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RESEARCH PAPER

INCIDENCE, PATTERN AND OUTCOME OF CARDIOVASCULAR ADMISSIONS AT THE ABIA STATE UNIVERSITY TEACHING HOSPITAL, ABA: A FIVE YEAR REVIEW.

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ABSTRACT

The aim of this study was to determine the burden of cardiovascular disease (CVD) in Aba -a cosmopolitan town undergoing increased urbanization in the last decade. The study involved 756 case notes of patients with records of CVD between January 2008 and December 2012. Information extracted from each case note included age, sex, type of CVD, length of hospitalization and treatment outcome. The data obtained were analyzed using the Statistical Package for Social Sciences (SPSS). The student t-test was used and $p<0.05$ was considered as statistically significant. The mean age of the patients was 54 ±6.5 years with a slight male preponderance. The highest incidence of CVD was seen between the age ranges of 50 -59 years (25.80%). Majority (61-6%) of the patients were admitted on account of hypertension. Diseases associated with heart failure include hypertension (19.40%), cardiomyopathy (9.20%), anaemia (5.60%), rheumatic heart disease (2.70%) and valvular disease (1.5%). Mean duration in hospital was 10±6 days with 201 (26.60%) deaths. Majority of the dead patients (51.74%) were those with cerebrovascular accident resulting from hypertension. Most of the deaths occurred within 8 days of hospital stay. Thus CVDs constitutes a significant health burden in our community requiring urgent attention.

Key words: Cardiovascular diseases, admissions, outcome, Aba.

INTRODUCTION

The incidence of non-communicable diseases, especially cardiovascular diseases (CVD) in developing countries has been on the increase in the past few decades (Kadiri, 2006, Dominguez et al; 2006). CVD are the leading cause of mortality and morbidity in developed countries and they are emerging as prominent public health problems in developing countries (WHO, 2002; Liu, 1990). CVD is responsible for one third of global disease burden (Ike et al; 2007). This has been linked to demographic changes, urbanization and life-style modifications. Boon et al (2002), defined cardiovascular disease as any disorder, abnormality or failure to function well, relating to the heart and blood vessels or the circulation. Importantly, however CVD is eminently preventable (WHO 2003).

World Health Organization report (2002) revealed that 80% of deaths from cardiovascular disease and 87% of related disability occur in low and middle income countries. The high burden of mortality from cardiovascular cause in developing countries which was estimated at 9.0 million in 1990 is expected to increase to 19 million by 2020, is only partially explained by their large populations (Murray and Lopez, 1996). Reddy (2002), reported that the rate of death due to cardiovascular disease among persons 15 to 59 years of age is 3 to 8 times as high in Tanzania and Nigeria as in England and Wales. It was finally concluded in that report that death and disability occurring in midlife have disastrous consequences for families who lose wage earners, and the resulting loss of productivity adversely

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affects national development (Reddy 2002, Akindele and Uba, 2009). Oviasu, (1982) in his study, opined that almost all unexpected deaths of medical origin in Nigeria are due to cardiovascular causes.

Numerous factors increase cardiovascular risk, including age, male sex, family history, hyperlipidaemia, tobacco use, physical inactivity, obesity, diabetes mellitus, unhealthy diet, hypertension and left ventricular hypertrophy (Padwal et al; 2001, Joni et al; 2014, Go et al, 2013; CDC 2011). Compared with the general population, the risk of death from CVD is two to four times higher among adults with diabetes (Beckman et al; 2002, CDC 2011). A patient's prognosis for CVD depends more on the sum of the risk factors (Maranga van de Mheen and Gunning – schepers, 1998). Achieving significant reductions in this CVD burden, requires targeting a combination of population based and lifestyle - related risk factors in a comprehensive approach (Sigal, 1999). It has been documented that increasing urbanization and changing lifestyle in the past four decades are the factors that have raised the incidence of non -communicable chronic diseases especially cardiovascular disease in Africa (Kadiri 2005, Domingnez et al; 2006).

Though there have been previous reports of medical admissions in tertiary institutions in Nigeria (Osuafor and Ele, 2004; Garko et al; 2004), few have focused on admission caused by cardiovascular disease (Ansa et al; 2008, Isezuo, 2003). The Abia State University Teaching Hospital is located in Aba, a cosmopolitan city in the South eastern part of Nigeria. As a referral centre, it serves all the towns in the state as well as adjourning parts of Rivers, Imo and Akwa Ibom States. Being centrally located within the oil rich states, it has witnessed population explosions, changes in life style of the inhabitants and numerous demographic shifts associated with urbanization.

