

# Knowledge of Hypertension among Ethiopian Army to the African Peace Keeping Mission

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## Abstract

**Background:** Occupational stressors, such as military deployment to peace keeping mission, if coupled with inadequate knowledge, attitude and practice related to hypertension can increase the likelihood of developing hypertension. We sought to determine the level of knowledge, attitudes and practices of Ethiopian Army to African Peace Keeping Mission.

**Methods:** Institution based cross sectional study was done among systematically selected 420 members of the Ethiopian Defense Force to the African peace keeping mission. Data was collected using structured questionnaire through face to face interview. Level of knowledge, attitude and practice towards hypertension were categorized using Bloom's cut-off points into good (>80%), moderate (60-80%) and poor (<60%), and association was examined using chi-square test and multinomial logistic regression.

**Results:** The overall knowledge of participants was poor with a mean score of 49.8% (SD ± 16), overall attitude was neutral with score of 65.1% (SD ± 16), and overall practice was fair with score of 60.5% (SD ± 16.9). Level of education was found to positively and significantly influence attitude towards preventive methods as well as preventive lifestyle practice at P<0.001.

**Conclusion:** The level of knowledge, attitude towards hypertension prevention as well as practice related to hypertension was low and inadequate, and can significantly raise their likelihood of developing hypertension.

**Keywords:** Ethiopia; Hypertension; Military; Peace keeping mission

## Background

Hypertension is a chronic, non-communicable disease often asymptomatic disease or progresses with mild symptoms for many years until it is diagnosed or consequences of end-organ damage emerge [1]. Hypertension is a highly prevalent public health problem [2]. The contribution of hypertension to the global burden of disease has significantly increased from about 4.5 percent in 2000, to 7 percent in 2010. Moreover about 92 million disability-adjusted life years worldwide were attributable to high blood pressure in 2001, and by 2025, the number of hypertensive people is expected to increase by 60% and reach 1.56 billion people [3].

There were approximately 80 million adults with hypertension in sub-Saharan Africa in 2000 and by 2025 this figure is expected to rise to 150 million [4,5]. Hypertension is the seventh contributor to premature death in developing countries [6]. A systematic review of various studies has reported the prevalence of hypertension at 19.6% in the year 2014 in Ethiopia [7] while a prevalence of reported at 28.3% to 30.3% was reported in studies done in urban settings [8,9].

Hypertension is a well-known risk factor for many chronic diseases including cardio-cerebrovascular disease, diabetes and kidney disease [10] and a leading risk factor for mortality [11] causing a significant

multifaceted social and economic burden not only on the individual patient but also on the families and society as well [12,13].

Worldwide the magnitude of hypertension is remarkably increasing [14-18] the increasing pattern was documented among military personnel [19-22]. A prevalence of 22% was reported among Brazilian Air force [23], almost three times higher than documented in the general population of 8% [24].

Comorbidities in hypertensive patients have been observed to reduce the effect of therapy and influence to quality of life [25] hence the control and prevention intervention of hypertension need to involve improving knowledge about potential risk factors, adoption of healthy life style, early diagnosis and treatment to reduce longterm cardiovascular risk.

Risk factors to hypertension are highly related with individual's lifestyle [14] that encompasses occupational and behavioral characteristics [26-28]. A study done among Kenyan military personnel reported alcohol consumption and cigarette smoking as risk factors for hypertension. The study also documented a significant association between hypertension and participation in peace keeping missions, where 68% of subjects participated in peace missions were hypertensive compared to 36% who had never been to the missions [29].

An increased risk of hypertension among higher body mass index, male, and senior rank military personnel was also documented in USA

by Brain [30]. Smoking, obesity, sedentary life-style and poor dietary intake were identified as a risk factor for high blood pressure among Nigerian Armed Forces Service men [31], and smokes cigarettes, drink alcohol, and not engaged in exercise among India military [32].

Knowledge about hypertension and adopting healthy attitude and practice related to risk factors for hypertension could reduce the likelihood of acquisition as well as development of complication of hypertension [33,34].

