Chapter I

Introduction
Chapter-I

INTRODUCTION

“Good health is men’s priceless treasure,

If one dose not posses good health,

One cannot enjoy success, prosperity

And other life’s comforts”.

.....Shanker

The above statement shows the need and importance of a healthy body of an individual. The health and well being of an individual is a sum of many factors out of which the physical fitness comes first and plays an important role. Physical fitness isn't just one of the necessary key to a healthy body; however it's the prerequisite of dynamic and inventive intellectual ability. The link between the soundness of the body and the activities of mind is a delicate and complicated process to understand. However, we have a tendency to apprehend what the Greeks knew that intelligence and talent will solely perform at the height of their capability once the body is healthy and powerful. The necessity for exercise is shown in few research findings maintaining organic soundness, in fat reduction and in improving motor performance.

1Ganesh Shankar “Holistic Approach of Yoga” Publisher Aditya publications, Sagar (M.P.), (1998) pp. 18
Physical fitness is a general state of health and well-being and, more specifically, the ability to perform different aspects of sports and occupations. Physical fitness is generally achieved through correct moderate-vigorous physical activity, rest and proper nutrition.  

Before the industrial revolution, fitness was the capacity to carry out of the day’s activities without undue fatigue. However with automation and changes in lifestyles, physical fitness is now considered a measure of the body’s ability to function efficiently and effectively in work and leisure activities. To be healthy is to resist hyperkinetic disease, and to meet emergency situations.

The materialistic lifestyle is different for the people of different areas – and, if we can classify, than the major division are urban and rural areas. There by one can see a clean cut difference in the lifestyle of health behaviour followed in the rural and urban area. More than 50% of the world’s population now lives in urban areas. Urbanization implies “considerable changes in the ways in which people live, how they earn their livelihoods, the food which they eat, and the wide range of environmental factors to which they are exposed.” There is an underlying assumption that urban populations will be healthier than their rural counterparts and that urbanization equates with modernization. However, this is rarely true. Research about the features of urban areas that

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influence health has been relatively sparse but often indicates increased health hazards.³

A past conception regarding rural versus urban health was the idea of an “epidemiological transition” that occurs when populations move from underdeveloped areas to urban ones. With the onset of modernization it was thought that the burden of disease would shift from infectious to chronic causes. In the past, most deaths were caused by infectious diseases, degenerative diseases, and violence; thus, people did not often live long enough to be afflicted by chronic causes of death such as heart disease and diabetes. Today it is more appropriate to talk about a “double burden” of disease, both infectious and chronic.

This double burden is often present in areas that have experienced rapid urbanization. Throughout most of human history, populations were not large enough to sustain highly transmissible infectious diseases for long periods of time. Now, however, this is no longer the case. Because people are living closer to one another in often unsanitary environments, the potential for infectious disease transmission is much higher. In addition to higher rates of infectious diseases, rapid urbanization has led to poor living and working conditions, and thus more chronic diseases. For example, poor urban individuals who live in mouldy apartments are more likely to be afflicted with

asthma. Furthermore, overworked factory employees are more likely to suffer from work-related injuries and environmental pollution.

To understand urban health and the phenomenon of urbanization, we must shift our focus away from disease outcomes and toward urban exposures, namely, the characteristics of the urban context that influence health and well-being. This can include methods relevant to the study of urban health including epidemiology, health policy, and urban planning. In addition, practical issues for developing healthy cities should be addressed, such as preventive strategies, the provision of health services, and education.

