

Exploring Hidden Epidemic of Hypertension and Diabetes in Catchment Areas of Rural Health Training Center (RHTC) and Urban Health Training Center (UHTC) of GMERS Medical College, Sola, Ahmedabad through Camp approach.

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Abstract :

Introduction : Non communicable diseases are no more confined to big cities or upper social class but are also affecting those living in rural areas and slums. Many a times these diseases are asymptomatic hence their detection and linkages with treatment facilities pose a challenge. **Objectives:** Primary objective of this study was to document the camp approach in detecting the hidden cases and linking them with health care system for further management. Additional objective was to assess the utility of camp approach in terms of case yield. **Method :** Total 7 community based (5 rural & 2 urban) screening camps were conducted by Community Medicine Department of GMERS Medical, Sola, Ahmedabad in its rural (Rancharda and urban (Ognaz) field practice areas in Sep 2013. Study tool: A predesigned proforma was used to record epidemiological and clinical details of camp attendee (age, sex, address, height, blood pressure & random blood sugar). A referral sheet was prepared for the referral of the suspected diabetes/hypertension patients to the Medicine Department of our hospitals. Data was entered in MS excel analysed. **Results :** 643 adults (> 20 years) were screened that included 505 (78.5%) rural and 138 (21.5%) urban areas. Females (377) outnumbered males (266). Prevalence of overweight/ obesity was high in urban (38.4%) than in rural (29.1%) areas. Prevalence of hypertension (JNC-7) was 39.2% in rural and 34.1% in urban areas; prevalence of diabetes (RBS >140 mg %) was 25.3% in rural and 24.6% in urban areas. Camps could detect additional 21.6% and 16.3% attendee as suspected of suffering from hypertension and diabetes respectively. Total 48.6% of attendee were suffering from hypertension or diabetes or both (14.8%). Self-care and treatment compliance was poor among known cases – among diabetics, 42 out of 57 (73.7%) and among hypertensive, 58 out of 106 (54.7%) had uncontrolled disease status. **Conclusions:** Hypertension and diabetes both being asymptomatic, make their detection difficult. Community camps detect this hidden load and facilitate linkage with health system. Early diagnosis/ treatment coupled with non-pharmacological management can prevent the complications. Organizing such camps along with local health staff, with pre camp mobilization and effective linkages with treatment facilities not only detects hidden cases or creates awareness amongst camp attendee and those who accompany them but also reinforce the understanding of known cases and improve their compliance.

Key words : Screening camp, Diabetes, Hypertension, RHTC, UHTC

Introduction :

Hypertension and type 2 diabetes are major risk factors for cardio vascular diseases.^[1] Demographic age shift in population and increase in life style related risk factors are leading drivers of this epidemic in India.^[2] Pooling of epidemiological studies shows that hypertension is present in 25% urban and 10% rural subjects in India.^[3]

Diseases like hypertension, diabetes, obesity etc. are showing astronomical increase in their prevalence in at risk population. Non communicable diseases are no more confined to big cities or amongst people who are from upper social class but are also affecting those who live in rural areas or are slum dwellers. Governments, both at central and state level have taken cognizance of this fact and special cells to

deal with non communicable diseases have been created.

Both diabetes (type 2) and hypertension are leading causes of morbidity and account for bulk of mortality taking place in adult population. They are "silent killers" as initially patients are unaware of disease. Many of them remain asymptomatic or even when they have symptoms, there is little or no realization that these symptoms are due to these diseases. In view of this the most efficient and cost effective way to identify/ diagnose these hidden cases from the community is through screening camps in high risk group. Such suspected cases detected through screening are later subjected to diagnostic tests and are put on the management - non-pharmacological management (life style modification) and lifelong treatment. Persons > 30 years of age are considered as risk group as cases of both diseases are seen less commonly below this age. Needless to say that this camp based approach of active case detection for hypertension, diabetes (type 2) and obesity while restricting the participation only to adults have been tried by many with success.^[1,4,5]

Field practice areas of GMERS Medical College, Sola, Ahmedabad namely Rancharda (rural) and Ognaj (urban) cater to population of approximately 32000 and 20000 respectively. Areas are jointly served by the local staff of PHC (state health department) and UHC (Ahmedabad Municipal Corporation and the staff provided by Medical College; latter include Lady Medical Officers (LMOs), Public Health Nurses (PHNs), Medical Social Workers, Health Inspectors and Health Educators. Considering the load of non-communicable diseases in the community and poor treatment seeking behaviour more so in relation of such diseases, it was decided to conduct community based camps to detect suspected cases and refer them to medical college for confirmation and initiation of therapy if needed.

