PREVALENCE OF RISK FACTORS FOR CORONARY HEART DISEASE IN LOW MIDDLE CLASS URBAN COMMUNITIES IN PAKISTAN

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SUMMARY

We sought to evaluate the urban communities for prevalence of CHD risk factors and the feasibility of implementation of prevention programme. National Health Survey data of Pakistan Medical Association has shown that the risk factors for CHD are significantly prevalent in the urban communities of Pakistan. There are no national programmes of prevention of CHD, therefore implementation of prevention at the community level may be achievable. Therefore risk factors profile, socioeconomic status, social service infrastructure & motivation of the community must be known if such intervention is to be successfully implemented. Three communities, Korangi 4, Akhtar Colony and Metroville which are located around Karachi were visited by holding day camps. The demographic data collected included age sex household composition, rooms per house & members per house, monthly income and profession of the head of the household. History of CHD, diabetes, hypertension & smoking was recorded. in a questionnaire, height, weight, ECG, Blood pressure and serum cholesterol were determined. No formal social services were present in any of the three communities. The average income of subjects was 2281 Rupees per month and average age was 40.9 years. There were 6. 1 persons per house in 2.3 rooms per house. Sixty seven percent were employed and 33% had no job. Risk factors were prevalent so that 24% were current smokers, 34% had hypercholestrolamia 5.5%, had diabetes and hypertension was noted in 20% males and 30% of females. Our data showed that the CHD risk factors were significantly prevalent in our low middle class urban communities. There are no structured community based social organizations and motivation of the communities for prevention of CHD was weak. This data has helped us plan the type of intervention strategy and the steps required for implementation.

In the developed world risk factors for coronary heart disease (CHD) are prevalent and are responsible for the Cardiovascular events and a major cause of morbidity and mortality (1-4). In the developing world the pattern of risk factor prevalence which is emerging as a consequence to the rapid urbanization, is becoming similar to the developed world (5-9). It is important for the health planners in the developing world to be aware of the pattern of risk factors prevalence their urban communities, which are multiplying with increasing industrialization. The prevention of CHD can only be rationally planned and implemented when the risk factors profile of CHD, socioeconomic status and the social service infrastructure of the communities are known. In Pakistan social services of' preventive medicine do not exist either in cities or mohalas. There are non government organizations splinter groups in some communities which deal with various aspects of social up lift but there are no planned NGOs which could be integrated as a structured organization entrusted with the role of implementing preventive program. In the absence of any national prevention program urban communities which are prone to risk of shall have to be specially targeted. Thus there is the need for urban communities to be evaluated for the dietary patterns and risk factor prevalence for CHD so that the type of preventive strategy may be planned. National Institute of Cardiovascular Diseases (NICVD) planned to investigate 3 urban communities in various regions of Karachi.

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The aim was to:

1. Identify risk factors for CHD.
2. Evaluate the socioeconomic status of the residents.
3. Evaluate existing social services infrastructure.
4. Evaluate the motivation of the community leaders for preventive program of the NICVD.

MATERIAL AND METHODS

Three communities, Korangi 4 and Akhtar Colony (South of Karachi Town Centre) and Metroville (North of Karachi) were targeted. These communities are located within the day trip from NICVD. Social services in the communities which included the elders and religious leaders were contacted by the NICVD social workers. The dates of day camps were announced by Posting banners and announcements in the local Mosques. The premises used in the three communities were a dispensary, a school and a local hospital. A team comprising of social workers, technicians, doctors and senior staff of NICVD conducted the day camps. Demographic data was obtained which included age, sex, household composition, such as rooms per house and numbers of person s per house, monthly household income and profession of the head of the household. History of CHD, diabetes, hypertension and smoking was recorded in a questionnaire. Physical examination included height, weight and blood pressure measurements, standard 12 lead ECG and serum cholesterol determined on Reflotron (Boerginger Mannheim) by dry strip method. Family consultations regarding CHD were provided by the consultants of the NICVD.

Medicines were not prescribed. At the end of consultations the participants were given a red card and advised to consult their own doctor if CHD or significant risk factors for CHD were detected. Yellow card was given to those who had borderline risk factors and were advised a repeat checkup. Green card was given to those in whom risk factors and CHD were not detected.

Following the day camps repeated contacts by the NICVD staff were made with the social organization and the local leaders during which prevention and role of risk factor modification were discussed.

RESULTS

Social Services in the communities

Formal social organizations did not existing in any of the communities. Metroville did have a social organization run by a school teacher. The elders of Metroville were cooperative and motivated towards a programme of prevention. The communities consisted of various ethnic groups, Mohajirs dominating in Korangi, Punjabis in Akhtar Colony and Pathans in Metroville. Attendance at day camps included 411 subjects: 122 in Korangi, 147 in Metroville and 142 in Akhtar Colony.

