International Journal Dental and Medical Sciences Research
Volume 3, Issue 2, Mar-Apr. 2021 pp 956-960 www.ijdmsrjournal.com ISSN: 2582-6018

Diabetic Profilingduring lockdown due to COVID-19 disease: Clinical Relevance.

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Submitted: 25-04-2021 Revised: 06-05-2021 Accepted: 08-05-2021

ABSTRACT: Introduction –Diabetes is a chronic condition which is associated with abnormally high blood sugar level. Insulin produced by pancreas lowers blood glucose level in humans. And inability of the body to properly use insulin causes diabetes.
Materials and Methods-Different samples were collected from in and around Dehradun. For profiling estimate blood glucose GOD-POD (Glucose oxidase and peroxidase) end point method was used. This was done with the help of Erba glucose estimation kit provided by Transasia BIO- MEDICAL LIT (LOT no. – B101905).
Results –A total of 205 cases were carried out of which 175 cases were considered for the proposed study. RBS and FBS were two tests which were found to be common rather than post prandial. From the study it was found that average age for this disease was between 41 years to 50 years. May had the most diabetic patients with 31 patients (26%) and august had the least number of diabetic patients i.e., 11 (9.24%).
Conclusion- Diabetes is one of the great health care concerns of 21st century in the country. Efforts made for the control should expand on the prevention of gestational diabetes and its associate such as cardiovascular disease.
Key words: Diabetes, Insulin, Post prandial, Random blood sugar, Fasting blood sugar, hyperglycemia.

I. INTRODUCTION:

Diabetes is a fast growing epidemic disease in India, more than 62 million diabetic individuals are currently diagnosed with diabetes. (1) It is non-communicable disease worldwide and most prevalent in the western countries.(2) The main reason of Diabetes is the lifestyle that we follow, which includes junk food, beverages like coke, adulterated food items etc. During the lockdown period as the whole nation was shut down, people were less exposed to the unhealthy food habits which declined the usage of health deteriorating food items thus suppressing the problem so far.

Diabetes is of two types which is categorized into two groups as follows, firsts juvenile-onset diabetes mellitus, now known as type I diabetes mellitus, and adult-onset diabetes mellitus, known as type II diabetes mellitus.(3) In India, there are 40% of children under 5 years which are suffering from malnutrition, which made India "diabetes capital" of the world.(4) Determination of blood glucose is one of the most common clinical diagnosis test for the detection of diabetes.(5)According to WHO, Diagnostic criteria for blood sugar estimation are fasting 60-110mg/dl, post prandial 60-140mg/dl for random 60-180mg/dl, or HbA1C 3-6% is considered.(6) Indians develop low and high glucose level at younger age, lower body weight than other population.(7) According to the WHO, more than 420 million people worldwide suffer from diabetes mellitus (DM), Severe DM can cause serious complications, such as cardiovascular (CV) diseases, optical nerve paralysis, and chronic kidney disease. (8) In diabetes mellitus, blood glucose level increased (hyperglycemia) resulting from defect in insulin production/secretion, insulin action or both.(10)Approximately 415 million people were suffering from diabetes worldwide (According to International Diabetes Federation, in 2015) and till the year of 2040, this no. is expected to exceed 640 million.(12)

II. MATERIAL AND METHODS:

For this study samples were collected from different hospitals and clinics of Dehradun with respect to different age group and the work was done at DNA LABS – A center for applied sciences Dehradun. For our study to estimate blood glucose GOD-POD (Glucose oxidase and peroxidase) end point method was used (11). This was done with the help of Erba glucose estimation kit provided by Transasia BIO- MEDICAL LIT (LOT no. – B101905)(9).1000ul glucose and 10 µl

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Volume 3, Issue 2, Mar-Apr. 2021 pp 956-960 www.ijdmsrjournal.com ISSN: 2582-6018

of serum was taken in a test tube and incubates for 15 min at 37°C and after incubation aspirated on semi-automated biochemistry analyzer provided by Mindray.

