

Understanding and Motivations of Female Community Health Volunteers About Blood Pressure Control

A Prerequisite for Developing Community-Based Hypertension Interventions in Nepal



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ABSTRACT

Background: Health literacy and attitudes of female community health volunteers (FCHV) toward hypertension management in the context of Nepal are not well understood. Therefore, it is important to explore the potential for the effectiveness for blood pressure screening and perceptions on their likely ability to promote a blood pressure reduction at community level.

Objective: The study aims to explore the knowledge and attitudes of FCHV related to hypertension prevention and control.

Methods: A cross-sectional survey was conducted with FCHV located inside Lekhnath municipality. A total of 113 FCHV were interviewed in the survey using a questionnaire on knowledge and attitudes related to hypertension and risk factors.

Results: The percentages of FCHV with low, medium, and high levels of knowledge about hypertension were 43%, 24%, and 31%, respectively. Almost all of the respondents considered hypertension a major problem in their community and they would like to receive training for blood pressure screening. No significant differences were observed in the knowledge and attitudes related to hypertension in relation to demographic characteristics of FCHV. A majority of FCHV agreed that smoking (69.8%), alcohol (77.8%), low physical activity (42.4%), high salt intake (65.4%), high fat intake (78.7%), and genetics (53.9%) are major risk factors for hypertension.

Conclusions: Our study demonstrates that there is a background need to improve the health literacy for blood pressure management. There is also a need for development and implementation of a community-based intervention aimed at mobilizing female community health volunteers for detection and management of hypertension at the community level in Nepal. Our study demonstrated a high level of interest and readiness for blood pressure prevention, control, and management in community settings.

The estimated prevalence of hypertension in Nepal is approximately 30% [1]. The burden of hypertension has tripled within the last 30 years and is most likely due to a shift toward unhealthy life styles and sedentary behaviors [2]. Risk factors for the higher hypertension rate in the country have been previously identified in a population study; for example, a nationwide survey found 19% were active smokers, 99% consumed <5 daily servings of fruit and vegetables, and 21% were overweight [3]. The tobacco and alcohol consumption rate among adults in Nepal is considered higher than that of its South Asian neighbors. The number of female smokers in Nepal is also higher compared with other countries in the region [4]. As the prevalence of hypertension is likely to be increasing with the

influence of Western diets, smoking, and sedentary behaviors, there is a perceived need to develop regular surveillance and community-based intervention programs. We suggest that the primary health care collaborative network would be effective to address prevention, control, and management of hypertension. Because of the high costs of curative and rehabilitative care toward hypertension-related stroke and heart failure, a population-based preventive approach to target early hypertension would likely be cost-effective [5]. A community-based hypertension prevention program aimed at modifiable risk factors has been found to be effective at a community level [6]. There would be return on an investment in community blood pressure management; for example, a population-wide reduction of 3 mm Hg in blood

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pressure could reduce stroke risk by about one-third [7] and similarly a minor reduction in blood pressure may reduce coronary heart disease events [6]. Hardy et al. [8] demonstrated in theoretical models that a 1-mm Hg population-wide systolic blood pressure reduction would be associated with 20.3 and 13.3 fewer heart failure events per 100,000 person-years in African Americans and whites, respectively.

Blood pressure management strategies are unique to each population. We have previously proposed to shift prevention, diagnosis, and treatment of hypertension to community health workers (CHW) [9]. Due to the trustworthiness of CHW in the community, CHW have the potential to influence community attitudes [10], particularly with respect to the ability to adopt healthy lifestyles via health promotion and education [11]. Earlier studies from Bangladesh, Guatemala, Mexico, and South Africa have demonstrated that community health workers without formal professional training could be adequately trained to effectively screen for, and identify, people at high risk of hypertension [12].

We have previously made the suggestion that a blood pressure management strategy in Nepal could be implemented via female community health volunteers (FCHV) [13]. The FCHV are a type of CHW [14]. FCHV are selected by members of Mothers' Groups for Health with the assistance of local health facility staff. FCHV receive 18 days of basic training in 2 steps (9 + 9 days), covering selected primary health care components. The current role of the FCHV is to promote maternal health, such as safe motherhood, child health, and family planning [15]. Health literacy and attitudes of FCHV toward

hypertension in the context of Nepal have recently been explored via qualitative assessments of opinions and understanding [16]. Here we are specifically interested in quantifying responses by CHW to their understanding of risk factors and their ability to promote a blood pressure assessment and reduction community program. Thus, this study aims to explore the knowledge and attitudes of FCHV related to hypertension in the context of establishing an intervention program in the community.