## Methodology

A descriptive cross-sectional quantitative study was done among the Ethiopian Defense force members assigned for peace keeping mission in 2015, to assess knowledge and attitude towards hypertension and lifestyle practices. The sample size of 423 was determined assuming percentage knowledge of hypertension among army recruits to be 50% (taking 95% level of significance, 5% margin of error (d), and 10% upward adjustment for non-response rate.

## Instrument

Data was collected through face to face interview using pretested structured questionnaire. There were 20 knowledge items; 1 point was given to correct response and 0 to wrong response. Level of knowledge was determined by the sum score of each item and graded in to three levels based on Bloom's cut-off point- low level (below 12 point or 60%), moderate (12-15 points or 60%-80%), and high (above 16 point or above 80%) [35]. Attitude was learned from 15 items framed in five point likert scale with 1 given to strongly disagree to 5 strongly agree and rated as negative (below 60%), neutral (60% -79%), and positive (above 80%) [36]. Likewise, practice was measured using 10 items with correct response given 1 and 0 to incorrect response, and ranked in to three - poor (below 6 point or 60%), fair (6-8 points or 60%-80%), and good (above 8 or above 80%) [35]. Relationship between categorical variables with knowledge, attitude, and practices was measured using a chi-square test. Multivariate logistic regression model computed to establish association and significance was declared if found  $P < 0.05$  and 95% CI.

The study obtained ethical approval from the Addis Ababa University. All patients were fully informed about the purpose of the study, and verbal informed consent was obtained.

## Results

The study sample consisted of 420 of which 56.8% were married, mean age was 36 (SD  $\pm$  4.5) years, and all attended formal education. Non-officer accounted for 79.5%, and 83.8% served for over ten year. Smokers accounted for 13.6% and 13.3% reported habit of drinking alcohol.

## Knowledge about hypertension

Two hundred eighty (66.7%) correctly defined high blood pressure. One hundred eighty two (43.3%) correctly listed symptoms of hypertension as headache, dizziness and nausea. Ninety three (22%) did not mention any risk factor for hypertension. Combination of medication, diet and exercise was cited as appropriate management approach by 239 (57%). One hundred sixteen (27.6%) and 56% cited salt reduction and regular exercise to reduce risk of hypertension. The overall knowledge was poor with a mean score of 49.8% (sd  $\pm$  16), and

only 3.3% had good knowledge, whilst 31.2% and 65.5% had moderate and poor level of knowledge related to hypertension respectively.

## Attitude towards hypertension

Respondent's agreement towards positive statement about the prevention and control of hypertension including life style modification ranged from 62.4% to 90.7% while agreement towards negative statements ranged from 11.2% to 22.2%. More importantly, 52% of respondents strongly agreed to the statement "high blood pressure is preventable", and 33% agreed to the statement "stopping smoking and alcohol helps to prevent hypertension". The overall attitude of respondents was neutral with score of 65.1% (SD  $\pm$  16). Only 16.7% had positive attitude towards hypertension preventive and control methods, whilst 33.6% and 49.8% had negative and impartial attitude.

## Practice towards prevention of hypertension

Three hundred eighty eight (92.4%) ever checked their blood pressure, and 80% checked within the past thirty days. Eighty four (20%) are current smokers, 63.3% drinks alcohol, 13.6% often add extra salt to their food and 25% used to do physical exercise for 30 to 60 minutes in a typical week. The global mean practice score of participants was 60.5% (SD  $\pm$  16.9) and 22.1% had good level of practice, whilst 44% and 33.8% had fair and poor practice related to hypertension prevention.

Factors associated with knowledge towards hypertension-Knowledge level was found significantly associated with level of education at  $p < 0.001$ , military rank at  $p < 0.001$ , and exposed with information on lifestyle related to hypertension at  $p < 0.001$  (Table 1).