In densely populated urban areas, there is often a lack of facilities and outdoor areas for exercise and recreation. In addition, air quality is often lower in urban environments which can contribute to chronic diseases such as asthma. In the developing world, urban dwellers often live in large slums which lack basic sanitation and utilities such as water and electricity. Lack of basic infrastructure can exacerbate rates of infectious disease and further perpetuate the cycle of poverty.\(^4\)

Persons of lower socioeconomic status and minority populations are more likely to live in urban areas and are more likely to lack health insurance. Thus, these populations face barriers to care, receive poorer quality care, and disproportionately use emergency systems. Other commonly represented

populations in cities are undocumented immigrants and transient populations. The high prevalence of individuals without health insurance or citizenship creates a greater burden on available systems. This often leads to vast disparities in health care outcomes as well as a two-tiered health care system where insured individuals have access to preventive and routine health care while marginalized populations utilize “safety-net” emergency room care.\(^5\)

It has been observed that, rural elders have significantly poorer health status than urban elders. Also, rural residents smoke more, exercise less, have less nutritional diets, and are more likely to be obese than suburban residents. “Health educators are increasingly aware of the need for culturally sensitive approaches to modifying unhealthy behaviour, but few rural health researchers and policymakers are asking the relevant cultural question, ‘Why does, the rural residence (culture, community, and environment) reinforce negative health behaviours. In fact, many of the major public health problems faced in rural areas are obesity, tobacco use, inactive lifestyle and on the negative health behaviour. Despite negative health behaviours, many aspects of rural social life contribute to positive health outcomes. “Rural areas frequently have strengths including dense social networks, social ties of long duration, shared life experiences, high quality of life, norms of self-help, and reciprocity”. Addressing the needs of rural areas requires building upon the

positive aspects of rural life while addressing the health, public health, infrastructure, and economic needs of rural areas.6

Evidence indicates that rural residents have limited access to health care and that rural areas are underserved by primary care physicians. In the developing and developed world, many rural individuals must travel substantial distances for primary medical care, requiring significantly longer travel times to reach care than their urban counterparts. Furthermore, some rural areas have a higher proportion of uninsured and individually insured residents than urban areas.7

The differently followed health behaviour leads to much health disease. High body-mass index caused 3.4 million deaths, high fasting plasma glucose caused another 3.4 million, high total cholesterol caused 2 million fatalities and low bone mineral density caused 0.2 million mortalities. The individual dietary risk factors, which is the largest attributable burden in 2010 was associated with diets low in fruits (4.9 million deaths) followed by diets high in sodium (4 million deaths), low in nuts and seeds (2.5 million), low in whole grains (1.7 million), low in vegetables (1.8 million) and low in seafood omega-3 fatty acids (1.4 million deaths). The burdens of disease attributable to tobacco smoking including second-hand smoke were 6.3 million deaths.


High blood pressure (BP) has become the world’s deadliest disease-causing risk factor. But for Indians, IAP (indoor air pollution) - emanating from chulhas burning wood, coal and animal dung as fuel - has been found to be a bigger health hazard for Indians.

The first-ever estimate of the contribution of different risk factors to the global burden of disease between 1990 and 2010 has found that household air pollution from solid fuels have risen from being the second highest risk factor for Indians. Published in the British medical journal, The Lancet, on Thursday, the study which took five years and involved nearly 500 researchers from 50 countries, including India, found that globally high BP jumped four spots to become the worst risk factor for disease, followed by smoking including second hand smoke, alcohol, low fruit consumption and high body fat. For Indians, however, high BP is the third Worst threat after IAP and smoking, including second-hand smoke.

WHO estimates that pollution levels in rural Indian kitchens are 30 times higher than recommended levels and six times higher than air pollution levels found in the national capital. The leading risks are both those associated with poverty, such as under-nutrition and not having clean fuels, and those that largely affect chronic diseases like high BP and smoking.

With almost three-quarters of India’s population living in rural areas where measures of health and living standards are low, rural women are vulnerable to many of these risks. For instance, rural Indian women tend to
marry earlier and have more children than urban Indian women. The average number of children per woman is 3 in rural areas and 2 in urban areas, according to India’s National Family Health Survey (NFHS-2) for 1998-99. Although the legal minimum age for marriage is 18 in India, roughly one-half of rural women ages 45-49 married before age 15, compared with 23 percent of urban women surveyed.\(^8\)

An average Indian man’s life expectancy at birth has increased by nearly 15 years in the last forty years; while an average Indian women as living over 18 years longer that what she did live for decades ago. The world population’s life span has gained more than a decade since 1970 from 56.4 years in 1972 67.5 years in 2010 for an average male and from 61.2 years to 73.3 years for a woman. An average Indian man and women’s expectancy is 63.2 years and 67.5 years respectively.\(^9\)

Indians may be living longer than what day used to be about four decades ago. But be that as it may, the number of year’s staying healthy is much lesser. For an average Indian female, though she is expected to live for 67.5 years, she is likely to be healthy for 57.1 years, spending over adequate, or 10.4 years, in poor health. There is only a slight increase in the number of


spend by an average Indian know in poor health compared to 1990, while a man use to spend 8.2 years and a woman 9.5 years not in fine fettle.

