Risk perception of cardiovascular diseases among individuals with hypertension in rural Malaysia

Nazar Mohd Zabadi Mohd Azahar,[1] Ambigga Devi S Krishnapillai,[2] Noor Hanita Zaini,[3] Khalid Yusoff[4,5]

[1]Department of Medical Laboratory Technology, Faculty of Health Sciences, Universiti Teknologi MARA Pulau Pinang, Bertam Campus
[2]Faculty of Medicine & Defence Health, National Defence University of Malaysia, Kuala Lumpur, Malaysia
[3]Department of Nursing Science, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia
[4]UCSI University, Kuala Lumpur, Malaysia
[5]Department of Cardiology, Faculty of Medicine, Universiti Teknologi MARA, Kuala Lumpur, Malaysia

Correspondence to
Nazar Mohd Zabadi Mohd Azahar, Department of Medical Laboratory Technology, Faculty of Health Sciences, Universiti Teknologi MARA, Pulau Pinang, Bertam Campus, Malaysia; nazarzabadi@gmail.com

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ABSTRACT

Objective Despite various efforts, hypertension remains poorly controlled, thus allowing cardiovascular disease (CVD) to impact the health burden worldwide. Patients' perception of risk may contribute to this scenario. The present study aims to assess the level of risk perception among individuals with hypertension in rural Malaysia.

Methods This is a community-based study conducted among adults between 2010 and 2011 among a rural population in Raub, Pahang, Malaysia. Blood pressure was measured after 5 min of rest. Measurement was done twice and the average was recorded. Cardiovascular risk perception score (CvRPS) was derived using the Modified Risk and Health Behavior Questionnaire. Higher CvRPS indicates the respondent perceives a poorer prognostic outlook.

Results A total of 383 respondents who have hypertension participated in this study. The mean age of respondents was 62±10.6 years; men 63.1±9.6 years, women 61.2±11.1 years (p>0.05). Among hypertensives, those who were not on medication had significantly lower CvRPS compared with those who were on medications (115.9±22.1vs 120.9±23.5, p=0.036); those who were not aware of their hypertensive status had significantly lower CvRPS compared with respondents who were aware about their hypertension (116.7±22.5vs 121.7±21.3, p=0.029) and those with uncontrolled hypertension had significantly lower CvRPS compared with those whose blood pressure was controlled (118.2±22.2vs 128.8±25.8, p=0.009).

Conclusions Our study shows that respondents who were not on medications, unaware of their hypertension status and those who had uncontrolled hypertension tended to underestimate (lower CvRPS) their risk for CVD. Improving their CvPRS through a concerted health education may lead to better therapeutic behaviour and outcomes.

INTRODUCTION

Risk perception is the assessment of an individual's subjective appraisal of vulnerability or personal harm.[1] It is an evaluation of the odds of having a specified event in the future.

Perception of risk should be determined especially among high-risk patients as an aid in health education. It is helpful in the risk dialogue or during patient consultation or counselling.[2] Knowing patients' concerns and how patients perceive their risk are important initial steps in appropriately managing the risk.[3 4] There are some theories that provide an insight into this issue. Health Belief Model and the Protection Motivation Theory are some of the examples that try to explain the association between perceptions of risk with health behaviour. These theories emphasise that perception of risk is important in educating patients on their health-seeking behaviour including preventive measures.[5 6]

Individuals who underestimate their future risk for a certain disease tend to have low motivation for changes in health behaviour[7] including low compliance with medical treatment. Conversely, a high score in perception of risk is associated with positive health-seeking behaviours and motivation to change lifestyle.[8]

Although there has been much effort on risk factor modification, high-risk individuals often fail to change their behaviours.[1 9] Underestimation of risk has been proposed to account for this discrepancy. Failure to have appropriate level of perception might prevent individuals from making a significant change in their lifestyles.[10 11] Perhaps the key to overcoming this ongoing conundrum is to focus on risk perception of individuals as an entry into engaging them into appropriate health-seeking behaviour.[8 12]

Hypertension is one of the main risk factors for developing cardiovascular disease (CVD). Controlling hypertension is a major issue worldwide. Many factors have been identified in the low rates of controlling hypertension such as availability, accessibility, affordability and acceptability of therapeutic regimens. Thus far, only a few studies focused on patients' own perspective, that is, how they view or perceive their risk of developing CVD. As risk perception plays an important role in behavioural changes, it can be used to improve the CVD awareness and knowledge among the rural populations. Subsequently, it will contribute in circumventing the current spread of CVD in the community. This study was aimed to measure the level of risk perception among individuals with hypertension in rural Malaysia.