METHODS

Study design and setting

A cross-sectional survey was conducted among FCHV of Lekhnath municipality, Nepal, from March to May 2014. The study area is located about 180 km west of Kathmandu. Total population of the municipality was 58,816 per the 2011 census. The municipality is divided into 15 smaller wards that share geography, lifestyle, ethnicity, and culture. The municipality is a semi-urban area with limited health services that possesses 1 primary health care center, 3 subhealth posts, and 2 urban health care centers. FCHV located inside the municipality were eligible to participate in the study ($n = 123$).

Method and tools of data collection

The interview questionnaire of this study was developed in English first and then translated into Nepali. The details about the formulation of the questionnaire are presented in Figure 1. It consists of 2 sections: knowledge questionnaire

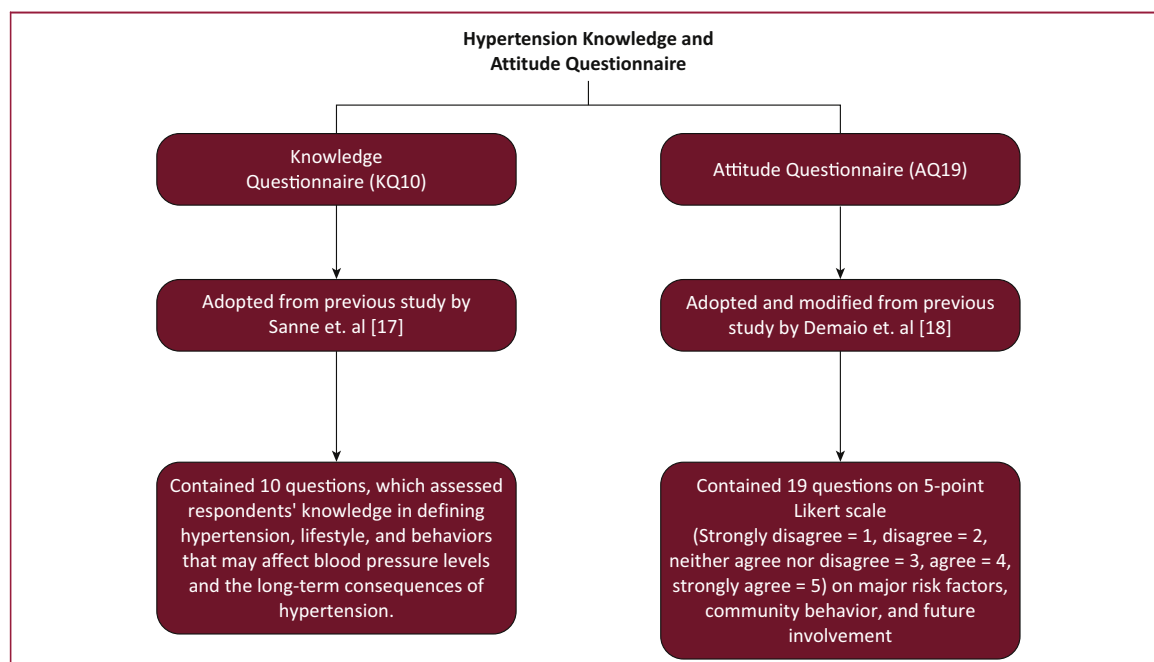


FIGURE 1. Hypertension knowledge and attitude questionnaire. KQ10, knowledge questionnaire with 10 questions; AQ19, attitude questionnaire with 19 questions.

(KQ10) and attitude questionnaire (AQ19). KQ10 contains 10 questions and AQ19 contains 19 questions. We also added 6 questions on demographic details.

