Hypertension and Its Contributing Factor among Adult People of Nepalgunj, Banke, Nepal

Ramesh Prasad Tharu[1] iD
https://orcid.org/0000-0002-8606-9185

[1]Assistant Professor, Department of Statistics, Mahendra Multiple Campus, Nepalgunj, T.U.
[1]Corresponding Author: rameshpt02@gmail.com

Abstract

Hypertension is a substantial public health concern on account of its extremely high prevalence all around the globe. It is referred to as a "silent killer" due to the fact that early-stage symptoms are rarely apparent until a medical emergency arises, such as chronic kidney disease, heart attack, or stroke. Therefore, this research aims to assess the contributing factor to hypertension among adult people of Belaspur -12, Nepalgunj, Banke. A descriptive cross-sectional research design was employed for the study, and primary data were collected through the implementation of a structured questionnaire and a non-probability convenience sampling technique. The analysis was carried out on the gathered data using descriptive and inferential statistics through SPSS (version 21.0). The findings of the research revealed that among total 120 respondents, nearly half of the respondents 56 (46.7%) had hypertension in 1- stage, while more than half of the respondents 64 (53.3%) had hypertension in its 2-stage. Based on the research findings, it can be inferred that the major factors contributing to hypertension among adult population were being alcohol consumption, consumption of animal source fat, overweight or obese, family history of hypertension.

Keywords: Factors, hypertension, adult people, Socio–demographic variables, Chi-square test

Introduction

Hypertension is a major public health problem due to its high prevalence all around the globe and it is becoming a global public health challenge due to its increased prevalence and the concomitant risk of stroke and cardiovascular disease in adults. Hypertension, often recognized as high blood pressure, is a disease when the pressure in blood vessels is too high. Taking a blood pressure reading is the sole way to determine whether a person has hypertension (Centers for Disease Control and Prevention [CDC], 2005). According to the Joint National Committee-7 (JNC), normal blood pressure is a systolic BP < 120 mmHg and diastolic BP < 80 mmHg. Hypertension is defined as systolic BP level of > or = 140 mmHg and diastolic BP level > or = 90 mmHg. The grey area falling between 120-139 mmHg systolic BP and 80-89 mmHg diastolic BP is defined as "prehypertension" although prehypertension is not a medical condition itself, prehypertensive subjects are at more risk of developing hypertension.

Hypertension is a silent killer as very rarely any symptom can be seen in its early stage until a several medical crises take place like heart attack, stroke, or chronic kidney disease

(Singh et al., 2017). Hypertension is a major risk factor for cardiovascular disease. Around 7.5 million deaths or 12.8% of the total of all annual deaths worldwide occur due to high blood pressure and raised blood pressure is a major risk factor for coronary heart disease and ischemic as well as hemorrhagic stroke (Mendis, 2010; Omar at al., 2020). It is predicted to be increased to 1.56 billion adults with hypertension in 2025 (Kearney et al., 2005), also an estimated 26% of the World 's population (972 million people) has hypertension, and the prevalence is expected to increase to 29% by 2025 (Kibria et al., 2017). Moreover, an estimated 1.28 billion adults aged 30-79 years worldwide have hypertension, most (two-thirds) living in low and middle-income countries. Hypertension is a major cause of premature death worldwide (WHO, 2023). As per a study of WHO on hypertension, one in every four males and one in every five females had hypertension. Hypertension and related complications are major contributors to death and disability in South Asian countries like India, Bangladesh, Nepal, Bhutan and Sri Lanka and it has also been recognized as one of the major public health problems in the developing countries (Hasan et al., 2018; Krishanan, 2013; Vaidya et al., 2012)

Modifiable risk factors of hypertension include unhealthy diets (excessive salt consumption, a diet high in saturated fat and trans fats, low intake of fruits and vegetables), physical inactivity, consumption of tobacco and alcohol, and being overweight or obese. Non-modifiable risk factors include a family history of hypertension, age over 65 years and co-existing diseases such as diabetes or kidney disease (WHO,2023). Noncommunicable diseases (NCDs) kill 41 million people each year, equivalent to 74% of all deaths globally. Of all NCD deaths, 77% are in low- and middle-income countries (WHO, 2023). According to the 2010 global non-communicable disease status report, the prevalence of hypertension has been increasing over the past decades from 600 million in 1980 to nearly 1 billion in 2008 because of population growth and ageing. Various risk factor has been associated with hypertension including age, sex, obesity, physical activity, family history and socioeconomic status. As per study by Aminde, et al., (2017) in City of Buea, Cameroon showed that obesity, diabetes, low physical activity, smoking, alcohol consumption were the factor contributing to hypertension.

