IMPACT OF HEALTH BELIEFS CHANGE MODEL STRATEGY ON THE RISK FACTORS OF HYPERTENSION AMONG NIGERIAN ARMED FORCES PERSONNEL IN LAGOS STATE

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Abstract
Existing scholarly works on cardiovascular diseases failed to examine why some military personnel died of various heart related diseases and why some patients who died of high blood pressure were undiagnosed. Therefore, this study investigated the impact of health beliefs change model strategy on risk factors of hypertension among personnel of Nigerian Armed Forces. Two research questions and two hypotheses were formulated for the study. The methodology adopted is a pre-test and post-test quasi-experimental research design based on the Health Beliefs Model Hypertension Package. The data were elicited from the three branches of Nigerian Armed Forces, consisting of 180 participants whose blood pressure reading were 130/90mmHg and above. The participants were purposively selected for pre-test and post-test intervention study for the period of eight (8) weeks among Nigerian Armed Forces. Descriptive statistics of frequency count and percentage was used to present the demographic data while inferential statistics of t-test was used for hypotheses one and one way analysis of variance was used for hypotheses two at 0.05level of significance. Findings showed that health belief change model, had a significant impact on smoking, alcohol and dietary behaviours (t=3.832; 2.488, 5.201: P=0.000, 0.015; 0.000) *in respect of smoking, alcohol and dietary behaviours of respondents before and after the health belief change model intervention. Significant differences were recorded among the impacts of health belief change model (F=0.17.43;p=0.000). Therefore, to improve health conditions of the personnel suffering from high blood pressure, they should be advised to reduce the intake of salt, increase intake of high fiber diet and low fat consumption.*

Keywords: Health Behaviours, Health Belief, High Blood Pressure, Hypertension,

Introduction

Health behaviours are influenced by the social, cultural factors as well as physical environments in which people live and work. They are shaped by individual choices and external constraints. Positive attitude help promote health and prevent disease, while negative lead to risk behavours (Lavikainen, Lintonen & Kosunen, 2010). In the broadest sense, health behaviour refers to the actions of individuals, groups, and organisations, as well as their determinants, correlates, and consequences, including social change, policy development and implementation, improved coping skills, and enhanced quality of life (Hu, Jousilahti, Antikainen, Katzmarzyk and Toomilehto, 2010). According to the health belief model, an individual will change behaviour if they

perceive a personal threat or illness secondary to the behaviour and believe changing the behaviour will effectively avert this threat or illness. The model asserts that for people to adopt recommended physical activity behaviour, their perceived threat of disease and its severity and benefits of action must outweigh their perceived barriers to action (Raingruber, 2013).

Health belief model is useful in explaining health behaviours in hypertensive among Americans and should be used in designing culturally competent health promotion interventions in this population (Thalacker, (2011). Evidence of increased risk of Coronary Heart Diseases (CHD) and other clinical manifestations of cardiovascular disease (CVD) with the presence of specific risk factors has been documented, such as the Framingham heart study, the Standford three-community study and the multiple risk factors intervention trial (Park, 2011). CHD is one of the most common clinical manifestations of cardiovascular disease (American Heart Association (AHA, 2010). Behaviours that have consistently been shown to improve blood pressure control include taking prescribed medicines, monitoring blood pressure regularly, maintaining a low sodium diet, exercising, maintaining a healthy weight, limiting alcohol use, and not smoking (Centre for Diseases Control, 2012).

Occupation-related stress has been considered to be a potentially important cardiovascular risk factor and consequently a bulk of recent investigations has focused on the detection of cardiovascular risk factors in certain jobs (Hackam, Quinn, Ravani, Rabi, Dasgupta, and Daskalopoulou, 2013); Mittal & Singh, 2010). Hypertension is the commonest cardiovascular disorder affecting at least 20% of adult population in several countries (World Health Organisation, 2012). The prevalence of hypertension has been attributed to numerous risk factors, such as population growth, aging, and behavioral factors, including poor nutrition, the disadvantages of drinking alcohol, cigarette smoking, physical inactivity, overweight, and being exposed to ongoing stress (Hu, Jousilahti, Antikainen, Katzmarzyk and Toomilehto, 2010). On the other hand, investigations revealed that military personnel are generally under high pressure of duty related stress with its biological ill effect and mental strain on their health (Thalacker, 2011). Whereas members of armed forces with their favourable physical conditions, lifestyles generally increasing cardiovascular risk factors among military personnel (Altorf-van der Kuil, 2010).