This study is therefore aimed at reviewing medical admissions caused by cardiovascular diseases with a view to determining their prevalence, burden on health facility as well as outcome. The data so generated may help in future planning and further research in this part of the country.

MATERIALS AND METHODS

Study duration and protocol: Ethical approval was obtained from ethical committee of the Abia State University Teaching Hospital where the study was conducted between January 2008 and December 2012.

Study procedure, sample collection and analysis: This was a descriptive retrospective study in which case notes of patients with records of cardiovascular disease were reviewed at the medical records department of the hospital. Our definition of cardiovascular disease is those diseases that affect the heart and blood vessels. Information extracted from each case note were age, sex, type of cardiovascular disease (hypertension, congestive cardiac failure (CCF), congenital heart disease, rheumatic heart disease, cardiomyopathies and anaemia), length of hospitalization and treatment outcome (dead or alive). The definitive diagnosis was made after patients had been investigated and hematological, radiographic and echocardio graphic data obtained. If a patient was admitted more than once for the same diagnosis, only the initial entry was used for the analysis. The data obtained from the case notes were reduced, tabulated and the results were subjected to descriptive statistical analysis of percentages. Tables and figures were used to give a clear view of the information obtained.

Statistical analysis: Data analysis was done using the SPSS version 10. Comparison of means was done using the student t- test. The level of statistical significance was taken as $p<0.05$.

RESULTS

Over the five year period, a total of 3688 patients were admitted into the medical wards of the Abia State University Teaching Hospital, Aba. Of those, 756 were on account of cardiovascular diseases, giving a frequency of 20.40%. A total number of 353 (46.70%) females reported different types of cardiovascular disease while 403 (53.30%) males presented with different types of cardiovascular diseases, giving a female: male ratio of approximately 1:1. The mean age of the patients was 54^{+} 6.5 years. Most of the patients were aged 40 years and above (table 1).

Table 1: Age and gender distribution of patients with cardiovascular disease.

Age	Males	Females	Total %
< 20	0	2	2 (0.26)
20 - 29	12	15	27 (3.57)
30 – 39	38	26	64 (8.46)
40 – 49	91	72	163 (21.56)
50 – 59	107	88	195 (25.80)
60 – 69	85	93	178 (23.54)
70 – 79	70	57	127 (16.80)
Total	403	353	756 (100%)

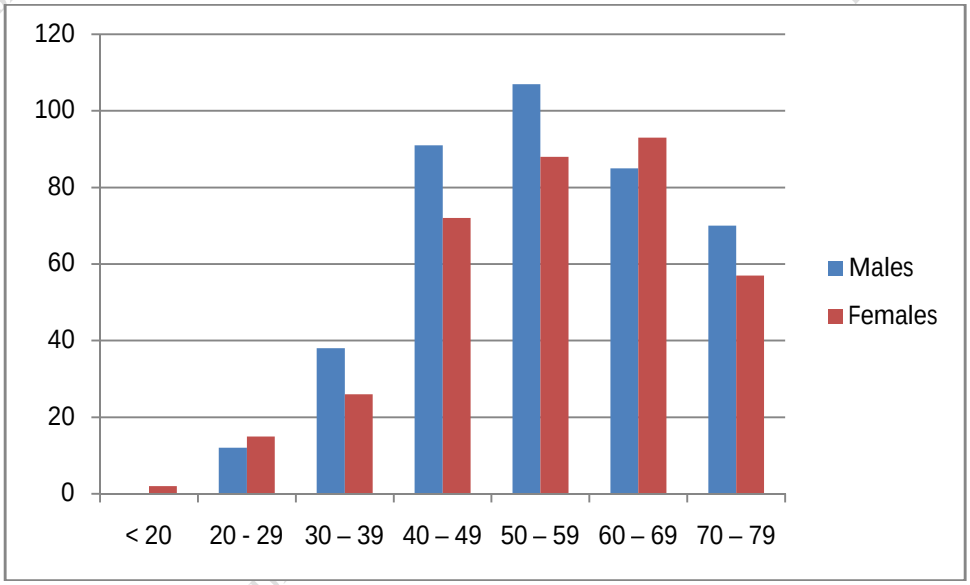

Figure 1: Age and gender distribution

The highest incidence of CVD was seen between the age ranges of 50-59 years (25.80%) while the lowest incidence was seen between the age ranges of 0-19 years, figure 1. There was a progressive increase in the number of admissions with each increasing age group, up to the 50-59 years age group, and a progressive decline thereafter.