A study conducted in urban population of Varanasi, India revealed that the prevalence of hypertension was 32.9% (male: 40.9%, female: 26.0%). Further, retired subjects, eldest age group, tobacco and alcohol consumption, overweight, obesity, subjects of upper socioeconomic status and abdominal obesity were also associated with hypertension. It concluded that men are at more risk of hypertension than female. Increasing age is proved to be an independent risk factor for hypertension (Singh et al., 2017).

A community based cross sectional study in rural population of Nepal revealed that the overall prevalence of hypertension was 27.7% (male: 32.7%, female: 19.8%). Increasing age, low level of education, ethnicity and smoking are found to be significant risk factors for hypertension (Chataut et al., 2020). Another study in Nepal, findings showed that the prevalence of hypertension was 28.4%, 25.5%, and 24.4% among urban, suburban, and rural populations, respectively. Moreover, rates of hypertension were found to be substantially higher in male (31.6%) compared to female (20.0%), and significantly higher among the middle-aged (≥40 years) than younger adults (< 40 years). The study concluded that an alarming situation of hypertension among Nepalese males and middle-aged, and a situation of concern with prehypertension in rural areas affecting almost 40 % of the population (Huang et al.,2019).

Likewise, a study was done in Bhadrabas village area of Kathmandu valley showed that there has been a three-fold increment in the prevalence of hypertension due to increased salt intake and increased body mass index and the study concluded there is a very high prevalence as well as a sharp rise in hypertension (Vaidya et al., 2012).

A cross- sectional study conducted among adult in Jogidaha Village Development Committee and Triyuga Municipality of Udayapur district of South –Eastern Nepal showed that hypertension was significantly associated with age and gender, alcohol consumption, and use of tobacco products with high prevalence of hypertension in rural districts of South-Eastern Nepal (Pyakurel et al., 2019). Another study among adult population residing Birendra Nagar Municipality of Surkhet district located at the Mid -Western Region of Nepal found that gender, age, ethnicity, smoking, drinking alcohol, and body mass index were significant factor contributing to hypertenson (Khanal et al., 2017), study in Kathmandu, prevalence of hypertension was 32.5%. smoking, alcohol consumption, physical activity, body mass index, and diabetes were identified as significant explanatory variables for hypertension (Dhungana et al., 2016).

The most of the previous studies indicated alcohol consumption, increased body mass index, low physical activity, diabetes, family history, more salt intake, increasing age etc. were significant factors contributing to hypertension. Hypertension is the major public health problem. It is one of the silent killer diseases affecting multiple organs and it is increasing in developing countries as well as developed country. With the alarming health implications associated with hypertension and its recognition as the "silent killer," That's why, this research piques the interest of a researcher to explore the contributing factor to hypertension among adult people. Thus, this research has attempted to assess the contributing factor to hypertension among adult people of Belaspur -12, Nepalgunj, Banke.

The study addresses the following research questions:
- What are the factors contributing to hypertension among adult people?
- What is the association between factor contributing to hypertension among adult people with their selected socio-demographic variables?

Methods and materials

Study Design, Area, Population and Sample

The hypertension of adult people and its contributing factors was evaluated using a community-based, descriptive cross-sectional research design. This research was conducted in August, 2023 among adult people of Belaspur-12, Nepalgunj Sub-Metropolitan city, Banke, Nepal and the study population consisted of adult people (18 years and above) residing Belaspur-12. This study relies entirely on primary data, and a sample of 120 adult people from community of Belaspur-12, Nepalgunj was selected using non probability convience sampling technique through structured questionnaire. There are a total of 23 wards, but the study area was Belaspur-12, the heart of the city of Nepalgunj Sub-Metropolitan city in Banke District, is located in Lumbini Province, in the mid- western part of Nepal.

Operational definition

Factor: In this study, "factor" refers to something contributing to raise the blood pressure among adult people of Belaspur-12, Nepalgunj, Banke.

