Treatment Seeking Behaviour in Hypertension: Factors Associated with Awareness and Medication among Socioeconomically Disadvantaged Migrants in Delhi, India

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ABSTRACT

The present study is a part of a cross-sectional prevalence study. Descriptive statistics were used to present the awareness, treatment and control of hypertension. Multiple logistic regression analyses were performed to examine the influence of socio-demographic and other variables on awareness and on current medication use. The results reveal that only 41% of the total hypertensive persons were aware of their hypertension status, and only 59% of them were on medication. Of those treated, only 5% had controlled hypertension. Multiple logistic regression analyses reveal that gender, age, pulse rate and education were significantly associated with awareness of hypertension whereas age is the only significant factor associated with medication use. The Hosmer and Lemeshow tests for goodness of fit reveal that these regression models are a good fit. The study concludes that undiagnosed hypertension is considerable. Awareness, treatment and control of hypertension are not adequate among socioeconomically disadvantaged migrants. Since hypertension has become a common problem, the health education and awareness campaigns along with facilities such as blood pressure screening and hypertension treatment through primary health care system are essential.

Key words: hypertension, treatment, adherence, migrants, India

Introduction

Hypertension has emerged as a major threat to health in developing countries, and in India the count of »hypertensive« individuals is expected to rise from 118 million in 2000 to 214 million in 2025[1]. About 54% of stroke and 47% of ischaemic heart disease worldwide were attributable to high blood pressure and about half of this burden was in people with hypertension[2] and controlling hypertension is crucial in reducing the premature mortality. Despite the availability of effective medical therapy, over half of all hypertensive persons do not take any treatment[3]. The World Health Organization describes poor adherence as the most important cause of uncontrolled blood pressure[4]. Hypertension is becoming prevalent also in the socio-economically disadvantaged sections of society[5] and the prevalence in the present study urban poor communities is considerable[6]. The present paper aims to study the awareness, treatment and control of hypertension; and factors associated with awareness and treatment adherence among migrants living in Delhi, the national capital of India.

Subjects and Methods

Study area and study groups

Delhi, the national capital of India is located at 28°61' N and 77°23' E. The population of Delhi in the year 2001 was 13,782,976. In 2006, the population of Delhi was increased by 2,85,000 as a result of migration and by an additional 2,15,000 as a result of natural population growth.[7] The rapid developmental activities and the opportunities attract several people to the city. The construction works, which need a lot of labour force act as pulling factor for several people, particularly those from the low socioeconomic strata, while the poverty and lack of work to earn act as pushing factors in the rural villages. The present

study migrants are mainly from northern Indian states, particularly from Uttar Pradesh and Bihar.

The participants are selected from a resettlement colony, slums and work sites. Resettlement colonies are mainly composed of low socio-economic groups, and their residence is legal, and the government provides basic amenities to its residents. Several resettlement colonies have been set up and sold at subsidized price by the government in order to provide better housing/living conditions to its residents, who have migrated and made their abode in Delhi. The residents of resettlement colonies are those who were able to bag this opportunity and were able to afford for a house in these colonies. However, there are people living in substandard houses/huts in Delhi and are confined to live in slums. Hence, the habitation in a resettlement colony is indicative of relatively better living conditions with better housing and other civic amenities within the low socio-economic strata. Slums are semi-legal squatter settlements and are mainly inhabited by those who are socially marginal and who have not been able to attain economic stability. The slums are semi-legal in the sense that they do not have legal recognition, and the authorities can evacuate them; still, people living in these areas own their houses and even sell to others while moving to another area of the city or elsewhere. Also the government provides some basic amenities to their residents. These areas (resettlement colonies and slums) are inhabited by a mix of ethnic groups, which generally represent the castes which occupy the middle and lower strata of the hierarchical social ladder of Hindu caste system. The material resources are not abundant and low for these migrants.

The sample

This investigation is part of a cross-sectional prevalence study and the sampling strategy has been adopted to suit that objective[6]. Sample size was estimated according to a standard method and the details were presented else where[6]. A total of 453 migrants (221 men and 232 women) were sampled. The institutional ethics committee approved the study protocol. The purpose of the study was explained, and the consent was taken from all the participants before data collection.