Variable	<60%N(%)	60-80%N(%)	>80%N(%)	$\chi^2$	P-value
Age group					
Below 30	30(57.7)	18(34.6)	4(7.7)		
30-39	304(71.8)	74(26.1)	6(2.1)		
40-49	48(57.1)	33(39.3)	3(3.6)	11.6	0.02
Level of education					
Primary level (up to grade 8)	110(85.3)	18(14)	1(0.8)		
Secondary and above	172(59.1)	107(36.8)	12(4.1)	27.9	0.001*
Marital status					
Single	126(69.2)	47(25.8)	9(4.9)		
Married	156(65.5)	78(32.8)	4(1.7)	5.4	0.066
Service years					
Less than 10 years	44(64.7)	20(29.4)	4(5.9)		
More than 10 years	238(67.6)	105(29.8)	9(2.6)	2.1	0.34
Military rank					
Non officer	250(74.2)	80(23.7)	7(2.1)		
Officer	32(38.6)	45(54.2)	6(7.2)	93	0.000*

Information about health life style					
No	62(91)	4(5.9)	2(2.9)		
Yes	213(60.5)	127(36.1)	12(3.4)	24.9	0.001*

\*Significant at p <0.05, in a test with less than 20% of cells have expected count less than 5.

**Table 1:** Chi-square test result to determine association between knowledge of hypertension and Socio-demographic characteristics of respondents, 2015.

On the other hand significant association was found between attitude towards hypertension preventive and control methods and level of education at P-value=0.001, and exposure to information about hypertension related lifestyle at p<0.001 (Table 2).

Variable	<60%N(%)	60-80%N(%)	>80%N(%)	x <sup>2</sup>	P-value
Age group					
Below 34	43(32.8)	61(43.5)	32(23.7)		
35-44	98(35.9)	116(42.5)	59(21.6)		
45-54	1(9.1)	8(72.7)	2(18.2)	8	0.238
Level of education					
Primary level (up to grade 8)	73(39.7)	86(46.7)	25(13.6)		
Secondary and above	69(29.2)	99(41.9)	68(28.8)	29	0.001*
Marital status					
Single	64(38.8)	67(40.6)	34(20.6)		
Married	78(31.0)	115(45.6)	59(23.4)	7.88	0.28
Military rank					
Non officers	118(35.3)	151(45.2)	65(19.5)		
Officers	25(28.7)	34(39.1)	28(32.2)	7.19	0.126
Service years					
Less than 10 years	19(27.9)	37(54.4)	12(17.6)		
More than 10 years	123(34.9)	148(42.0)	81(23.0)	7.44	0.114
Information about health lifestyle					
No	62(91)	4(5.9)	2(2.9)		
Yes	213(60.5)	127(36.1)	12(3.4)	24.9	0.001*

\*Significant at p-value <0.05% in a test with less than 20% of cells have expected count less than 5.

**Table 2:** Chi-square test result to determine association between attitude towards prevention of hypertension and socio-demographic characteristics of respondents, 2015.

Furthermore, practice related to hypertension prevention found to significantly associate with level of education at p<0.04 (Table 3).

Variable	<60%N(%)	60-80%N(%)	>80%N(%)	x <sup>2</sup>	P-value
Age group					
Below 30	11(21.2)	26(50.0)	15(28.8)		
30-39	100(35.2)	125(44.0)	59(20.8)		
40-49	31(36.9)	32(38.1)	21(25.0)	5.4	0.24
Level of education					
Primary level (up to grade 8)	53(41.1)	55(42.6)	21(16.3)		
Secondary and above	89(30.1)	128(44.0)	74(25.4)	6.2	0.04*
Marital status					
Single	72(39.6)	72(39.6)	38(20.9)		
Married	70(29.4)	111(46.6)	57(23.9)	4.7	0.09
Military rank					
Non officers	118(35.3)	151(45.2)	65(19.5)		
Officers	3(23.1)	6(46.2)	4(30.8)	7.19	0.126
Service years					
Less than 10 years	19(27.9)	36(52.9)	13(19.1)		
More than 10 years	123(34.9)	147(41.8)	82(23.3)	2.9	0.23
Information about health life style					
No	23(33.8)	31(45.6)	14(20.6)		
Yes	119(33.8)	152(43.2)	81(23.0)	0.22	0.89

\*Significant at p-value <0.05% in a test with less than 20% of cells have expected count less than 5.

