



การศึกษาความสัมพันธ์ระหว่างเพศ ความรู้เกี่ยวกับโรคความดันโลหิตสูง สมรรถนะแห่งตน การสนับสนุนทางสังคมกับการปรับวิถีการดำเนินชีวิต ของชาวภูฏานที่เป็นโรคความดันโลหิตสูง

Nima Dorji M.N.S.* นิภาวรรณ สามารถกิจ PhD**

เขมรดี มาสิงบุญ D.S.N.*** วิภา วิเสโส PhD****

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บทคัดย่อ

การศึกษานี้เป็นการวิจัยเชิงพรรณนาหาความสัมพันธ์ระหว่างเพศ ความรู้เกี่ยวกับโรคความดันโลหิตสูง การรับรู้สมรรถนะแห่งตน การรับรู้การสนับสนุนทางสังคมกับการปรับวิถีการดำเนินชีวิต กลุ่มตัวอย่างสุ่มอย่างง่ายจากผู้เป็นโรคความดันโลหิตสูงที่มาตรวจตามนัดที่คลินิกโรคไม่ติดต่อเรื้อรัง โรงพยาบาลภูฏาน ประเทศภูฏาน จำนวน 108 ราย ดำเนินการเก็บรวบรวมข้อมูลระหว่างเดือนมีนาคมถึงเมษายน พ.ศ. 2563 เครื่องมือที่ใช้ในการวิจัย ประกอบด้วยแบบสอบถามข้อมูลส่วนบุคคลแบบวัดพฤติกรรมในการดูแลตนเองเกี่ยวกับโรคความดันโลหิตสูง แบบวัดระดับความรู้เกี่ยวกับโรคความดันโลหิตสูง แบบวัดการรับรู้สมรรถนะแห่งตน แบบสอบถามการรับรู้การสนับสนุนทางสังคมแบบพหุมิติ ซึ่งมีค่าความเชื่อมั่น เท่ากับ 0.83, 0.82, 0.81 และ 0.85 ตามลำดับ วิเคราะห์ข้อมูลด้วยสถิติพรรณนา สถิติสัมพันธ์สหสัมพันธ์พอยท์ไบซีเรียล และสัมประสิทธิ์สหสัมพันธ์ของเพียร์สัน

ผลการวิจัยพบว่า กลุ่มตัวอย่าง มีคะแนนการปรับวิถีการดำเนินชีวิตในระดับสูง ($M = 53.9$, $SD = 7.7$) การปรับวิถีการดำเนินชีวิตมีความสัมพันธ์ทางบวกกับความรู้เกี่ยวกับโรคความดันโลหิตสูง ($r = .27$, $p < .01$) การรับรู้สมรรถนะแห่งตน ($r = .43$, $p < .001$) และการรับรู้การสนับสนุนทางสังคม ($r = .26$, $p < .01$) เพศไม่มีความสัมพันธ์กับการปรับวิถีการดำเนินชีวิต ($r_{pb} = .03$, $p = .79$) จากผลการศึกษา การออกแบบการดูแลผู้เป็นโรคความดันโลหิตสูงให้สามารถปรับวิถีการดำเนินชีวิตเพื่อให้ควบคุมความดันโลหิตให้อยู่ในระดับปกติและป้องกันภาวะแทรกซ้อน ควรให้ความสำคัญกับการให้ความรู้เกี่ยวกับโรคความดันโลหิตสูง การส่งเสริมการรับรู้สมรรถนะแห่งตนและการรับรู้การสนับสนุนทางสังคม

คำสำคัญ: การปรับวิถีการดำเนินชีวิต ความรู้เกี่ยวกับโรคความดันโลหิตสูง สมรรถนะแห่งตน การสนับสนุนทางสังคม

*พยาบาลศาสตรมหาบัณฑิต (หลักสูตรนานาชาติ) มหาวิทยาลัยบูรพา

**ปรัชญาดุษฎีบัณฑิต รองศาสตราจารย์ คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา

***D.S.N. ผู้ช่วยศาสตราจารย์ คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา

****ปรัชญาดุษฎีบัณฑิต ผู้ช่วยศาสตราจารย์ คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา

**ผู้ประสานการเผยแพร่ตีพิมพ์: nsamartkit@gmail.com Tel: 086-4131861



The Association between Gender, Hypertension Knowledge, Self-efficacy, Social Support and Lifestyle Modification among Bhutanese People with Hypertension