The Nigeria military implies a combat force of men and women take up the challenge of voluntarily being trained as officers and soldiers to perform the military duty of defending the nation from external and internal aggression and military organizations are anchors of national security, nation building, and good governance, and are indispensable in national and international peace and humanitarian relief operations. Knowledge and awareness of risk factors of CVDs are essential for behavioural change (Abdullahi and Amzat, 2011). Prevalence of hypertension has reached epidemic proportion globally with data from the developing countries like Nigeria scarcely available. This gap in knowledge of risk factors of hypertension, high prevalence of hypertension and associated complications among Nigerian military necessitated this study. The present study, therefore, examined the impact of health belief change model strategy on the risk factors of hypertension among personnel in Nigerian Armed forces in Lagos state. This study investigated the impact of health beliefs change model strategy on the risk factors of hypertension among Nigerian Armed Forces personnel in Lagos State.

Specific objectives of the study were:

1. assess the prevalence of risk factors of hypertension within the three Nigerian Armed Forces;
2. assess the impact of Health belief model strategy on management of hypertension among Nigerian Armed Forces.s

The two research questions generated for the study

1. Will health belief change model have any impact on the risk factors of hypertension among Nigerian Armed Forces Personnel?
2. Will there be any difference among the impacts of Health belief change model on risk factors of hypertension among Nigerian Armed Forces Personnel?

The two hypotheses were tested:

1. Health belief change model will have no significant impact on risk factors ofhypertension among Nigerian Armed Forces Personnel.
2. There is no significant difference between the impacts of Health belief change model on risk factors of hypertension among Nigerian Armed Forces Personnel.

Methodology

A quasi-experimental design of non-randomized pre-test and post-test using health education intervention as treatment was adopted for the study. The population consists of all personnel of Nigerian Armed forces resettlement centre, Oshodi, Lagos State which comprised of Nigerian Army, Nigerian Navy and Nigerian Air force. The purposive sampling technique was employed to select one hundred and eighty (180) participants among Nigerian Armed Forces who have been screened high blood pressure for the health education intervention. Health Belief Model Questionnaire (HBMQ) The construct of Health Belief Model Questionnaire which was developed by Brown and Segal (1996) for the four perception elements of the Health Belief Model (HBM) were measured on a 4-point Likert-type scale anchored by Strongly Disagree (SD), Disagree (D), Agree (A) and Strongly Agree (SA). Points were assigned to the options from 1–4 for positive items and from 4-1 for negative items. The four components of the HBM are as follows:

Perceived threat and consequences of hypertension six (6) items were measured in terms of the seriousness and degree to which an individual perceives her/himself to be vulnerable to consequences of uncontrolled hypertension, the fear of having hypertension and the limitation that hypertension imposes on social activities and individuals believed it is probable that they would experience a stroke, heart attack with Cronbach alpha for these items was 0.72. Perceived benefits of Normal Blood Pressure six (6) items were measure on benefits of complying with health education treatment on management of hypertension. Perceived benefits of health education treatment (Rx) represented the degree to which respondents believed their health education treatment to be effective in controlling high blood pressure and preventing adverse consequences. Perceived benefits of Rx were measure in terms of the health education treatment ability to control high blood pressure, to prevent strokes, heart attacks and kidney disease, and to ease one's mind about having high blood pressure with Cronbach alpha for these items was 0.82. Perceived barrier to lifestyles modification as it's related to hypertension management. Four (4) items were measure on perceived barriers of not complying with health education treatment (Rx). Perceived barriers of Rx were measure in terms of motivation to stop smoking, alcohol and unhealthy dietary intakes with Cronbach alpha for these items was 0.68 and Cues for Action and Self Efficacy in Hypertension Management, six (6) items were measure on precipitating force that make person

feels the need to take action, cue to action can be internal and external factors with Cronbach alpha for these items was 0.73.