**Table 3:** Chi-square test result to determine association between practices related to hypertension prevention and socio-demographic characteristics of respondents, 2015.

Multinomial logistic regression shows that level knowledge has significant positive association with practice score of respondents for low level knowledge relative to high level knowledge, (AOR=9.39; 95%CI, 1.92-45.93) at P=0.006 when comparing poor practice to good practice, and (AOR=5.26; 95%CI, 1.51-18.31) P=0.009 when comparing fair practice to good practice. Furthermore, attitude towards prevention of hypertension has significant association with practice score of respondents, with the odds ratio of 4.6 (AOR=4.61; 95%CI, 2.1-10.1) at P=0.001 when comparing poor practice to good practice, and (AOR=2.99; 95%CI, 1.45-6.15) at P=0.001 when comparing fair practice to good practice for negative attitude relative to positive attitude. Moreover, comparison neutral attitude relative to positive attitude, significant association was established between poor practice to good practice (AOR=2.77; 95%CI, 1.34-5.7) P-value 0.006,

and fair practice to good practice, (AOR=2.45; 95%CI, 1.29- 4.67) at P=0.006 (Table 4).

	Variables	P value	AOR	95% confidence interval
Low knowledge level	Intercept	0		
	Poor practice	0.006*	9.39	[1.92, 45.93]
	Fair practice	0.009*	5.26	[1.51, 18.31]
	Good practice	.	1	.
Moderate knowledge level	Intercept	0		
	Poor practice	0.15	3.28	[0.65,16.56]
	Fair practice	0.082	3.08	[0.86,10.91]
	Good practice		1	
The reference category is High level knowledge				
Negative attitude	Intercept	0.397		
	Poor practice	0.000*	4.61	[2.10,10.12]
	Fair practice	0.003*	2.99	[1.45,6.15]
	Good practice		1	
Neutral attitude	Intercept	0.077		
	Poor practice	0.006*	2.77	[1.34,5.70]
	Fair practice	0.006*	2.45	[1.29,4.67]
	Good practice		1	
The reference category is positive attitude				
* Significant association				

**Table 4:** Multinomial logistic regression test to determine association between practice with knowledge and attitude towards prevention, 2015.

## Discussion

Participants to this study showed similar life style related to hypertension with previous studies done elsewhere [29,30,32]. In this study the 65.5% of respondents found to have low level knowledge, and this is considerably lower when compared with previous studies done in a North Carolina, Iran, Mongolia and Nigeria [36-39]. The possible explanation for this discrepancy could be the difference in study setting.

In this study cumulative mean percent of attitude score was 65.1%, and two hundred nine (33.6%) has negative attitude, which is better than the study done in India [40], but worse with that found in Iran [41]. The difference could be the difference in the set of questions used to measure the attribute.

The mean practice score in this study was 60.5%, and ninety three (22.1%) had good practice towards preventive measures of hypertension. The finding is better than documented in India and Iran

[38,41]. Participants to this study were in the training center where some military disciplines such as regular physical exercise, screening for hypertension, etc., may have contributed to the variation.

The significant influence of educational level on respondent's knowledge, attitude and practice related to hypertension goes with the traditional thinking of the overall impact of education on positive living in a way that education makes people aware of health and disease. Similar finding was documented in Nigeria and Europe [32].

The positive significant relationship of participant's knowledge with attitude as well as with practice found in this was reported in other several studies, such as in Nigeria [32]

## Limitation

The study could have been more of informative if medical examination relevant to high blood pressure to records respondents' status and relate to their level of knowledge. However, the request to do so was not accepted as it may violate the procedure of the military camp.

## Conclusion

The level of knowledge, attitude towards hypertension prevention as well as practice related to hypertension was inadequate. There is a need to educate members of the peace keeping mission about modifiable lifestyle risk factors related to hypertension before departure to the mission.

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