Nima Dorji M.N.S.* Niphawan Samartkit PhD**

Khemaradee Masingboon D.S.N.*** Wipa Wiseso PhD****

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Abstract

The purposes of this descriptive correlational research design aimed to analyze the relationship among gender, hypertension knowledge, perceived self-efficacy, perceived social support, and lifestyle modification among persons with hypertension (HT). Simple random sampling technique was used to recruit 108 persons with HT visiting non-communicable disease unit of Punakha District Hospital, Bhutan. Data were collected during March and April, 2020 using the Demographic Questionnaire, Hypertension Self-care Profile Behavior Scale, Hypertension Knowledge-Level Scale, Hypertension Self-Efficacy Scale and Multi-dimensional Scale of Perceived Social Support each bearing reliability coefficient of 0.83; 0.82; 0.81 and 0.85 respectively. The data were analyzed using descriptive statistics, Point-biserial correlation and Pearson's product moment correlation coefficient.

The result showed that lifestyle modification was high among the participants ($M = 53.9 \pm 7.7$). There were significantly positive relationship between lifestyle modification with hypertension knowledge ($r = .27$, $p < .01$), perceived self-efficacy ($r = .43$, $p < .001$), perceived social support ($r = .26$, $p < .01$). There was no relationship between lifestyle modification and gender ($r_{pb} = .03$, $p = .79$). This study result reveal that lifestyle modification of persons with HT can be enhanced by designing an intervention directed toward strengthening hypertension knowledge, perceived self-efficacy and perceived social support.

Keywords: lifestyle, hypertension, self-efficacy, social support, knowledge

*Master of Nursing Science student (International Program), Burapha University, Thailand

**RN, PhD, Associate Professor, Faculty of Nursing, Burapha University, Thailand

***RN, D.S.N, Assistant Professor, Faculty of Nursing, Burapha University, Thailand

****RN, PhD, Assistant Professor, Faculty of Nursing, Burapha University, Thailand

**Corresponding author: nsamartkit@gmail.com Tel: 086-4131861



Introduction

Hypertension is a serious public health problem that leads to increasing global morbidity and mortality. Globally, prevalence of hypertension has been increasing with two third of the cases occurring in low and middle income countries.¹ It is evident that uncontrolled blood pressure alone is responsible for 10.4 million global deaths and 218 million disability adjusted life years.² It is also alarming to note that more than 80% of the people with hypertension in the world cannot control their blood pressure resulting in devastating complications such as ischemic heart disease, stroke, heart failure and kidney disease among others.¹ Bhutan is also experiencing an immense burden of non-communicable diseases (NCD) which include hypertension. NCD account for 69% of total mortality in Bhutan.³ Incidence of hypertension is rising steadily with 278 per 10,000 population in 2017 to 343 per 10,000 population in 2018 resulting in concomitant increase in incidence of stroke and ischemic heart diseases.⁴ A nationwide survey on NCD also shows that 35.7% of Bhutanese with hypertension had uncontrolled blood pressure.⁵

The main contributing factors for uncontrollably elevated blood pressure include unhealthy diet, physical inactivity, heavy alcohol consumption, smoking, non-adherence to prescribed medication and psychological stress among hypertensive population.^{1,6,7} Studies demonstrate lifestyle modification as a promising strategy in controlling blood pressure and prevention of complications associated with hypertension.^{1,2,6,8-9} Lifestyle modification encompasses ingestion of healthy diet, physical activity, weight reduction, moderation in alcohol consumption, cessation of smoking, adherence to prescribed medication and stress management.^{1,6} Evidences indicate that adoption of Dietary Approach to Stop Hypertension diet (DASH diet) is associated with reduction of 11 mmHg blood pressure⁷ while engagement in regular physical activity is associated with reduction of 7-10 mmHg of systolic and 4-8 mmHg of diastolic blood pressure.⁸ Similarly, the body-weight

reduction of 5.1 kg was associated with corresponding drop in systolic and diastolic blood pressure by 4.4 mmHg and 3.6 mmHg respectively.⁸ Smoking cessation, moderation in alcohol and stress management have also been shown to avert elevated blood pressure.^{1,9}

