

PREVALENCE AND AWARENESS OF CARDIOVASCULAR DISEASE INCLUDING LIFE STYLES IN A LOWER MIDDLE CLASS URBAN COMMUNITY IN AN ASIAN COUNTRY

KALIM UDDIN AZIZ* , AZHAR M. A. FARUQUI* , NAJMA PATEL* , HAFEEZ JAFFERY*

ABSTRACT

The emerging Cardiovascular Diseases are becoming leading cause of death in the developing countries. The incidence of coronary heart disease in Pakistan is not well established. The aim was to report the prevalence of coronary heart disease in an urban Pakistani Community and to evaluate the awareness of coronary heart disease and to determine life styles of the community.

Material: Metroville a suburb of Karachi was selected, it has 4296 household population. After open invitation 398 households agreed to participate in an intervention study. The data obtained at baseline is basis of this report. Subjects ≥ 18 years age were 1078 while 382 males and 343 females were > 30 years age. Physical exam height, weight, BMI, ECG, waist circumference, blood pressure were determined. Questionnaire was administered to evaluate life styles and awareness in face to face interviews.

Results: Household data showed 1.24 families per household with 3.98 adults and 4.26 children. Uneducated were 27.5% while 26.3% had 10 years as more schooling. Most had job. By history the prevalence of heart attack was 8.2% in women and 4.5% in men, Over all 6.2%, Stroke 2.6, hypertension 26.7% and diabetes 9.5%.

Abnormal ECG suggesting myocardial infarction or ishaemia prevalence rate was 4.4 percent. awareness that heart attack was major problem was reported in 40% men and 25% women who strongly agreed while 31% men and 35% agreed that heart attack can not be prevented.

Food and its linkage to coronary heart disease showed majority were aware of organ meat, fat and obesity linkage to coronary heart disease.

Life Styles: Physical activity was mostly confined to walking stairs at home and shopping trips. Tobacco was used by 34.3% men and 6.2% women.

Conclusion: Coronary heart disease prevalence was significant in an urban Karachi community and the prevalence had increased over the past decades. Smoking, obesity were prevalent. The community had sedentary life style.

Key words : Coronary heart disease, Community Prevention of heart disease ,Risk factor management, Prevalence coronary disease, Awareness heart disease.

INTRODUCTION

In Pakistan the prevalence data of cardio vascular diseases is sparse. Two population study were conducted in 1965 and 1973 which showed a prevalence rate for ischaemic heart disease of 0 to 1.5% in rural and 0.7% to 3.7% in urban population of Karachi, 10% for hypertension and 4% for

diabetes(1,2). Since then to our knowledge no further studies have been undertaken.

The urbanization of rural population has continued over the past decades. The population in Pakistan is increasing with concomitant increased migration of rural to urban centers where newly emerging lower middle class communities are now rapidly increasing. The population of Karachi, a major metropolis in Pakistan, has increased from 7 million in 1987 to well over 15 million.

* National Institute of Cardiovascular Diseases.
Rafiqi Shaheed Road, Karachi, Pakistan.

The purpose of this study was to report the prevalence of cardiovascular diseases including coronary heart disease (CHD) in a selected lower middle class urban community of Metroville which has been impacted by urbanization since the past population urban studies in Karachi. Additional aims were to determine the life style and awareness of the effect of risk cardiovascular for CHD in this community.

Patients and Method

Metro Ville is a lower middle class community in the suburbs of Karachi with a total household population of 4296. The Metroville health study was an intervention study designed to assess the feasibility of prevention of Cardiovascular diseases in a community. It was a Pakistan (National Institute of Cardiovascular diseases) – USA Heart Lung and Blood Institute, (NHLBI) Blood collaborative study. After an open invitation letter distributed in the community, 398 households were willing to participate in an intervention study conducted during 1995- 2000. The households were then randomized as control and intervention groups, the intervention was modification of the diet so the target was set to reduce the household consumption of fat and salt content over the intervention period, the details are reported elsewhere (3) The data obtained at the base line examination of the study was the basis of this study. A total of 2089 subjects comprised the base line examination, 1064 were males and 1025 females. Only 1078 subjects were 18 year or older were included in the study, of which 552 males and 526 females, (382 males and 343 females greater than 30 years old) subjects less than 18 years age were excluded from the present analysis. The results of the intervention, and risk factor profile and prevalence in the total cohort has been reported elsewhere(3).

