

AN ANALYTICAL STUDY ON BLOOD PRESSURE OF UNDERGRADUATE STUDENTS IN KUVEMPUR UNIVERSITY

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Abstract

The purpose of the study was to describe the level of blood pressure among men and women of undergraduate students who are not regularly involved in physical exercises. Out of 454 students, 256 were females, and 198 were males. The age of the students was between 19-23 years (21.01 ± 0.71). An inventive research survey system was used to reach a minimum sample size of 454. First-year undergraduate male and female students who satisfied the inclusion criteria were selected using a simple randomised sampling technique. A random number generator was used for randomisation. The included subjects were given an explanation of the study's nature in the language that best suited their comprehension. Written informed consent was provided by study participants, and each participant duly signed it. All participant identifiers, including the consent form, were kept confidential and secure and were only accessible by the research team. Blood pressure was measured using a bio-monitor. We obtained standard descriptive statistics. Uncorrelated t-test was used to identify the difference between males and females. The results of this test indicated that there was a significant difference observed between the males and females on blood pressure.

Keywords: Blood pressure, Under Graduate Students, Kuvempu University.

1. Introduction

Over the past 20 years, lifestyle changes have made non-communicable diseases like hypertension a major public concern. During recent years, hypertension has become a significant public health concern, accounting for nearly 71% of all deaths worldwide [Zare et al. 2023]. Additionally, young adults are showing an increasing trend in hypertension. According to the Global Burden of Disease, hypertension caused approximately 10.8 million deaths in 2019, or 9.3% of disability-adjusted life years. Additionally, it was estimated that by 2025, 1.56 billion people will have high blood pressure [Zare et al. 2023]. To improve lifestyle, the Centres for Disease Control and Prevention advises 10,000 steps or more a day. Insufficient physical activity contributes to elevated blood cholesterol, which leads to increase in blood pressure [Stanley et al. 2009]. Frequent exercise improves endothelial function and lowers oxidative stress. According to a Japanese study, people with hypertension should try to get between 30 and 180 minutes of exercise every day [Hirani et al. 2024]. Modern dietary patterns, which are characterised by a higher consumption of salty, sugary, and high-fat foods and a decreased intake of dietary fibre, vegetables, and fruits, are to blame for the increased prevalence of hypertension among college students. According to studies, the main way that a junk food diet speeds up heart failure is by affecting hypertension.

Obesity is caused by consuming too many calories and is closely associated with elevated blood pressure [Faghih et al. 2020]. Due to excessive exposure to unhealthy eating habits, academic stress, gadget use, and a lack of physical activity, younger age groups are more likely to develop these diseases. Although many studies have been conducted at different

universities to understand blood pressure and the relationship of various variables, to the best of our knowledge, no research of this kind has been conducted among young adults at Kuvempu University. Therefore, the study's goal is to describe the blood pressure and the variables that affect it in male and female undergraduate students who do not regularly participate in physical activity.

2. Methodology

The purpose of the study was to describe the level of blood pressure among men and women of undergraduate students who are not regularly involved in physical exercises. Out of 454 students, 256 were females, and 198 were males. The age of the students was between 19-23 years (21.01 ± 0.71). An inventive research survey system was used to reach a minimum sample size of 454. First-year undergraduate male and female students who satisfied the inclusion criteria were selected using a simple randomised sampling technique. A random number generator was used for randomisation. The included subjects were given an explanation of the study's nature in the language that best suited their comprehension. Written informed consent was provided by study participants, and each participant duly signed it. All participant identifiers, including the consent form, were kept confidential and secure and were only accessible by the research team. Blood pressure was measured using a bio-monitor. We obtained standard descriptive statistics. Uncorrelated t-test was used to identify the difference between males and females.

3. Results

Table 1. Descriptive Analysis of Blood pressure

Parameter	Male (n=256) Mean $\pm$ SD	Female (n=198) Mean $\pm$ SD	P value
Systolic Blood Pressure	128.70 $\pm$ 1.65	131.40 $\pm$ 1.45	<0.005*
Diastolic Blood Pressure	88.45 $\pm$ 1.23	90.12 $\pm$ 1.86	<0.005*

This illustrates that there is a significant difference ($p < 0.005$) in mean values of systolic and blood pressure between males and females.