Objectives :

While the camps were being organized, this study was planned with the aim to (1) document the camp process and assess its efficacy in terms of case yield, (2) detection of hidden cases of hypertension, diabetes (type 2) and obesity in the community and

(3) their linkages with health care system.

Method :

Study Settings : During Aug - Sep 2013, in consultation with health staff at both rural and urban field practice areas, it was decided to organize total 7 community based camps for the detection of cases of hypertension and diabetes. Out of 7 camps 5 were held in the areas of Rural Health Training Centre (RHTC), Rancharda, at its sub centre namely Rancharda, Vansajda, Vadsar, Khatrej and Santej, rest 2 were held in the areas under Urban Health Training Centre (UHTC), Ognaz. Faculty from Medicine department of college participated in these camps. Looking to the age distribution of two diseases participation in the camps was restricted to only those who were above 20 years of age.

Study Period : September 2013

Study Design : Cross sectional Study

Study population : People residing in the field practice areas of RHTC and UHTC and aged more than 20 years were included for screening.

Study tool : Predesigned proforma was used to record epidemiological and clinical details of the attendee, age sex, address, height, blood pressure and RBS. A referral sheet was prepared for the referral of the suspected diabetes/hypertension patients to the Medicine Department of our hospitals. Information Education and communication (IEC) material was prepared by our department for awareness and success of this camp. Local health staff along with paramedical staff from medical college moved extensively in the field area (prior to camp) for awareness generation and community mobilization. Information, education and communication (IEC) materials including banners and pamphlets were especially prepared for these camps. While large display banners were kept at the camp site for the benefit of attendee, 3000 copies of printed pamphlets providing the camp details (venue, time & date) and some salient information about the diseases were distributed in the catchment areas 1 - 2 days prior to the scheduled date of camp by paramedical staff.

In the camp flow of attendee was from one table to next and all the information were recorded on a

single case sheet. Height and body weight were recorded by trained paramedical staff using height measuring stand and digital weighing scale. For diabetes screening, glucometer/ gluco-strip were used to measure random blood sugar (RBS) by trained lab technician. Finger prick method was used and cut off point used was > 140 mg% in capillary blood. For hypertension, mercury sphygmomanometer was used and blood pressure was measured by department faculty/LMO/MO of centre in sitting posture. Those who had RBS >

140mg/dl were considered as suspect for diabetes and those having SBP ≥ 140 mmHg &/or DBP ≥ 90 mmHg^[6] were considered suspected hypertensive. These suspects were referred to our teaching hospital for confirmation of diagnosis and further management.

Data Analysis : Data collected was entered on MS Excel and analyzed and appropriate test of significance was applied.

Results:

Table 1 : Demographic profile of camp attendees

Age(years)	Rural			Urban		
	Male	Female	Total	Male	Female	Total
21-30	30	57	87	3	14	17
31-40	41	74	115	16	29	45
41-50	52	51	103	9	22	31
51-60	41	57	98	16	8	24
>60	49	53	102	9	12	21
Total	213	292	505	53	85	138

Total 643 adults (≥ 20 years) were screened; out of them 505 (78.5%) were from rural areas while 138 (21.5%) from urban areas. All participants by design were above 20 years of age as the diseases

under screening are common only in adults. Half of the attendee (46%) were in the age group of 31 – 50 years. There were more female participants 377 (58.6%) than males 266 (41.4%). (Table 1)

Table 2 : Prevalence of various disorders under study amongst camp attendee

	Rural	Urban	Total
Population Screened	505	138	643
Hypertension			
Pre hypertension	158 (31.3)	60 (43.5)	218 (33.9)
Hypertension	198 (39.2)	47 (34.1)	245 (38.1)
Grade			
stage I	99	18	117
stage II	63	17	80
Under treatment*	36	12	48
Old vs. Newcases			
Old	85	21	106
Newly detected	113	26	139
Diabetes	128 (25.3)	34 (24.6)	162 (25.2)
RBS > 140 mg%	118	29	147
under treatment**	10	5	15
Old vs. New cases			
Old	42	15	57
New	86	19	105
Overweight/ obese***	147 (29.1)	53 (38.4)	200 (31.1)

Figure in parenthesis indicate prevalence rate per 100

* Include normotensive or pre hypertensive cases

** RBS was < 140 mg%

***BMI ≥30

Overall, prevalence of hypertension was 33.9% separately being high in rural (39.2%) than urban (34.1%) areas. Another one third of attendees (33.9%) were found suffering from pre hypertension. Suspected diabetes (RBS > 140 mg%) was seen

amongst 25.2% of attendee with almost identical prevalence in rural and urban areas. About 31% of camp attendee had above normal BMI (overweight/obese); when viewed separately it was more common in urban (38.4%) than rural (29.1%). These camps in total could detect 105 new suspected cases of diabetes and 139 of hypertension; very few cases of diabetes reported, had the presence of classical symptoms of polydipsia (6), polyuria (4) and polyphagia (0). Same was true for hypertension where those who were symptomatic had headache and giddiness as common symptoms. (Table 2).