A questionnaire for evaluating life style and awareness of cardiovascular disease risk factor profile and prevalence (4), was administered to 946 subjects, 463 males and 483 females, by trained physician in a face to face interview's at the baseline examination, the questions were translated in Urdu, the language of the community. The interviewers read the question in Urdu and the response was record in the language of the subject.

The question regarding awareness of cardiovascular

diseases and life styles included awareness for heart attack and effect of various risk factors such as diabetes and hypertension on the genesis of cardiovascular diseases.

Life styles assessment included determination of physical activities smoking and food choices .The physical activities were evaluated in terms of formal games, exercise, running and jogging and in terms of daily activities such as climbing stairs at home or work and shopping trips.

Twelve lead ECG was taken in each adults and evaluated using the following criteria.

Criteria left ventricular hypertrophy was when the sum of S wave and R waves in V1 or V2 + V5 or V6 equaled or exceeded 35mm. Possible left ventricular hypertrophy was diagnosed when sums exceeded 35-25mm.

Myocardial Infarction was diagnosed when following were present, Q wave in leads II, III, aVF, Q in lead I and aVL for high lateral infarction, Q in V1-V2 for anterior septal, V1- V4 for anterior and Q in V1- V6 for anterior- lateral infarction.

Possible myocardial ischaemia was diagnosis when T waves were inverted in non specific pattern and finally arrhythmia such as atrial and ventricular premature beats were present. Atrial fibrillation, supra ventricular tachycardia, incomplete and complete Bundle branch blocks were looked for.

Results

Demographic profile of Metro Ville

Over crowding in the households was present indicated by 1.24 families living in one house, comprising 3.98 adults and 4.26 children per household. Average income per household was 8,149.8 rupees, maximum 90,000. The composition of the community was an ethnic mixture dominated by recent migrants to Karachi from Frontier and Punjab provinces. Majority 45.3% were Pathans followed by Punjabi 33.4%, Baluchi and Sindhi's were 1.2 and 1.3 percent while Mohajirs were 8.2% and Aga Khani's 2.7%.

Education was assessed according to number of years

spent in school and or college, 27.5% had no formal schooling, 27.95% had 4 years in primary schooling, 12.4 % had 6 year school and 26.3% had 10 year or above education.

Occupation determination showed 18.8 % had regular job, 10.8 % owned their own business, 42.7 % were students, 21.5 % housewives and 10% were retirees. Job description in 7.3 % was unknown.

Prevalence of Cardiovascular Diseases

Women greater than 30 years age reported a higher percentage of heart attack history than men 8.2% VS 4.5% (P = <0.04) and over all prevalence was 6.2%. The prevalence of stroke was 3.5% in women VS 1.8% men (P= <0.1123), and overall 2.6%. Hypertension prevalence was reported in >30 years old, 37.9% women VS 16.5% men (P = <0.001), overall 26.7% had hypertension. Diabetes was reported 8.6% men and 10.4 % in women (P= <0.154), over all prevalence was 9.5 %. While over all 13.4% were on hypertensive medication, men taking medication was 7.9 and 19.5 % women (P= <0.001). Anti diabetic medications were being taken by 5% men and 8.7% women (P= <0.0478), and over all 6.8%, so that compliance for taking medications

