

**KNOWLEDGE, ATTITUDE AND PRACTICES ON THE RISK FACTORS FOR  
HYPERTENSION AMONG UNDERGRADUATE MEDICAL STUDENTS OF ANDHRA  
PRADESH**Harsha Pudhota Choudary<sup>1</sup>, Dr. P. Radha Kumari<sup>2\*</sup>, Dr. Phani Kumar<sup>3</sup> and Dr. R. NageswaraRao<sup>4</sup><sup>1</sup>3<sup>rd</sup> year MBBS student, Guntur Medical College, Guntur.<sup>2</sup>Professor of Community Medicine, Guntur Medical College, Guntur.<sup>3</sup>2<sup>nd</sup> year postgraduate, Community Medicine, Guntur Medical College, Guntur.<sup>4</sup>Professor and HOD, Community Medicine, Guntur Medical College, Guntur.**\*Corresponding Author: Dr. P. Radha Kumari**

Professor of Community Medicine, Guntur Medical College, Guntur.

DOI: <https://doi.org/10.17605/OSF.IO/NRS2X>

Article Received on 18/11/2020

Article Revised on 08/12/2020

Article Accepted on 28/12/2020

**ABSTRACT**

**Background:** Hypertension is currently global health concern resulting in increased morbidity & mortality among population. Medical students have a role as future physicians and public health advocates in the management of cardiovascular disease related habits may predict their preparedness for this role. So the present study was carried to know the knowledge, attitude and practices towards risk factors of hypertension among undergraduate medical students. **Methodology:** A cross-sectional description study conducted among undergraduate medical students of Guntur district, Andhra Pradesh, in the month of September 2020. One medical college was randomly selected by simple random technique from three medical colleges present in Guntur district of Andhra Pradesh. Data was collected from under graduate medical students from second, fifth, seventh and ninth semesters by developing a questionnaire in Google forms. A pretested and semi structured questionnaire was developed for collection of data and was the same questionnaire was created in Google forms. The data was analyzed in EPIINFO version 3.0 software. chi-square test was used to elicit the association between knowledge, attitude, practices and demographic variables. **Results:** In the present study knowledge regarding hypertension and its associated risk factors is found to be increasing as years of study is increasing. Positive attitude towards risk factors for hypertension is found to be maximum (99.3%) among final years. Only 47% of the study population are doing adequate physical exercise and walking is found to be the common physical activity. Harmful habits like tobacco use, alcohol intake and high salt intake is found to be very low in the present study. There is a significant relation between checking of blood pressure, salt usage and adequate physical exercise and students from families having and not having medical professionals. **Conclusion:** Knowledge and attitude medical students of various semesters are good towards risk factors of hypertension but the warning signs are about half of study participants are not doing regular physical exercise & eating junk food & some of them are having habits of alcohol, smoking which are modifiable risk factors that leads to hypertension at very early age. Strategies to prevent cardiovascular disease among the young population should be put in place.

**KEYWORDS:** Attitude, blood pressure, hypertension, knowledge, practices, physical activity.**INTRODUCTION**

Hypertension is a serious medical condition and can increase the risk of heart, brain, kidney, and other diseases.<sup>[1,5]</sup> Hypertension has been called the silent killer disease because it is rarely symptomatic, and can lead to life-threatening complications.<sup>[1,4,15]</sup> Subjects with hypertension possess two fold higher risk of developing coronary artery disease (CAD), four times higher risk of congestive heart failure and seven times higher risk of cerebrovascular diseases (CVD), compared to normotensive subjects.<sup>[3,8,9]</sup>

Although hypertension has its lowest prevalence in young adults compared to older and middle aged, earlier diagnosis and appropriate management of these cases can prevent future complications. Pre-hypertension, more prevalent among young adults, is an important predecessor of full-blown hypertension, which can be lowered by lifestyle modifications.<sup>[1,7, 8]</sup> Hence, an attempt was made to assess the knowledge of undergraduate medical students about modifiable risk factors like, obesity, smoking, alcohol consumption, diet, salt consumption, psychological stress, and low physical activity.<sup>[4,5,10,11,12,15]</sup> An attempt was also made to find out

the significance of presence or absence of associated factors influencing hypertension.<sup>[7]</sup>