The data collection process was carried out at Nigerian Armed Forces Resettlement Centre, Oshodi, Lagos State. The exercise lasted for eight (8) weeks among Nigerian armed forces who consented to be involved in the study. Selection were based on outcome of the blood pressure screening and those with blood pressure of 130/90mmHg and above were selected for the health education treatment. This process was used to recruit and select 180 respondents among Nigerian armed forces. All the participants were subjected to Health Belief Model Hypertension Package (HBMHP) which consisted of ninety minutes health education talks of one module per day in each unit of Armed forces. The descriptive statistics of frequency counts and percentages were used to describedemographic data while the inferential statistics of t-test and One Way Analysis ofVariance (ANOVA) was used to test hypotheses. The post-hoc test (Scheffe) was usedwhere there were significant differences in the *f* ratios among the means of risk factorsand determine the area where the most significant differences is occurring among therisk factors. All tests were carried out at 0.05 level of significance.

Results

Data Presentation

Table 1: Distribution of respondents by Age

Age	Frequency	Percent
18-29 years	13	7.2
30-39 years	25	13.9
40-49 years	31	17.2
50-59 years	111	61.7
Total	180	100.0

From table 1 above, it could be observed that 7.2% of the total respondents were aged 18-29 years, 13.9% of them were aged 30-39 years, 17.2% were aged 40-49 years, while the remaining 61.7% being the majority were aged 50-59 years.

Table 2: Distribution of respondents by gender

Gender	Frequency	Percent
Female	14	7.8
Male	166	92.2
Total	180	100.0

Table 2 above shows the distribution of respondents by gender indicated that 166(92.2) % of the total respondents being the majority were males, while the other 14(7.8) % were females representing the minority group.

Table 3: Distribution of respondents by marital status

Marital Status	Frequency	Percent
Single	8	4.4
Married	166	92.2
Widow	3	1.7
Divorced	3	1.7
Total	180	100.0

The distribution of respondents by marital status as shown in table 3 above, revealed that widows 3(1.7)%, divorced 3(1.7)% respondents of the total respondents respectively, single respondents were 8(4.4)%, while the remaining 166(92.2)% of the total respondents were married.

Table 4: Distribution of respondents by highest level of education

Highest Level of Educ.	Frequency	Percent
Primary Education	23	12.8
Secondary Education	80	44.4
Tertiary Education	74	41.1
Others	3	1.7
Total	180	100.0

According to table 4 above, it could be ascertained that 12.8% of the total respondents had only primary education, 44.4% of them had only secondary education and 41.1% of the respondents were certificate holders at various levels of tertiary education, while a minute 1.7% of the total respondents had other forms of education.

Table 5: Distribution of respondents by arms of service

Arm of Service	Frequency	Percent
Nigerian Airforce	60	33.3
Nigerian Army	60	33.3
Nigerian Navy	60	33.3
Total	180	100.0

Going by table 5 above, it could be observed that a total of 60 respondents, representing 33.3% of the total respondents were drawn each from the three components of the Nigerian military, namely the Nigerian Army, the Air force and the Navy.