A steady increase in the incidence of cardiovascular disease was observed in Aba, South Eastern Nigeria from 2008 (15.21%) to 2012 (27.38%), figure 2

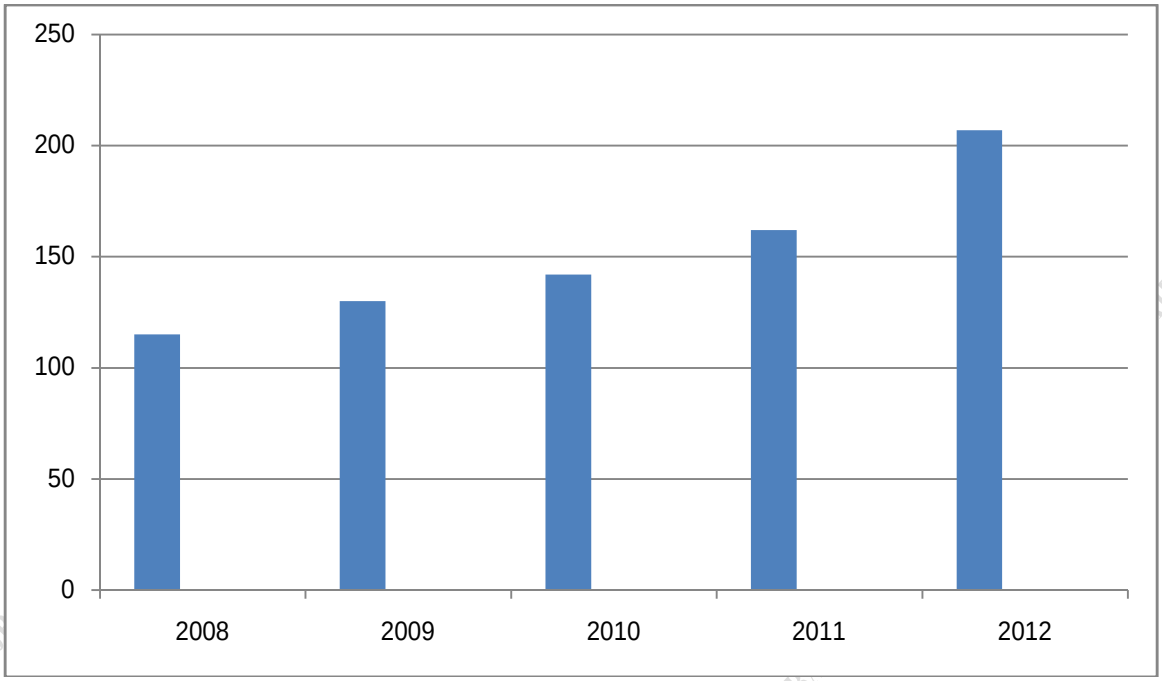

Figure 2: Yearly distribution of CVDs

Majority 466 (61.6%) of the cardiovascular patients were admitted on account of hypertension with 228 of these (48.80%) associated with cerebrovascular accident (CVA). The rest of the patients 38.40% were in congestive cardiac failure (CCF). Hypertension accounted for 19.40% of those admitted with CCF. Other diseases associated with CCF were cardiomyopathies 9.2%, anaemia 5.60% rheumatic heart disease 2.70% and valvular disease 1.5%.

Table 2: Pattern of Cardiovascular Admissions

Event	Number	Percentage (%)
Hypertension	466	61.60
Congestive cardiac failure	147	19.40
Cardiomyopathy	70	9.20
Anaemia	42	5.60
Rheumatic heart disease	20	2.70
Valvular disease	11	1.5
Total	756	100

The length of hospital stay ranged between 3 to 31 days with mean duration of 10^{+} 6 days. There were 201 deaths (26.60%) during this period and 40 (5.30%) discharged themselves against medical advice (LAMA). Majority of the dead patients 104 (51.74%) were those with cerebrovascular accidents resulting from hypertension. Most of the deaths occurred within 8 days of hospital stay.

