

Review Article

Preventing Coronary Heart Disease Risk of Slum Dwelling Residents in India

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ABSTRACT

Coronary heart disease (CHD) is the top cause of mortality and morbidity in India. People in slums are generally at a higher risk for CHD than Indians living in more affluent areas mostly because of the higher prevalence of major CHD risk factors such as uncontrolled hypertension and tobacco use amongst them. Knowing their CHD risk perceptions and bringing them into line with the actual CHD risk is a prerequisite for effective CHD risk management. Consequently, there is need to develop tailored interventions focusing medication management and tobacco cessation to reduce growing CHD epidemic among slum dwellers and long-term CHD burden in India.

Keywords: Coronary heart diseases, coronary heart disease risk perception, medication management, tobacco cessation, uncontrolled hypertension

Introduction

According to recently released Global Burden Disease report 2010, coronary heart disease (CHD) is the top cause of mortality and morbidity worldwide as well as in India. At present CHD affects an estimated 31.8 million of the population in India. It claimed nearly 1.67 million lives in 2008^[1] and is expected to account for at least 33.5% of total deaths by 2015, replacing infectious disease as the number one cause of mortality in India.^[2] While genetic factors can play a crucial role, 80-90% of people dying from CHD in India also have one or more major modifiable lifestyle risk factors such as uncontrolled hypertension, diabetes, or tobacco use.^[3] People in slums are generally at a higher risk for CHD than Indians living in more affluent areas due to higher prevalence of uncontrolled hypertension and tobacco use among them.^[4-6] To prevent growing CHD epidemic, physicians particularly at primary care level need to take responsibility for the accurate assessment and effective communication of CHD risk in hypertensive slum dwelling residents in order to improve their uptake of cardioprotective lifestyle choices and preventive medications.

Why Priority Should be Given to Reduce CHD Risk Among Slum Dwelling Residents?

Suboptimal hypertension management contributes to total CHD risk and is directly responsible for 24% of the total CHD deaths in India. A cross-sectional, population-based study was conducted to assess the prevalence, awareness, treatment, and control of hypertension among people aged 20-59 years from 120 clusters spread across Delhi. According to this study, the prevalence of hypertension among slum dwellers was 23%. Among the hypertensive, 55% were unaware of their diagnosis; about 36% were taking treatment and only 9.4% had controlled blood pressure (BP).^[4]

Moreover, there is evidence stating that around 36% of CHD in men and 33% in women was attributable to tobacco smoking and that the risk of developing CHD increased with duration and intensity of exposure to tobacco smoke.^[7] There is no 'low risk' level of tobacco smoking. Even 'social' smoking (less than grams of tobacco per day) increases the risk of heart disease.^[8] Several cohort^[9,10] and case-control studies^[11,12] have also reported a significant positive association between smokeless tobacco use and CHD. Prevalence of tobacco use is higher among slum dwellers (men 48.3%, women

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11.9%) than non-slum dwellers (men 35.2%, women 3.5%) in India.^[5] Study also found lack of awareness about the wide applications of tobacco use on health among slum dwelling residents.^[13]

The increased prevalence of CHD and its risk factors among slum dwellers is of major concern since this group is large in number, and they have poor access to acute care management and long-term secondary prevention practices. This is due to the inadequacy of the urban public health delivery system to access these areas of very high population density. In spite of better health care infrastructure, primary healthcare facilities have not grown in proportion to the explosive growth of urban population, in particular the slum population. Ineffective outreach and a weak referral system also limit the access of the urban poor to healthcare services. The social exclusion and lack of information and assistance at the secondary and tertiary hospitals make them unfamiliar with the modern hospital environment making them less likely to use these facilities. The lack of economic resources also restricts their access to the available private facilities.^[14] Moreover, a general lack of understanding about the causes of CHD and social stigma among this group results in a large proportion of those with major developing illness remaining undiagnosed and few undertaking preventive medical treatment.^[15] Similarly, as they have poor compliance and adherence to pharmaceutical treatments, they are also more exposed to future CHD events.^[16,17] A continued neglect of the healthcare of people in overcrowded urban slums will inevitably lead to greater expenditure and diversion of healthcare resources in the long-term, having to manage end stage complications of major risk factors for CHD. Therefore, targeting preventive intervention at these people is fundamental to an effective CHD prevention approach.