Despite supreme benefits of lifestyle modification for the persons with hypertension in controlling blood pressure and averting dreadful complication, many are non-compliance to it. Literatures indicate that rate of adherence to lifestyle modification ranges from 15.6% to 23% among the persons with hypertension indicating that majority were non-compliance to it.¹¹⁻¹² While the literature which provides data on level of lifestyle modification among the persons with hypertension is scarce in Bhutan, a survey conducted among the general adult population shows that majority of Bhutanese were non-compliance to lifestyle modification.⁵

Hence, in order to help promote lifestyle modification among the persons with hypertension, it is essential to examine the factors associated with it. According to individual and family self-management theory which is used as a theoretical underpinning for the current study, individual's engagement in lifestyle modification is proximal outcome which may be influenced by contextual factors such as gender and the factors in self-management process such as knowledge, self-efficacy and perceived social support.¹³

Though the role of gender in modulation of lifestyle modification among people with hypertension is still unclear, studies indicate association between these factors.¹² Similar studies also indicate females are more adherent to moderation in alcohol and smoking cessation compared to their male counterpart.^{13,14} Further, it was reported that salt intake was higher among male at 186 mmol (4.3 g) compared to their female counterpart at 173 mmol (4 g).¹⁵

It is proposed that knowledge impacts lifestyle modification by influencing behavior specific self-efficacy, outcome expectancy and goal congruence.¹³ A study demonstrates a positive



association between hypertension knowledge and lifestyle modification wherein those with good hypertension knowledge were more adherent to self-care practice.¹⁶ In line with this finding, a study in the Bamenda Health District, Cameroon reported that a likelihood of engaging in lifestyle modification is 2.9 times for those with adequate hypertension knowledge compared to those with a low hypertension knowledge.¹⁷ On contrary, those with a low hypertension knowledge are less likely to consume low salt diet and engage in weight reduction strategies.¹⁸

Similarly, perceived self-efficacy has been reported to influence lifestyle modification by streamlining the way of thinking, feeling, motivation and action.¹³ Against the backdrop of this hypothesis, a significant association was observed between self-efficacy and lifestyle modification ($r = .39$).¹⁹ Similarly, adherence to lifestyle modification was four-fold higher among those with high self-efficacy than those with low self-efficacy.¹⁰

Social support has also been shown to be associated with lifestyle modification wherein those with a high social support are more likely to adhere to lifestyle modification compared to their counterpart.^{14,20} A significant correlation was observed between social support and adherence to lifestyle modification in one of the studies conducted in India ($r = .41$, $p < .01$).²¹ Similarly, a study in Indonesia also reveals significant association between social support and lifestyle modification.¹¹

While lifestyle modification and related factors have been extensively studied in various parts of the world, due to the scarcity of literature in the Bhutanese context, little is known about this. Furthermore, as Bhutan has a unique culture and traditions, the results of other countries may not be generalized to address this knowledge gap, this study examined the level of lifestyle change and related factors among people with hypertension in Bhutan. The results of this study may be design an educational program to promote lifestyle modification for people with high blood pressure in Bhutan.

Objectives of the study

1. To describe lifestyle modification among Bhutanese people with hypertension.
2. To examine the association between gender, hypertension knowledge, perceived self-efficacy and perceived social support and lifestyle modification among Bhutanese people with hypertension.

Research hypothesis

Gender, hypertension knowledge, perceived self-efficacy and perceived social support have relationship with lifestyle modification among Bhutanese people with hypertension

Research design

A descriptive correlational research design was used to examine the relationship between gender, hypertension knowledge, perceived self-efficacy, perceived social support, and lifestyle modification among persons with hypertension in Bhutan.

Population and samples

The target population in this study was individuals diagnosed with essential hypertension by a physician based on the mean of two or more seated blood pressure reading of $\geq 140/90$ mmHg⁷ on two or more separate occasions or taking blood pressure lowering agents who visited non-communicable disease (NCD) clinic of Punakha District Hospital. As per the data maintained by the hospital, there are 1113 persons with hypertension in Punakha District. Recruitment of the sample was based on the following inclusion criteria: 1) Aged ≥ 18 to ≤ 60 years; 2) Have been diagnosed with hypertension ≥ 6 months; 3) Taking at least one anti-hypertensive medication; 4) Able to read and write in English; 5) No history of stroke, and no history of psychiatric illness.

Estimation of sample size for the current study was based on Tabachnick and Fidell's formula (2007)²² which is given by $N \geq 104+m$ (where N is required sample size and m is number of independent variables). Since there are four independent variables in the



current study, the sample size required was at least 108. A total of 108 samples were recruited using simple random sampling technique.