METHODS

This is a community-based study carried out in rural communities in Raub, Pahang, between 2010 and 2011. Participants were randomly selected from among those in a previous study.[13] Individuals who have hypertension were included in this study. Blood pressure was measured by an Omron automatic blood pressure monitor (Shanghai, China). An average of two readings was taken after the participants had a 5 min rest. Hypertension was defined as blood pressure ≥140/90 mm Hg or on antihypertensive medications.

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Table 1 Frequency distribution of respondents by sociodemographic and clinical characteristics

Characteristics	Frequency (n)	Percentage (%)
Sex	n=383	
Male	157	41.0
Female	226	59.0
Age (years)	n=383	
30–50	60	15.7
51–60	129	33.7
61–70	95	24.8
>70	**99**	25.8
Highest educational attainment	n=379	
No formal education	57	14.9
Primary school	255	66.6
Secondary school	67	17.5
Marital status	n=380	
Single/divorced	84	22.1
Married	296	77.9
Monthly household income (RM)	n=371	
≤500	94	25.3
501–1500	213	57.4
1501–2500	51	13.7
>2500	13	3.5
Current smokers	50	13.2
On treatment	173	46.4
Aware of hypertension	180	47.7
Controlled hypertension	44	25.4

RM, Ringgit Malaysia.

The Risk and Health Behaviors Questionnaire developed by Britta Renner and Ralf Schwarzer (2005)[14] was modified and piloted before use in this study.[15] Cardiovascular risk perception score (CvRPS) was assessed by a 28-item questionnaire. Each item was given a Likert scale ranging from 1 to 7. Total of the score was calculated, and this represented the cardiovascular risk perception score. Sociodemographic properties of respondents such as age, sex, level of education, smoking status and medical history were recorded. Institutional ethics board approval and informed consent were obtained prior to the commencement of the study. Statistical Package for the Social Sciences V.20 was used for analysis. Frequency and percentages with 95% CI were used to describe the sociodemographic properties of the respondents. Independent t-test was used to determine whether there is a significant difference between cardiovascular risk perception score with sex, marital status, smoking status, medication, awareness and status of hypertension control. One-way analysis of variance was used to determine whether there is a significant difference between cardiovascular risk perception score with age groups, highest educational attainment, household income and blood pressure status of the respondents.

RESULTS

Table 1 shows the sociodemographic characteristics of the respondents. The mean age of respondents in this study was 62±10.6 years. The study population was predominantly women (59%), aged 51–60 years old (33.7%), had primary education (66.6%), married (77.9%) and had a monthly household income ranging from RM501 to RM1500 (57.4%). Furthermore, 13.2% were smokers while 46.4% of respondents were on medication to treat hypertension and 25.4% had their hypertension controlled.

Table 2 CVRP score among hypertensives (n=383)

		Mean CvRPS score (95% CI)	p Value
Age of respondents (years)	30–50	124.1 (117.3 to 130.8)	0.028
	51–60	121.4 (117.4 to 125.5)	
	61–70	116.2 (111.4 to 121.1)	
	>70	114.4 (110.2 to 118.7)	
Sex of respondents	Male	119.0 (115.3 to 122.8)	0.636
	Female	117.9 (114.8 to 121.0)	
Marital status	Single/divorced	113.3 (109.4 to 117.1)	0.024
	Married	119.8 (117.0 to 122.5)	
Highest educational attainment	No formal education	110.9 (105.6 to 116.1)	0.025
	Primary school	118.8 (115.9 to 121.7)	
	Secondary school	122.3 (116.4 to 128.2)	
Smoking status	Smokers	119.3 (113.0 to 125.6)	0.781
	Non-smokers	118.3 (115.7 to 120.9)	
Household income/month	≤RM500	110.3 (106.2 to 114.4)	
	RM501–RM1500	119.5 (116.4 to 122.7)	<0.001
	RM1501–RM2500	128.4 (120.8 to 136.0)	
	>RM2500	107.1 (94.3, 119.9)	

CVRP, cardiovascular risk perception; RM, Ringgit Malaysia.