Three blood pressure readings were taken in a sitting position by using mercury sphygmomanometer. The mean of the three readings is considered for further data analysis. Hypertension was defined as systolic blood pressure ≥140 mm Hg or diastolic blood pressure ≥90 mm Hg or self reported antihypertensive medication. Data pertaining to height, weight, pulse rate and socio-demographic details were also collected. Awareness of hypertension was defined as self reporting of any prior diagnosis of hypertension by a health care provider. Controlled hypertension was defined as SBP <140 mmHg and DBP <90 mmHg. Interview schedule was developed with an objective of understanding the treatment seeking behavior among the known hypertensive persons i.e., who were aware of their hypertension status. The interview schedule consisted of both closed-ended and open-ended ques-

TABLE 1
SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE PRESENT STUDY MIGRANTS

	Men (221) N (%)	Women (232) N (%)
Age group		
20–29 years	78 (35.3)	75 (32.3)
30–39 years	83 (37.6)	97 (41.8)
40–49 years	42 (19.0)	47 (20.3)
50 years and above	18 (8.1)	13 (5.6)
Education		
No education	78 (35.3)	125 (53.8)
1–5 years	18 (8.1)	35 (15.1)
6–10 years	87 (39.4)	62 (26.7)
11–15 years	38 (17.2)	10 (4.3)
Size of the household		
Living alone	30 (13.6)	2 (0.9)
Two – three	59 (26.7)	51 (22.0))
Four – five	87 (39.4)	111 (47.8)
Six and above	45 (20.3)	68 (29.3)
Occupation		
House wife	–	178 (76.7)
Working to earn		
Domestic help	0 (0.0)	43 (18.5)
Labourer	102 (46.1)	2 (0.8)
Skilled worker (unsalaried)	31 (14.0)	4 (1.7)
Small business	34 (15.4)	2 (0.8)
Salaried	46 (20.8)	1 (0.4)
Unemployed/learning/ not working	8 (3.6)	2 (0.9)
Monthly family income		
Up to 3000	74 (33.5)	78 (33.6)
3001–6000	79 (35.7)	93 (40.1)
6001–9000	32 (14.5)	33 (14.2)
9001–12000	17 (7.7)	15 (6.5)
12001–15000	7 (3.2)	6 (2.6)
15001 and above	12 (5.4)	7 (3.0)
Social class		
Scheduled caste/tribe	133 (29.4)	
Backward classes	224 (49.4)	
Others (forward)	77 (17.0)	
Didn't want to reveal	19 (4.2)	
Religion		
Hindu	387 (85.4)	
Other than Hindu	66 (14.6)	

*Indian Rupee (INR) = 0.025 US$

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│   Total hypertensive persons = 83│
│            (18.3%)               │
└─────────────────────────────────┘

┌──────────────────────────┐   ┌──────────────────────────┐
│ Aware of hypertension     │   │ Unaware of hypertension   │
│ status 34 (41%)           │   │ status 49 (59%)           │
└──────────────────────────┘   └──────────────────────────┘

┌──────────────────────────┐   ┌──────────────────────────┐
│ Under medication          │   │ Interrupted/irregular     │
│ 20 (58.8%)                │   │ medication 14 (41.2%)     │
└──────────────────────────┘   └──────────────────────────┘

┌──────────────────────────┐   ┌──────────────────────────┐
│ Controlled= 5 (25%)       │   │ Uncontrolled = 15 (75%)   │
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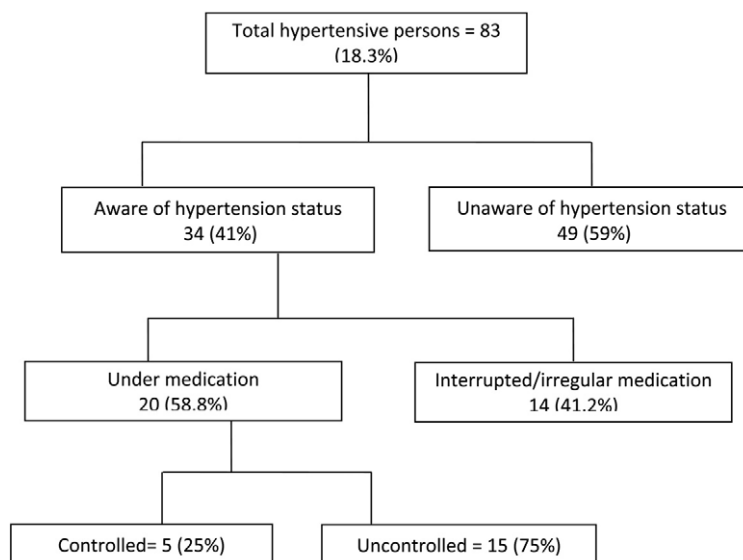
Fig. 1. Flow chart showing hypertension awareness, medication and control among migrants in Delhi.

tions. The responses of open-ended questions were of narrative type and were categorized during analysis. Multiple logistic regression analyses were carried out for awareness of hypertension and medication use as dependent variables; and age, gender, current stage of blood pressure (normal, prehypertension, hypertension stage 1 and hypertension stage 2), pulse rate, body mass index, educational status, marital status, monthly family income and preference for salty foods as independent variables.