Treatment Gap in CHD Prevention

Despite established treatment guidelines, there are still significant differences in management methods used to reduce CHD risk factors in high CHD risk persons.

Research has confirmed that CHD risk factor occur frequently in cluster in hypertensive individuals and that the risk of developing CHD is determined by the cumulative effect of multiple concomitant CHD risk factors.^[18] The knowledge of the multi-factorial nature of CVD has prompted the development of management systems based on 'absolute risk' of developing CHD. There is strong epidemiological evidence that combining risk factors into absolute scores is capable of predicting an individual's total cardiovascular risk with reasonable accuracy and consequently making a logical approach to decide who should receive treatment. It enables the intensity of interventions to be matched to the degree of total risk.^[19]

As the coexistence of several CHD major risk factors is common with hypertension, the failure to effectively identify these risk factors, often asymptomatic, within the management

of hypertension adds to the burden of CHD morbidity and mortality.^[20] An absolute estimation of the 10-year CHD risk (absolute CHD risk (ACR) score) in hypertensive patients is therefore beneficial for determining the appropriate primary prevention strategies to implement in high-risk populations.^[21] Using the ACR to bring a hypertensive patient's risk factors to a particular threshold has also proved to be cost-effective because it is a way of preventing hospitalization and avoiding tertiary treatment cost.^[19,22-24]

Many tools are now available to estimate an individual's 5- or 10-year absolute risk of CHD. However, acceptance of primary care physicians of cardiometabolic health check is still low.

Pharmacological treatment gap in high CHD risk people in India is considerable with less than one-third of hypertensive people taking antihypertensive therapy (thus more than 70% treatment gap) and less than 10% of people with high cholesterol taking cholesterol-lowering medications (more than 90% treatment gap).^[25] This is mainly due to lack of proper identification of high risk individuals by the health services at primary care level. Though, there is no published study in India, studies in developed countries have shown suboptimal use of risk prediction charts to estimate an individual's 5-10 years ACR score in primary practice (varying from 17 to 47%).^[26-28] One qualitative study in Australia demonstrated that general practitioners (GPs) do not routinely perform absolute CHD risk assessments.^[29] Furthermore, some studies confirm that when doctors do use CHD risk assessment tools, they are not always used correctly.^[30] If GPs are not using risk assessment tools routinely and properly to estimate CHD risk, it is difficult to properly identify high risk people or make logical approaches to decide who should receive treatment or intensity of treatment to be matched to the degree of absolute risk.

In contrast, patients' lack of motivation and willingness to comply with therapy and follow-up with their physicians are some of the major obstacles which often stand in the way of quality CHD care.^[31] Models of health behavior such as the Health Belief Model,^[32] Theory of Reasoned Action and Theory of Planned Behavior^[33] suggest, an individual is more likely to take a recommended health action if he or she perceives himself or herself to be at risk of getting a serious disease and believes that he or she can control a particular behavior. It appears that people are generally inaccurate in their own risk perception and the bias tends to be toward unjustified optimism or pessimism.^[34] Unrealistic optimism or pessimism can create a discrepancy between perceived and actual risk that may affect compliance with medical recommendations, engagement in CHD preventive behaviors, and delay in seeking care in the presence of CHD symptoms.^[35] Studies assessing the concordance between physicians' assessment of CHD risk at primary practice and actual patients CHD risk, found that the tendency is for physicians to underestimate the patient's risk.^[36,37] This results in missed opportunities to treat CHD risk factors, to educate patients, and

eventually to prevent CHD. As conveying risk information to a patient has been shown to improve accuracy of risk perception, primary care physician need to take responsibility for the accurate assessment and effective communication of CV risk in their patients in order to improve patient uptake of cardio-protective lifestyle choices and preventive medications.