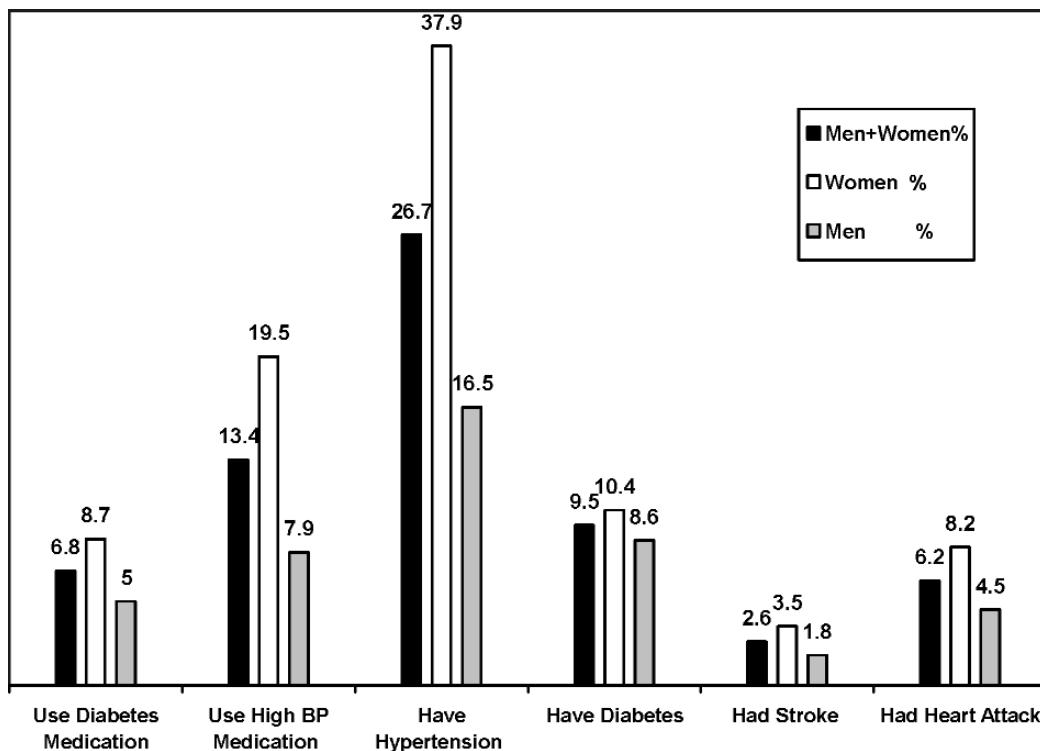
was more common in women. Fig 1. Abnormal Electrocardiogram was noted in 7.7% of the subjects. Myocardial infarction was diagnosed in 1.9% and myocardial ischaemia in 2.5% so that if one is to combine ECG findings of myocardial ischaemia with myocardial infarction then 4.4% had coronary heart disease. Table1

Awareness of Cardiovascular Diseases

Approximately 40% men and 25% of women strongly agreed that heart attack is a major problem while much larger number, approximately 48% of men and women, agreed that heart attack is major problem. Response to the question that heart attack cannot be prevented 9.1 men and 7.4% strongly agreed while greater percentage 31% men and 35% women agreed that heart attack can not be prevented. Bad luck as a cause of heart attack was agreed by 25% men and 31% women.

Response to question that one has to go to a doctor to find high blood pressure, only 18% men and 16% women strongly agreed. The lack of awareness that diabetes can cause heart attack, was apparent because only 10% men and 9% women strongly agreed and less than 40% agreed. The question regarding

Fig1. Yes responses to the questions "Has a doctor ever told you any of the following," in men, women and both men and women greater than 30 years age.



smoking and heart attack showed that less than 10% were sure of the linkage. The response to the question that high blood pressure causes heart attack 18% of men and 16% of women strongly agreed while 63.4% men and 53% women agreed. Fig 2

of role of sugar in occurrence of heart attack. Similar situation was noted for salt in the food and heart attack over 80% said yes, as to obesity and heart attack linkage, over 80% women and 69% men said yes the linkage of organ meat such as liver kidney and

Fig 2A. Agree and strongly agree responses to the questions regarding awareness of cardio vascular diseases in Men