Hypertension: In this study "Hypertension" is defined as a systolic blood pressure (SBP) of 140 mm Hg or more, and diastolic blood pressure (DBP) of 90 mm Hg or more. Hypertension can be classified into 2 stages: In stage 1 hypertension systolic BP is 140-159 mm of Hg and diastolic BP is 90-99. In stage 2 hypertension systolic BP is 160 or higher and diastolic BP is 100 or higher.

Adult people: In this study, adult people include both male and female who falls under age group 18-80 years who were categorized into young adults (18-35) years, middle-aged adults (36-55) years, and older adults > 55 years.

Research Instrument and Reliability

To assess the contributing factor to hypertension among adult people, self-structured questionnaire was used which was obtained from rigorous literature reviews. In this research, Cronbach's alpha test was used to evaluate the internal consistency and reliability of each test item set. The reliability coefficients of this research were 0.708 for the scale. Thus, the scale of this research was reliable as alpha coefficients in the range of 0.70 and above (Robinson et al., 1991).

Sample selection criteria

Inclusion criteria
The study was included adult people who were:
- willing to participate in the study.
- available at the time of data collection.

Data Analysis Procedure

The collected data were entered and analysed using descriptive and inferential statistics through IBM-Statistical Package for the Social Sciences (SPSS version 21.0). For categorical variables, descriptive statistical measures such as frequency, percentages with frequency tables, minimum, and maximum values were calculated. In inferential part, chi-square test ($\chi^2 - test$) or Fisher's exact test, whenever applicable, was employed to assess the contributing factor to hypertension among adult people of Belaspur -12, Nepalgunj, Banke. The association was presented as finally, if variables with P-value less than 0.05 were considered as statistically significant for a two-tailed test at 5% level of significance otherwise insignificant

Results

All the obtained data were analyzed on the basis of the objective of the study. The findings were organized and presented under the following tables.

Table 1

Frequency and Percentage Distribution of socio-demographic *variables among adult people*

Variables	Frequency	Percentage
Age		
18-35	52	43.3
36-55	36	30.0
Above 55	32	26.7
Sex		
Male	48	40
Female	72	60
Marital status		
Unmarried	2	1.7
Married	110	91.7
Widowed/Widower	8	6.7
Educational Status		
Literate	84	71.6
Illiterate	36	28.4
If literate		
Primary	24	20
Secondary	42	35
Higher secondary	12	10
Bachelor and above	6	5
Exercise		
Yes	74	61.7
No	46	38.3
Occupation		
Business	64	53.3
Government	14	11.7
Private employee	8	6.7
Agriculture	4	3.3
Others	30	25.0
Smoking		
Yes	34	28.3
No	86	71.7
Alcohol		
Yes	34	28.3
No	86	71.7
Extra Salt intake		
Yes	34	28.3
No	86	71.7

Table 1 depicts that a nearly half of respondent 52 (43.3%) falls under age group 18-35 years and a quarter of respondent 32 (26.7%) falls under the age group of above 55 years. Majority of the respondents 72(60%) were female and 48 (40%) of the respondents were male. Most of the respondents 110 (91.7%) were married and least of the respondent 2(1.7%) were unmarried. 84 (71.6%) were literate and 36 (28.4%) were illiterate. Among literate, 42 (35%) of respondent achieved secondary education and least of the respondent 6(5%) achieved Bachelor level and above. 74 (61.7%) did exercise whereas 46 (38.3%) respondents didn't do exercise.

Likewise, more than half of the respondent 64 (53.3%) were engaged in business and least of the respondents 4 (3.3%) were engaged in agriculture. Furthermore, majority of the respondent didn't do smoking 86(71.7%) whereas 34(28.3%) respondents did smoking. Similarly, majority of the respondent 86 (71.7%) didn't drink alcohol but 34(28.3%) drunk alcohol. 86(71.7) didn't take extra salt and   34(28.3%) took extra salt.

Table 2
Frequency and Percentage Distribution of Respondents in Terms: hypertension and use of medicine

Variables	Frequency	Percentage
Hypertension		
Stage1	56	46.7
Stage 2	64	53.3
Use of medicine		
Yes	46	38.3
No	74	61.7

Table 2 shows that 64(53.3%) of respondents were in the stage 2 and nearly half of the respondents 56 (46.7%) were in the stage 1 hypertension. Majority of the respondents 74(61.7%) didn't use medicine for hypertension but 46 (38.3%) did.