The girl child in India is increasingly under threat. In recent decades, there has been an alarming decrease in the child sex ratio (0-4 years) in the country. Access to technological advances of ultra sonography and India’s relatively liberal laws on abortion have been misused to eliminate female foetuses. From 958 girls to every 1000 boys in 1991, the ratio has declined to 934 girls to 1000 boys in 2001. In some states in western and north western India, there are less than 900 girls to 1000 boys. The sex ratio is at its worst in the states of Punjab, Haryana, Madhya Pradesh, Himachal Pradesh and Gujarat, where severe practices of seclusion and deprivation prevail. Often in contiguous areas in these states, the ratio dips distressingly below 800 girls to every 1000 boys (RGI, MOHFW, UNFPA, 2003).

In recent years there has been a renewal of interest in geographic characteristics within public health, particularly in the areas of international health and community development. Past research has documented a difference between urban and rural health care, usually expressed in terms of healthcare access and utilization, cost, and geographic distribution of providers and services. By utilizing a framework that examines determinants of health,
researchers can identify environment-specific factors that may contribute to different health outcomes for urban and rural residents.\textsuperscript{10}

This focus on the environmental and social determinants of health has accompanied a rapid change in rates of urban populations across the world. The rapid urbanization of the 20th century reflects changes in global political, economic, and social forces. Thus, the health of urban populations has changed as cities have evolved. As more people worldwide live in cities, it is imperative to understand how urban living affects population health.

Urban environments are more likely to see large disparities in socioeconomic status, higher rates of crime and violence, the presence of marginalized populations (e.g., sex workers) with high risk behaviours, and a higher prevalence of psychological stressors that accompany the increased density and diversity of cities.

In densely populated urban areas, there is often a lack of facilities and outdoor areas for exercise and recreation. In addition, air quality is often lower in urban environments which can contribute to chronic diseases such as asthma. In the developing world, urban dwellers often live in large slums which lack basic sanitation and utilities such as water and electricity. Lack of

basic infrastructure can exacerbate rates of infectious disease and further perpetuate the cycle of poverty.\textsuperscript{11}

Persons of lower socioeconomic status and minority populations are more likely to live in urban areas and are more likely to lack health insurance.\textsuperscript{2} Thus, these populations face barriers to care, receive poorer quality care, and disproportionately use emergency systems. Other commonly represented populations in cities are undocumented immigrants and transient populations. The high prevalence of individuals without health insurance or citizenship creates a greater burden on available systems. This often leads to vast disparities in health care outcomes as well as a two-tiered health care system where insured individuals have access to preventive and routine health care while marginalized populations utilize “safety-net” emergency room care.

Perception of risk may also play a role in the rural/urban disparity for heart disease. Some rural inhabitants do not perceive themselves at risk for heart disease and stroke, and their behaviours are modelled by these misperceptions. Older rural women reportedly have a decreased perception of heart disease and are less likely to participate in primary prevention efforts, such as screening procedures. This lower perceived risk is exacerbated by the decreased availability of screenings in rural areas.\textsuperscript{12}


Attitudes of health care providers toward patients in rural settings can determine the quality of medical care. In a scenario-survey sent to a random selection of family physicians, heart patients with reduced access to services were not as likely to be referred to a cardiologist or to receive left ventricular function test two heart failure guidelines. Physician’s treatment methods were affected by the patient’s environment.\textsuperscript{13}