Table 6: Distribution of respondents' by hypertension stages before and after treatment

Blood Pressure (BP)	Normal BP	Pre-Hypertension	Stage 1 Hypertension	Stage 2 Hypertension	Total
BP Before Treatment	-	27 (15.0%)	90 (50.0%)	63 (35.0%)	180 (100.0%)
BP After Treatment	39 (21.7%)	58 (32.2%)	75 (41.7%)	8 (4.4%)	180 (100.0%)

It could be observed from table 6 above that before treatment, no respondent had normal BP, 15% of them were in pre-hypertension stage, 50% were in stage 1 hypertension, while the remaining 35% were in stage 2 hypertension. The table further revealed that after treatment, 21.7% of the total respondents migrated to normal BP, 32.2% of them remained in pre-hypertension stage, 41.7% of them remained in stage 1 hypertension, while the number of respondents remaining in stage 2 hypertension reduced to 4.4% from 35%.

Hypothesis 1

Hypothesis one states that health belief change model will have no significant impact on risk factors of hypertension among Nigerian Armed Forces Personnel. The stated hypothesis was tested using the t-test statistical tool at 0.05 level of significance. The result is presented on the table below.

Table 7: t-test result of health belief change model impact on risk factors of hypertension

Risk Factors of Hypertension	N	Mean	SD	SEM	Df	T	Sig.
Smoking Behaviour Before	90	19.8444	3.35841	0.35401	89	3.832	0.000*
Smoking Behaviour After	90	21.6889	3.25557	0.34317			
Alcohol Behaviour Before	90	23.1333	4.05911	0.42787	89	2.488	0.015*
Alcohol Behaviour After	90	24.7111	3.75737	0.39606			
Dietary Behaviour Before	90	20.1444	3.39716	0.35809	89	5.201	0.000*
Dietary Behaviour After	90	22.9333	3.34126	0.35220			

It could be observed from table 7 above that significant t-values were recorded (t=3.832, 2.488, 5.201; P=0.000, 0.015, 0.000) in respect of smoking, alcohol and dietary behaviours of respondents before and after the health belief change model intervention. Thus, hypothesis two stated above is hereby rejected in respect of all the risk behaviours of hypertension. It thus implies that health belief change model had a significant impact on smoking, alcohol and dietary behaviours as risk factors of hypertension among Nigerian Armed Forces Personnel.

Hypothesis 2

Hypothesis two stated that there will be no significant difference between the impacts of Health belief change model on risk factors of hypertension among Nigerian Armed Forces Personnel. The above stated hypothesis was tested using the one way ANOVA at 0.05 level of significance. The result is presented on the tables below.

Table 8: ANOVA result of difference between the impacts of health belief change model on risk factors of hypertension

Risk Factors of Hypertension	N	Mean	SD	Source	SS	Df	MS	F	Sig.
Smoking Behaviour	90	21.6889	3.25557	Between Groups	413.696	2	206.85	17.43	0.000
Alcohol Behaviour	90	24.7111	3.75737	Within Groups	3168.767	267	11.868		
Dietary Behaviour	90	22.9889	3.29962	Total	3582.463	269			
Total	270	23.1296	3.64934						

Table 8.1: Post-Hoc Test on the difference between the impacts of health belief change model on risk factors of hypertension

Risk Factors of Hypertension	Means	Mean Difference	Std. Error	Sig.
Smoking Behaviour/Alcohol Behaviour	21.6889/24.7111	-3.02222*	0.51355	0.000*
Smoking Behaviour/Dietary Behaviour	21.6889/22.9889	-1.30000*	0.51355	0.042
Alcohol Behaviour/Dietary Behaviour	24.7111/22.9889	1.72222*	0.51355	0.004*

In view of the result presented on table 8 of which a significant F-value was recorded at 0.05 level of significance (F-=17.43, P=0.000), thus, hypothesis four stated above is hereby rejected. This implies that significant differences were recorded between the impacts of health belief change model on risk factors of hypertension among Nigerian Armed Forces Personnel. In addition, the significance of the F-value signifies that the impact of health belief change model was higher in one risk factor of hypertension than the other. Furthermore This implies that health belief change model had higher impact on alcohol behaviour as a risk factor of hypertension as compared with smoking and dietary behaviours. On the other hand, the impact is greater in dietary behaviour when compared with smoking behaviour., the post-hoc test (Scheffe) on the difference among the means of the risk factors on table 8.1 shows that the mean of alcohol behaviour was significantly higher than that

of smoking and dietary behaviours (24.7111 > 22.9889 & 21.6889), while the mean of dietary behaviour was observed to be higher than smoking behaviour.