Table 3: Prevalence rate (per 100) of diabetes and hypertension in various sub groups of camp attendee

	Hypertension (N = 245)	Diabetes (type 2) (N = 162)	Statistical interpretation
Age (Years)			
21-30 (n = 104)	9 (8.7)	6 (5.8)	Hypertension- X ² = 103.40, df = 4, p < 0.0001 Diabetes X ² = 61.77, df = 4, p < 0.0001
31-40 (n = 160)	32 (20.0)	24 (15.0)	
41-50 (n = 134)	65 (48.5)	32 (23.9)	
51-60 (n = 122)	66 (54.1)	48 (39.3)	
>60 (n = 123)	73 (59.3)	52 (42.3)	
Gender			
Male (n = 266)	113 (42.5)	95 (35.7)	Hypertension- X ² = 3.69, df = 1, p = 0.054 Diabetes X ² = 26.64, df = 1, p < 0.0001
Female (n = 377)	132 (35.0)	67 (17.8)	
Nutritional status			
Overweight/ obese (n = 200)	106 (69.5)	70 (35.0)	Hypertension- X ² = 27.32, df = 1, p < 0.0001 Diabetes X ² = 14.81, df = 1, p = 0.0001
Under/ normal weight (n = 443)	139 (31.4)	92 (20.8)	

Figure in parenthesis indicate prevalence rate per 1000 Prevalence of both hypertension and diabetes showed an increasing trend with increase in age in both the areas; differences when tested statistically were found highly significant. Prevalence rates were high for both diabetes and hypertension in males than females. While the difference for hypertension were statistically not significant (p

<0.54), in case of diabetes, it was not only highly significant but also twice high in males than females. When viewed in relation of overweight/ obesity, prevalence of both disorders were significantly high in overweight/ obese persons than in under/ normal weight persons. Amongst obese persons prevalence of hypertension was alarmingly high (70%) (Table 3).

Table 4 : Co existing morbidities among camp attendee (N = 643)

Category	No	Percent
Persons screened	643	100.0
Absence of all 3 morbidities (diabetes, hypertension, Overweight/ Obesity)		
Overweight/ Obesity	260	40.4
Diabetes alone	44	6.8
Hypertension alone	91	14.2
Overweight/ obesity alone	71	11.0
Hypertension and obesity	59	9.2
Diabetes and obesity	23	3.6
Diabetes and hypertension	48	7.5
Diabetes, hypertension and overweight/ obesity	47	7.3

Table 4 shows the pattern of co-existing morbidities. Only 40% of attendee were free from all three morbidities and rest had any of three morbidities either in combination or in isolation. Some 60% of attendee had two or more disorders while 7.3% had all the three present in them.

Discussion :

Camp based approach has always been a matter of debate. It can at the most supplement the efforts of organized health system and no way can act as substitute of the system.^[7] Here in this communication we discuss the effectiveness of organizing camps. Out of total 7 camps, only 2 were held in urban and rest in rural areas. Due to the availability during the day time, female participation was more in present study but elsewhere similar camps attracted more male participation.^[4] Contrary to popular belief, prevalence of suspected hypertension and diabetes were marginally more in rural areas than in urban areas. It may be noted that the rural area in this study was also periurban in nature.

Obesity is an important public health problem and is increasing in both developed and developing countries with a varying prevalence between 10% and 40% indifferent countries.^[8] Prevalence of overweight/ obesity in this study itself was high and was more so in urban areas. It is alarming that in urban areas every third camp attendee was either

overweight or obese which can easily be linked with the dietary pattern and life style peculiar to urban areas. Early detection and timely institution of management of hypertension has tremendous benefits as lowering of blood pressure has been associated with 35% - 40% mean reduction in stroke incidence; 20-25% in myocardial infarction, high coronary disease risk.^[6] Prevalence of suspected hypertension and diabetes (type 2) in present study were 38.1% and 25.2% respectively. Prevalence of hypertension was comparable with similar study in Jammu and Kashmir^[1], but was much high when compared with prevalence of suspected diabetes. Additional 40.3% attendee (37.6% in rural & 50 % in urban) were pre hypertensive constituting an ideal group to be targeted with primordial/ primary prevention. As evident from the present study, it is worth knowing that diseases like hypertension and diabetes are no more confined to urban areas but are equally and at times more common in rural areas.