Beyond social and behavioural barriers, rural residents are faced with access challenges and service gaps in seeking treatment and prevention services. The unique challenges faced by rural residents include the prolonged distance to provision of comprehensive post-discharge care of heart failure and limited access to personnel, screening services (e.g., cholesterol checks), and treatment services for heart disease and stroke. When screening does occur, dietary assessments and other needed follow-up measures are often unavailable. Furthermore, organizations disseminating heart disease and stroke prevention strategies may have only limited activities in rural areas.\textsuperscript{14}

Procedures in the treatment of heart disease and stroke are also more limited in rural areas than in urban areas. Availability of technology is a main factor for geographic differences in testing patients for stroke diagnosis. Some physicians in rural areas are averse to treating stroke patients with


anticoagulant therapy because of limited experience in administration and monitoring of the drug and fear of drug complications, such as excessive bleeding and/or fatal bleeding. A study of Medicare patients in one state yielded an antithrombolytic therapy utilization rate 1.7 times greater in urban hospitals than in rural hospitals and demonstrated that patients who were prescribed antithrombolytic therapy were less likely to suffer adverse outcomes. Baker, however, reported that the differences in rural versus urban hospitals did not result from different levels of quality but from access to technology or specialists. Although it is controversial whether outcome success correlates to the number of specialists in an area, one study conducted in the Appalachian region found that nonmetropolitan counties had a cardiovascular physician-to-patient ratio less than one-third of that found in metropolitan counties. 

The health of Indian women is intrinsically linked to their status in society. Research on women’s status has found that the contributions Indian women make to families often are overlooked, and instead they are viewed as economic burdens. There is a strong son preference in India, as sons are expected to care for parents as they age. This son preference, along with high dowry costs for daughters, sometimes results in the mistreatment of daughters. Further, Indian women have low levels of both education and formal labor force participation. They typically have little autonomy, living under the

control of first their fathers, then their husbands, and finally their sons. All of these factors exert a negative impact on the health status of Indian women. Poor health has repercussions not only for women but also their families. Women in poor health are more likely to give birth to low weight infants. They also are less likely to be able to provide food and adequate care for their children. Finally, a woman’s health affects the household economic well-being, as a woman in poor health will be less productive in the labor force. While women in India face many serious health concerns, this profile focuses on only five key, reproductive health, violence against women, nutritional status, unequal treatment of girls and boys, and HIV/AIDS. Because of the wide variation in cultures, religions, and levels of development among India’s 25 states and 7 union territories, it is not surprising that women’s health also varies greatly from state to state.  

The discrimination against the girl child is systematic and pervasive enough to manifest in many demographic measures for the country. For the country as a whole as well as its rural areas, the infant mortality rate is higher for females in comparison to that for males. Usually, though not exclusively, it is in the northern and western states that the female infant mortality rates are higher, a difference of ten points between the two sexes specific rates not being uncommon. The infant mortality rate is slightly in favour of females in the urban areas of the country (as a whole) But then, urban India is marked by greater access to abortion services and unwanted girl children often get eliminated before

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birth. It has been commented in the context of women’s health that sustainable well-being can be brought about if strategic interventions are made at critical stages. The life cycle approach thus advocates strategic interventions in periods of early childhood, adolescence and pregnancy, with programmes ranging from nutrition supplements to life skills education. Such interventions attempt to break the vicious intergenerational cycle of ill health. The vulnerability of females in India in the crucial periods of childhood, adolescence and childbearing is underscored by the country’s sex wise age specific mortality rates. From childhood till the mid twenties, higher proportions of women than men die in the country. In rural India, higher proportions of women die under thirty. Like most cultures across the world, Indian society has deeply entrenched patriarchal norms and values. Patriarchy manifests itself in both the public and private spheres of women’s lives in the country, determining their ‘life chances’ and resulting in their qualitatively inferior status in the various socio-economic spheres. It permeates institutions and organisations and works in many insidious ways to undermine women’s right to dignified lives. There are similarities in women’s lived experiences due to such gendered existences. However, in a vast and socioculturally heterogeneous country like India, women’s multiple and often special needs are played out on a variegated terrain of age, caste, class and region resulting in a complexity of experiences. Traditional bases of social stratification such as caste and class reproduce themselves in women’s lived experiences as also do rural-urban and regional disparities. New needs emerge as women progress through the life cycle. Talking about women’s health and access to
healthcare in such a complex setup thus poses a challenge.