Table 3: Outcome of Cardiovascular admissions

Event	Number	Percentage (%)
Death	201	26.60
Doctors' discharge	515	67.45
Left against medical advice (LAMA)	40	5.95%
Total	756	100

DISCUSSION:

Cardiovascular disease (CVD) results from multiple risk factors, including but not limited to diabetes, hyperlipidaemia and hypertension (Go et al; 2013, CDC, 2011, Yusuf et al; 2004). It is associated with heart failure, stroke and myocardial infarction (CDC, 2011) and is the primary cause of death and disability among people with diabetes (Go et al; 2013). Compared with the general population, the risk of death from CVD is two to four times higher among adults with diabetes (Joni et al; 2014,CDC, 2011, Ryden et al; 2007). Hypertension is known to be one of the major risk factors for cardiovascular mortality which accounts for 20-50 percent of all deaths (Irurhe et al; 2015).

This study has shown that cardiovascular diseases are common in persons above 40 years as most of the patients admitted on account of CVD were in this age group. This is similar to the results from other studies in Nigeria (Akindele and Uba 2009, Ansa et al, 2008). This can be explained by the fact that longevity prolongs the time exposure to risk factors resulting in a great probability of CVD in the older age groups (Domingnez et al; 2006). It is therefore important for persons in this age group to undergo routine medical check up to ensure early detection and treatment of CVDs. Again the highest incidence of CVD in this study is in the 50-59 years age group. This is in contrast to the studies by Adedoyin and Adesoye (2005) and Akindele and Uba, 2009) where the highest incidence of CVDs were seen in the 60-69 and 40-49 years age group respectively.

Our finding shows higher male incidence of CVD compared to females. This is in accordance with the studies of Adedoyin and Adesoye (2005) in South Western Nigeria and Trigo (1998) among the Cubans. The highest incidence of CVD observed in male might be due to the type of lifestyle in males. Males generally have higher alcohol consumption and cigarette smoking than females. A steady rise in the incidence of CVD was observed between 2008 and 2012 due probably to improved accessibility to good and qualitative health care delivery system as seen in Aba, South Eastern Nigeria.

Hypertension was the commonest CVD requiring admission into the medical wards, closely followed by cerebrovascular accident (stroke) while the least is valvular disease of the heart. This study agrees with the studies by Ansa et al; 2008 and Akindele and Uba, 2009 but is in contrast to the studies by Adedoyin and Adesoye in South Western Nigeria where heart failure was the most prevalent. Our findings were also similar to other studies carried out in Cameroon by Kotto and Bouelet, (2000). The high prevalence of hypertension in this study may reflect the burden of the disease in the community under study. Changing life style is increasing the susceptibility to diabetes mellitus and hypertension. The prevalence of hypertension was earlier documented as 10-15% in urban areas in Nigeria (Kadiri et al, 1999), but recent reports show the prevalence of hypertension and diabetes to be on the increase and can be as high as 34.80% in Nigerians (Amira et al; 2014). Aba is a metropolitan city with increasing urbanization. Raising the standard of living and increasing the life span has been shown to be accompanied by life style changes that predispose to hypertension and other cardiovascular diseases (Kadiri, 2006, and Domingnez et al; 2006).

Heart failure from different causes accounted for 38.4% of cardiovascular admissions. This is similar to the results from other studies (Ansa et al; 2008 (44%), Ogun et al; 2002, Osuafor and Ele, 2004), where heart failure was found to be a major cause of medical admission. Majority of the heart failure were due to hypertension (19.4%) while other causes include cardiomypathies (9.2%), anaemia (5.60%), rheumatic heart disease (2.70%) and valvular disease

(1.5%). The large number of patients admitted in heart failure may be a reflection of poor awareness of risk factors (Ansa et al; 2008). Hypertension has also been shown to be a major cause of heart failure in other studies in Africa (Abengowe, 1979; Amoah and Kallen, 2000). Heart failure, on the other hand accounts for 3-7% of all hospital admissions in Africa (Oyoo and Ogola, 1999), and is fast becoming a global disease as the prevalence is increasing worldwide at an alarming rate (Sandersen and Tse, 2003). Our finding of high prevalence of heart failure in this study is therefore in tandem with the global situation.