Numerous studies are available about the perception regarding knowledge, attitudes, and practices on CVD risk factors but most of these studies are related to the elderly, and hypertensive patients. Only few studies are available about the perception of young adults especially, medical students.<sup>[6,7]</sup>

Medical students have a role as future physicians and public health advocates in the management of cardiovascular disease related habits may predict their preparedness for this role. It is imperative to understand the young generation's existing knowledge, attitude, and practices about the risk factors of hypertension for initiating the preventive efforts. Hence the present study was selected to know the knowledge, attitude and practices towards risk factors of hypertension among undergraduate medical students.

### OBJECTIVES

1. To know the knowledge, attitude and practices towards risk factors for hypertension among undergraduate medical students.
2. To study the association between social-demographic factors and knowledge, attitude and practices towards risk factors for hypertension among the study population.

### METHODOLOGY

It is a cross-sectional descriptive study conducted among undergraduate medical students of Guntur district, Andhra Pradesh.

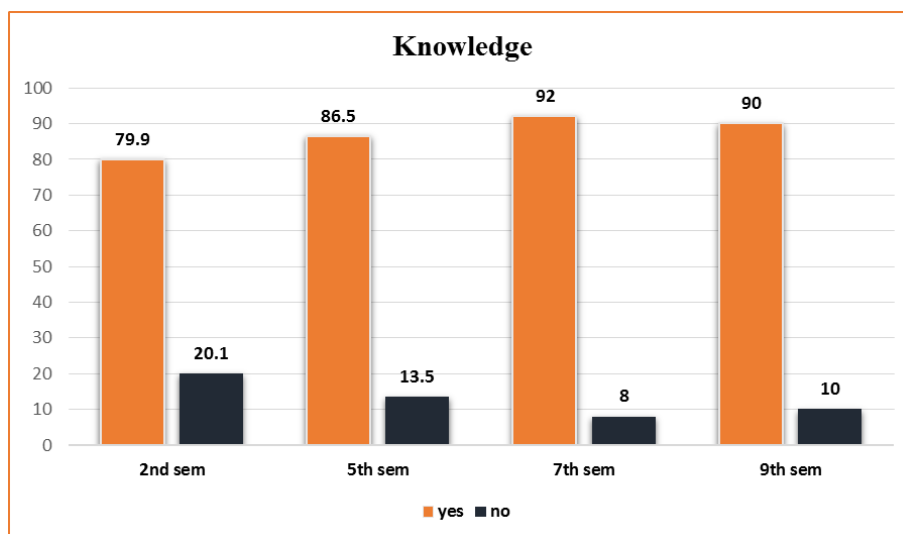
The study was conducted in the month of September 2020. One medical college was randomly selected by simple random technique from three medical colleges present in Guntur district of Andhra Pradesh. Data was collected from under graduate medical students from second, fifth, seventh and ninth semesters by developing questionnaire in Google forms.

A pretested and semi structured questionnaire was developed for collection of data and was the same questionnaire was created in Google forms. A pilot study was done among twenty-five students in a close group to test the validity of the questionnaire and to make any deletions and additions in the questionnaire. The data was collected by using Google forms by sharing the link in various semester groups by maintaining the individual confidentiality. Only students who were willing to participate in the study were asked. The link was made available for only four days and then it was disabled. The questionnaire is consisted of four parts. First part is regarding socio-demographic information. Second part is knowledge related information. Third part is related to attitude related questions and fourth part is related to information regarding practices.

The data was analyzed in EPIINFO version 3.0 software. chi-square test was used to elicit the association between knowledge, attitude, practices and demographic variables.