Table 1: Descriptive chart of blood sugar fasting, post prandial and random blood sugar

Age group (In years)	Number of cases	FBS (Blood sugar fasting in mg/dl)	PP (Post prandial in mg/dl)	RBS (Random blood sugar in mg/dl)
20-30	16(9.14%)	10(5.7%)	10(5.7%)	5(2.85%)
31-40	23(13.14%)	18(10.28%)	18(10.28%)	5(2.85%)
41-50	49(28%)	41(23.42%)	41(23.42%)	9(5.14%)
51-60	46(26.28%)	36(20.57%)	36(20.57%)	8(4.57%)
61-70	28(16%)	21(12%)	21(12%)	6(3.4%)
71-80	9(5.14%)	8(4.57%)	8(4.57%)	2(1.14%)
81-90	3(1.71%)	2(1.14%)	2(1.14%)	1(0.57%)
91-100	1(0.57%)	1(0.57%)	1(0.57%)	-
Total cases	175	137(78.2%)	137(78.2%)	36(20.5%)

Table 2: Descriptive tables of fasting blood sugar, post prandial and random blood sugar as per the gender wise and age group (in years)

Age Group (in year)	Gender	FBS(Fasting blood sugar)	PP(Post prandial)	RBS(Random blood sugar)
20-30	M- 10(5.7%) F- 5 (2.85%)	6(3.42%) 4 (2.28%)	6 (3.42%) 4(2.28%)	4(2.28%) 1(0.57%)
31-40	M-14 (8%) F- 9 (5.14%)	11 (6.2%) 8(4.57%)	11 (6.2%) 8 (4.57%)	5 (2.85%) 1 (0.57%)
41-50	M- 27 (15.4%) F- 23 (13.14%)	22 (12.57%) 19 (10.85%)	22 (12.57%) 19 (10.85%)	5 (2.85%) 4 (2.28%)
51-60	M- 27 (15.42%) F- 19(10.85%)	22 (12.57%) 13 (7.42%)	22 (12.57%) 13 (7.42%)	7 (4%) 3 (1.71%)

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61-70	M- 13 (7.42%) F- 15 (8.57%)	10 (5.7%) 11 (6.28%)	10 (5.7%) 11 (6.28%)	3 (1.71%) 4 (2.28%)
71-80	M- 6(3.42%) F- 3(1.71%)	5 (2.85%) 2 (1.14%)	5 (2.85%) 2 (1.14%)	1 (0.57%) 1(0.57%)
81-90	M- 2() F- 1(0.57%)	1 (0.57%) 1 (0.57%)	1 (0.57%) 1 (0.57%)	1 (0.57%) -
91-100	M- 1 (0.57%) F- -	1 (0.57%) -	- -	- -

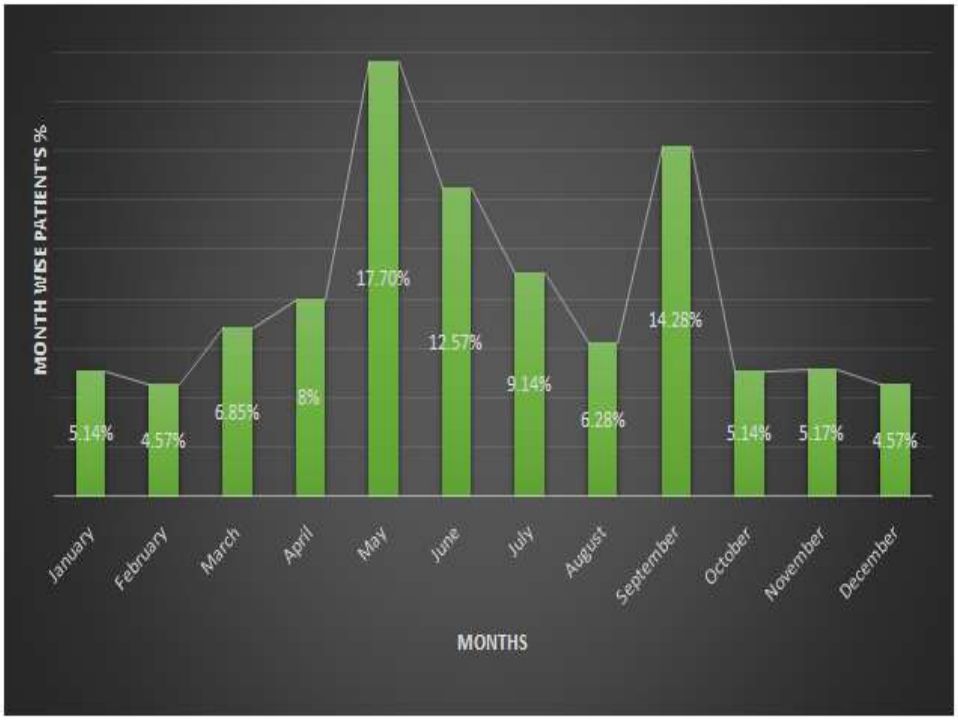

Figure 1: Month wise % bar graph showing no. of patient

Table 3: Index of monthly diabetes cases in year 2020

NO. OF CASES OF DIABETES MONTHLY (2020)