Table 3

Frequency and Percentage Distribution of hypertension in Terms: factors of hypertension

Factor contributing to hypertension among adult population	SD (%)	D(%)	U(%)	A(%)	SA(%)
Being overweight or obese	2(1.67)	28(23.33)	12(10.0)	36(30.0)	42(35.0)
Increasing age	4(3.3)	10(8.3)	18(15.0)	16(13.3)	72(60.0)
Inadequate intake of fruits and vegetables	4(3.3)	54(45.0)	18(15.0)	32(26.7)	12(10.0)
Any stress	0(0.00)	60(50.0)	8(6.7)	46(38.3)	6(5.0)
Extra salt intake	0(0.00)	66(55.0)	18(15.0)	30(25.0)	6(5.0)
Family history of hypertension	2(1.7)	50(41.7)	4(3.3)	18(15.0)	46(38.3)
Being physically inactive	0(0.00)	54(45.0)	16(13.3)	36(30.0)	14(11.7)
Sedentary life style	2(1.7)	64(53.3)	12(10.0)	36(30.0)	6(5.0)
Smoking and alcohol consumption	6(5.0)	70(58.3)	10(8.3)	28(23.3)	6(5.0)
Taking too little potassium in diet	2(1.7)	54(45.0)	12(10.0)	40(33.3)	12(10.0)
Diabetes mellitus	2(1.7)	86(71.7)	0(0.00)	10(8.3)	22(8.3)
Chronic kidney disease	0(0.00)	100(83.3)	4(3.3)	10(8.3)	6(5.0)
Consumption of animal source fat	2(1.7)	46(38.3)	10(8.3)	60(50.0)	2(1.7)
Having high level of income	0(0.00)	76(63.3)	14(11.7)	28(23.3)	2(1.7)
Don't perform exercise daily	2(1.7)	56(46.7)	12(10.0)	40(33.3)	10(8.3)

SA = Strongly agree , A = Agree , U = Uncertain, D = Disagree, SD = Strongly disagree

Table 3 indicates that data related to factor contributing to hypertension in which 42(35%) were strongly agree with being overweight or obese. Majority of the respondent 72(60%) were strongly agree with increasing age. Nearly half of the respondent 54(45%) were disagree with inadequate intake of fruits and vegetables and least of the respondent 4(3.3%) were strongly disagree with inadequate intake of fruits and vegetables. Half of the respondent 60 (50%) were disagree with having any stress. Above half of the respondent 66(55%) were disagree with taking extra salt. Likewise, more than half of the respondents 64 (53.3%) were disagree with having sedentary lifestyle. Furthermore, 70 (58.3%) were disagree and 28 (23.3%) agree with consumption of smoking and alcohol. 54(45%) of respondents were disagree with taking too little potassium in diet. Mmoreover, 86(71.7%) were disagree with having diabetes mellitus . Most of the respondent 100(83.3%) were disagree with having chronic kidney disease and least of the respondent 4(3.3%) were uncertain with chronic kidney disease. Half of the respondent 60 (50%) agree with consumption of animal source fat. Majority of the respondents 76(63.3%) adult were disagree with having high level of income. Similarly, almost half of the respondents 56 (46.7%) were disagree with don't perform exercise daily.

Table 4

Bivariate analysis of variables with hypertension

Variables	Hypertension		Chi-square/Fisher's Exact Value	D.f.	P-value
	Stage I	Stage II			
Age					
18-35	24	28			
36-55	20	16	1.114	2	0.573
Above	12	20			
Sex					
Female	28	44	2.188	1	0.189
Male	28	20			
Exercise					
Yes	40	34		1	0.187
			2.116		
No	16	30			
Marital Status					
unmarried	0	2			
Married	50	60	2.064	2	2.064
Widowed/Widower	6	2			
Educational Status					
Literate	44	42			
Illiterate	12	22	1.233	1	0.39
If literate					
Primary	10	14			
Secondary	24	18	4.673	4	0.327
Bachelor	8	4			
Above bachelor	0	6			
Smoking					
Yes	22	12	3.101	1	0.093
No	34	52			

