

## **Changes in Systolic Blood Pressure with Ageing in Population Residing in Western Parts of Madhya Pradesh**

<sup>1</sup>Dr. Ranu Suthar, PhD Scholar, Department of Physiology, Index Medical College

<sup>2</sup>Dr. Ashutosh Jain, Associate Professor, Department of Physiology, Index Medical College

<sup>3</sup>Dr. Manish Pokra, Assistant Professor, Department of Microbiology, Government Medical College, Bundi

<sup>4</sup>Dr. Deepak Pokra, PG Resident, Department of Physiology, Ratlam Medical College

**Corresponding Author:** Dr. Ranu Suthar, PhD Scholar, Department of Physiology, Index Medical College

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**Type of Publication:** Original Research Article

**Conflicts of Interest:** Nil

### **Abstract**

The aim and objectives of the study is to have base line data of physiological parameters for 65+ population of Western part of Madhya Pradesh and to identify and grade overall health status of 65+ population in Indore. The present study is proposed to be undertaken on 65 years age and above population those who visit Index Medical College, Indore respectively and those who are residing in and around these areas. We have assessed physiological parameter, biochemical parameter and nutritional status of the subjects. So we have preferred to take our study subjects of > 65 years age. Total number of subjects for study will be 1000 with equal number of both genders. This number is statistically significant to arrive at a conclusion. We shall measure the health status of elderly aging.

**Results:** The result of our study showed highly positive significant association and correlation of SBP, DBP,

MAP and PP with age. The HR, FVC, FEV1, FEV1/FVC, HB%, ESR is positively correlated with age but not significant. The biochemical parameter like Creatinine, ox-LDL is positively correlated with age but not significant. The nutritional parameter BMI, BMR is negatively correlated and caloric intake is positively correlated with age but both are not having significant correlation with age.

**Keywords:** BMI, Creatinine, Heart Rate, morbidity, Oxygen Extraction

### **Introduction**

Research on physiological losses in several systems in elderly persons is very new. The primary goal of the Geriatric Society is to encourage experts from different medical specialties to concentrate on the physiological and physical aspects of aging. Although social and psychological factors are also significant, this study will not address them.

The gradual buildup of haphazard molecular flaws in tissues and cells is known as aging. Growing older causes physiological changes in every organ system. Exclusive researchers have described age-related changes to the cardiovascular system, including decreased heart rate, oxygen extraction, artery stiffening, vasoconstriction, elevated systolic blood pressure, myocardial thickening, decreased diastolic filling rate, altered rhythmic rates, and prolonged action potential.<sup>1</sup>

Growing older has typically been linked to decreased heart rate (HR) and accelerated normal systolic and diastolic blood pressure (SBP and DBP). Older hypertensive and normotensive participants have been found to exhibit additional fluctuation for blood pressure in studies utilizing intra-arterial and non-invasive ambulatory tracking techniques.<sup>2,3,4</sup> The age-associated changes in variability are related to changes inside the baro reflex and sympathetic or parasympathetic control of the cardiovascular system. BP variability has been discovered to be an independent chance issue for cardiovascular morbidity and the rate and severity of target-organ damage.<sup>5,6</sup>

The "physiological" age-related increase in blood pressure can be a confounding element in the determination of age consequences on blood pressure variability. Definitely, incidence of hypertension with a conservative definition of blood pressure above 140/90mm Hg in patients above aged 65 years is higher than 40%.<sup>7,8</sup>

### Aims and Objectives

1. To have base line data(Systolic Pressure) for 65+ population in Western part of Madhya Pradesh state of India. [L]  
[SEP]

2. To identify and grade overall health status of 65+ population in Western part of Madhya Pradesh state of India. [L]  
[SEP]
3. To identify weakest and most vulnerable group of older population and recommend policy for better care.

### Material and Method

The present cross sectional study was under taken on 65 years age and above population in Western part of Madhya Pradesh. World population data sheet 2002 shows 41.9 million Indian population is >65 years age. In Indian context person having age more than 60 years is concluded old. It coincides with age of retirement in Government sector. But most developed world countries have accepted the chronological age of 65 years as a definition of "elderly" or "older person".<sup>9</sup> So we have preferred to take our study subjects of > 65 years age. Total number of subjects for study will be 1000 with equal number of both genders. This number is statistically significant to arrive at a conclusion. We shall measure the health status of elderly aging.