Research instruments

Data was collected using self-administered research questionnaires. Demographic Questionnaire was used to gather demographic and health information of the participants.

Lifestyle modification among the participants was measured by Hypertension Self-Care Profile Behavior Scale (HBP SCP).²³ The scale comprises of 20 items self-care behavior related to hypertension which include taking medication, physical activity, low sodium and low fat diet, restricting alcohol consumption, non-smoking, weight control, and stress reduction. 2 Items were inversely coded. Scoring on each item was based on four points interval scale, 1= never (do not practice it), 2 = rarely (seldom practice it), 3 = sometimes (occasionally practice it), and 4 = always (all the time). The total score of the scale range from 20 to 80 with higher score indicating high level of hypertension self-care behavior which reflect high lifestyle modification.²³

Hypertension Knowledge-Level Scale (HK-LS)²⁴ measured the level of hypertension knowledge among the participants. It is 22 items scale requiring standard response as "Correct, Incorrect or Don't Know". Correct response was given 1 point each while the incorrect statement or do not know was accorded zero. Possible score for the scale ranges from 0 to 22 with higher score showing better hypertension knowledge.²⁴

Perceived self-efficacy of the participants was determined by Hypertension Self-efficacy Scale.²⁵ It comprises of five items and each item begins with the phrase "How confident are you that you can...?" Response ranges from 1 (not confident at all) to 10 (totally confident). A mean score of 9 or greater (≥ 9) was categorized as having good self-efficacy while the mean score lower than 9 was considered as poor self-efficacy.

Multi-dimensional Scale of Perceived Social Support (MSPSS) was used to determine perceived social support of the participants.²⁶ The scale is a 12

items self-reported questionnaire rated on a seven-point Likert scale. The total score ranges from 12 to 84 while the mean score of the scale ranges from 1 to 7. Based on the mean score, magnitude of social support was categorized as low: 1-2.9, moderate 3-5 and high 5.1-7.²⁶

All standard research instruments had robust psychometric properties. In order to test the reliability of standard research instruments for the current study, a pilot study was conducted with 30 persons with hypertension fulfilling the same inclusion criteria of the main study. The result showed reliability coefficient of .83, .82, .81 and .85 respectively for HBP SCP, HK-LS, Hypertension Self-Efficacy Scale and MSPSS.

Ethical consideration

The permission to conduct study was accorded by Institutional Review Board of Burapha University, Thailand (certificate number 005/2020), Research Ethic Board of Health, Ministry of Health, Bhutan (Ref. No. REBH/Approval/2020/024) and the clinical agency. Participants who volunteered, willing and consented to take part in the study were recruited. All data obtained from the study were kept strictly confidential.

Statistical Analysis

The data was coded and entered into Minitab 17 with statistical significance set the alpha level of .05. Descriptive statistics including frequency, percentage, mean (M) and standard deviation (SD) were used to describe demographic characteristics, independent and dependent variables. Pearson's correlation test was used to examine the relationship between hypertension knowledge, perceived self-efficacy, perceived social support and lifestyle modification. Association between gender and lifestyle modification was determined by Point biserial test.

Results

The result showed that age of the participants ranged from 28-60 years with mean age of 49.3. 58.3% were male, 41.7% were female, 85.1% were married, 55.6% were employed and 33.3% had primary school education. Majority (37.1%) of the participants reported



monthly family income of Nu.10,000-Nu.20,000 (\$130-\$260) with 79.6% of the participants revealing it as adequate. In terms of hypertension related information, 45% acquired it from health professionals. Majority (73.2%) of participants did not attend hypertension awareness program. Though 23% of the participants reported history of past smoking, only 2.8% currently engaged in smoking. Likewise, 29.6% drank alcohol in the past while 22.2 were currently involved in drinking.

The majority (71.3%) of the participants did not have any comorbidity. Blood pressure of the participants were graded based on the standard hypertension guideline.⁷ It revealed that 14.9% of the participants had elevated blood pressure, 33.1% had stage 1 hypertension and 41.3% had stage 2 hypertension indicating that 85.1% of the participants are at the greater risk for cardiovascular disease, kidney failure, subclinical atherosclerosis and all-cause death.⁷ While 40.7% of the participants had uncontrolled blood pressure, 59.3% had their blood pressure under control.⁶ Body mass index indicates that 53.7% (BMI 25

to 29.9) were overweight and 18.5 were obese (BMI $\geq$ 30).⁵ Majority (59.3%) of the participants had their blood pressure diagnosed within the span of 1-5 years. Regarding the medication to control blood pressure, 61.1% were on a single medication while 38.8% were on multiple medications. As many as 93.5% did not resort to traditional medicine to control blood pressure.