Economic prosperity alone cannot be a sufficient condition for good nutritional status of a population, the state of Maharashtra in western India being a prime example in this regard. Maharashtra has one of the highest per capita incomes among states in the country, but is marked by poor nutritional profile of its people. More than half the households in both the rural and urban areas of the state receive less than the prescribed adequate amount of calorific intake and the situation has worsened in the rural areas of the state in the past twenty years. The nutritional status of children and women in India has attracted the attention of academics and policy planners for some decades now. Despite the interest, these population subgroups continue to suffer from poor nutritional status. The girl child, disadvantaged from birth (or even before it) due to her sex, is systematically denied or has limited access to the often paltry food resources within the household.

Women’s empowerment is hindered by limited autonomy in many areas that has a strong bearing on development. Their institutionalized incapacity owing to low levels of literacy, limited exposure to mass media and access to money and restricted mobility results in limited areas of competence and control (for instance, cooking). The family is the primary, if not the only locus for them. However, even in the household domain, women’s participation is highly gendered. Nationally, about half the women (51.6%) are involved in decision making on their healthcare. Women’s widespread ignorance about matters related to their health poses a serious impediment to their well-being. The NFHS-2, for
example, reports that out of the total births where no antenatal care was sought during pregnancy, in 60 percent of the cases women felt it was ‘not necessary’. And, at a time when AIDS is believed to have assumed pandemic proportions in the country, 60 percent of the ever married women have never heard of the disease. Women’s inferior status thus has deleterious effects on their health and limits their access to healthcare. The household has been seen to be a prominent site for gender based discrimination in matters of healthcare in a number of other studies too. Marriage in India is predominantly patrilocal with the new bride relocating to her marital house after marriage. Early marriage usually follows a truncated education, disadvantaging girls in many ways. In such a setup, the new bride, already ignorant about health processes, may be in a difficult position to seek healthcare. Basua and Kurz report from their study on married adolescent girls in Maharashtra that ‘girls had neither decision making power nor influence’ in matters relating to seeking healthcare for their problems. These illnesses that incapacitated girls from discharging their household responsibilities were treated quickly. The culture of silence prevented care seeking in problems related to sexual health. Some reproductive health problems went untreated because they were considered ‘normal’. In the Nasik study by Madhiwalla, 45% of the episodes of ill health in women went untreated. In most cases it was financial incapacity that precluded women from seeking treatment. But, quite notably, in almost a quarter of the cases, women thought that the illness did not require medical attention. Treatment was also not sought for reasons like inaccessibility
Disadvantaged rural health reflected by significantly higher mortality rates in rural areas which indicate less attention paid by the government. The issue of health disadvantage to the rural area in the country is far from settled. The public expenditure on health in India is far too inadequate, less than 10% of the total health budget is allocated to rural area where 75% people live. In spite of rising budgetary provision, many of the rural populace dies without any medical attention. Access to high quality health care services plays an important part in the health of rural communities and individuals. Resolving the health problems of rural communities will require more than simply increasing the quality and accessibility of health services. Until governments begin to take an ‘upside-down’ perspective, focusing on building healthy communities rather than simply on building hospitals to make communities healthy, the disadvantages faced by rural people will continue to be exacerbated. Underutilization of existing rural hospitals and health care facilities can be addressed by a market entered approach, and more effective government intervention for horizontal and vertical hospital integration. Tele healthcare, Mobile Health Units and Community based health insurance are proven helpful in rural areas. Autonomy enjoyed by women and exposure to media also has a significant impact on maternal health care utilization. Accessibility to health facilities is a critical factor in effective health treatment for people in rural areas. Location– allocation models prescribe optimal

configurations of health facilities in order to maximize accessibility.\textsuperscript{18}

The health of India's citizens have improved significantly since it gained independence from Great Britain in 1947 thanks largely to public health efforts that have nearly doubled life expectancy while halving infant mortality rates. It mentions that India's public health system eradicated smallpox and guinea worm\textsuperscript{11} and fighting hard against polio and measles. However, the urban - rural health differences have received less attention in the entire course of action. On average, urban populations in modern-day periods live longer than do rural populations, and with the exception of HIV/AIDS, exhibit healthier levels across a range of indicators. In the period when centralized planning was accepted as a key instrument of development in the country, the attainment of an equitable distribution was considered one of the main objectives.