Months	No. of cases
January	9(5.14%)
February	8(4.57%)
March	12(6.85%)
April	14 (8%)
May	31 (17.7%)
June	22 (12.57%)
July	16 (9.14%)
August	11 (6.28%)
September	25 (14.28%)
October	9(5.14%)
November	10(5.17%)

December	8(4.57%)
Total	175

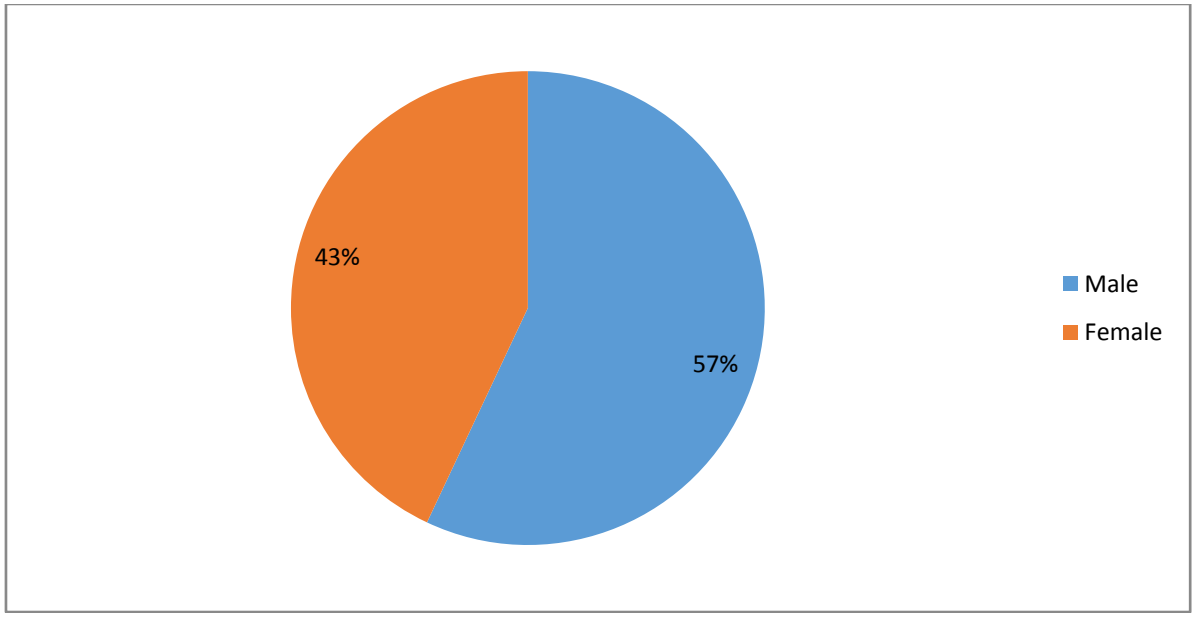

Figure 2: - Pie chart for distribution of male and female suffering from diabetes mellitus

III. RESULTS: -

From January 2020 to December 2020 total of 175 cases for diabetes mellitus were reported in this study. The data is arranged in tabular form as per age group, FBS, RBS parameters and gender. The male – female ratio of the disease was 4:3. The mean age at diagnosis was 48 years. Blood sugar in fasting (FBS) was most frequent test which was followed by random blood sugar (RBS) and post prandial (PP). All the information was obtained from 175 patients of Dehradun both male and female. Most of the cases were found to be between 41-50 age groups with male- female ratio of 3:4. Mortality was not considered in the following data.

From our study the maximum age group for the diabetes mellitus is 41-50 followed by 51-60 age groups.

(Results of table 1) Themaximum.No. of cases of diabetes were observed in 41-50 age bar i.e. 39% and the least were in age bar 91-100 i.e. 1%

(Results of table 2) In our study it was observed that the males of 31- 60 age group are more prone to diabetes as compared to females.