KQ10 was adapted from a hypertension knowledge questionnaire used in an earlier study in New Orleans, Louisiana, that was particularly adapted for a population of low literacy [17]. KQ10 assesses respondents' knowledge in defining hypertension, lifestyle, and behaviors that may affect blood pressure levels, as well as their knowledge about the long-term consequences of hypertension. Responses were coded as correct or incorrect and 0 points were assigned for incorrect responses or responses of "do not know." Points were summed to generate a total score with a possible range of 0 to 10, with higher scores reflecting better blood pressure knowledge.

For AQ19, a previously used Likert scale for hypertension attitude was taken as a reference [18] and modified by adding a neutral option "Neither agree nor disagree (3)" in the Likert scale in addition to strongly agreed (5), agreed (4), disagreed (2), to strongly disagreed (1) for assessment of their attitude in all 3 sections of the attitude questionnaire on risk factors of hypertension, community behavior, and future role in the management of hypertension, respectively.

Cronbach alpha, an internal consistency estimate of reliability of test scores [19], is calculated separately for 3 sections on AQ19: attitudes toward risk factors; community behavior; and future involvement. The attitude toward risk factors consisted of 7 items ($\alpha = 0.78$); the attitude toward community behavior consisted of 7 items ($\alpha = 0.60$); and the attitude toward future involvement on hypertension management consisted of 5 items ($\alpha = 0.63$). The recommended minimum Cronbach alpha for exploratory variables is 0.6 [20].

The complete questionnaire with 35 questions was pre-tested among the FCHV of Pokhara municipality, which is the adjoining municipality of the study area, to improve any problem related to ambiguity of words, misinterpretation of questions, inability to answer a question, and any sensitive questions. A research assistant who did not have a health sciences background conducted all the interviews via house-to-house visits of the FCHV.

Statistical analysis

Data were entered in a Microsoft Excel spreadsheet and imported to STATA version 11 (StataCorp, College Station, TX, USA) for analysis. Descriptive data were presented in frequency and percentage. As the distribution of hypertension knowledge was skewed, participants were classified into tertiles of hypertension knowledge. Of 10 questions on KQ10 about hypertension, participants who answered <4 , 4 to 5, and >5 were reclassified as having low, medium, and high hypertension knowledge. For the attitude questionnaire, each response was analyzed separately and treated as ordinal data in descriptive analysis. Chi-square test was used for the test of difference in ordinal

variables by demographic characteristics. We did not calculate the sum for knowledge and attitude related indicators, acknowledging the fact that the meaning of each indicator may be different for our study population.

Ethical consideration

Ethical approval for the study was obtained from Nepal Health Research Council. Written informed consent was obtained from all participants. Data were treated in a confidential manner with access only granted to the investigators.

RESULTS

Demographic characteristics

Background and demographic characteristics of 113 FCHV who responded to the survey are shown in Table 1. The median age of the participants was 43 years. Ninety-six percent of the FCHV were literate and a majority belonged to the upper caste ethnic group. Seventy-seven percent of respondents had >10 years of work experience as an FCHV.

Knowledge of diagnosis, risk factors, and complications

The distribution of responses from KQ10 is presented in Table 2. The median hypertension knowledge score was

TABLE 1. Characteristics of FCHV

Variable	% (No. of FCHV)
Age group, yrs	
20–29	5.3 (6)
30–39	23.8 (27)
40–49	41.5 (47)
50–59	24.7 (28)
60–69	4.4 (5)
Education	
Literate	96.0 (109)
Illiterate	3.5 (4)
Ethnicity	
Dalit	4.4 (5)
Disadvantaged Janajati	5.3 (6)
Relatively advantaged Janajati	9.7 (11)
Upper caste	80.5 (91)
Years of experience as an FCHV	
≤ 10 yrs	23.0 (26)
> 10 yrs	76.9 (87)
History of hypertension	
Yes	9.7 (11)
No	90.2 (102)
Family history of hypertension	
Yes	32.7 (37)
No	67.2 (76)

FCHV, female community health volunteers.