About 49% of the patients admitted on account of hypertension had cerebrovascular accident (CVA). Cerebrovascular accident also accounted for 25.67% of deaths arising from hypertension. Also about 12% of the CVA cases left against medical advice (LAMA). These findings highlight the possible rise in the prevalence of CVA -the burden of hypertension and reflect the poor state of hypertension control in the community under study. The overall mortality rate from all cardiovascular admissions was 26.60%. This high rate may be a reflection of the severity of the disease at presentation due probably to late referrals from initial health facility. The high rate of self discharge is in keeping with local myth about CVA with the belief by large segments of the community that CVA results from spiritual attack and are therefore better managed traditionally or in spiritual local churches (Ansa et al, 2008). The average duration hospital stay was about 10 days with patients staying for less than eight days.

Most of the deaths occurred in the first eight days of admission and were mainly in those with hypertension complicated by CVD. Deaths from heart failure complicating other CVDs also occurred at this time and may be attributed to late presentation for treatment or late referrals. This is similar to the results of studies by Ansa et al,(2008). The issue of late referrals as a contributing factor to mortality particularly in the first few days of admission had been highlighted in earlier studies (Garko et al; 2004, Ansa et al; 2008). Majority of CVA victims are usually brought to the orthodox health facilities when the traditional intervention fails after which a lot of complications might have set in (Akindele and Uba, 2009).

CONCLUSION:

Based on the findings from this study it is seen that cardiovascular diseases constitute a significant health burden in our community. Conclusive evidence exist that reducing elevated blood pressure, especially systo-diastolic hypertension, is accompanied by a reduction in cardiovascular morbidity and mortality (Mancia et al, 2002). Intensive health education is advocated and is aimed at increasing awareness of the cardiovascular risk factors as well as promoting healthy life-style. We advocate that early detection and treatment of CVDs should be done. Early referrals to tertiary health institutions are encouraged as these centers are better equipped with both manpower and equipment to handle the possible epidemic of CVDs consequent upon urbanization in the nearest future.

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REFERENCES

Abengowe C.U (1979). Cardiovascular disease in Northern Nigeria Trop. Geog. Med; 31 (4): 533 -560.

Akindele O Makadas, Uba Misbau (2009). Incidence and patterns of cardiovascular disease in north western Nigeria. Niger Med J, vol 50 (3); 55-57.

Amira C.O, Akinkugbe O, Fasanmade O, Ozoh O, Bandele E, (2014). Prevalence and awareness of hypertension in a rural community in south –west Nigeria. Nig. QHJ Hosp. Med;24:96-101.

Amoah AGB, Kallen C (2000). Aetiology of heart failure as seen from a national cardiac referral center in Africa. Cardiology; 93: 11-18.

Ansa V.O, Ekott J.U, Bassey E.O, (2008). Profile and outcome of cardiovascular admissions at the University of Teaching Hospital, Uyo, a five year review. Nigerian Journal of clinical practice; Vol. 11 (1): 22-24.

Beckman J.A, Creagor M.A, Libby P (2002). Diabetes and atherosderosis: epimiology, pathophysiology and management. JAMA: 287:2570-2781.

Boon N.A, Fox K.A, Bloomfield P, Bradibury A (2002). Davison's principles and practice of medicine (19th ed) Edinburgh, London, New York, Oxford, Philadelphia. Churches Livingstone.

Centers for disease control and prevention (CDC): (2011): Million Hearts: strategies to reduce the prevalence of leading cardiovascular disease risk factors – United states, 2011. MMWR Morb Mortal weekly Rep: 60:1248-1251.

Domingnez L.J, Galioto A, Ferlisi A, Pineo A, Putignario E, Belvedera M (2006). Ageing, lifestyle modifications and cardiovascular disease in developing countries. J Nutr Health Ageing; 10 (2): 143 – 9.

Garko SB, Ekweani CN, Anyiam C.A (2004). Duration of hospital stay and mortality in the medical wards of Ahumadu Bello University Teaching Hopital, Kaduna. Annuals of African medicine 2 (2): 68-71.

Go as, Mozaffariam D, Roger VL, Benjamin EJ et al (2013). American heart association statistics committee and stroke statistics subcommittee: Heart disease and stroke stattiscs – 2013 update: a report from the American Heart Association. Circulation 2013; 127: e6 – 6245.

Ike S.O, Arodiwe E.B, Onoka C.A (2007). Profile of cardiovascular risk factors among priests in a Nigerian Rural community. Niger Med J, vol. 48, No 4: 79-84.