Results

The general characteristics of the study participants are presented in Table 1. A majority of men and women were 30–49 years of age followed by 20–29 years. Around 35% of men and 54% of women didn't receive formal education. Most of the respondents were married; however unmarried males constituted a considerable proportion. A majority of the households are with 4–5 members. Slightly less than half of the men were labourers (46%) while around 20% of men were engaged in salaried jobs and 15% in small business. Greater proportion (77%) of women were house wives and around 18% were working as domestic help in nearby well off houses. For around 90% of the households the family income was only up to INR 6000 per month. A majority belongs to backward class (49.4%) and scheduled castes/tribes (29.4%). The Government of India had categorized some ethnic groups (castes and tribes) into scheduled castes, scheduled tribes and backward castes, and these categories are entitled for positive discrimination in education, employment and other developmental opportunities. Backward castes are mainly a mixed group of artisan and service castes, which are about the middle level of the caste hierarchy and are on the way to catching up with so-called

forward castes (uncategorized group) economically and controlling the socio-political axis. The scheduled castes and backward castes and tribes as a whole are marginalised in India in terms of health and development. Due to apathy by the upper caste rulers and bureaucrats during the reign of Indian rulers, as well as colonial rule, these castes fell behind the mainstream and remained backward.

Table 2 presents the prevalence of hypertension among the present study migrants and other details pertaining to the awareness, medication, and control of hypertension. The results reveal that only 41% were aware of their hypertension status and 59% did not know that they have hypertension (Figure 1). More women (18/37, 49%) than men (16/46, 35%) were aware of their hypertension status. Regarding the control of hypertension, blood pressure levels were under control for none of the men, and only for five out of 11 women (45.5%) who were under medication currently. On the whole, it was found that 75% (15/20) of the hypertensive persons have not attained their blood pressure under control i.e., below 140/90 mmHg.

The participants who were aware of their hypertension status (known hypertensive persons) were further queried on the history of illness and treatment aspects. The risk perception seems low even among the known hypertensive persons as 58.8% (20/34) of the hypertensive persons reported that they never thought that they may be prone for hypertension. Only 41.2% (14/34) reported that they felt that they probably had hypertension as they experienced dizziness, anger and irritation, anxiety, headache, sweating, palpitation, loss of interest in work, chest pain, etc. however, only four participants have visited doctor based on perceived symptoms. A majority came to know their hypertension status, when they have visited doctor for some other complaint (12/34,

TABLE 2

DETAILS ON THE PREVALENCE, AWARENESS, TREATMENT AND CONTROL OF HYPERTENSION AMONG SOCIO-ECONOMICALLY DISADVANTAGED MIGRANTS IN DELHI

	Men (N=221)	Women (N=232)	Both sexes (N=453)
Total number of hypertensive persons	46 (20.8)	37 (15.9)	83 (18.3)
Known hypertensive persons	16 (34.8)	18 (48.6)	34 (41.0)
On medication	9	11	20
% out of known hypertensive persons	(56.2)	(61.1)	(58.8)
% out of total hypertensive persons	(19.6)	(29.7)	(24.1)
On medication, BP under control	0 (0.0)	5 (45.5)	5 (25.0)
On medication, BP uncontrolled	9 (100.0)	6 (54.5)	15 (75.0)

BP – blood pressure; Figure in parentheses indicate percentages.

35.3%). Two participants reported that they were admitted to hospital as they fell unconscious. Fourteen participants (14/34, 41.2%) could not recollect the event when they were diagnosed as hypertensive. Regarding consultation, all those who were aware of their hypertension status consulted a health care provider (qualified doctor, local unqualified medical practitioner, health worker, or a government health facility). It was found that the initiation to consult a health care provider was mainly by self or family members and in a very few instances neighbours. The delay in seeking treatment varied from a week to more than 3 years. The participants were asked a question 'How do you feel after taking treatment?' For this query, 60% of those currently on medication (12/20) said that they are feeling better due to medication and 64.3% of those who were not on medication currently (9/14) also said that they felt better while on medication. All the fourteen respondents, who were not on medication currently, were asked for reasons for not continuing medication. The reasons cited for not adhering to the medication includes felt better and thought that they became normal

and hence stopped medication (6/14, 42.9%); did not feel better on medication and did not perceive any change while taking medicines (3/14, 21.4%), three participants (3/14, 21.4%) cited money-related reasons, and one participant said that she did not know that she has to continue medicines, and another participant reported that she took medicines for two years and stopped for no specific reason.