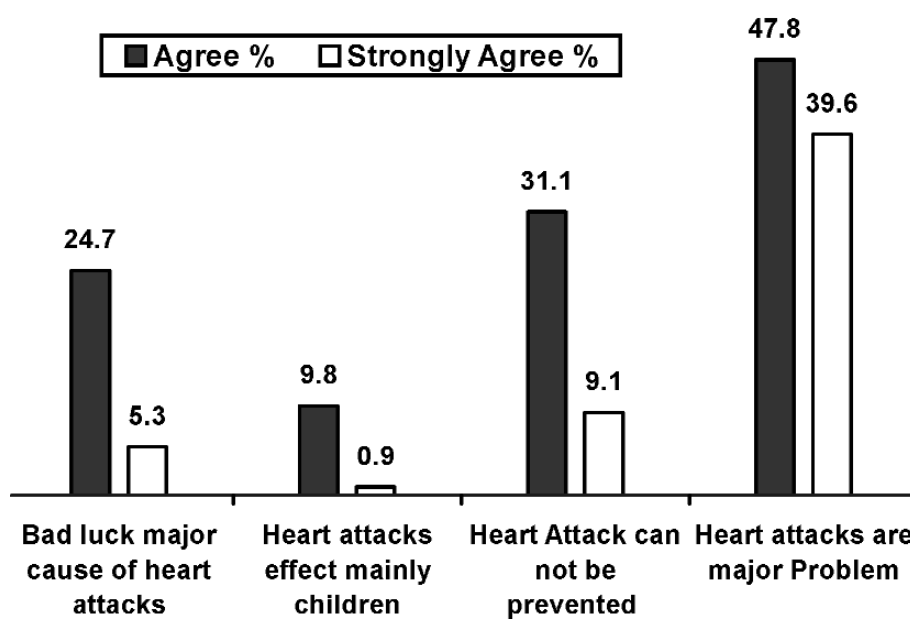
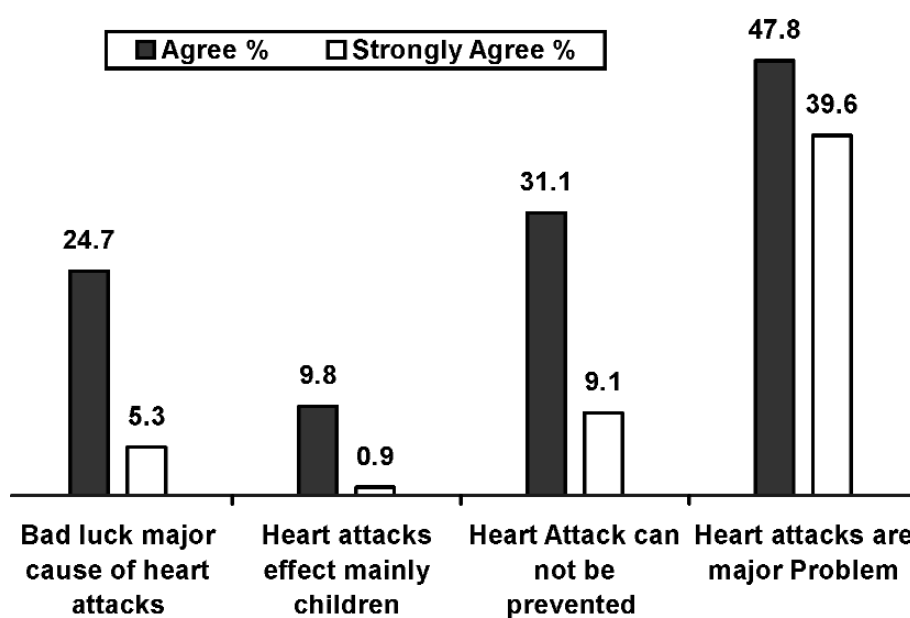


Fig 2B. Agree and strongly agree responses to the questions regarding awareness of cardio vascular diseases in women



Regarding the effect of fatty food on the genesis of heart attack, over 80% responded Yes, suggesting awareness of the linkage. Less than 50% were aware

brain in food and heart attack was a yes response in 33% men and 69% women. Fig 3.

Fig 3A. Agree and Strongly agree responses to the questions regarding awareness of cardio vascular diseases in Men