Alcohol					
Yes	24	10	5.454	1	0.024*
No	6	80			
Extra salt intake					
Yes	10	24	2.838	1	0.150
No	46	40			
Consumption of animal source fat.					
Yes	30	26	5.183	1	0.0437*
No	20	44			
Overweight or obese					
Yes	36	30	5.613	1	0.0362*
No	28	26			
Use of medicine					
Yes	14	32	3.948	1	0.064
No	42	32			
Family history of hypertension					
Yes	34	36	7.698	1	0.007**
No	28	22			

*significant at 5% level of significance, **significance at 1% level of significance

As per above table 4, the p-value for alcohol consumption is less than 0.05 indicates that alcohol consumption is statistically significant variable for contributing to hypertension at 5 % level of significance. Therefore, alcohol consumption ($\chi^2 = 5.454$, P-value < 0.05) of the respondents is significantly associated with contributing to hypertension. Likewise, consumption of animal source fat ($\chi^2 = 5.183$, p-value <0.05) and overweight or obese ($\chi^2 = 5.613$, p-value<0.05) have found statistically significant variables for contributing to hypertension at 5% level of significance as p-value less than 0.05. Also, family history of hypertension ($\chi^2 = 7.698$, P-value < 0.01) is statistically significant for contributing to hypertension at 1 % level of significance.

Discussion

The aim of this study was to assess the contributing factor to hypertension among adult people of Belaspur -12, Nepalgunj, Banke. The findings of the present study revealed that major factors contributing to hypertension among adult population were being alcohol consumption, consumption of animal source fat, overweight or obese, family history of hypertension, which is supported by the study conducted in City of Buea, Cameroon showed that obesity, diabetes, low physical activity, smoking, alcohol consumption were the factors contributing to hypertension (Aminde, et al., (2017). Furthermore, the findings of this current study were corroborated by research carried out in in urban population of Varanasi, India with results the prevalence of hypertension was 32.9% (male: 40.9%, female: 26.0%). Further, retired subjects, eldest age group, tobacco and alcohol consumption, overweight, obesity, subjects of upper socioeconomic status and abdominal obesity were also associated with hypertension (Singh et al., 2017). Likewise, the results of present study also were supported by the study in Kathmandu, with prevalence of hypertension was 32.5%. smoking, alcohol consumption, physical activity, body

mass index, and diabetes were identified as significant explanatory variables for hypertension (Dhungana et al., 2016).

Delimitation of The Study

The study was limited to only adult people of Belaspur -12, Nepalgunj Sub-Metropolitan city, Banke, Nepal. The sample size was insufficient to constitute a representative sample. Consequently, the results of this research may lack generalizability for other study population or area.

Conclusion

Based on the findings, it can deduce that the major factors contributing to hypertension among adult population were being alcohol consumption, overweight or obese, consumption of animal source fat, family history of hypertension. Thus, in order to prevent hypertension, intervention strategies should prioritise modifiable risk factors, including alcohol consumption, lipid intake from animal sources, physical activity, and obesity.

Ethical consideration

The study protocol was reviewed and approved by Research Management Cell (RMC), Mahendra Multiple Campus, Nepalgunj, Tribhuvan University. Verval informed consent was obtained from every participant.

References

Aminde, L. N., Takah, N., Ngwasiri, C., Noubiap, J. J., Tindong, M., Dzudie, A., & Veerman, J. L. (2017). Population awareness of cardiovascular disease and its risk factors in Buea, Cameroon. *BMC public health*, *17*(1), 545. https://doi.org/10.1186/s12889-017-4477-3

Centers for Disease Control and Prevention [CDC]. (2005). *Racial/ethnic disparities in prevalence, treatment, and control of hypertension-United States, 1999-2002. Morbidity and mortality weekly report: MMWR*. Centers for Disease Control and Prevention.

Chataut, J., , Ghimire, M., , Jonchhe, S., , & Tamrakar, D., (2020). A Community Based Cross Sectional Study to Estimate the Prevalence and Associated Factors of Hypertension in Rural Nepal. *Kathmandu University medical journal (KUMJ)*, *18*(71), 235–242.