Comparison of Vital rates among urban and rural India Vital Rates, 2010

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<tr>
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<th>Rural</th>
<th>Urban</th>
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<tbody>
<tr>
<td>Birth Rate</td>
<td>29.7</td>
<td>48.9</td>
</tr>
<tr>
<td>Death Rate</td>
<td>54.7</td>
<td>33.7</td>
</tr>
<tr>
<td>Infant Mortality Rate</td>
<td>5.8</td>
<td>7.7</td>
</tr>
<tr>
<td>Under Five Mortality Rate</td>
<td>38.0</td>
<td>66.0</td>
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| Percent of deaths where medical attention received before death | 2 Part of the advantage to urban area is thought to be a function of environmental factors, such as better equipped and a greater concentration of health facilities, and part a function of individual factors, such as characteristics among urban dwellers that relate to better health, like higher levels of income and education.\textsuperscript{19}


\textsuperscript{19}R. Mark, C. Paul and M. Hewett “Urban Poverty and Health in Developing Countries: \textit{Household and Neighbourhood Effects}.” Demography 42:3 (2005), pp. 397-425.
Availability of a rural health facility in the village and other community level programme propagates the utilization of health care. Accessibility to health facilities is a critical factor in effective health treatment for people in rural areas of lesser developed countries like India. In many areas accessibility is diminished by the lack of all-weather roads, making access subject to weather conditions. Location–allocation models have been used to prescribe optimal configurations of health facilities in order to maximize accessibility, but these models are based on the assumption that the underlying transport network is static and always available. Essentially, past work has ignored the potential impacts of improvements to the transport system in modelling access.20

The above cited literature shows the need and importance of research work to be done in physical fitness and health related fitness among rural and urban population in India.

Hence the present study was undertaken with intent to make an attempt to determine the health related fitness and risk factor of disease among rural and urban women of India.

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**Statement of the Problem**

The purpose of the study was to make “Comparative analysis of health related fitness and risk factors of diseases among rural and urban women of Madhya Pradesh”.

**Delimitations**

The study was delimited to the followings:-

1. The study was delimited to female subjects between the ages of 40 to 50 years.
2. The study was further delimited to urban and rural areas of greater Gwalior M.P.
3. The study was delimiting to following Health Related Fitness variables i.e. measurement of Endurance by 12 min run/walk cooper’s test, measurement of Abdominal muscular Strength by bent knee sit-ups, measurement of Shoulder muscular strength by flexed arm hang, measurement of hamstring and back flexibility by sit and reach test, and measurement of Body Composition by skin fold calliper.
4. The study was further delimited to find out the, Risk factors of diseases likes i.e. Blood pressure (systolic & diastolic), Fasting blood glucose, Cholesterol percentage and Haemoglobin percentage, Vital Capacity, Expiratory Force, Breath Holding time (Positive & Negative) and Peak Flow Ability lung capacity.
**Limitation**

The limitations of the study were as:

1. The different level of socioeconomic status, motivational level and interest of subjects involved during the collection of relevant data is considered as one of the limitation of the study.

2. The differences in the educational qualifications, dietary habits, knowledge about the health facilities, working conditions and life style among and within the women of rural and urban women involved in the study be considered are one of the limitation.

3. The efforts made by each urban and rural woman in performing measure fitness test could be considered are one of the limitations of the study.

4. The non availability of very high sophisticated instrument to measure body composition and health related fitness could be are one of the limitations.