The present study is proposed to be undertaken on 65 years age and above population those who visit Index Medical College, Indore, Out Patient Department (OPD) and and those who are residing in and around these areas. We will assess physiological parameter, biochemical parameter and nutritional status of the subjects.

This study was taken 24 months

### Inclusion Criteria

- Aged population 65 and above, clinically fit and with symptoms, signs related to frailty that is weight loss, weakness, slow walking speed, low level of activity and feeling of fatigue [L]  
[SEP]

- 65 and above individuals on medication for idiopathic hypertension, visual and hearing deficits, bronchial asthma, diabetes mellitus but well controlled with medication and clinically healthy. [SEP]

**Exclusion Criteria** [SEP]

- All the subjects 65 and above, with sign and symptoms because of disease , on medication but clinically not healthy.

**Procedure**

Blood pressure – Palpatory method (mmHg) and Auscultory method (mmHg). Systolic and diastolic blood pressure, Mean Atrial Pressure and pulse pressure shall be recorded in mm of Hg by using sphygmomanometer and stethoscope.

In Auscultatory method involves the balancing of pressure in a bag, that is air pressure against the pressure

**Result**

Physiological Parameter (Cardiovascular System)

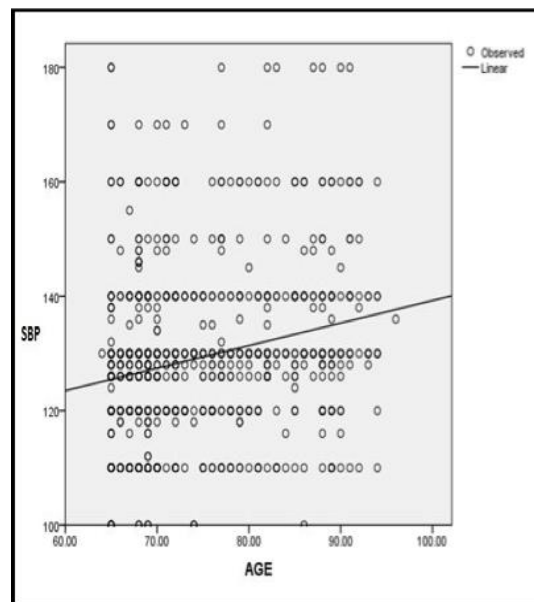
Table 1: Mean & SD of SBP

Parameter	Mean	Std. Deviation
Systolic Blood Pressure	129.02	13.554

Table shows descriptive statistics details of cardiovascular parameter. The parameters are Systolic Blood Pressure.

The mean systolic blood pressure was 129.02±13.55

of the blood in an artery. The air pressure is estimated by means of mercury or air (aneroid) manometer. The manometer of a sphygmomanometer consist of broader limb is the reservoir for mercury and narrow limb is graduated from 0 to 300mm, with the smallest division corresponding to a reading of 2mmHg. In palpatory method radial pulse and rubber bag inflate to increase the pressure up to 20 – 30mmHg above the point at which the radial pulse will disappear at the wrist. After that slowly deflate the cuff by releasing the pressure @ 2–3mmHg/ Sec, lowering the pressure, keep palpating the radial artery and reading is taken just when pulse starts reappearing.



Graph 1:

Graph shows scatter plots graphical representation of correlation between systolic blood pressure and age, which observed linear relationship

### Conclusion

In our study the cardiovascular parameter that SBP shows significant correlation with age. Obesity is an important risk factor for cardiovascular disease. Blood pressure at each age is generally regarded as the single most reliable predictor of blood pressure at a later age.

Exercise and training may be responsible for age related decreases in maximum heart rate and arteriovenous oxygen difference. Age and hypertension make act independently to reduce baroreceptor sensibility and heart rate variability. Sometimes decreased heart rate variability is associated with a decrease in the range of systolic and diastolic blood pressure in the elderly. The older subjects have a lower intrinsic heart rate but it can be increased by daily activities.

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