TABLE 2. Hypertension knowledge items and percentage of participants with correct responses

Item	Hypertension knowledge item	Response options	% correct
1	If someone's blood pressure is 120/80 it is...	High, low, normal , do not know	44.2
2	If someone's blood pressure is 160/100 it is...	High , low, normal, do not know	38.0
3	High blood pressure can cause strokes.	Yes , no, do not know	88.4
4	High blood pressure can cause heart attacks.	Yes , no, do not know	80.2
5	High blood pressure can cause cancer problems.	Yes, no , do not know	4.6
6	High blood pressure can cause kidney problems.	Yes , no, do not know	50.5
7	Once someone has high blood pressure, it usually lasts for...	A few years, 5–10 years, the rest of their life , do not know	46.9
8	Losing weight usually makes blood pressure...	Go up, go down , stay the same	15.9
9	Eating less salt usually makes blood pressure...	Go up, go down , stay the same	29.2
10	People with high blood pressure should take their medicine...	Every day , at least a few times a week, only when they feel sick	71.7

Correct responses are given in **bold**.

4 (25th percentile = 2 and 75th percentile = 6). The distribution of FCHV based on low (<4 score), medium (4 to 5 score), and high (>5 score) knowledge was 43%, 24%, and 31%, respectively. Forty-three percent of participants provided the correct answer for normal blood pressure reading, whereas 38% did so for high blood pressure. A majority of the respondents considered that high blood pressure can cause stroke (87.5%) and heart attack (80.1%). However, only 50% of the respondents considered that high blood pressure might cause renal dysfunction. Only 4.6% of the respondents correctly answered that high blood pressure does not cause cancer. Fifty percent of respondents provided the correct answer that hypertension is a chronic condition and generally lifelong, and 71% of FCHV considered that hypertensive patients should take their medicine for their whole life. Regarding risk factors, 16% and 29% of participants correctly identified that reducing weight and eating less salt usually lowers blood pressure, respectively. We did not find any statistical differences on KQ10 score by demographic characteristics, family history of hypertension, and self-diagnosis of hypertension ($p > 0.05$).

Attitude toward hypertension and its risk factors

The attitudes toward different hypertensive risk factors are presented in Figure 2. Among the risk factors, high fat intake was perceived as the most important risk factor followed by alcohol use. Overall agreement (strongly agree or agree) on specific risk factors such as smoking, alcohol, high salt, high fat, and genetics were >50% (smoking = 69.8%, alcohol = 77.8%, high salt intake = 65.4%, high fat intake = 78.7%, and genetics = 53.9%). Low fruit intake followed by low physical activity was perceived as the least important risk factor. Only 26.5% and 42.4% of FCHV agreed that low fruit intake and low physical activity were risk factors for hypertension, respectively.

Attitude toward community behavior related to hypertension

The community behavior-related attitude toward hypertension prevention and management is presented in Figure 3. Of FCHV respondents, 92.9% agreed that their communities are eating enough green leafy vegetables, and 44% agreed that their community members made the choice to consume food products with low fat content. Fifty-four percent of the FCHV agreed that their communities have access to regular blood pressure monitoring and treatment. And 27.3% believed their community chose to engage in physical activity for blood pressure control.

Attitude toward future involvement in hypertension management

The attitudes toward future involvement in hypertension management are presented in Figure 3. Of FCHV respondents, 59.7% agreed with the statement "high blood pressure is a problem in my community," and 97% agreed

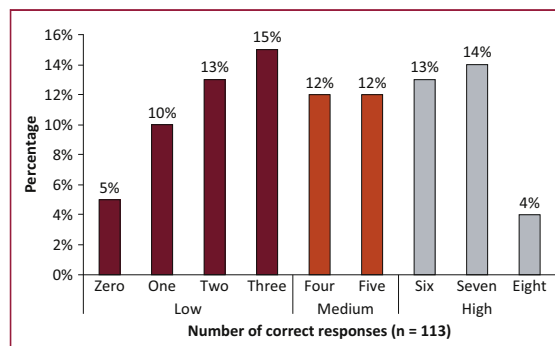


FIGURE 2. Distribution of correct responses on a 10-item hypertension knowledge questionnaire and categorization of respondents into low, medium, and high knowledge categories.