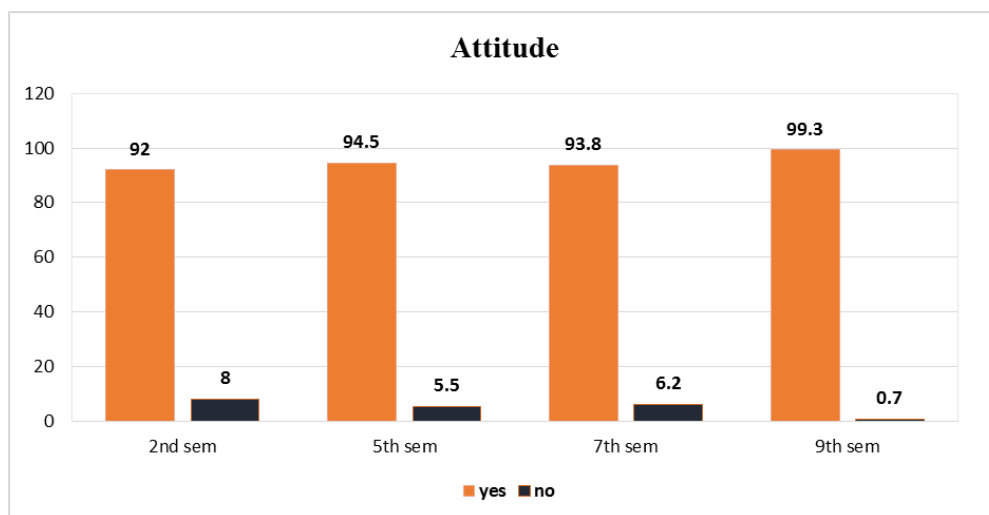
### RESULTS

In the present study, 336 students participated. The results were analyzed and they are as follows:



**Figure 1: Knowledge on risk factors of Hypertension.**

In the present study knowledge regarding hypertension and its associated risk factors is found to be increasing as years of study is increasing.



**Figure 2: Attitude regarding hypertension & associated risk factors.**

Positive attitude towards risk factors for hypertension is found to be maximum (99.3%) among final years (Fig:2).

**Table 1: Practices concerning hypertension & its risk factors among study population.**

Practices	2 <sup>nd</sup> Sem	5 <sup>th</sup> Sem	7 <sup>th</sup> Sem	9 <sup>th</sup> Sem	Average
1. Do you include fruits and vegetables in your diet?					
Yes	86.67	92.8	93.4	97.7	92.64
No	13.33	7.2	6.6	2.3	7.357
2. How often do you consume junk foods					
Everyday	2.2	4.08	4.8	4.5	3.895
Few times a week	32.1	24.4	26.67	22.7	26.46
About once a week	26.7	24.4	27.73	18.5	24.33
A few times a month	20	24.4	24.08	20.2	22.17
Once a month	6.67	11.5	5.7	20.5	11.09
Less than once a month	13.31	11.34	11.02	13.6	12.32
3. Are you doing regular physical exercise to maintain your weight?					
Yes	51.1	70.4	64.2	72.7	64.6
No	48.9	29.6	35.8	27.3	35.4
4. If yes: a) How many days in a weeks					
<5days	74	62.3	18.2	21.9	44.1
>5days	26	37.7	81.8	78.1	55.9
5. b) Type of exercise					
Walking	47	38.8	39.78	32.4	39.49
Cycling	8.7	7.24	10.6	5.4	7.895
Skiping	21	7.24	10.02	6.9	11.29
Gym	8.7	14.4	13.6	20.2	14.225
Yoga	13	14.4	10.3	18.9	14.15
Others	1.6	17.92	15.7	16.2	12.85
6. c)How many minutes a days					
<15mins	20	27.4	37	13.89	24.57
15-30mins	42	37.69	42	36.11	39.45
>30mins	38	50.91	50	50	47.23
7. Are you avoiding extra added salt in your daily diet (eg. in curd and buttermilk)?					
Yes	71.2	52	94.16	65.9	70.815
No	28.8	48	5.84	34.1	29.185
8. Do you avoid alcohol consumption?					
Yes	91.1	97.9	98.5	95.5	95.75
No	8.9	2.1	1.5	4.5	4.25

9. Are you avoiding tobacco use or smoking?						
	Yes	93.3	93.9	98.5	95.5	95.3
	No	6.7	6.1	1.5	4.5	4.7
10. How often do you check your Blood pressure?						
	Daily	2.2	1.02	0	0	0.8
	Weekly	2.2	3.06	1.4	0	1.665
	Monthly	8.8	6.12	3.6	11.36	7.47
	When I feel ill	75.5	78.6	74.6	72.7	75.35
	Others	11.3	11.2	20.4	15.94	14.71

In the present study more than 90% of the study population are including fruits in their diet. The habit of junk food eating is found to be around 50%. Only 47% of the study population are doing adequate physical

exercise and walking is found to be the common physical activity. Harmful habits like tobacco use, alcohol intake and high salt intake is found to be very low in the present study.