It was also queried whether they have received any advices other than medication from the doctor. Only nineteen respondents (on medication: 12/20, 60%; not on medication: 7/14, 50%) reported that they have received advices in addition to prescription of medicines. These nineteen participants were further asked for details of advices they have received. All of them reported that they received advices pertaining to diet which mainly included low salt diet; and eight of them also informed that they were advised to reduce high fat in the diet and one was advised to include more greens in the diet. Only seven participants (7/34, 20.6%) were advised on physi-

TABLE 3

FACTORS ASSOCIATED WITH AWARENESS AND MEDICATION USE IN HYPERTENSION. RESULTS OF LOGISTIC REGRESSION ANALYSES

	Coefficient	SE	Significance (p)	Wald Statistic	OR (95% CI)
Awareness of hypertension					
Constant	–17.750	4.736	0.000	14.047	–
Gender	1.936	0.677	0.004	8.184	6.933 (1.840 – 26.126)
Age	0.101	0.029	0.000	12.518	1.107 (1.046 – 1.171)
Pulse rate	0.122	0.046	0.008	7.090	1.130 (1.033 – 1.237)
Education	0.131	0.066	0.049	3.883	1.140 (1.001 – 1.299)
Hosmer and Lemeshow test for goodness of fit χ^2=5.716, significance=0.679					
Medication use					
Constant	–4.901	1.743	0.005	7.902	
Age	0.101	0.039	0.009	6.846	1.107 (1.026 – 1.194)
Hosmer and Lemeshow test for goodness of fit χ^2=3.697, significance=0.883					

SE – Standard Error, OR – Odds Ratio, CI – Confidence Interval

cal activity and the main physical activity advised was walking. Three of the participants (3/34, 8.8%) also reported that they were advised on emotional control, mainly to avoid tensions and situations that create tensions and try to be happy.

The participants were further asked, were they following any practices pertaining to diet, physical activity and emotional control. For this query, 16 (on medication: 10/20, 55%; not on medication: 6/14, 42.9%) reported that they were following dietary restrictions which mainly included low salt diet (13/34, 29.4%), and less fat diet (5/34, 14.7%) and one each informed that they reduced intake of tea and increased more greens in the diet. Seven participants (7/34, 20.6%) reported that they were engaged in physical activity, which mainly included walking (6/34, 17.6%) and yoga (2/34, 5.9%). For this query, two men felt that the work they were involved in was heavy physical activity and hence did not feel that it was necessary to do extra physical activity for health reasons and two women reported that household work itself is a physical activity and they did not feel that they need to do additional physical activity for health reasons. One participant reported that he feels shortness of breath after any physical activity; hence he did not specifically do any physical activity. Regarding emotional control, five participants (5/34, 14.7%) reported that they try to be happy, try to control anger and avoid situations that create tensions.

The multiple logistic regression analyses were performed to see the factors influencing awareness of hypertension and medication use. The results (Table 3) revealed that age, gender, pulse rate and education were significantly associated with awareness of hypertension. However, only age was significantly associated with medication. The Hosmer and Lemeshow tests indicate that both the models were good fit.

Discussion

The present study migrants represent socioeconomically disadvantaged group of migrants. The living conditions in slums and resettlement colonies are poor and are below the standards and the communities living in these areas are as such disadvantaged. The socioeconomic details of the present study participants in terms of social class, income, occupation, educational attainment are indicative of their socioeconomic disadvantage. The vulnerability of migrants increases further in the background of livelihood insecurity, negligence and alienation in the new sociocultural environment. In the background of increasing prevalence of hypertension even in the lower socioeconomic strata, it is important to study the awareness of the problem and treatment seeking behavior in the specific communities such as migrants.