Demographic and Socioeconomic Data of the Communities

The participants in all three communities were relatively young with mean ages of 46.2±17.6 years in Korangi, 37.5±16.5 in Metroville 39.1±13.5. in Authar Colony. The mean weight of subjects in Korangi was 55.4±19.4 kg (n=105), 63.4±4.14 kg (n= 118) in Metroville and 64.6±20.7 kg (n= 116) in Akhtar Colony. The monthly household income was similar in the three communities, in Korangi it was Rs.2265±2405, Rs.2149±999 in Metroville and Rs.2429±1331 in Akhtar Colony. House ownership was 18.9% in Korangi with 2.5 ±1.1 rooms per house and 5.5±4.4 persons per house. House ownership was 25.8% 1.9±1.1 rooms per house and 6.4±3.6 persons per house in Metroville and 60% house ownership in Akhtar Colony with 2.5±1.6 rooms per house and 6.25±3.1 persons per house. Thus over crowding was present in all three communities Table 1.

In all three communities two hundred and eighty one (66.9%) were employed, 71 of 122 (58%) in Korangi 124 of 147 (84%) in Metroville and 86 of 142 (61%) in Akhtar Colony. Skilled labor was 122 of 281 (43%) and 50 of 281 (17.5%) had their own business while 47 of 282 (16.7%) had no regular job and worked on daily wages. 130 (33%) were unemployed; 18

Table-1
DEMOGRAPHIC DATA IN THE THREE COMMUNITIES

	KORANGI n=122	METROVILLE n=147	AKHTAR COLONY n=142
Age Years	46.2±17.6 n=121	37.5 ±16.5 n=96	39.1±13.5 n=109
Weight Kg.	55.4±19.4 n=105	63.4±14 n=118	64.6±20.7 n=116
Height Cm.	149±28 n=105	162.5±9.5 n=118	162±12.2 n=116
Income (Rs.1000)	2265±2405 n=84	2149±999 n=116	2429±1331 n=104
House Ownership	23/122 18.9%	38/147 (25.8%)	85/142 (59.9%)
Rooms Per House	2.5±1.1	1..9±1.1	2.49±1.6
Person Per House	5.5±4.4	6.39±3.6	6.25±3.1

Table-2
BLOOD PRESSURE PROFILE OF MALES IN THE THREE COMMUNITIES

			Age	Wt. (Kg)	SBP (mmHg)	DBP (mmHg)
Ak.Cly.	**Normotensive**	**n=67**	40.7±13.9	163.8±18.4 n=69	115.8±11.3 n=67	75.9±7.3
	Hypertensive	**n=16**	48.3±22.9	73.5±22.9	164.4±20.6	95.6±9.8
Korangi	**Normotensive**	**n=57**	46.7±15.4	56.2±20.2 n=50	114.6±23.8 n=57	76.9±7.2
	Hypertensive	**n=18**	54.4±13.5	63.9±15.7	167.2±24.7	98.8±14.5
Metroville	**Normotensive**	**n=85**	33.6±13.5	62.4±12.7 n=92	116.2±12.7 n=85	75.7±6.5
	Hypertensive	**n=1 8**	52.5±14.0	74.8±16.2	161±14.5	96.7±12.8

Abbreviation
AK.CLY = Akhtar Colony; Wt. Weight; SBP Systole Blood pressure: DBP Diastole Blood Pressure.

Table-3
BLOOD PRESSURE PROFILE OF FEMALES IN THE THREE COMMUNITIES

			Age	Wt. (Kg)	SBP (mmHg)	DBP (mmHg)
Ak.Cly.	Normotensive	n=24	35.5±111 .8	60.4±18.9 n=23	111.3±16.2 n=24	73.3±7.0 n=24
	Hypertensive	n=01	45.0±0	55	160	100
Korangi	Normotensive	n=28	40.0±11.8	55.0±12.2 n=16	114.6±5.5 n=16	74.7±11.2 n=16
	Hypertensive	n=12	53.7±10.5	63.0±14.0	164.2±16.2	94.2±15
Metorville	Normotensive	n=12	39.2±11.9	64.6±20.7 n=7	115.7±15.1 n=7	64.0±15.1 n=7
	Hypertensive	n=04	43.3±67	64.3±19.4	190±53.2	130±462

Abbreviation
AK.CLY = Akhtar Colony; Wt. = Weight., SBP = Systole Blood pressure., DBP Diastole Blood Pressure.

(13.8%) were students, 38 (29.2%) were house wives, 20 (16.4%) retired and 63 (51.6%) had no job or had worked in the past on daily wages.

Risk Factors in Communities in Children

There were 67 children under 18 years of age in all three communities with mean age of 11.4±5.6 years. The average systolic blood pressure was 110.4±6.2 mmHg and diastolic (K5) pressure was 66±13.8 mmHg. Hypertension i.e. exceeding 95th percentile occurred in 1.9% (10) Mean serum cholesterol was 149±33.3 mg% and serum cholesterol greater than 175 mg (11) i.e. Hypercholesterolaemia, occurred in 21.4%.