**Table 2: Knowledge on risk factors of hypertension among family with medical professionals.**

Knowledge	Family with medical professional	Family without medical professional	Chi-square value	p-value
Yes	87	80.9	1.381	0.2406
No	13	19.1		

In the present study there is no significant relation between knowledge on risk factors for hypertension

among the study population who are from families with and without medical professional.

**Table 3: Attitude towards risk factors of hypertension among family with medical professionals & without medical professionals.**

Attitude	Family with medical professional	Family without medical professional	Chi-square value	p-value
Yes	94.9	93.6	0.1559	0.6929
No	5.1	6.4		

In the present study there is no significant relation between attitude towards risk factors for hypertension

among the study population who are from families with and without medical professional.

**Table 4: Knowledge on risk factors of hypertension among study participants residing in rural & urban areas.**

Knowledge	Urban	Rural	Chi-square value	p-value
Yes	86.4	83.7	0.2867	0.5924
No	13.6	16.3		

In the present study the knowledge is found to be more in urban study population when compared to rural and is not statistically significant.

**Table 5: Attitude towards risk factors of hypertension among study participants residing in rural & urban areas.**

Attitude	Urban	Rural	Chi-square value	p-value
Yes	93.8	92.6	0.1136	0.7361
No	6.2	7.4		

In the present study the attitude towards risk factors for hypertension is found to be more in urban study population when compared to rural and is not statistically significant.

**Table 6: Association between practices regarding risk factors of hypertension and family with medical professionals.**

Practices		Family with medical health professionals	Family without medical health professionals	P value
1. Do you include fruits and vegetables in your diet?				
	Yes	94.3	92.3	0.5716
	No	5.7	7.7	
2. How often do you consume junk foods				
	Everyday	9.43	3	0.06736
	Few times a week	16.98	28	
	About once a week	32.07	23.2	
	A few times a month	28.3	23.6	
	Once a month	7.54	10.9	
	Less than once a month	5.68	11.2	
3. Are you doing regular physical exercise to maintain your weight?				
	Yes	69.85	63.7	0.3559
	No	30.15	36.3	
4. If yes: a) How many days in a weeks				
	<3days	37.84	58.3	0.003875
	>3days	62.16	41.8	
5. b) Type of exercise				
	Walking	21.05	39.1	0.002137
	Cycling	8.1	5.3	
	Skipping	10.81	11.1	
	Gym	28.94	9.5	
	Yoga	8.1	15.9	
	others	23	19	
6. c)How many minutes a days				
	<15mins	13.15	18.8	0.5406
	15-30mins	42.11	38.1	
	>30mins	44.74	43.1	
7. Are you avoiding extra added salt in your daily diet (eg. in curd and buttermilk)?				
	Yes	62.26	55.1	0.04617
	No	27.74	44.9	
8. Do you avoid alcohol consumption?				
	Yes	88.67	90.9	0.5889
	No	11.43	9.1	
9. Are you avoiding tobacco use or smoking?				
	Yes	96.22	93.1	0.3265
	No	3.78	6.9	
10. How often do you check your Blood pressure?				
	Daily	1.8	0.7	0.008206
	Weekly	0	2.9	
	Monthly	22.64	6.5	
	When I feel ill	64.15	78.3	
	Others	11.41	11.6	

In the present study there is a significant relation between checking of blood pressure, salt usage and adequate physical exercise and students from families having and not having medical professional.