Dhungana, R. R., Pandey, A. R., Bista, B., Joshi, S., & Devkota, S. (2016). Prevalence and Associated Factors of Hypertension: A Community-Based Cross-Sectional Study in Municipalities of Kathmandu, Nepal. *International journal of hypertension*, *2016*, 1656938. https://doi.org/10.1155/2016/1656938

Global status report on noncommunicable diseases. (2010). https://www.who.int/nmh/publications/ncd-report-full-en.pdf

Hasan, M., Sutradhar, I., Akter, T., Das Gupta, R., Joshi, H., Haider, M. R., & Sarker, M. (2018). Prevalence and determinants of hypertension among adult population in Nepal: Data from Nepal Demographic and Health Survey 2016. *PloS one*, *13*(5). https://doi.org/10.1371/journal.pone.0198028

Huang, Y., Guo, P., Karmacharya, B. M., Seeruttun, S. R., Xu, D. R., & Hao, Y. (2019). Prevalence of hypertension and prehypertension in Nepal: a systematic review and meta-

analysis. *Global health research and policy*, *4*, 11. https://doi.org/10.1186/s41256-019-0102-6

Hypertension. (2023, March 16). World Health Organization (WHO). https://www.who.int/news-room/fact-sheets/detail/hypertension

Huang, Y., Guo, P., Karmacharya, B. M., Seeruttun, S. R., Xu, D. R., & Hao, Y. (2019). Prevalence of hypertension and prehypertension in Nepal: a systematic review and meta-analysis. *Global health research and policy*, *4*, 11. https://doi.org/10.1186/s41256-019-0102-6

Kearney, P. M., Whelton, M., Reynolds, K., Muntner, P., Whelton, P. K., & He, J. (2005). Global burden of hypertension: analysis of worldwide data. *Lancet (London, England)*, *365*(9455), 217–223. https://doi.org/10.1016/S0140-6736(05)17741-1

Khanal, M. K., Dhungana, R. R., Bhandari, P., Gurung, Y., & Paudel, K. N. (2017). Prevalence, associated factors, awareness, treatment, and control of hypertension: Findings from a cross sectional study conducted as a part of a community based intervention trial in Surkhet, Mid-western region of Nepal. *PloS one*, *12*(10). https://doi.org/10.1371/journal.pone.0185806

Kibria, G. M. A., Swasey, K., Kc, A., Mirbolouk, M., Sakib, M. N., Sharmeen, A., Chadni, M. J., & Stafford, K. A. (2018). Estimated Change in Prevalence of Hypertension in Nepal Following Application of the 2017 ACC/AHA Guideline. *JAMA network open*, *1*(3). https://doi.org/10.1001/jamanetworkopen.2018.0606

Krishnan, A., & Garg, R.M. (2013). Hypertension in the South-East Asia Region: an overview.

Non communicable diseases (2023,September 16).World Health Organization (WHO). https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases

Omar, S. M., Musa, I. R., Osman, O. E., & Adam, I. (2020). Prevalence and associated factors of hypertension among adults in Gadarif in eastern Sudan: a community-based study. *BMC public health*, *20*(1), 291. https://doi.org/10.1186/s12889-020-8386-5

Pyakurel, P., Yadav, D. K., Thapa, J., Thakur, N., Sharma, P., Koirala, N., Yadav, S. K., Chaurasia, A., Sharma, S., Thapa, J., Thapa, S., Shah, A., Panta, P., Shrestha, R., Dangi, A., Acharya, B., Pyakurel, U., & Jha, N. (2019). Prevalence and associated risk factor of hypertension among individuals of age 18-59 years in South-eastern Nepal: A cross-sectional study. *Nepalese Heart Journal*, *16*(1), 19–26. https://doi.org/10.3126/njh.v16i1.23894

Robinson, J. P., Shaver, P. R., & Wrightsman, L. S. (Eds.). (1991). *Measures of personality and social psychological attitudes.* Academic Press. https://psycnet.apa.org/record/1991-97206-000

Singh, S., Shankar, R., & Singh, G. P. (2017). Prevalence and Associated Risk Factors of Hypertension: A Cross-Sectional Study in Urban Varanasi. *International journal of hypertension*, *2017*, 5491838. https://doi.org/10.1155/2017/5491838

S. Mendis, "Global status report on non-communicable diseases 2010," Tech. Rep., World Health Organisation, 2010, http://www.who.int/nmh/publications/ncd report 2010/en/.

Vaidya, A., Pathak, R. P., & Pandey, M. R. (2012). Prevalence of hypertension in Nepalese community triples in 25 years: a repeat cross-sectional study in rural Kathmandu. *Indian heart journal*, *64*(2), 128–131. https://doi.org/10.1016/S0019-4832(12)60045-5

World hypertension day (2019). https://www.who.int /news-room

***