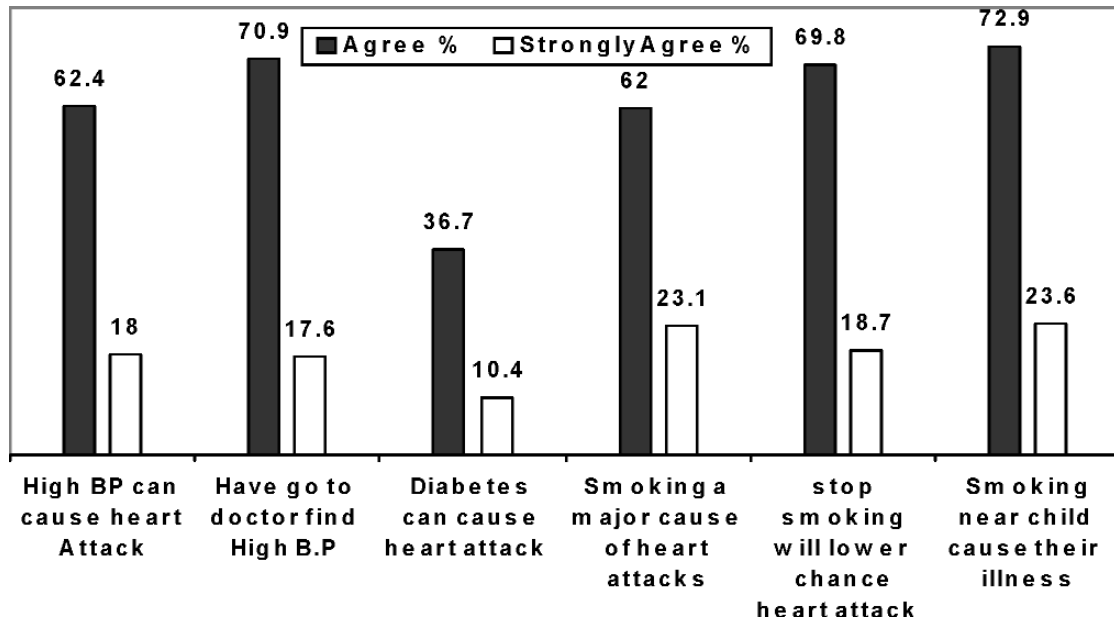
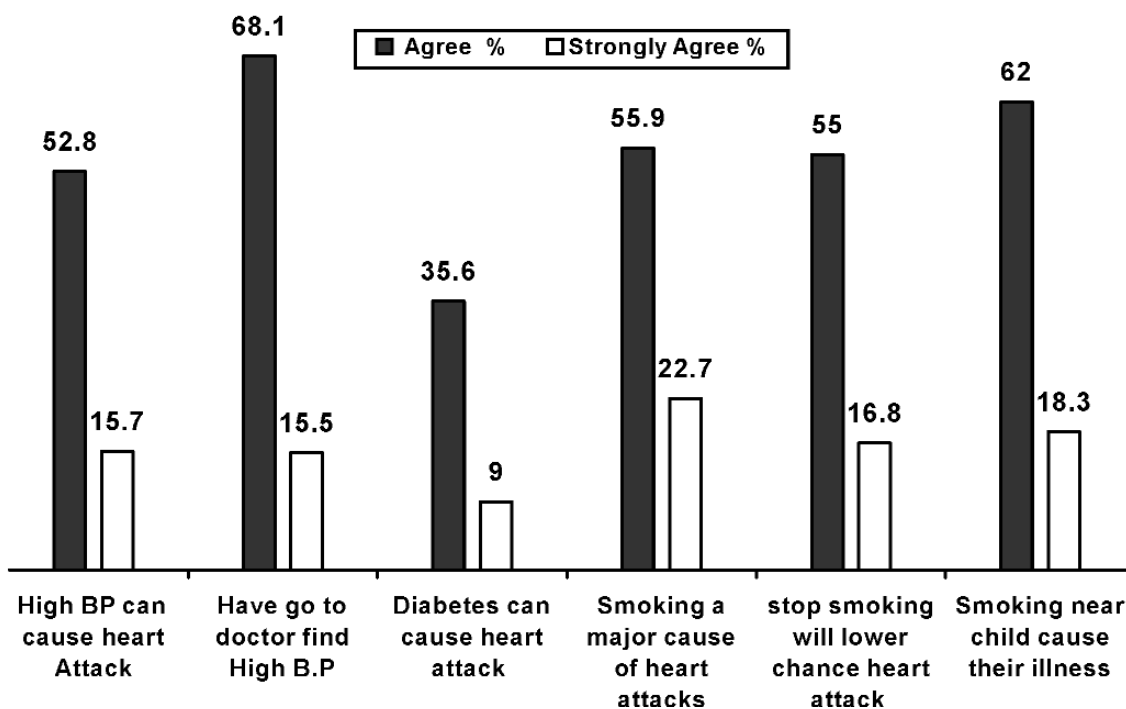


Fig 3B. Agree and Strongly Agree responses to the questions regarding awareness of cardio vascular diseases in Women



Life Style Assessment

Physical activity assessment showed that men do running or swimming five times in a month and 0.5 times other exercises, while games such a hockey or foot ball were played 1.2 times per month by the men and 0.08 times by women, while any other games were played 0.2 times by men and 0.03 times by

women. The main activity seemed to be shopping 5.2 times per week by men and 1.7 times by women while walking stairs per day was done 10.5 times by men and 6.1 times by women. The physical activity assessment showed sedentary life style for both men and particularly women who were essentially home dwellers table 2.