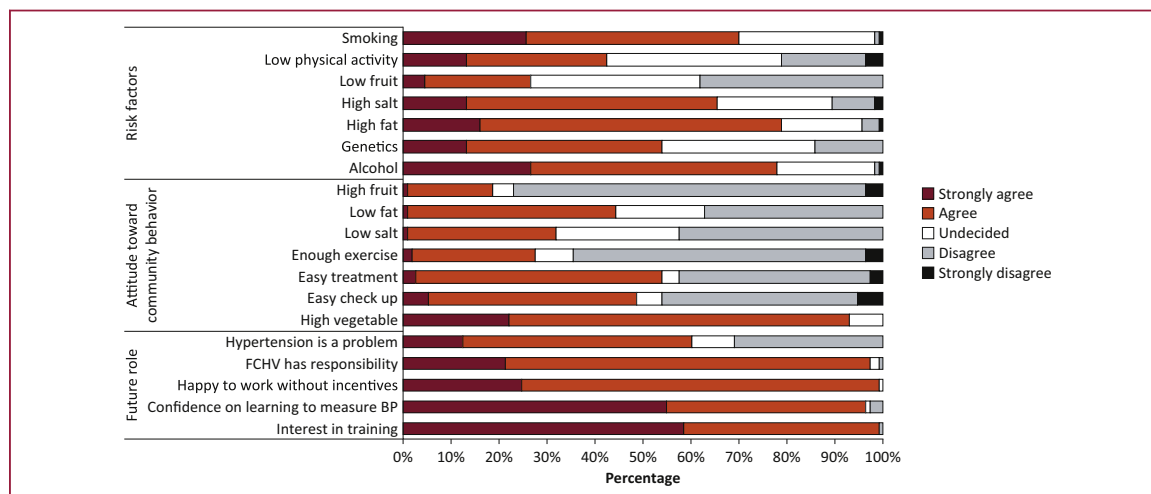


FIGURE 3. Attitudes of female community health volunteers (FCHV) toward risk factors, community behavior, and possible future role for hypertension. BP, blood pressure.

that they could assist in hypertension management at a community level. Furthermore, FCHV were willing to receive future hypertension-related training. If training is provided, 96.3% of the FCHV agreed that they had the confidence to take future blood pressure readings correctly. Ninety-nine percent of FCHV suggested that they could contribute to community education and screening programs for hypertension without receiving any financial or reward incentives.

DISCUSSION

This is the first study assessing hypertension-related knowledge and attitudes of FCHV from Nepal. We found 31% of FCHV had good knowledge about hypertension and its associated complications and risk factors. Our earlier qualitative study from within the same geographic area found that FCHV possess some knowledge about diagnosis, risk factors, and consequences of hypertension [16]. Both of these studies showed that FCHV generally are positive and interested but need an appropriate training program in order to enhance their knowledge and skills in hypertension management. An earlier study in a peri-urban community of nonselect adult participants in Nepal reported 20% had a satisfactory knowledge of blood pressure risk factors [21], suggesting that CHW are more aware of conditions affecting the general community compared with their “general community” counterparts. A high frequency of FCHV in our study agreed that smoking, alcohol, high salt intake, high fat intake, and genetics are significant risk factors for hypertension development and continuation.

CHW, like the FCHV of Nepal, and their role in health promotion are being increasingly recognized [9]. A systematic review of randomized controlled trials reported

significant improvement in African Americans’ self-care practices and adherence to antihypertensive medications if assisted by CHW (with blood pressure management training) [22]. However, such an approach has not been applied in Nepal. There is a willingness for FCHV to be trained in the prevention, control, and management of hypertension in the future.

Our findings also showed that the FCHV in our study area do not differ in terms of level of knowledge, because there were no significant differences in knowledge with regard to age, literacy status, and family history of hypertension and years of experience as an FCHV. The majority of FCHV are semi-health literate for blood pressure risk factors, which is an important prerequisite for involving FCHV in a future blood pressure control. The fact that pre-existing blood pressure knowledge was not increased by a self-diagnosis or family diagnosis suggests a need for a blood pressure training program, which will increase screening, health promotion, and blood pressure health literacy.

The study was conducted only among FCHV based in 1 municipality in Nepal. Due to the diverse nature of CHW in terms of training and exposure, the study may not be generalized to CHW of other areas without prior validity assessment.

CONCLUSIONS

As FCHV are frontline CHW in Nepal, there is a potential for involvement for prevention, control, and management of hypertension in the future. FCHV until now have been entrusted with responsibilities related to family planning, nutrition, maternal, newborn, and child health [14]. Our study demonstrated a high level of interest and readiness for blood pressure prevention, control, and management in community settings.

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