

Report on Females live in Urban and Village areas in relation to diabetes with special reference to Central India - Chhattisgarh

Labya Prabhas¹, Megha Agrawal²

¹ Assistant Professor, School of Life Sciences,

Pt. Ravishankar Shukla University, Raipur (C.G.) (India)

² Assistant Professor, Department of Botany, Gurukul Mahila Mahavidyalaya,

Kalibadi Road, Raipur (C.G.) (India)

ABSTRACT

Within existing era a large population of the world is suffering from significant perpetual diseases such as High blood pressure and Diabetes mellitus. Various kind of treatment and medicines are available to cure such diseases but still not very effective. Identification of diabetic individuals with high blood sugar level (Type 2 diabetes) is primarily focused in this study. Females of central region of India has been included and categorized as working and non-working females. Sample size of 2400 patients where in 1200 belongs to urban area and rest lives in village area were analyzed out of which. A premeditated questionnaire was provided to all the participants to collect scientific information regarding their medical history and physical status. Measurement of blood sugar level (in mg/ml), Height (squared in cm) and weight (Kg) have been done through various commercially available digital and non-digital devices. Observation revealed that food habit and daily routine life significantly act as a deciding factor for susceptibility to non-communicable diseases in all the subjects. It is clearly observed that risk of Type 2 diabetes is higher in housewives, especially those who depend upon servants for accomplishing basic necessities. Analysis has been done by comparing obtained values with the standard values of blood glucose level recommended in earlier studies. This study may provide the much needed awareness among existing population of information regarding factors influencing diabetes and importance of continuous research for its permanent cure to minimize every growing number of diabetes in the community.

Keywords: Disease, Female, Urban, Village, Devices, Height, Weight, Food Habit

I. INTRODUCTION

The so called modern life style with changed food habit with more inclination to junk food appears to pose a serious risk threat of developing obesity, hypertension and diabetes. This further invites unwarranted communicable pathogen to cause infectious diseases at any point of time due to weak immune system. Diseases appears due to food habit is a common and serious issue for world population. Most commonly non-communicable diseases of hypotension, hypertension and diabetes are found around the globe. Globally, an

estimated **422 million** adults are living with diabetes mellitus, according to the latest 2016 data from the World Health Organization (WHO) (Reference). Since diabetes mellitus is a worldwide problem, the authors have extensively studied the various risk factor associated with it.. Diabetes mellitus is an internal body situation in which food is not properly utilized as energy source, rather energy starts accumulates in the body as glucose or sugar. This disease is specifically associated with the function of a special hormone, Insulin. This hormone is responsible for maintaining blood sugar level in an individual and is secreted by Pancreas. There are two types of diabetes Type 1 diabetes and Type 2 diabetes. Type 1[Insulin-dependent diabetes mellitus (IDDM)]occurs due to deficiency of insulin on the other hand Type 2[Non-insulin-dependent diabetes mellitus (NIDDM)] appears because of improper functioning and use of the hormone inside human body. Type 2 is very common among the people; it contributes approximately 90-92 % in total registered cases at global level (Lindstrom and Tuomilehto, 2003). Apart from Type 1 and Type 2 there is one more diabetic problem, which is known as Gestational diabetes. Type 1 is acute and Type 2 can be placed in mild category on the basis of dreadful effects in human body. Diabetes is also found among 5-7 % of all pregnant ladies and disappears with completion of the pregnancy period in most cases. Actually, High blood sugar level is a fatal situation, which also supports appearance of other superfluous diseases such as Diabetic retinopathy, Diabetic neuropathy, kidney damage, heart diseases etc. Not only food habit but also daily routine life of an individual can influence the level of blood sugar. Diabetes is avoidable prior to appear in an individual through balanced diet and regular physical exercise. But later appearance, it takes long time to control blood sugar level. A food and culture ritual prevalent in Indian Territory is well known in global map. Principally dietary habit of Indian continent is playing significant role for causing unenthusiastic effect in the human population of this region. Moreover in developing countries lack of perception towards balanced diet serving increase in number of diabetic patient year by year. Earlier studies reveal that the chances of diabetic situation among the people vary due to disparity in their daily or routine activity. Number of cases relevant to diabetes also varies place to place due to various unknown factors, already exists in between different type of human population.

Blood sugar level in an individual may be influenced directly or indirectly by various factors such as-

- Age
- Gender
- Working and non-working (Male and Female)
- Type of organization/firm/place
- Type of work (Hard or physical work/Soft or managerial work)
- Food habit
- Family history
- Urban and village area
- Daily routine activity (ratio of energy gain/loss per day)
- Routine Physical exercise
- Type of environmental condition, where people/individual live (Season)
- Physical and mental status of an individual (hypertension)

- Medical history

There are many other features which can affect level of blood sugar level in an individual or same type of population (Maureen *et al.*, 1987).

