index which has proved exceptionally useful for large scale epidemiological work.[11]

In this study of hypertensive and diabetic patients attending PHCC in Riyadh, only 19% of patients were their ideal weight (BMI < 25 kg/m^2), while 35% were overweight (BMI 25-29.9 kg/m^2), 41% were moderately obese (BMI 30-40 kg/m^2) and 5% were morbidly obese (BMI >40 kg/m^2). Another study carried out to study overweight and obesity among adult diabetic patients in PHCC in Riyadh showed that 32% were overweight (BMI 25-29.9 kg/m^2), 33% were moderately obese (BMI 30-40 kg/m^2), and 1.5% were morbidly obese (BMI >40 kg/m^2).[12] One study carried out in a PHCC in Bahrain showed that 27% of all the diabetic patients had a BMI above 30.[13] Another study carried out to determine the prevalence of obesity among Saudi males in the Riyadh region, showed that only 37% of subjects were their ideal weight (BMI <25 kg/m^2), while 35% were overweight (BMI 25-29.9kg/m^2). Twenty seven percent were moderately obese (BMI 30-40 kg/m^2), and 2% were morbidly obese (BMI >40kg/m^2).[14] A retrospective study to determine the prevalence of obesity in Saudi patients attending the PHCC of King Fahad University Hospital, Al-Khobar, in the Eastern Province of Saudi Arabia, showed that 51.5% of men were considered obese using as the criterion the BMI (wt/ht^2) of greater than 25(kg/m^2).[15] The high prevalence of overweight and obesity amongst hypertensive and diabetic adult patients might be explained because hypertension is more prevalent in the older obese population than in normal weight control,[16] also there is a direct positive relationship between body weight or BMI and blood pressure,[17] and over 75% of newly diagnosed non insulin dependent diabetes mellitus (NIDDM) patients are obese.[18] The reasons for this alarming surge in obesity are multifactorial. Saudi Arabia, along with other Gulf countries, has undergone major economical changes in the last couple of decades.

Table 2 - Body mass index among male hypertensive and diabetic adult patients attending primary health care centers.

Body Mass Index (kg/m2)	Number of patients	Frequency %
< 25%	446	30
25 - 29.9%	634	43
30 - 40%	392	26
> 40%	17	1
TOTAL	**1489**	**100**

This has resulted in significant changes in lifestyle. Use of cars for even-short distances like for going to market or the mosque, routine consumption of meat, meat products, Kabsa (a traditional high-fat feast), dates and ready made, highly refined carbohydrate preparations are very common. Most of the physical work inside the house and outdoors is being carried out by foreign manpower. Exercise and jogging are rare. All these factors together with social acceptance of obese habitus and a possible genetic susceptibility contributes to this high prevalence.[19] Obesity, physical inactivity and high fat diet have been found to predict IGT and NIDDM.[20] Therefore, diet and exercise intervention from the onset of diagnosis of NIDDM could improve the treatment outcome and prognosis of patients with this disease. Although transient decrease in weight can be achieved by dietary control, long term regulation of obesity depends on maintaining higher energy expenditure through high physical activity.[20] The body weight (ie BMI) will help the physician in deciding the best way of managing NIDDM,[4] also some patients need to lose weight in preparation to reduce drug treatment for diabetes.[21] The advice for diabetic subjects about reducing risk of early death is generally similar to that for non-diabetic subjects, they should stop smoking and reduce both over all and central obesity. Increased physical activity may be a key factor since it would reduce obesity, hypertension and insulin resistance.[22] Physicians do not need to become certified experts in clinical nutrition and metabolism to help their obese patients lose weight, they do however need to understand the factors that either enable or prevent weight loss and know how to apply general therapeutic principles in counseling, if a physician becomes an active participant in the weight loss process, his or her patients are more likely to succeed.[23] The clinic therefore, should not be a place where only the ups and downs of plasma glucose are handled, as unfortunately, is often the case in clinical practice; rather, a global appraisal of the diabetic patient taking into consideration all cardiovascular and metabolic risk factors is the best way forward if we are to make a credible impact on the morbidity and mortality of NIDDM patients.[24] Non pharmacological measures play an important part in any blood pressure control program and should be offered to all hypertensive patients whether taking drugs or not, blood pressure lowering lifestyle modifications should include caloric restriction to achieve ideal body weight.[25] Clearly there are benefits in encouraging the large number of overweight hypertensive patients to lose weight.[16] Obese patients with hypertension have resistance to insulin mediated glucose uptake by skeletal muscle, which can lead to impaired glucose tolerance and type II diabetes, in overweight patients with hypertension. Weight reduction enhances the blood pressure lowering effect of concurrent antihypertensive agents and can significantly reduce concomitant cardiovascular risk factors, such as diabetes and dyslipidemia.[26] It is apparent that a relatively small change in average adult blood pressure could have large effects in terms of the number of serious cardiovascular events prevented, in China, for example, a decline of 5mmHg in average adult blood pressure could be expected to prevent about a million deaths from stroke and coronary heart disease each year.[9] Therefore, all patients with hypertension who are above their desirable weight should be prescribed an individualized, monitored weight reduction program involving caloric restriction and increased physical activity.[26] Health protection should be promoted as the mainstay of preventing hypertension, diabetes mellitus and coronary heart diseases in poorer countries.[27] Since treatment of established non communicable diseases is expensive and for some diseases often ineffective, prevention is the best way of avoiding growth in the burden of these diseases and in unnecessary health care expenditure.[2]

Acknowledgment. The author wishes to thank the health team in the selected PHCC for their help and assistance during data collection.