Few Approaches to Prevent CHD Risk Among Slum Dwellers

1. Since most patients with hypertension are undiagnosed, untreated, or sub-optimally treated; there is a significant treatment gap in hypertension associated CHD prevention in India.^[38] It is crucial to do proactively identify hypertensive subjects and routine assessment of ACR of all of them at primary care (which is most accessible to slum dwellers) to identify individuals at high risk of CHD and ensure that they receive evidence-based treatment to optimally control BP over and above prevent future CHD events.
2. Recent study revealed that awareness and knowledge about hypertension and its consequences were inadequate in slum communities.^[39] Due to inaccurate understanding of hypertension management which contributes to low level of CHD risk perception and self-efficacy, primary care physicians find it difficult to persuade people with hypertension to adopt positive changes in treatment adherence and lifestyle practices. Knowing the patients' risk perceptions and bringing them into line with the actual risk is a prerequisite for effective management.^[40] There is a critical need to develop interventions for improving the accuracy of CHD risk perception.^[41]
3. Education regarding the disease and medication information is the cornerstone of improving adherence.^[42] Although education is an important factor, educational interventions alone are not enough to ensure patient medication adherence. Patients need to be informed, motivated, and skilled in the use of cognitive and behavioral self-regulation strategies.^[43] Community health workers from the locality can visit the homes of patients diagnosed with hypertension, monitor blood pressure and adherence to medications, educate the patient on healthy lifestyle choices, and encourage follow-up visits with a doctor if necessary.^[44]
4. Though tobacco cessation is one of the important effective lifestyle measures for the prevention of CHD; lack of awareness about the broader influence of tobacco use on health among slum dwellers make it much harder to bring about changes in its use. In view of the limited knowledge among slum people regarding health implications of tobacco use, there is a great need to design a multicomponent intervention focusing on the factual hazards of tobacco use (not just focusing on cancer or respiratory diseases), education regarding benefits of tobacco cessation, encouragement to seek assistance if they have difficulty in quitting, and building awareness regarding the availability of tobacco cessation services. The combination of medication and advice or counseling is more effective for tobacco

cessation than either medication or counseling alone.^[45]

5. Research suggests that although tobacco smokers are often advised to quit, a discussion of future health risks, with information about the personal effects of smoking (e.g. immediate feedback about the smoker's exhaled carbon monoxide (CO) values) would motivate smokers to stop smoking much more effectively than simple advice about potential hazards.^[46] For example, a breath CO test shows the amount of CO in the breath which is the indirect measure of blood carboxyhemoglobin (%COHb); the level of CO in the blood. When a smoker stops smoking, the level of CO in their blood falls quickly, and becomes comparable with a nonsmoker's within 24-48 h.^[47] It has been observed that a CO test is quick to carry out, noninvasive in nature, and easily administered by nontechnical staff.^[47] The immediate and positive breath CO result can have a profound impact on the smoker and counselor can use this as a way of encouraging smokers; accentuating the positives over the difficulties associated with kicking the smoking habit. For an effective tobacco cessation program smokerlyzer should be used to motivate or encourage people for stopping tobacco use in slum settings.

Conclusion

Inaccurate understanding of hypertension management and health risk of tobacco use among slum dwellers contributes to low levels of perceived susceptibility, seriousness, and self-efficacy to bring changes in medication adherence and stopping or reducing tobacco use over and above preventing CHD. In the slum setting, priority should be given by the primary care health services for proactively identifying hypertensive individuals and then quantify and compare their absolute and perceived CHD risk status. Subsequently, there is a need to develop personalized interventions focusing improving patients' uptake of preventive medications and cardio-protective lifestyle choices such as stopping tobacco use in order to reduce the emerging CHD epidemic among them and long-term CHD burden in India.

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