Irurhe N.K, Ibeabuchi M.N, Adekola O.O, Yakabu C.I, Toyobo O, Adewoye A.M (2015). Cardiothoracic Ratio: An indicator for cardiomegaly in hypertension among Nigerians. Nigeria Medical Practitioner vol 67, No 1-3, 12-16.

Isezuo S.A (2003). Seasonal variation in hospital admission for hypertension related morbidities in Sokoto, North western Nigeria international journal of circumpolar health 62 (4): 397-409.

Joni L, Williams, Cheryl P Lynch, Rhonda Winchester, Leslic Thomas, Brad Keit, Leaonard E. Egele (2014). Gender differences in composite control of cardiovascular risk factors among patients with type 2 diabetes. Diabetes technology therapeutics vol 16 No 7 Dol:10.1089/dia.2013.0329.

Kadiri S, Walker O, Salako BL, Akinkugbe O (1999). Blood pressure, hypertension and correlates in urbanized workers in Ibadan: a revisit. J. Human hypertension 13 (1): 23-27.

Kadiri S (2005). Tackling cardiovascular disease in Africa. BMJ West African Edition 8 (4): 172-73.

Kadiri (2006). Tackling cardiovascular diseases in Africa (Editional), 331 (7519): 711.

Kotto R.M, Bouelet B.A, (2000). Cardiovascular disease in adults in Douala (Cameroon). Cardiologie tropical 26(103): 61-64

Liu L (1990). Epidemiology of hypertension and cardiovascular disease – chain experience Lin. Exp. Hypertens; 12:831-844.

Mancia G, Seravalle G, Grassia G, (2002). Systolic blood pressure: an underestimated cardiovascular risk factor J. hypertens 20 (suppl5): 521-527.

Murray C.J, Lopez A (1996). The global burden of disease. A comprehensive assessment of mortality and disability from injuries and risk factors in 1990 projected to 2020. Cambridge mass 1996 Harvard university press.

Ogun S.A, Adelowo O.O, Familoni O.E, Jaiyesimi A, Fakoya E (2002). Pattern and outcome of medical admissions in Ogun state university Teaching Hospital, Sagamu a three year review. WAJM; 19 (4): 304 – 308.

Osuafor T.U, Ele P.U (2004). Pattern of admissions in medical wards of Nmadi Azikiwe University Teaching Hospital, Nnewi Orient Journal of medicine, 16 (1): 11-15.

Oviasu V.O (1982). Risk factors of cardiovascular disease in Africa. Post graduate doctor; (2) 4 (6); 190.

Oyoo G.O, Ogola E.n (1999). Clinical and socio demographic aspects of congestive heart failure patients at Kenyatta National Hospital, Nairobi. East Afr. Med. Journal; 76: 23-27.

Padwal R, Straus S.E, Mc Alister F.A (2001) cardiovascular risk factors and their effects on the decision to treat hypertension; evidence based review. BMJ: 322:977-80.

Reddy K.S (2002). Cardiovascular disease in developing countries, dimensions, determinants, dynamics and directions for public health action. Public Health and nutrition; 5 (23): 18.

Ryden L, Standl E, Bartnik M, Van den Berghe G, et al (2007). The task force on diabetes and cardiovascular disease of the European society of cardiology (ESC) and of the European Association for the study of diabetes (EASD). Eur Heart J, 28: 88-136.

Sanderson J.E, Tse T.F (2003). Heart failure – a disease requiring a global response. Heart; 89: 585-586.

Sigal R (1999). Cardiovascular disease in diabetes mellitus. In: Godlee F, Goldmann D, Donald A, Barton S, (eds). Clinical Evidence, issue 2 London. BMJ publishing group: 32-44.

World Health Organization. World Health report 2002. Reducing risk, promoting healthy life. Geneva: WHO, 2002, www.who. Int/whr/2002/en/index.html.

World Health Organization / international society of hypertension. 2003 Who/ISH statement on management of hypertension. J. hypertension 2003; 21: 1983 – 92.

Yusuf S, Hawken S, Ounpuu S, Dans T, Avezum A, et al (2004). INTERHEART study investigators: Effect of potentially modified risk factor associated with myocardial infarction in 52 countries (the INTERHEART study), case control study Lancet 2004: 364:937-952.

AUTHORS CONTRIBUTIONS

All the authors participated fully in this study.