The mean cardiovascular risk perception score was 118±25.7. The score ranged from 34 to 185. The score was significantly associated with age (p=0.028), marital status (p=0.024), highest educational attainment (p=0.025) and household income of the respondents (p<0.001). In contrast, sex of respondents and smoking status were not significantly associated with cardiovascular risk perception score (table 2).

The score was not significantly associated with blood pressure status (p=0.532). However, hypertensive respondents who were not on antihypertensive medications had significantly lower cardiovascular risk perception score compared with those who were on antihypertensive medications (p=0.036). Furthermore, hypertensives who were not aware of their hypertension status had significantly lower cardiovascular risk perception score (p=0.029). In addition, respondents with uncontrolled hypertension had lower cardiovascular risk perception score compared with those who had their blood pressure controlled (p=0.009) (table 3).

DISCUSSION

Older hypertensives in this study tend to underestimate their risk for CVD events. Our finding is consistent with a study done in the USA[16] as well as in the Nottingham Health Profile study[17]

Table 3 CVRP score of the respondents

		Mean CVRP score (95% CI)	p Value
Medication status	On medications	120.9 (117.3 to 124.4)	0.036
	Not on medications	115.9 (112.8 to 119.0)	
Awareness	Aware	121.7 (118.5 to 124.9)	0.029
	Not aware	116.7 (113.4 to 119.9)	
Control of blood pressure	Controlled blood pressure	128.8 (121.0 to 136.7)	0.009
	Uncontrolled blood pressure	118.2 (114.3 to 122.1)	

CVRP, cardiovascular risk perception.

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who found that older individuals have a tendency to underestimate their risk. People who underestimate their risk are actually at a higher risk. This happens because underestimation of risk may not motivate them to adopt a healthy lifestyle including appropriate health-seeking behaviour or even appropriate dietary choices. Our study suggests that healthcare providers need to provide extra effort in educating patients about the consequences of hypertension especially among older individuals. As the person ages, perception of risk turns out to be the key motivational drive to ensure health sustainability.[18]

Hypertensive women tend to have a non-significant lower cardiovascular risk perception score compared with men. Perhaps they perceive that CVD is a male problem.[19] Schenck-Gustafsson showed that CVD is the most neglected health problem among women in both developing and developed nations.[20] Another reason for the low cardiovascular risk perception score among women is that they tend to focus on breast cancer and menopause,[21] thus underestimating their risk for CVD. Empowering women with CVD knowledge is required to avoid the development of this problem among them.

Being single or a divorcee is another factor associated with low cardiovascular risk perception score. Our findings suggest that being single or a divorcee causes lack of motivational or spiritual support. There is evidence from a previous study that motivation and risk perception play an essential role in preventive medicine.[22]

Level of educational attainment is crucial to ensure health sustainability. Majority of people with low educational attainment tend to have lower household income. Subsequently, they will have limited access for health. Furthermore, they will encounter difficulties in affording medicines that are costly. In this study, people who have no formal education underestimated their risk for CVD. Our study conforms to a study conducted by Nsiah-Kumi *et al*[23] who found that individuals with low educational attainment were more likely to have low levels of concern about their risk for certain diseases such as diabetes.[23] According to the Health Belief Model proposed by Rosenstock *et al*,[6] they emphasised that there is a link between patients' perception and educational level on patients' behaviour.[6]

It has been shown that cardiovascular risk perception was significantly associated with household income with the lowest score being observed among respondents with the highest household income. There is evidence that there is a significant relationship between income and heart disease.[24 25] This mismatch is due to the fact that patients with higher income levels were more likely to be able to afford all necessary medications.[26] Hence, their dependence on medical appointment or advice from healthcare providers is less. During the medical appointment, there will be a counselling session in which the patient will share their medical problems with their healthcare providers. By conducting counselling, the patient's risk perception could be corrected.[27]

In a study done by Ljubotina *et al*,[19] they highlight that hypertensives in a rural population are not concerned about their risk to develop CVD.[19] One of the reasons for this is that people with uncontrolled hypertension are not well informed about the consequences of poorly controlled hypertension. Thus, the percentage of people with uncontrolled hypertension increases yearly.