Risk Factors in Adults

Smoking

The incidence of current smokers was 17.2% in Korangi, 25.2% in Metroville and 19,6% Akhtar Colony so that average of 23 .5% were currently smokers in all three communities, additionally 6.4% subjects among the three communities had smoked in the past.

Blood Pressure Profile of Three Communities

There were 293 males in the three communities; blood pressure data was available in 261 subjects, 209 of these were normotensive with blood pressure <140/96 mmHg with a mean of SBP of 115.8±1.0.3 mmHg and DBP of 75.9±7.3 mmHg. There were 52 hypertensive with blood pressure of > 140/90 mmHg, so that 19.9% of males were hypertensive. In Korangi there were 57 normotensive and 18 (24%) were hypertensive. In Metroville 85 were normotensive and 18 hypertensive (17.4%) pertensive and in Akhtar Colony 67 were normotensive and 16 were hypertensive (19.3%) table 1. There were 81 females in all three communities: blood pressure data was available in 64 of 81 subjects. Forty Seven were normotensive with a mean SBP of 113.8±12.3 mmHg and mean DBP of 70.2±11.1 mmHg and 17 were hypertensive so that 26.6% of females had hypertension. In Korangi 12 of 40 subjects (30%) 4 of 16 in Metroville (25%) and one in 25 (4%) in Akhtar Colony had hypertension Table - 2.

Diastolic blood pressure of more than 100 mmHg was noted in 9.6% of population of all three communities.

Hypercholesterolaemia

Serum cholesterol was available in 171 adult greater than 18 year of ages in all three communities.

Mean serum cholesterol was 183±4 mg%, in Korangi, 183±53.7 mg% in Metroville and 173.7±42.5 mg% in Akhtar Colony. Hypercholesterolacinia i.e. serum cholesterol greater than 200 mg% was noted in 32.7% in the three communities, 38% in Korangi, 29.6% in Metroville and 29.7% in Akhtar Colony. (Table 4)

Table-4
SERUM CHOLESTEROL IN THE COMMUNITIES IN 171 SUBJECTS

	mean (mg%)	> 200 mg%
KORANGI	183±46 n=63	228.9±28.6 n=24
METROVILLE	183±53.7 n=71	237.7±44.2 n=21
AKTHAR COLONY	173.7±42.5 n=37	230±21.4 n=1

Diabetes and CHD

There were 344 adults age greater than 18 years in all three communities. Diabetes Mellitus was reported on the questionnaire in 1.9 of 344 (5.5%) subjects greater than 18 year age. Chest pain in 63 of subjects (18.3%), family history of CHD in 45 (13.1%), CHD in: 17 (4.9%) and high blood pressure in 70 (20.3%).

DISCUSSION

Our study showed that the socioeconomic status of our urban communities is of low-middle class with approximately half of the subjects who attended the camps were unemployed. House ownership varied from 20-60% while over crowding was prevalent in all three communities. The monthly income was indicative of low socioeconomic status (5). The risk factors were prevalent, Hypercholesterolemia was

noted approximately one of three while one in four were hypertensive. Diabetes was reported in 5% and hypertensive current smoking was noted in 24%. When we compare this data with the National Health Survey data by the PMRC, we find that these communities had prevalence of risk factors comparable to other urban communities in the nation (5). The prevalence of risk factors in these three communities was higher than the reported incidence in rural areas of Pakistan (5). These data suggest that changing life style imposed by rapid urbanization in Pakistan is changing the risk profile of urban migrant in an adverse way. If such a trend continues one can expect increasing incidence of CHD even in the low middle class communities in Pakistan. The socioeconomic condition of these urban communities is riot of middle or high middle class and the weights of the subjects examined showed that they were not obese. Inspite of all this the risk factors were significantly prevalent. Another significant fact is that these subjects were relatively young, but had risk factors of significant degree. Our national data by PMRC has shown that smoking tends to be more frequent in poor and illiterate in Pakistan i.e. in poor urban communities (5). Our data supports this observation.

Because there is no national policy of prevention of CHD the prevention of CHD by modification of risk factors in Pakistan can best be achieved at the community level. The emphasis and direction of the preventive efforts can only be rationally implemented if the risk factor profile of the targeted community is available (12-1.5). The social structure of our communities is not adequate, social organizations based on special interest groups are present but for implementation of a coherent planned prevention of CHD, community social service organization is necessary. Thus at present major cardiac institutes or university hospitals would have to fulfill the obligation to implement preventive strategies for CHD in their communities which are within reach of these institutes. In conclusion, Our study shows that communities in the urban centres of Pakistan should be explored for risk factor prevalence and possibility of implementation of intervention for modification of the prevalent risk factors. It is expected that if the trend of risk factor prevalence is not checked we should expect to see significant increase of CHD in our urban work force. A strong institutional support to the communities would be vital to achieve a successful prevention.