(Results of table 3) We took the samples for study from the month of April which was lockdown period and observed that May had the most diabetic patients with 31 patients (26%) and august had the least number of diabetic patients i.e., 11 (9.24%).

IV. CONCLUSION:

Diabetes mellitus is a disease which is a threat as it is increasing day by day in very large number of people in Dehradun and is spreading quickly to other areas. The potential complications of diabetes mellitus are immense which pose serious health related burden on family as well as society because of the rate of morbidity as well as mortality. Apart from this, diabetes is shown to be occurring at a relatively younger age within the stage. Reason for the increase in the level of diabetic patients in Dehradun are the migration of people from different areas, the sudden change in the economy and change in the lifestyle of the people in Dehradun. Despite the increase in the diabetes there remains dearth in the studies and probe in the exact status of the disease because of different nature in such a vast and diverse state. If talking about the disease it can be seen all around the state and across different section of the society within the state. So, there is urgent demand in the research and investigation at regional as well as national level which can be beneficial to eliminate the potentially increase in diabetes which can be predicated in the upcoming years.

Ethical approval: The study was approved by ethical clearance body of organization, DNA Labs-A Centre for Applied Science, dehradun , 248001-Uttarakhand, Dehradun, India. This study has maintained strict standards for protecting the privacy and confidentially of respondents during sample collection and data processing.

Conflict of interest: Authors does not show any conflict of interest.

Acknowledgement: Authors are thankful to DNA Labs-A Centre for Applied Sciences, Dehradun, Uttarakhand for their valuable guidance for this study and helps to processing the sample.

REFERENCES:

[1]. Kaveeshwar SA, Cornwall J. The current state of diabetes mellitus in India. The Australasian medical journal. 2014;7(1):45.

[2]. Ramachandran A, Snehalatha C. Current scenario of diabetes in India. Journal of diabetes. 2009 Mar;1(1):18-28.

[3]. Genuth SM, Palmer JP, Nathan DM. Classification and diagnosis of diabetes. Diabetes in America. Bethesda, MD: National Institutes of Health. 2017.

[4]. Wells JC, Pomeroy E, Walimbe SR, Popkin BM, Yajnik CS. The elevated susceptibility to diabetes in India: an evolutionary perspective. Frontiers in public health. 2016 Jul 7;4:145.

[5]. Frank EA, Shubha MC, D'Souza CJ. Blood glucose determination: plasma or serum?. Journal of clinical laboratory analysis. 2012 Sep;26(5):317-20.

[6]. Yeasmin N, Akhter QS, Mahmuda S, Hasan M, Rabbani R, Afroz R. Correlation of Estrogen with Serum Insulin and Blood Glucose Levels in Post-menopausal Women. Bangladesh medical journal. 2017 Nov 21;46(1):32-7.

[7]. Wells JC, Pomeroy E, Walimbe SR, Popkin BM, Yajnik CS. The elevated susceptibility to diabetes in India: an evolutionary perspective. Frontiers in public health. 2016 Jul 7;4:145.

[8]. Ki H, Jang H, Oh J, Han GR, Lee H, Kim S, Kim MG. Simultaneous detection of serum glucose and glycated albumin on a paper-based sensor for acute hyperglycemia and diabetes mellitus. Analytical Chemistry. 2020 Aug 17;92(17):11530-4.

[9]. Asegaonkar, S., Marathe, A., Tekade, M., Cherekar, L., Bavikar, J., Bardapurkar, J. and Ajay, R., 2011. High-sensitivity C-reactive protein: a novel cardiovascular risk predictor in type 2 diabetics with normal lipid profile. Journal of Diabetes and its Complications, 25(6), pp.368-370.

[10]. Cernea, S., &Dobreanu, M. (2013). Diabetes and beta cell function: from mechanisms to evaluation and clinical implications. Biochemiamedica, 23(3), 266-280.

[11]. Visvanathan, R., Jayathilake, C., Liyanage, R., &Sivakanesan, R. (2019). Applicability and reliability of the glucose oxidase method in assessing α-amylase activity. Food chemistry, 275, 265-272.

[12]. Papatheodorou, K., Banach, M., Bekiari, E., Rizzo, M., & Edmonds, M. (2018). Complications of diabetes 2017.