Fig 4A. Yes and No responses to the questions Awareness Regarding the diet and Cardiovascular Diseases in Men

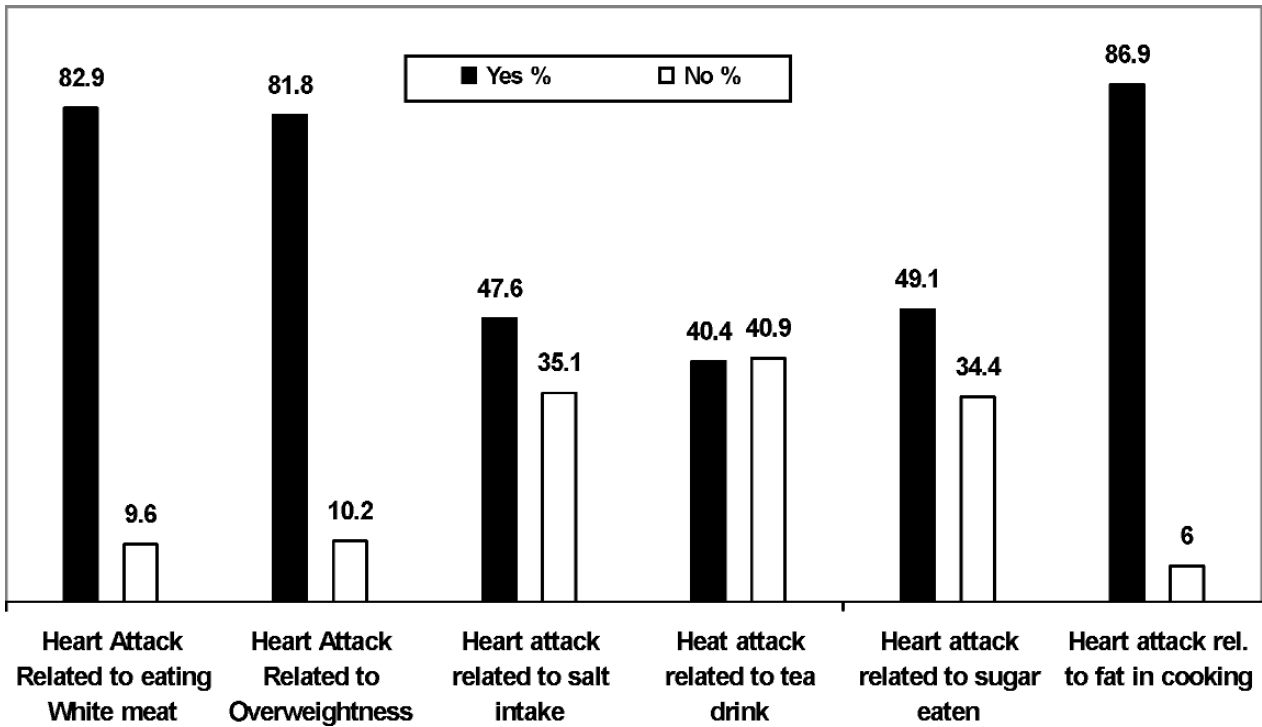
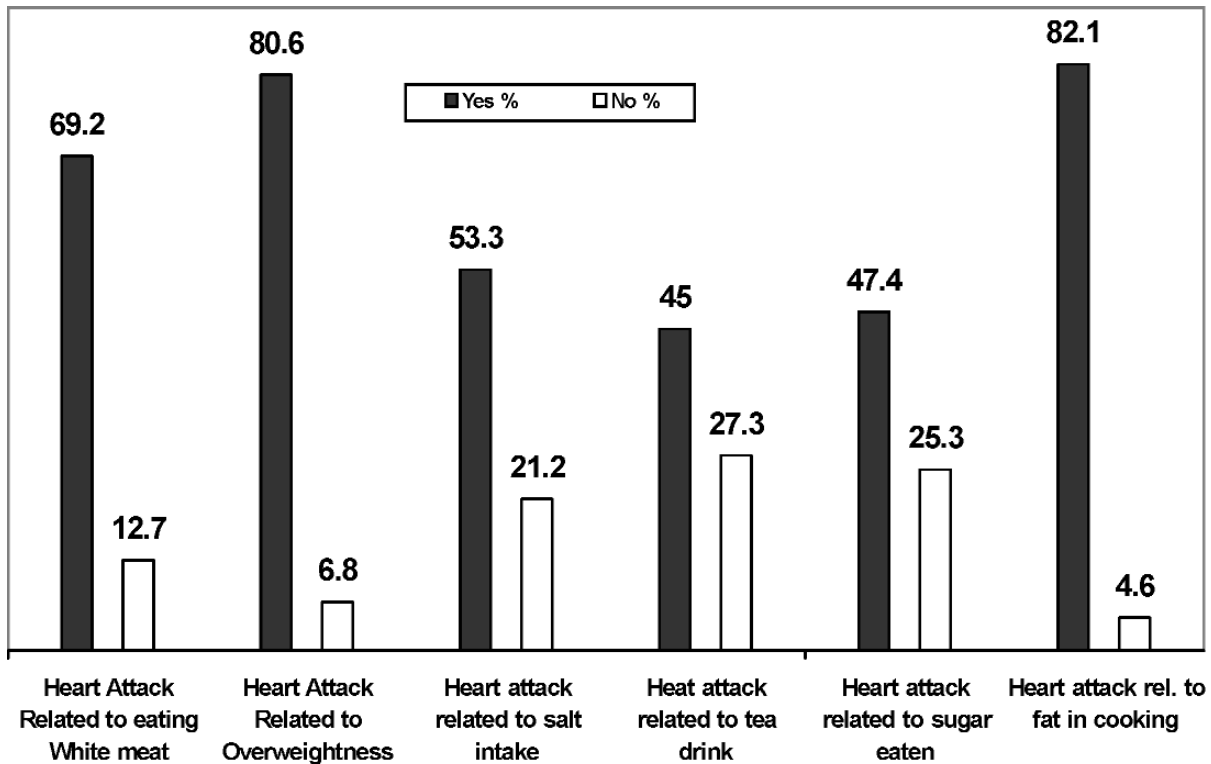