In the absence of a national screening program, innovative low cost method like camps^[10] are needed to detect hidden asymptomatic cases of non-communicable diseases and promote awareness in rural and slum areas. 20 camps were conducted in Faridkot, Punjab, where 25 – 29% of attendee were found suffering from hypertension.^[4] Camp approach enables us to detect such pre (potential) hypertensive who will rarely report at health facilities but with effective communication on preventive strategies can

be kept as normotensive and be spared from lifelong medication. These camps^[7], organized with existing resources in present study, proved to be effective as additional 16% and 21% of attendee could be detected as suspected to be suffering from hypertension and diabetes respectively. Known yet uncontrolled cases of hypertension and diabetes detected in this study indicate poor treatment compliance and emphasize the role of camps in reinforcing the relevant knowledge to them which may improve their compliance. Some 60% attendee report two or more morbidities. It is common to see such morbidities^[1, 5] as co-existing because the risk factors of all three disorders are common hence an integrated IEC can be developed and administered to the community during these camps as a cost effective intervention.

Conclusions & recommendations:

Logic of organizing such camps is based on the feasibility of camp approach in early detection of such disorders and the fact that they add to awareness generation about diseases/ their risk factors/ preventive measures. Organization of such camps in itself acts as good IEC. Many attendee who do not suffer from diseases (s) and their accompanying friends/ relatives took keen interest in IEC messages displayed at camp sites. Camp based strategy is useful provided it is (1) preceded by an intensive community mobilization and (2) supported by good referral services honoured by the hospital for further work out and management. Hence it requires team work and coordination with different agencies involved. Selective and limited participation of male population in camps restricts their utility and such male population needs to be addressed by some alternative mechanism.

Limitations: Findings of this report elementary in nature, no way represent the population of the areas, hence need cautious interpretation. As prevalence is not a true one, denominator is total attendees. However in general they provide useful information about the load of hypertension, diabetes and obesity in the community and another crucial information that these non communicable diseases often associated with modern life style seen more in urban

areas are equally (if not more) prevalent in rural areas as well.

Acknowledgement:

Authors are thankful to Dr. Prakash Prajapati, Dr. Jagruti Prajapati (both Asst. Professor), Dr. Parita Patel (Tutor), Dr. Madhuri (LMO) for organizing the camps and Dr. Brijesh Patel and Dr. Sanju Gajjar (both Tutor) for organizing camps and developing IEC materials.

References:

1. Rehman Saleemur, Kadri S M, Kausar Rehana, Sharma Rashmi. Twin load of hypertension and diabetes among adults: community based study from Jammu and Kashmir, India. *International Journal of Research in Medical Sciences*. 2014;2(1):139-44.
2. Reddy KS. Cardiovascular disease in India. *WHO Stat Q*. 1993;46:101-7.
3. Jaseja Upsana, Jadeja JM. Comparative study of hemoglobin concentration in hypertensive and normotensive subjects. *Indian Journal of Applied -Basic Medical Sciences*. 2011;13B(17):421-23.
4. Gupta Sanjay, Padda Preeti, Devgan Shalini, Singh Gaganpreet, Gupta Vishal, Chaudhary Sanjay. To Study the Prevalence of Hypertension among Urban Population of Faridkot District - A Camp Based Approach. *SSRG International Journal of Medical Science (SSRG-IJMS)*. 2015; 2(5):15-18.
5. Gothankar Jayashree Sachin. Prevalence of obesity and its associated co morbidities amongst adults. *National Journal of Community Medicine*. 2011; 2(2):221-24.
6. Chobanian Aram V, Bakris George L, Cushman William C. The seventh report of the joint national committee on prevention, detection, evaluation and treatment of high blood pressure - The JNC 7 report. *Journal of American Medical Association*. 2003; 289(19):2560-72.
7. Kumar P. How much is it worth to arrange medical camps once in a while? *MEDISCENE (Journal of IMA, Surat Branch)*. 2004; 2(10):31-32.
8. Alanazi Shehab A, Koura Hala M, Zakri Sherif M, Mohamed Ayman H. Prevalence of Obesity among adolescents in Arar Saudi Arabia: Future Risk of Cardiovascular Disease. *Indian Journal of Community Medicine*. 2015; 40(3):182-87.
9. Sood R, Gupta A. An epidemiological study of obesity in Shimla town. *Indian Journal of Medical Sciences*. 1996; 50(10):362-64.
10. Pandya SJayashri, Yi ChingLing, Dalal Asha, Vutha S Ravikiran. Screening Employees of a tertiary care hospital for cancer cervix and cancer breast: A cross sectional study. *Indian Journal of Community Medicine*. 2015; 40(3):211.