Levene's Test for Equality of Variances					T test for Equality of Means		
	F	Sig	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal Variance Assumed	4.21*	0.05	2.34	453	0.05	2.70	0.78
Equal Variance Not Assumed			2.34	438.27	0.05	2.70	0.78

Table 2. Computation of Independent 't' ratio between Males and Females on Systolic Blood pressure

In order to examine differences in systolic blood pressure between the males and females, an independent samples *t*-test was conducted. Given a violation of Levene's test for homogeneity of variances, $t(1,453)=1.96$, $p = .05$, a *t*-test not assuming homogeneous variances was calculated. The results of this test indicated that there was a significant difference observed between the males and females and the obtained 't' ratio was 2.34.

Figure 1.

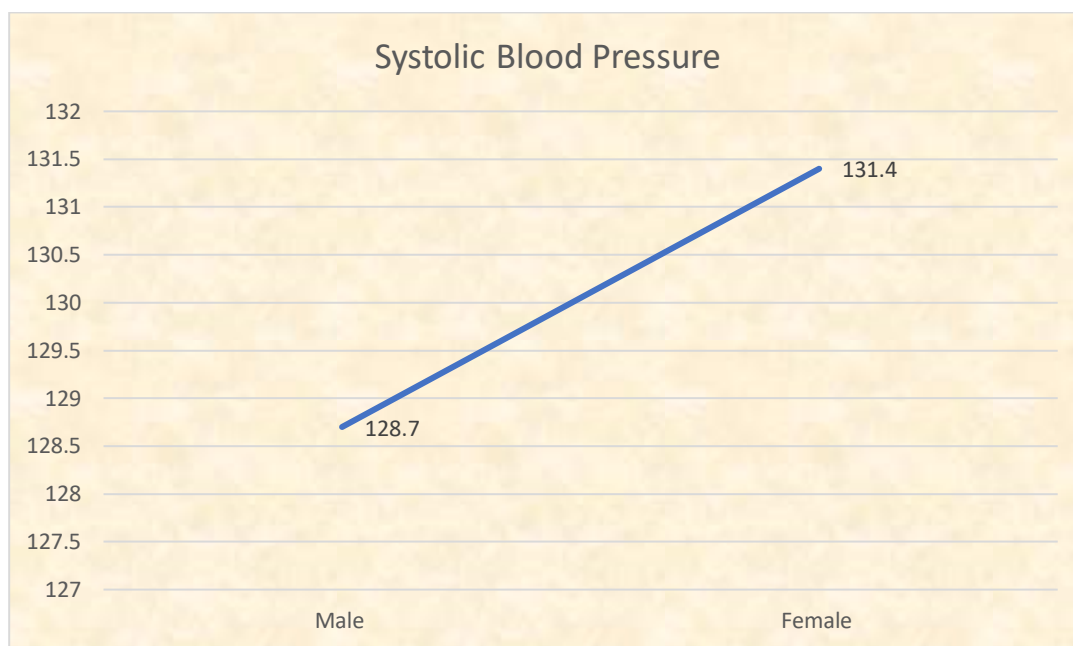
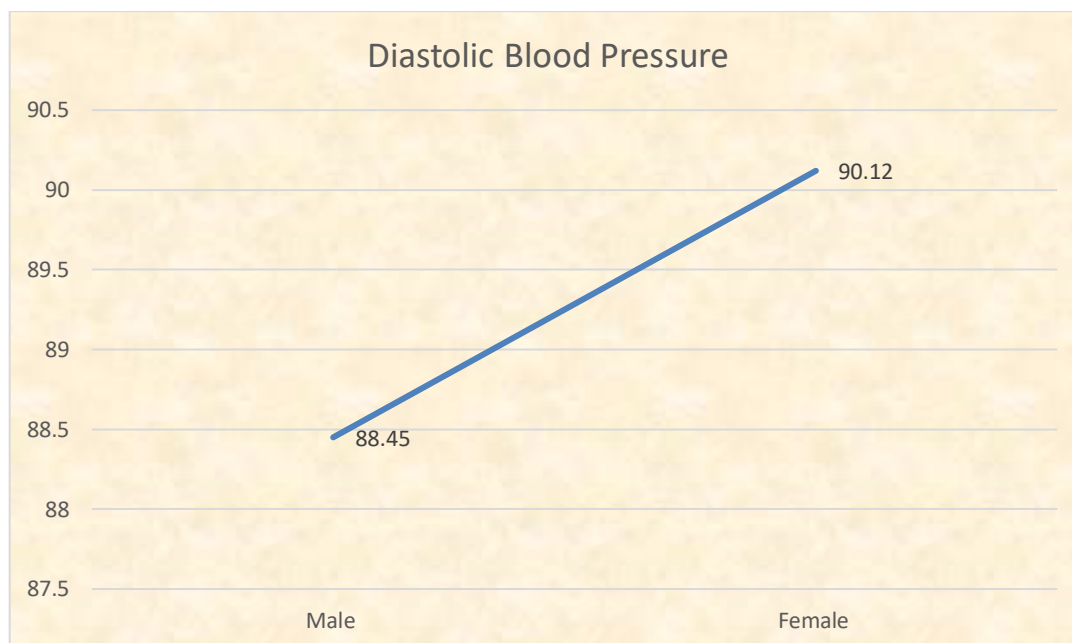