**Hypothesis**

On the basis of available literature, expert’s advice and scholars own understanding it was hypothesised that “there shall be no significant differences in health related fitness and risk factors of diseases among rural and urban women of Madhya Pradesh (M.P)”.
Definition and Explanation of Terms

Health Related Fitness

Health related physical fitness refers to those components of physiological functioning that are believed to offer protection against such degenerative disease as obesity and coronary heart disease.\textsuperscript{21}

Cardio Respiratory Endurance: - Cardio-respiratory endurance has been defined as the ability of circulatory and respiratory system to adjust to vigorous exercise and to recover from the effect of that endurance activity.\textsuperscript{22}

Muscular Strength: - it is the maximum amount of force a muscle or muscle groups can exert.

Hamstring and Back Flexibility: - “Flexibility is defined as the ability to do wider range of movement of the joints of the body.”

Blood pressure (Systolic and Diastolic): - Sometimes referred to as arterial blood pressure. It is the pressure exerted by circulating blood upon the walls of blood vessels, and is one of the principal vital signs. When used without further specification, "blood pressure" usually refers to the arterial pressure of the systemic circulation.

Blood glucose: - The definition of a normal blood glucose level has recently been revised by the Expert Committee on the Diagnosis and Classification of Diabetes Mellitus of the American Diabetes Association. An impaired fasting

\textsuperscript{21} David Auxter and Puffer Jean, \textit{Principles and Methods of Adapted Physical Education and Recreation} 6\textsuperscript{th} ed. (1989): pp. 354

plasma glucose level is now considered to include the range of 100 to 109 mg per decilitre (5.55 to 6.05 moles per litre).

**Cholesterol percentage:** - Cholesterol percentage is defined as a waxy alcohol, fat-like substance that occurs naturally in all areas of the human body. Your body needs some cholesterol to help it work properly and is required to establish proper membrane permeability and fluidity.

**Haemoglobin percentage:** - Haemoglobin is the iron-containing oxygen-transport metalloproteinase in the red blood cells of vertebrates. In mammals, the protein makes up about 97% of the red cell’s dry content, and around 35% of the total content (including water). Haemoglobin transports oxygen from the lungs or gills to the rest of the body, such as to the muscles, where it releases the oxygen for cell use. It also has a variety of other roles of gas transport and effect-modulation which vary from species to species, and are quite diverse in some invertebrates.

**Vital capacity:** - The maximum amount/volume of air that can be expelled from the lungs following a maximum expiration is called vital capacity.\(^\text{23}\)

**Breath Holding Time:** - a rough index of cardiopulmonary reserve measured by the length of time that a person who is a study subject can

voluntarily stop breathing; normal duration is 30 seconds or longer; diminished cardiac or pulmonary reserve is indicated by duration of 20 seconds or less.\textsuperscript{24}

**Expiratory force:** - Subject taking a deep breath and then exhaling with maximal force, we apply force to the thoracic cavity and its contents: pleural and alveolar pressure increase to wall above barometric pressure and gas is expelled from the lung.

**Peak Flow Ability:** - The Peak Flow Rate is the maximum rate of air flow that could be expired out after a deepest possible inspiration. This is measured by the Peak Flow Meter and in expressed in litter/minute\textsuperscript{25}.

**Significance of the study**

1. The study may help to find out the present health related fitness status of rural and urban women of M.P.
2. The study may also help to find out the present risk factors of selected diseases among rural and urban women’s of M.P.
3. The study may contribute towards the similarities and differences between the rural and urban women in health related fitness and risk factors of diseases.
4. The result of the study may provide clear idea about the strength and weakness of the health status enjoyed by women in M.P. between ages 40 to 50 years.

\textsuperscript{24} Breath-holding test Medical Definition www.medilexicon.com/medicaldictionary.

5. The study may help to design the follow up or the remedial classes/programs for the women of rural and urban areas of M.P.

6. The study may create awareness among the society and specifically women regarding the need of healthy and active lifestyle.

7. The findings of the present study may also enrich the literature on women of rural and urban, areas in relation to health status.

8. The results and data of the study may be utilised by the Govt. and Non-Govt. Organizations for the upliftment of health status women in India.