Discussion

Hypothesis one was tested using the t-test statistical tool at 0.05 level of significance. The significant t-values recorded in respect of smoking, alcohol and dietary behaviours of respondents before and after the health belief change model intervention, led to the rejection of the stated hypothesis. It thus implies that health belief change model had a significant impact on smoking, alcohol and dietary behaviours as risk factors of hypertension among Nigerian Armed Forces Personnel. This findings are not different from those of World Health Organisation, (2012) agreed that, the intervention had beneficial effects on the smoking, alcohol and dietary intake of the subjects, especially on nutrients related to their bone health. Hackam, Quinn, Ravani, Rabi, Dasgupta, and Daskalopoulou, (2013) agreed that, scientific findings and clinical guidelines recommend dietary sodium reduction among people with and without hypertension in order to treat hypertension prior to any pharmaceutical interventions. Centre for Disease Control, (2012) asserted that, dietary sodium reduction has suggested a voluntary sodium reduction approach along with other strategies.

In testing hypothesis two, one way ANOVA statistical tool was employed at 0.05 level of significance. The result obtained indicated a significant F-value which led to the rejection of hypothesis four as stated, indicating that significant differences were recorded among the impacts of health belief change model on risk factors of hypertension among Nigerian Armed Forces Personnel. The post-hoc test conducted on the difference among the means of the risk factors of hypertension using the Scheffe procedure showed that the mean of alcohol behaviour was significantly higher than that of on risk factors of hypertension, while the mean of dietary behaviour was observed to be higher than that of smoking behaviour. It therefore indicated that health belief change model had higher impact on alcohol behaviour as a risk factor of hypertension as compared with smoking and dietary behaviours. On the other hand, the impact is greater in dietary behaviour when compared with smoking behaviour.

This finding corroborate with that of Altorf-van der Kuil, (2010) that a number of different dietary factors have been shown to be positively related to hypertension, including intake of animal protein, low potassium, low magnesium, inadequate calcium, low fish fatty acid,

high alcohol and high coffee consumption. Thalacker, (2011) opined that, increased intake of fruits, vegetables, legumes and whole grain and restriction of added sugar and saturated fat have been recommended for their beneficial effect to control hypertension. Hackam et al, (2013) agreed that, scientific findings and clinical guidelines recommend dietary sodium reduction among people with and without hypertension in order to treat hypertension prior to any pharmaceutical interventions. Abdulahi and Amzat, (2011) asserted that, dietary sodium reduction has suggested a voluntary sodium reduction approach along with other strategies.

Conclusion and Recommendation

Based on the findings of this study, it was concluded that:

The prevalence of hypertension among the study population was very high and unhealthy dietary behaviours. The study showed significant impacts of health belief change model on smoking, alcohol and dietary behaviours as risk factors of hypertension among Nigerian Armed Forces Personnel. Thus there were differences recorded on the impacts of health belief change model on the risk factors of hypertension among Nigerian Armed Forces Personnel as regard to their lifestyles modification. Based on the findings of the study, the following recommendations were suggested:

1. Military authority should place a ban on tobacco smoking and alcohol consumption among the military personnel who live in the military barrack, to curtail unhealthy practices which can lead to healthy behaviour among those who are hypertensive.
2. Personnel should be encouraged on weekly checking of blood pressure and record of their own blood pressure readings performed on them in the hospital or home checks.
3. The Nigerian armed forces should organize seminars and workshop on the effects of smoking, alcohol and unhealthy diet among their personnel.
4. Good management of stress, more relaxation and eating more fiber diet and low cholesterol.
5. Hypertensive patients should be encouraged to change their lifestyle practices to prevent complications by eating low salt diets and not adding salt to food since this is significantly associated with occurrence of hypertension complications.

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