Fig 4B. Yes and No responses to the questions Awareness Regarding the diet and Cardiovascular Diseases in Women



Tobacco was used by 34.3% in men and 6.2 women, over all rate was 20%. Majority of tobacco users in

the past were cigarette smokers, men were significantly more cigarette smokers than women, so

Table-1 : Prevalence of Cardiovascular Disease by Electrocardiographic Diagnosis

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	Men		Women		Over all	
	N	%	N	%	N	%
Total	382	4.7	343	11	725	7.7
Definite LVH						
Yes	1	0.26	3	0.87	4	0.55
Possible LVH						
Yes	1	0.26	1	0.26	2	0.27
Definite MI						
Yes	5	1.3	9	2.6	14	1.9
Possible Ischaemia						
Yes	6	1.6	12	3.5	18	2.5
Arrhythmia						
Yes	1	0.26	3	0.87	4	0.55
Other Abnormality						
Yes	4	1.0	10	1.4	14	1.9

Table 2 : Life Style Assessment of Men and Women

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Physical Exercise Question		Men		Women	
		N	Mean	N	Mean
Time Run : Times You run/Swim/exercise per month		355	5.3099	401	0.52618
Play Hockey : Times You play hockey/football per month		325	1.2492	397	0.07809
Play Game: Times You play other games per month		310	0.2129	397	0.03275
Stairs :	Flights of stairs per day	439	10.4670	486	6.09259
Shop:	Shopping trips per week	439	5.2255	470	1.65532

that approximately one in five male was a smoke, 21.8 % men and only 1% women were currently smoking. Tobacco use in various forms such as chewing and sniffing, was also more common in men. Chewing, tobacco was done by 11.7% men and 4.6 women average was 3%. Sniffing was done by 3% men and 0.8% women over all 2.1% sniffed

When asked which is the most important factor in choosing food the first choice was food which provides good health, 45% men and 39% women so responded. The next factor was safety, 22% men and 20% women and the third choice was 18% men and 16% women food which provides energy. Taste and cost was not a significant factor in food selection.

Discussion

Our study showed that the results of awareness questions regarding cardiovascular disease were mixed, majority seem to know that heart attack when happens was a major problem. The awareness concerning effect of various risk factors and their role in genesis of cardiovascular disease was present in the community at large, but the awareness from exact knowledge was much less.

The mix responses may be due to type of question, such question requiring agree or strongly responses showed marked disparity between the two choices. Most agreed because it is considered unwise to disagree with authority, but when the option was to strongly agree which required conviction and prior knowledge the positive responses were significantly less. The bias of personal belief causing a major event such as heart attack was noted when occurrence of heart attack was attributed to bad luck.

Some of the responses to questions showed an apparent good knowledge while others were dictated by cultural bias and not a true knowledge so that significant number of men and women believed that bad luck cause heart attack. Lack of awareness was apparent when we evaluated the response to the question that heart attack cannot be prevented, approximately half agreed with the proposition.

We concluded that awareness of heart diseases was present in the Metro Ville community but cultural bias was noted in some of the responses and true knowledge in awareness was lacking which is a prerequisite for motivation toward behavior change.