Table 2. Computation of Independent 't' ratio between Males and Females on Diastolic Blood pressure

		Levene's Test for Equality of Variances			T test for Equality of Means			
		F	Sig	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal Variance Assumed		5.48*	0.05	3.12	453	0.05	1.67	0.10
Equal Variance Not Assumed				3.12	438.27	0.05	1.67	0.10

In order to examine differences in diastolic blood pressure between the males and females, an independent samples *t*-test was conducted. Given a violation of Levene's test for homogeneity of variances, $t(1,453)=1.96$, $p = .05$, a *t*-test not assuming homogeneous variances was calculated. The results of this test indicated that there was a significant difference observed between the males and females and the obtained 't' ratio was 3.12.

Figure 2.



4. Discussions on Findings

The primary goals of this study are to describe the blood pressure levels of undergraduate students, both male and female, who do not regularly engage in physical activity. According to the current study, undergraduate students have a high prevalence of hypertension. The results of this study emphasise the importance of routinely checking for blood pressure and the different risk factors that contribute to it. Numerous studies have shown that physical activity is a crucial lifestyle change for the prevention and treatment of hypertension [Hedge & Solomon, 2015; Semlitsch et al. 2013]. Increased body weight is frequently associated with inactivity, and this can put further strain on the heart and blood vessels. Increased peripheral resistance brought on by excess body fat raises blood pressure. Regular exercise, on the other hand, improves the heart's ability to pump blood efficiently, which lowers resting blood pressure and increases vasodilation. Regular exercise improves cardiovascular strain, lowers body fat, and supports heart health in general [Pudjijuniarto et al. 2024]. In order to identify students who are at risk and implement appropriate preventive and therapeutic measures, it is imperative that young adults who are asymptomatic be screened for hypertension.

5. Conclusion and Future Scope

The results of this test indicated that there was a significant difference observed between the males and females on blood pressure. This research has clarified the connection between low blood pressure and a sedentary lifestyle in a group of people who are academically orientated. According to the study's findings, a significant number of college students suffer from hypertension and prehypertension. These results demonstrate the need to address hypertension as a growing public health issue. It also highlights how important it is to put in place focused health education initiatives meant to encourage young adults to lead healthy lifestyles. Given the paucity of data on blood pressure, comparable research ought to be carried

out for young adults nationwide. It will also be interesting to examine blood pressure in various ethnic groups.

References

1. Faghih S, Babajafari S, Mirzaei A, Akhlaghi M. (2020). Adherence to the dietary approaches to stop hypertension (DASH) dietary pattern and mental health in Iranian university students. *Eur J Nutr.* 59:1001–1011.
2. Hegde SM, Solomon SD. (2015). Influence of physical activity on hypertension and cardiac structure and function. *Curr Hypertens Rep.* 17:77.
3. Hirani MM, Gandhi R, Thakkar DG, Kateshiya N, Murugan Y, Stanley WC, Shah KB, Essop MF. (2009). Does junk food lead to heart failure? Importance of dietary macronutrient composition in hypertension. *Hypertension.* 54:1209–1210.
4. Pudjijuniarto P, Sholikhah AM, Yuliasrid D, Yuhantini EF, Putera SH. (2024). Overweight and obesity among university student: cross sectional study exposes association with food habit and physical activity. *International Journal of Disabilities Sports and Health Sciences.* 7:326–334.
5. Semlitsch T, Jeitler K, Hemkens LG, et al. (2013). Increasing physical activity for the treatment of hypertension: a systematic review and meta-analysis. *Sports Med.* 43:1009–1023.
6. Suresh, Kumar M. (2017). Influence of Yoga Practices on Blood Pressure Among Rural College Girls. *Star International Research Journal*, 5,1(3).
7. Zare MG, Okati-Aliabad H, Ansari-Moghaddam A, Mohammadi M, Shahraki-Sanavi F. (2023). Prevalence and risk factors of pre-hypertension and hypertension among adults in Southeastern Iran: findings from the baseline survey of the Zahedan adult cohort study. *PLoS One.* 18:0.