**Table 7: Association between practices regarding risk factors of hypertension and study participants residing in rural & urban areas.**

Practices	Urban	Rural	P value
1. Do you include fruits and vegetables in your diet?			
Yes	93.75	91.07	0.4743
No	6.25	8.93	
2. How often do you consume junk foods			
Everyday	6.09	1.78	0.09241
Few times a week	28.84	19.65	
About once a week	22.22	29.6	
A few times a month	25.4	22.2	
Once a month	10.97	10.7	
Less than once a month	6.48	16.07	
3. Are you doing regular physical exercise to maintain your weight?			
Yes	65.2	58.03	0.2988
No	34.8	41.97	
4. If yes: a) How many days in a weeks			
<3days	40.2	47.7	0.2867
>3days	59.8	52.3	
5. b) Type of exercise			
Walking	30.3	47.29	0.06543
Cycling	5.16	6.75	
Skipping	11.06	6.75	
Gym	17.4	6.75	
Yoga	13.5	14.9	
others	22.58	17.56	
6. c) How many minutes a days			
<15mins	15.9	23	0.4463
15-30mins	39.4	36.5	
>30mins	44.7	40.5	
7. Are you avoiding extra added salt in your daily diet (eg. in curd and buttermilk)?			
Yes	57.88	52.68	0.4596
No	42.12	47.32	
8. Do you avoid alcohol consumption?			
Yes	88.89	93.75	0.03788
No	11.01	3.25	
9. Are you avoiding tobacco use or smoking?			
Yes	93.5	93.75	0.3102
No	6.5	3.25	
10. How often do you check your Blood pressure?			
Daily	0.93	0.89	0.1987
Weekly	1.85	3.58	
Monthly	10.2	7.14	
When I feel ill	64.02	76.79	
Others	23	11.6	

With regard to some of the practices, avoiding alcohol consumption showed significant difference among the study participants who are residents of urban and rural areas.

Other practices, inclusion of fruits and vegetables in their diet, how often consume junk food, regular physical exercise to maintain weight & type of exercise, how often do they check their blood pressure, how many days of exercise in a week, how many minutes of exercise a day, avoiding extra added salt in your daily diet (eg. in curd and buttermilk), avoiding tobacco use or smoking shows

no significant difference among the study participants who are residents of urban and rural areas.

## DISCUSSION

Risk factors of hypertension are not well studied in young adults<sup>[16]</sup> and public awareness of hypertension in countries undergoing epidemiological transition is dismal<sup>[17]</sup>. High blood pressure is a burning issue now, rising developing countries. It is the top cause of mortality. Prevention is always desirable but it is actually difficult where there is poor awareness, attitude, and

practices. This study reveals 2<sup>nd</sup>, 5<sup>th</sup>, 7<sup>th</sup>, 9<sup>th</sup> semester students 79.9%, 86.5%, 92%, 90% respectively have proper knowledge regarding hypertension & associated its risk factors. 2<sup>nd</sup>, 5<sup>th</sup>, 7<sup>th</sup>, 9<sup>th</sup> semester students 92%, 94.5%, 93.8%, 99.3% have respectively shown positive attitude towards hypertension. About 61.8% of the respondents check their blood pressure when they feel ill. 51.1%, 70.4%, 64.2%, 72.7% among 2<sup>nd</sup>sem, 5<sup>th</sup>sem, 7<sup>th</sup>sem, 9<sup>th</sup> sem respectively are doing regular physical exercise which is good when compared with the result of a research done in Ghana (60%).<sup>(14)</sup> 71.2%, 52%, 94.16%, 65.9% among 2<sup>nd</sup>sem, 5<sup>th</sup>sem, 7<sup>th</sup>sem, 9<sup>th</sup>sem respectively are avoiding extra salt in their diet, 93.3%, 93.9%, 98.5%, 95.5% among 2<sup>nd</sup>sem, 5<sup>th</sup>sem, 7<sup>th</sup>sem, 9<sup>th</sup> sem respectively are avoiding tobacco & are non-smokers. In this study 86.67%, 92.8%, 93.4%, 97.7% among 2<sup>nd</sup>sem, 5<sup>th</sup>sem, 7<sup>th</sup>sem, 9<sup>th</sup>sem respectively students includes fruits & vegetables in their diet. Whereas, 45.0% of participants agreed that increased consumption of fruits and vegetables would improve control of hypertension<sup>[12]</sup>. On the contrary, knowledge about hypertension is high when compared with a research done in Kinondoni Municipality, Dar es Salaam (66.8%).<sup>18</sup> The attitude of the patients in avoiding salt intake and smoking cigarette was 94.6% and 98.5%. Evidence recommended that study participants should be educated on the components and application of life style modification for better control and prevention of their blood pressure. The future health care providers can come forward and play vital role to enable the patients to control their blood pressure by giving consistent advices on the life style modification by participating in Community based health education program.