Despite considerable prevalence of hypertension in these communities, the awareness levels as well as adherence to treatment were low. On the whole, women are relatively better regarding awareness, treatment and control of hypertension compared to their men counter-

parts. The present study highlights alarming situation of lack of awareness and inadequate treatment seeking (in terms of medication) in the back ground of considerable prevalence of hypertension in these communities. Also, this knowledge is mainly limited to 'have had heard of hypertension' and comprehensive knowledge was lacking in these communities[6]. The present study results are comparable to several other studies reviewed by Krousel-Wood et al[8]. Several other studies reported that compliance to anti-hypertension medication was far from optimal[8]. Numerous factors as responsible for adherence include age, gender, low socioeconomic status and severity of disease, side effects of medication, patient's inadequate understanding of the disease and importance of the treatment, poor patient-provider relationship, cost, forgetfulness, have all been shown to affect adherence in various populations[8]. In our study, age was found to be a significant contributor to anti hypertensive medication use. This finding is similar to earlier studies[8,9], however, there are studies which show either no association, or decreasing adherence with increasing age. The present study results indicate that younger age could be a factor contributing to non-compliance to anti hypertensive medication. We feel that the widely held perception among these communities that hypertension occurs in middle/older age people[6] may be responsible for this sort of behavior. Since hypertension is becoming more common even among low socio-economic communities[5,6], we feel that health education and awareness campaigns along with other facilities such as blood pressure screening and treatment are essential. This may enable to identify and bring many hypertensive persons into the treatment fold. World Health Organization defines adherence as »the extent to which a person's behavior–taking medication, following a diet, and/or executing lifestyle changes-corresponds with agreed recommendations from a health care provider«[4]. The present study found that advices given during consultation were not adequate. The advises during consultation were not adequate as they focused mainly on prescribing medicines rather than explaining the importance of adhering to the treatment. Also, the patients did not receive adequate advices pertaining to diet and other lifestyle changes to be followed. We feel that physicians have to pay special attention to patient education and counseling when treating hypertensive patients, for which increasing the consultation time would be essential. The present study underscores the importance of imparting knowledge and bringing awareness regarding hypertension and its consequences along with provision of care under primary health system and proper referral in these and other socio-economically disadvantaged communities. Hashmi et al[9] reported that that the common encouraging factors such as understanding the need and effectiveness of the prescribed medication and availability of support system, were significantly associated with better adherence. Control and prevention of hypertension is central to the reduction and prevention of cardiovascular related mortality and morbidity, particularly in the low and middle--income countries. Zhang et al.[10], among urban elderly in

Western China, reported that good knowledge of hypertension risk factors, awareness of being hypertensive and regular medication were associated with controlled BP. The reversal of social gradient in the possession of hypertension and other cardiovascular diseases was on the sway; however, treatment seeking behavior did not seem to follow such gradient and remained poor and stagnant among the urban poor. Hence, there is an urgent need to bring awareness regarding cardiovascular diseases with an emphasis on hypertension and its consequences, in the background of increasing CVD morbidity and mortality in the developing countries. Rising awareness in the community should be accompanied with screening for hypertension along with the provision of primary health care services with proper referral.

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STRATEGIJE TRAŽENJA LIJEČENJA KOD HIPERTENZIJI: FAKTORI POVEZANI SA SVJESNOŠĆU I LIJEKOVIMA MEĐU SOCIOEKONOMSKI UGROŽENIM DOSELJENICIMA U DELHIJU U INDIJI

S A Ž E T A K

Ova studija dio je presječne studije prevalencije. Deskriptivna statistika upotrebljena je da se predstavi svjesnost, liječenje i kontrola hipertenzije. Obavljene su višestruke regresijske analize kako bi se ispitao utjecaj socio-demografskih i drugih varijabli na svjesnost te korištenje lijekova. Rezultati su pokazali da je samo 41% svjesno svog statusa hipertenzije, a samo 59% od njih uzima lijekove. Od onih koji su liječeni, kod samo 5% njih ima hipertenziju pod kontrolom. Višestruke regresijske analize pokazuju da su spol, dob, puls i obrazovanje značajno povezani sa sviješću o hipertenziji, dok je dob jedini značajan čimbenik povezan s korištenjem lijekova. Studija zaključuje da je raširenost nedijagnosticirane hipertenzije znatna. Svjesnost, liječenje i kontrola hipertenzije nisu adekvatne među socioekonomski ugroženim migrantima. Od kad je hipertenzije postala čest problem, od iznimne su važnosti postali zdravstveni odgoj i kampanja za podizanje svijesti, zajedno sa programima kao što su mjerenje krvnog tlaka putem sustava primarne zdravstvene zaštite.