Perception and compliance are intercorrelated with each other. Patients with good perception will comply with their medication. Hence, perception can act as a predictor for compliance. Ross *et al*[28] illustrate that if the patients perceived that they are at high risk for stroke, they will be concerned with their blood pressure status.[28] Subsequently, they will comply with their medications. In a study conducted by Petrie and Weinman,[29] they pointed out that patients with hypertension perceive medication is the key to treat their illness, but a substantial proportion were concerned about taking medicines.[29]

Uncontrolled hypertension remains common despite having effective medical therapy and guidelines in the management of high blood pressure.[30] One of the significant factors for this poor control of hypertension is compliance. Poor medication compliance has been associated with the behaviour of patients.[31] Controlling high blood pressure is beneficial for health as well as financial reasons. Optimal management of hypertension has a positive impact on clinical, economic and public consequences.[32 33] Treating hypertension requires both lifestyle and behavioural changes. Moreover, compliance to medications is a vital step in the regulation of blood pressure. Perception on risk may motivate patients to take medications as prescribed. Knowing how patients perceive hypertension and its complications, doctor–patient relationship is markedly improved leading to better control of blood pressure.[19 28]

Many factors are expected to influence the risk perception such as beliefs, knowledge and social circumstances.[34] Intensive health education could serve as the best tools to ensure our population has adequate perception about their risk of getting CVD. It is important to educate people about the consequences of hypertension.

There are several important clinical and public health implications from our findings. Our study provides an insight into how hypertensives in a rural population perceive their risk for CVD. By knowing patients' perception, effective treatment strategies can be delivered to patients. In our population, there are a limited number of studies with regard to cardiovascular risk perception. Findings from this study may provide useful insight into how hypertensives in rural Malaysia perceive their risk for CVD.

Limitations of the study

The study has several limitations. First, since this study is a cross-sectional study, we can only describe the factors that were independently associated with cardiovascular risk perception among hypertensives, not attributable causes or temporal inferences on the associations found. Second, this study involved rural communities in Raub, Pahang, potentially limiting the generalisation of the results. Finally, as with any self-reported data concerning sensitive topics, some responses may have been inaccurate. Due to the fear of cardiovascular treatment or surgery, cardiovascular risk factors were potentially under-reported. Nonetheless, this study has provided useful and important information on the perceived risk.

CONCLUSION

In summary, our study revealed that hypertensives who were not on medications, unaware of their hypertensive status and hypertensives with uncontrolled blood pressures tend to underestimate their risk for future cardiovascular events. Mismatch between actual risk and perceived risk on CVD should be minimised.[35] Due to the fact that hypertension drives future cardiovascular events,[36] many strategies have to be put in place. Health education is needed to raise perception, awareness and knowledge in the population. Raising awareness and aggressive lifestyle modification among our population are necessary to treat this malady. It is essential to provide the population with adequate information in relation to hypertension followed by strategies to reduce

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the risk of getting it. Consequently, individuals would look at it in a rational and logical manner and implement the risk reduction strategies, thus minimising risk to develop CVD.

Key messages

What is already known about this subject?

- Only a few studies pay attention to the perception of individuals with hypertensives in rural areas on their risk of developing cardiovascular disease (CVD).
- Perceived risk has been shown to play an important role in behavioural change.

What does this study add?

- Hypertensives who were not on medications, unaware of their hypertension and those who had uncontrolled hypertension underestimate their risk for CVD.

How might this impact on clinical practice?

- This study shows how hypertensives in a rural area perceived their risk of developing future cardiovascular events. Adequate health education may improve this perception, and this may be translated into better blood pressure control.

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