More than 60% were aware of high salt intake and a high-calorie diet being risk factors.<sup>[11]</sup> In a study done in Seychelles, another country in epidemiological transition, it was seen that a high proportion showed good basic knowledge of hypertension, where 96% were aware of the association of hypertension with salt. The benefit of physical exercise on BP was also well recognized by 79% of the participants.

## CONCLUSION

Knowledge and attitude medical students of various semesters are good towards risk factors of hypertension but the warning signs are about half of study participants are not doing regular physical exercise & consuming junk food & some of them are having habits of alcohol, smoking which are modifiable risk factors that leads to hypertension at very early age. Strategies to prevent cardiovascular disease among the young population will be kept in the hands of these future doctors so these people has to practice all the preventive strategies thereby they can be beneficial to themselves as well as to the society.

## REFERENCES

1. AlWabel, A. H., Almufadhi, M. A., Alayed, F. M., Aloraini, A. Y., Alobaysi, H. M., & Alalwi, R. M. Assessment of hypertension and its associated risk factors among medical students in Qassim University. *Saudi journal of kidney diseases and transplantation: an official publication of the Saudi Center for Organ Transplantation, Saudi Arabia*, 2018; 29(5): 1100–1108. <https://doi.org/10.4103/1319-2442.243959>.
2. Aung, M. N., Lorga, T., Srikrajang, J., Promtingkran, N., Kreuangchai, S., Tonpanya, W., Vivarakanon, P., Jaiin, P., Praipaksin, N., & Payaprom, A. Assessing awareness and knowledge of hypertension in an at-risk population in the Karen ethnic rural community, Thasongyang, Thailand. *International journal of general medicine*, 2012; 5: 553–561. <https://doi.org/10.2147/IJGM.S29406>.
3. Buang, N., Rahman, N., & Haque, M. Knowledge, attitude and practice regarding hypertension among residents in a housing area in Selangor, Malaysia. *Medicine and pharmacy reports*, 2019; 92(2): 145–152. <https://doi.org/10.15386/mpr-1227>.
4. Aubert, Line & Bovet, Pascal & Gervasoni, Jean-Pierre & Rwebogora, Anne & Waerber, Bernard & Paccaud, Fred. Knowledge, Attitudes, and Practices on Hypertension in a Country in Epidemiological Transition. *Hypertension*. 31. 1136-45. 10.1161/01.HYP.31.5.1136, 1998.
5. Bashaar M, Saleem F, Thawani V, et al. Evaluation of hypertension related knowledge, attitudes and practices at community level in Kabul. *Pharm Pharmacol Int J.*, 2019; 7(3): 106-112. DOI: 10.15406/ppij.2019.07.00239.
6. Baig, M., Gazzaz, Z. J., Gari, M. A., Al-Attallah, H. G., Al-Jedaani, K. S., Mesawa, A. T., & Al-Hazmi, A. A. Prevalence of obesity and hypertension among University students' and their knowledge and attitude towards risk factors of Cardiovascular Disease (CVD) in Jeddah, Saudi Arabia. *Pakistan journal of medical sciences*, 2015; 31(4): 816–820. <https://doi.org/10.12669/pjms.314.7953>.
7. Patnaik, A., & Choudhury, K. C. Assessment of risk factors associated with hypertension among undergraduate medical students in a medical college in Odisha. *Advanced biomedical research*, 2015; 4: 38. <https://doi.org/10.4103/2277-9175.151245>.
8. Rahman MN, Alam SS, Mia MA, et al. Knowledge, attitude and practice about hypertension among adult people of selected areas of Bangladesh. *MOJ Public Health*, 2018; 7(4): 211?214. DOI: 10.15406/mojph.2018.07.00231.
9. Mahajan, Hemant Assessment of KAP, Risk Factors and Associated Co-Morbidities in Hypertensive Patients.. *IOSR Journal of Dental and Medical Sciences*, 2012; 1: 6-14. 10.9790/0853-0120614.
10. Ondimu, D. O., Kikuvi, G. M., & Otieno, W. N. Risk factors for hypertension among young adults (18-35)