Research methodology viz., survey, experimentation, clinical trial etc. may provide the utmost required awareness among the masses which may help in reducing the number of diabetic patient. This research study may help to explore various causal factors of diabetes among the people in specific type of population. This study may possibly also reveal different or novel ideas for reducing diabetic situation through small change in routine activity in specific type of human population or individual.

II. METHODOLOGY

A major objective of this study was to identify diverse medical conditions of females in civilian population of the Chhattisgarh (Central India). Sample included females of age between 18 to 50 years, living in village and urban area for collecting information. Preferred urban areas of the study are Bhilai (BH), Bilaspur (BP), Raipur (RP), Raigarh (RG), Korba (KB) and Durg City (DC). Similarly, Durg Village (DV), Gariyaband (GB), Dhamtari (DM), Bemetara (BT), Mahasamund (MS) and Kabirdham/Kawardha (KD) are included in village areas. In both the regions females are categorized in two different categories as working and non-working (Housewives) on the basis of their daily routine life. Size of the sample was fixed but and random sample was drawn within the preferred region. It was difficult to convince all the participants for specific medical trial in clinics, which can influence the accuracy of the study. Hence, unlike simple survey based on questionnaire, blood sugar level is analyzed with the help of digital equipments. Similarly measurements of height and weight have been examined. Survey specification reveals that there was no boundation for number of person per household in this study.

Examination practice: All the informants have been studied only once. A questionnaire based on medical history and health status has been provided to all the informants. Blood sugar level (mg/ml) of the samples were examined through digital equipment, hence clinical examination has been avoided. Informants were requested to wear light indoor clothes while measurement of weight and height have been measured without shoes and tightly bound hair. Therefore, Body Mass Index (BMI) was analyzed through height and weight as

$$\text{BMI} = \text{Weight (in kg)} / \text{Height squared (in cm)}$$

Survey based examination of the samples has been conducted from March to August to evade effect of seasonal variation.

Table 1: Showing standard values of blood sugar level in humans.

	>50	50-70	71-108	109-180	181-260	260 or more	280 or More
Level of Risk	Very Low	Low	Normal	Medium	High	Very High	Very High
Prescription	Severe Medical attention	Confer with your doctor	Healthy	Confer with your doctor	Confer with your doctor	Severe Medical attention required	Severe Medical attention required

Table 2: Showing standard values of Body Mass Index (BMI) in humans.

Body Mass Index (BMI)				
Category	Underweight	Normal weight	Over weight	Obesity
Range	<18.5	18.5-24.9	25-29.9	30 or more

Well established standard values for various level of blood sugar and BMI were followed. Obtained values from the informants were also compared and analyzed on the basis of standard values (Table 1 and 2). All the informants has been thoroughly examined and discussed before obtaining values of blood sugar level, height and weight. Medical history or current infirmity in an individual can vastly influence the accuracy of the expected result. So many other factors were also considered during investigation like time of meal taken, room temperature, sleeping hour etc. Orderly all the investigation has been preferred to be done in morning time for reducing effect of any work done by the informant before or after the measurement.

All values are collected and analyzed to obtain mean (average) value. Mean values for both variables, urban and village area have been calculated separately.

III. RESULT AND OBSERVATION

Blood glucose value (mean) for working ladies is found to be normal (close to medium) in working females, while blood glucose level for house wives are relatively high and chancy. Thorough the study it was confirmed that those females involved in physical/hard work in routine life are preventing chances of diabetes with the normal mean value **109** and also working females involved in sitting job are also safe with the mean value **177**, if they continue their routine life in prospect. Present study discloses that the females pleasing the responsibility of housewife have medium/High risk of diabetes collectively with the high value of **186**. But in fact they have higher values than working woman and also house wives availing responsibility with the help of servant are showing critical value (**201**) of diabetes. Housewives without servants are also somehow represented medium mean value (**171**) due to their involvement in physical work and energy consuming activities within the house or indoor environment. **Body mass index (BMI)** values (mean) obtained from the informants are also satisfactory in relation to theoretical principal of increasing blood glucose level with rise in BMI (Table 1)

Range of blood glucose in females living in village or rural areas are comparatively lower as expected. Result obtained from the data reveals that the females categorized as working (physically/hard worker) and housewives are showing normal values of blood glucose level *i.e* **111** and **147.5** and can be considered as free from diabetes. But the values belong to medium level category. Somehow simple life style in village/rural areas is responsible to avoid appearance of diabetes in the housewives also. House wives with servants are again proven perilous for their life with the higher value of blood glucose level as **188**. Although result obtained for urban and village areas are showing similar pattern for probability of diabetes appearance but females lives in village areas have higher chances to control blood glucose level because of their simple routine life style and healthy food habit which is usually not found in urban areas (**Table 2**).