References

1. International Society of Hypertension. 1993 Guidelines for the management of mild hypertension: memorandum from a WHO/ISH meeting. Bulletin of the World Health Organization 1993; 71: 503-517.
2. Al-Wan A. Non communicable diseases: a major challenge to public health in the region. Eastern Mediterranean Health 1997; 3: 6-15.
3. Abolfotouh M, Abu-zeid H, Abdel Aziz M, Alakija W, Mahfouz A, Bassuni W. Prevalence of hypertension in south-western Saudi Arabia. Eastern Mediterranean Health 1996; 2: 211-218 .
4. Al-Faris E. Guidelines for the management of diabetic patients in the health centers of Saudi Arabia. Journal of Family & Community Medicine 1997; 4: 12-20.
5. Al-Nuaim A, Al-Rubeaan K, Al-Mazrou Y, Khoja T, Al-Attas O, Al-Daghari N. National chronic metabolic diseases survey 1995. 1st ed. Riyadh (KSA); Ministry of Health and King Saud University; 1997.
6. Selby J, Ray G, Zhang D, Colby C. Excess costs of medical care for patients with diabetes in a managed care population. Diabetes care 1997; 20: 1396-1401.
7. Sebai ZA. Health in Saudi Arabia. 1st ed. Riyadh: Tihama Publications; 1985. p. 16.
8. Ravussin E, Swin Burn B. Pathophysiology of obesity. Lancet 1992; 340: 404-408.
9. Kawar G, Suleiman H. Risk factors for cardiovascular diseases. The Practitioner East Mediterranean Edition 1999; 10: 5-8.
10. Al-Faris E, Al-Shammari S. Diabetes Mellitus and Hypertension. Quality Assurance in Primary Health Care Manual. Riyadh: Dar AL Hilal printing press; 1995. p. 143-223.
11. Prentice A. Body Mass Index standards for children. BMJ 1998; 317: 1401-1402.

12. Al-Turki Y. Obesity among diabetic patients in a primary health care center. Saudi Medical Journal 1999; 20: 763-765.
13. Zurba F. Characteristics and patterns of care of diabetes in primary health care center in Bahrain. The Bulletin of the Arab Group for study of Diabetes 1994; 3: 9-18.
14. Al-Shammari S, Khoga T, Al-Maatoug M. The Prevalence of Obesity among Saudi males in the Riyadh region. Annals of Saudi Medicine 1996; 16: 269-272.
15. Binhemd T, Larbi E, Absood G. Obesity in a primary health care center: A retrospective study. Annals of Saudi Medicine 1991; 11: 163-166.
16. Marley J. Lifestyle intervension in hypertension. The Practitioner 1989; 233: 661-663.
17. Alderman M. Non pharmacological treatment of hypertension . Lancet 1994; 344: 307-310.
18. William G. Management of non insulin dependent diabetes mellitus. Lancet 1994; 343: 95-99.
19. Khan L. Obesity in Saudi Arabia. The Practitioner East Mediterranean Edition 1999; 10: 147-151.
20. Mahroos F. Community-based approaches for the primary prevention and control of Diabetes Mellitus among Bahrain population. Journal of Bahrain Medical Society 1999; 11: 4-5.
21. Garrow J. Treatment of obesity. Lancet 1992; 340: 409-412.
22. Balkau B, Eschwege E, papoz L, Richard J, Claude J, Warnet J et al. Risk Factors for early death in non-insulin dependent diabetes & men with known glucose tolerance status. BMJ 1993; 307: 295-298.
23. Neil K, Kushner R. When your obese patient cannot lose weight. Postgrad Med 1993; 93: 155-172.
24. Al-Zaid A. Diabetes care in the wake of the United Kingdom prospective Diabetes Study. Saudi Medical Journal 1999; 20: 405-407.
25. Sever P, Beevers G, Bulpitt C, Lever A, Ramsay L, Reid J. Management guidelines in essential hypertension: report of the second working party of the British Hypertension Society. BMJ 1993; 306: 983-987.
26. The Joint National Committee. The Sixth Report of the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure. Arch Intern Med 1997; 157: 2413-2445.
27. Ebrahim S, Smith G. Systematic review of randomised controlled trails of multiple risk factor intervention for preventing coronary heart disease. BMJ 1997; 314: 1666-1673.