The mean score of lifestyle modification was 53.9 (2.7) showing that the participants occasionally practiced it. Similarly mean score in each dimension of physical activity, healthy diet, weight reduction, moderation in alcohol consumption, stress management, and medication adherence indicate that participant occasionally practiced lifestyle modification (M = 2.6-2.9). However, mean score of cessations of smoking (M = 3.3) were slightly higher than other dimensions of lifestyle modification. The participants demonstrated fair hypertension knowledge (M = 16.6, SD = 2.7), poor perceived self-efficacy was (M = 7.4, SD = 1.9) and high social support (M = 5.2, SD = 1.1) (table 1).

Table 1 Range, mean, standard division of lifestyle modification, hypertension knowledge, perceived self-efficacy and perceived social support among the participants (n = 108)

Variables	Range		Mean (M)	SD
	Possible score	Actual score		
Lifestyle modification	20-80	33-71	53.9 (2.7*)	7.7
- Healthy diet	10-40	14-39	26.55 (2.7*)	.05
- Physical activity	1-4	1-4	2.7	.99
- Weight reduction	1-4	1-4	2.6	.90
- Moderation in alcohol consumption	1-4	1-4	2.9	1.26
- Cessation of smoking	1-4	1-4	3.3	1.19
- Stress management	2-8	2-8	5.32 (2.7*)	1.45
- Medication adherent	4-16	5-16	10.6 (2.7*)	2.04
Hypertension knowledge	0-22	10-22	16.6	2.7
Perceived self-efficacy	5-50	21-50	7.4	1.9
Perceived social support	12-84	30-84	5.2	1.1

*is a mean score calculated from the score range of 1-4

Pearson's correlation test showed that lifestyle modification was significantly correlated with hypertension knowledge ($r = .27$, $p < .01$), perceived self-efficacy ($r = .43$, $p < .001$) and perceived social

support ($r = .26$, $p < .01$) (table 6). However, there was no association between gender and lifestyle modification ($r_{pb} = .03$, $p .79$) (table 2).



Table 2 The association between lifestyle modification and related factors (n = 108)

Variables	lifestyle modification
Gender	$r_{pb} = .03$
Hypertension knowledge	$r = .27^*$
Perceived self-efficacy	$r = .43^{***}$
Perceived social support	$r = .26^{**}$

* $p < .05$, ** $p < .01$, *** $p < .001$

r = Pearson's Product Moment Correlation

r_{pb} = point-biserial correlation (male = 0, female = 1)

Discussions

Findings of the study indicated that the participants occasionally practiced lifestyle modification which could be enumerated in terms of national health policy and demographic characteristics of the participants. At the policy level, one of the national strategies instituted by the Ministry of Health of Bhutan was implementation of WHO PEN program.²⁷ This novel program ensures that all the adult population are screened for risk factors of NCD and all the patients suffering from NCD are periodically monitored and followed. The program also mandates provision of health education and counseling for the patients with hypertension and other NCD. Based on individual and family self-management theory this program will magnetize individual's engagement in lifestyle modification by enabling conducive physical and social environment and by enhancing their understanding about the condition and its management.¹³ However, our data showed that only 26.8% of the participants took part in hypertension awareness program. Therefore, the program should be planned and designed in such a way that there is periodic evaluation, motivation and monitoring of their lifestyle modification to ensure that persons with hypertension always practice healthy self-care behavior.

Socioeconomic characteristics of the participants might have also played a role in promoting outcome of lifestyle modification in this study. Our study showed that 86.1% of the participants were married. Marital status is reported to influence lifestyle modification wherein the married demonstrated better lifestyle

modification compared to their unmarried counterpart.¹⁴ Such positive impact of marriage on lifestyle modification could be due to material, informational and emotional support they received from their partners.¹³ Employment status might have also contributed for high lifestyle modification practice in the current study since 56.5% of the participants were employed. According to Ryan and Sawin¹³ (2009), physical and social environment such as work is related to engagement in lifestyle modification. A study also shows those who are employed are adherent to lifestyle modification compared to those who are unemployed,¹⁰ as they are more likely to gain support and information from the workplace. Similarly, education is known to influence lifestyle modification among the participants with hypertension.¹¹ All the participants enrolled in the current study had some form of formal education ranging from primary to graduate level which could have positively impacted in their engagement in lifestyle modification.¹³ The possible explanation for such association is that educated participants are willing to seek information and are exposed to various sources of health-related information.¹¹ It is also easy for them to understand about hypertension and healthy lifestyle.