Table 3: Showing various range of Blood Glucose Level of working and non-working women's (House wives) in urban area

Urban Areas (1200)	Working (600)	Working (Physically) (300)	Working (Sitting Job) (300)	Average Blood Glucose Level in working women area wise	Average BMI (Area wise)	House Wife (600)	House Wife (With Servant) (300)	Housewife (Without servant) (300)	Average Blood Glucose Level in non-working women area wise (100)	Average BMI (Area wise) (100)
1	2	3	4	5	6	7	8	9	10	11
BHC01 (Sample size)	100	50	50	150	26.50	100	50	50	188	32.80
BPC02(Sample size)	100	50	50	166	29.00	100	50	50	176	29.80
RPC03(Sample size)	100	50	50	130	27.30	100	50	50	210	33
RGC04(Sample size)	100	50	50	122	25.20	100	50	50	177	28
KBC05(Sample size)	100	50	50	150	28.70	100	50	50	190	27
DCC06(Sample size)	100	50	50	134	28.00	100	50	50	175	28.80

11th International Conference on Recent Trends in Engineering, Science and Management

(IETE) Institution of Electronics and Telecommunication Engineers, Osmania University Campus, Hyderabad, India

22nd October 2017, www.conferenceworld.in

(ICRTE SM-17) ISBN: 978-93-86171-72-6

Average Blood Glucose	142	109	175	142	-	186	201	171	186	-
Average BMI (On the basis of wt. and ht.)	27.45	25.20	29.70	-	27.45	29.90	31.70	28.10	-	29.90

Bhilai (BH), Bilaspur (BP), Raipur (RP), Raigarh (RG), Korba (KB) and Durg City (DC)

Table 4: Showing various range of Blood Glucose Level of working and non-working women's (House wives) in Village/Rural area

Village Areas (1180)	Working (750)	Working (Physically) (375)	Working (Sitting Job) (375)	Average Blood Glucose Level in working women area wise	Average BMI (Area wise)	House Wife (750)	House Wife (With Servant) (375)	Housewife (Without servant) (375)	Average Blood Glucose Level in non-working women area wise	Average BMI (Area wise)
1	2	3	4	5	6	7	8	9	10	11
DV 01 (Sample size)	100	50	50	110	20.2	100	50	50	160.9	33.6
GB02(Sample size)	100	50	50	98.8	19.7	100	50	50	152.5	32.7
DM03(Sample size)	100	50	50	135.7	19.6	100	50	50	135	26.9
BT04(Sample size)	100	50	50	102	21	100	50	50	149.5	26.8
MS05(Sample size)	100	50	50	91.3	22.8	100	50	50	129	28.0
KD06(Sample size)	100	50	50	128.2	19.7	100	50	50	158.5	31.4
Average Blood	111	82	140	111	-	147.5	188	107	147.5	-

Glucose										
Average	20.5	17.9	23.1	-	20.5	29.9	31.70	28.10	-	29.90
BMI (On the basis of wt. and ht.)						0				

Durg Village (DV), Gariyaband (GB), Dhamtari (DM), Bemetara (BT), Mahasamund (MS) and Kabirdham/Kawardha (KD)

Result obtained through the statistical values and oral conversation with the informants can be theoretically explained as the blood glucose level of an individual (females) can be influenced by various factors such as

1. Food habit of an individual
2. Pregnancy (after and before) and menstrual period
3. Available facilities to accomplish daily and necessary task
4. Natures of work to be executed by an individual.
5. Daily activity and physical exercise
6. Side effect of other medication
7. Stress
8. Dehydration
9. Health status in past few months (Medical history)
10. Influenced insulin level in the body

IV. DISCUSSION

This is well known fact that food habit and daily activities can affect blood glucose level. But in social atmosphere every individual plays different role suitable for basic necessity. According to earlier studies it was mentioned that proper awareness toward working and dietary habits can help to control sugar level, which can also be beneficial to avoid other kind of diseases (Kriska *et al.* 1990). Some of the studies also reveal that there is a fluctuation in blood glucose level in different day phases *i.e.* morning, afternoon, evening and night. This happens because under the influence of variation in activity and dietary habits at particular time (Jarrett *et al.*, 1972). Our current survey based experiment reveals that diversity in female population based on daily activity, habits and working style is particularly influencing blood glucose level. Also the surrounding cultural and social environment can also affect the health issues such as blood glucose level, blood pressure, heart diseases, psychological status etc. Knowledge regarding potential of daily routine life to effect blood glucose level can help to minimize cited problem in our population. If we go from one place to another or country to country factors influencing health issues are different. Hence, we cannot apply solitary method to reduce cited health issue. It was really difficult to collect information and performing research activity when the samples are females in existing social atmosphere of our country. Only 50% response was obtained from household in total population. Still a satisfactory outcome has been observed, which can provide a direction to further required studies in this field.

V. ACKNOWLEDGEMENT

Very special thanks to Dr. Kamlesh Shukla, School of Studies in Biotechnology, Pt. Ravishankar Shukla University, Raipur (Chhattisgarh) – India and Dr. Sanjay Singh Negi, Department of Microbiology, AIIMS, Raipur (Chhattisgarh) – India. We are also obliged to all the volunteers and participants, who contributed directly or indirectly to accomplish this research study. We appreciate all the subjects of different regions for their remarkable support and involvement during this investigation.

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