- years attending in Tenwek Mission Hospital, Bomet County, Kenya in 2018. *The Pan African medicaljournal*, 2019; 33: 210. <https://doi.org/10.11604/pamj.2019.33.210.18407>.
11. Shaikh, Rizwana& Mathew, Elsheba&Sreedharan, Jayadevan&Muttappallymyalil, Jayakumary& Al-Sharbatti, Shatha&Basha, Shaikh. Knowledge regarding risk factors of hypertension among entry year students of a medical university. *Journal of family & community medicine*, 2011; 18: 124-9. 10.4103/2230-8229.90011.
  12. Gnanaselvam, Kisokanth&Ilankoon, Prasanthi&Arulanandem, Kandasamy&Cse, Goonewardena&Sundaresan, Thadchanamoorthy& Joseph, J. Assessment of Knowledge on Hypertension, its consequences and management practices among hypertensive patients - A descriptive study. *Journal of the Postgraduate Institute of Medicine*, 2016; 3: 30. 10.4038/jpgim.8097.
  13. Thapa, Lekhjung& Sharma, Nooma&Poudel, Ramesh & Bhandari, Tirtha&Bhagat, Riway& Shrestha, Asis& Shrestha, SHAKTI &Khatiwada, Dipendra& Caplan, Louis. Knowledge, attitude, and practice of stroke among high school students in Nepal. *J Neurosci Rural Pract*, 2016; 7: 504-9. 10.4103/0976-3147.188635.
  14. Kizito, Samuel &Nyombi, Kenneth &Mukunya, David &Nabukalu, Angella&Bukama, Martin &Lunyera, Joseph &Asiimwe, Martha &Kimuli, Ivan &Kalyesubula, Robert. High prevalence of hypertension and cardiovascular disease risk factors among medical students at Makerere University College of Health Sciences, Kampala, Uganda. *BMC Research Notes*, 2016; 9: 10.1186/s13104-016-1924-7.
  15. Osman, Hisham& Mohamed, Asma&Zakaria, Khawla&Salum, Maymuna& ME, Shayoub. Assessment of Knowledge about Hypertension and its Risk Factors among Students from Medical Colleges at IUA. *Diagnostic Pathology: Open Access*, 2018; 03: 10.4172/2476-2024.1000142.
  16. Sonne-Holm S, Sorensen TI, Jensen G, Schnohr P. Independent effects of weight change and attained body weight on prevalence of arterial hypertension in obese and non- obese men. Reddy KS. Hypertension control: Challenges and opportunities. *Natl Med J India*, 2000; 13: 1-2.
  17. Linda, Mlunde. Knowledge, Attitude and Practices Towards Risk Factors for Hypertension in Kinondoni Municipality, Dar es Salaam. *Dar Es Salaam Medical Students' Journal*, 2010; 14: 10.4314/dmsj.v14i2.51203.
  18. Weiland SK, Keil U, Spelsberg A. Knowledge and attitudes towards hypertension and hypercholesterolemia in a population of Southern Germany: Results from a population survey in the Augsburg area. *SozPraventivmed*, 1991; 36: 5-8.
  19. Kusuma YS, Gupta SK, Pandav CS. Knowledge and perceptions about hypertension among neo- and settled-migrants in Delhi, India. *CVD Prev Control*, 2009; 4: 119-29.
  20. Shankar PR, Partha P, Shenoy N, Chandrasekhar TS, Dubey AK. Knowledge about heart attack and hypertension among individuals attending a cardiac camp in Pokhara city. *Kathmandu Univ Med J (KUMJ)*, 2007; 5: 273-8.