Life Style

Life styles such tobacco use was prevalent so that one in three subjects was a tobacco user, the smoking was exclusively in males and females did not smoke cigarettes to any significant degree. Sniffing and chewing were noted in older women. Similar observation regarding smoking has been reported in other Asian countries such as Indonesia (5). The smoking prevalence was of concern but the situation was not as grave as reported in Indonesia (6). Exercise assessment showed that playing of games

was not the style of the community which could be classified as sedentary. The main activity for both males and females was walking stairs and shopping trips. The women activities were confined to the home and few trips to the market place. We have previously reported the prevalence of significantly higher risk factors such as obesity in women compared to men in this community. The lack of physically active life style seems to be a factor. (7)

The effect of fat in salt and ghee on the increases CHD was not known in the community. Much education needs to be imparted to the communities so that they are aware of cardiovascular friendly foods and restriction of fat in the diet to less than 30 of the total calories. It has been shown that industrially developed Asian countries have increased their fat consumption and level of cholesterol so that in Singapore the fat consumption has already passed the 30% of total calories recommendation (6)

Prevalence of Heart Disease

The study showed that in Metroville the prevalence of CHD as evaluated with the questionnaire was 6.2% to 4.4% in over 30 year age subjects. Comparing this prevalence to the population studies performed in Pakistan in 1970, the prevalence rate in urban Karachi community was 3.7 percent, thus the prevalence rate had approximately doubled since. The same trend was noted for hypertension where rates have increased from 10 % to 26.7% for 30 year and above age urban population (1, 2). The rising trend of CHD in the developing countries in Asia is widely reported (5, 6, 8, 9, 10). In urban India with population life styles similar to ours have also showed increasing CHD (11, 8). In developing countries, urbanization is a phenomenon which is bound with the industrialization and newly emerging urban communities such as Metro Ville are vulnerable to increasing threat of CHD. We have previously reported high prevalence of risk factors in Metro Ville community (4) which we believe explain the rising incidence of CHD in urban hospital in Pakistan (12). While the prevalence rate are falling in the developed west (13). The increasing prevalence of coronary artery disease in developing countries has been attributed to changing life styles, adoption of sedentary urban living, changes in the dietary patterns such as increased consumption of red meat and oils

including Ghee coupled with increasing stress of urbanization (14, 11). It is reported that in India the prevalence rate of ischaemic heart diseases has markedly increased over the last decades and various reports suggest that this increase is associated with urbanization and increasing prevalence of risk factors (15, 8). The prevalence of ischaemic heart diseases, in the developing countries is significantly higher in the urban compared to rural population (11, 15).

If this increase is not prevented, the CHD shall increase to economically unmanageable proportions and shall become a health catastrophe. With the increase in socio economic betterment, the experience in Hong kong, Singapore and Thaiwan will be repeated in China and India and other developing countries (5, 6, and 16). Industrial development and prosperity has led to increase in the fat consumption and higher cholesterol levels with increasing prevalence rate CHD so that in Singapore and Hong Kong the mortality rates from CHD are similar to Australia, and the west. The reported markedly increased risk factors in the urban Metro Ville are a consequence of the sedentary life styles and lack of awareness regarding risk factors and CHD and its prevention. The obesity has increased in urban Pakistan similar to other Asian countries such as China and India, which must be considered a paradox considering the prevalence of concomitant malnutrition in there populations as a whole (9, 7). These comments are doubly applicable to the women who are more obese than men and are thus at a much greater risk of developing CHD.

In Metroville population participation in organized sports by women in particular, was almost absent. The women in Metroville were confined to houses activities, over crowding was present in the houses and half of population was comprised of children. The main physical activity of the community was shopping trips and climbing stairs. This observation begs the need for improving the promotion of physically active life styles by provision of community infrastructures of physical activities, parks and gyms etc. The urban centers need to be planned so that enough infrastructures of parks, gyms, school play grounds and community play grounds are scattered within the community with easy accesses. The awareness regarding cardiovascular disease and its prevention need to be taught in

structured manner in the community health centers which need to be created so that these can be managed by communities themselves.

In conclusion our study has shown that the prevalence of Ischaemic heart diseases in urban has increased over the past decades while awareness of cardiovascular risk factors as a cause of CHD has not. The life styles of urban community under study were sedentary and smoking pervasive in the adult males.

Preventive guidelines need to be developed for Pakistan and much more population data concerning cardiovascular diseases need to be generated. Serious preventive efforts need to be made otherwise Pakistan would end up with the burden of cardiovascular disease epidemic without economic prosperity, a scenario in which any meaningful prevention will not be possible.

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