As enshrined in individual and family self-management theory, longer duration since diagnosis of hypertension is a condition specific factor which might have directly or indirectly promoted lifestyle modification¹³ in the present study. Our study indicated that 37% of the participants had duration of hypertension of 6 years or more. Longer duration of being hypertensive might have provided the participants with the platform to gain more health recommendations and counselling from healthcare providers as they must periodically visit healthcare centre for follow up.²⁸

The finding of this study showed significant association between lifestyle modification and hypertension knowledge ($r = .27$, $p < .01$). Such significant association could be due to unwavering political and administrative support rendered by the Royal Government of Bhutan in promoting health-related



knowledge among the patients afflicted with NCD.²⁷ Theoretically it is hypothesized that knowledge which corresponds to hypertension knowledge in the current study would influence individual's engagement in self-regulation behavior which ultimately impact the proximal outcome, lifestyle modification.¹³ Further, a high level of hypertension knowledge would also increase the understandings and willingness of the participants to engage in lifestyle modification.¹¹ The result of the study is supported by the findings of the similar study conducted in Cameroon¹⁷ which demonstrated positive association between lifestyle modification and hypertension knowledge. The studies conducted in Ethiopia¹¹ and Indonesia⁹ also support the finding of the current study. This underscores the importance of providing health education to foster disease-specific knowledge to promote lifestyle modification.

In congruence with the research hypothesis, perceived self-efficacy was significantly associated with lifestyle modification among the participants ($r = .43$, $p < .001$). According to the theory, behavior specific self-efficacy directly influences the proximal outcome, lifestyle modification.¹³ It has also been shown that self-efficacy motivates the patients by leveling the expectation of behavior changes.¹¹ The findings of the previous studies also support those of the present study. A study in Korea reveals significantly positive association between self-efficacy and lifestyle modification ($r = .60$, $p < .001$).²⁹ A similar study in Indonesia reports self-efficacy as the strongest predictor of lifestyle modification.¹¹ It was also reported that adherence to lifestyle modification was four times higher among those with high self-efficacy compared to those with low self-efficacy.¹⁰

Similarly, a significant association was observed between social support and lifestyle modification in the current study ($r = .26$, $p < .01$) which could be due to prevalence of overwhelming social support among the people of Bhutan.³⁰ Social support which comprises provision of emotional, instrumental or informational support from healthcare providers, a family, friends,

neighbours, work colleagues and members of community group can direct, encourage and support engagement in self-management behavior and achievement of proximal outcome, lifestyle modification.¹³ A study in Ethiopia revealed that those with high social support are 2.9 times more likely to engross in healthy lifestyle compared to those without social support.²⁰ Similarly, a study conducted in India demonstrates a significant positive association between social support and adherence to lifestyle modification.²¹ This shows healthcare providers should equally engage both afflicted individual and the family members in all aspects of planning and decision making related to the management of the chronic disease.¹³

Contradicting to the studies conducted in India²¹ and Jordan¹⁵ there was no association between lifestyle modification and gender in the current study. The reason for the lack of association between the gender and lifestyle modification in this study could be due to prevalence of joint family in the Bhutanese society³⁰ coupled with majority of the participants being married. A joint family system embraces spirit of caring, sharing and bonding among the members³⁰ thus ensuring freedom from gender inequality in every facets of individual's enrollment in any activities.

Conclusion

Lifestyle modification was significantly associated with hypertension knowledge ($r = .27$, $p < .01$), perceived self-efficacy ($r = .43$, $p < .001$) and perceived social support ($r = .26$, $p < .01$). Thus to improve patient's adherence to lifestyle modification an interventional program should be strategically planned in such a way to enhance their hypertension knowledge, perceived self-efficacy and perceived social support. Future research should explore causal relationship between the aforementioned variables across multiple settings.

Limitation

Though this study provided deeper insight on lifestyle modification and associated factors, it is limited



by cross-sectional nature of the study, single study setting and use of self-reported questionnaires to collect data. The future study should explore causal relationship between the studied variables across multiple settings.

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