

ORIGINAL ARTICLE



OPEN ACCESS

## Uncontrolled Diabetes Mellitus during Lockdown period of Covid 19 pandemic

Mall D

National Academy of Medical Sciences, Bir Hospital, Kathmandu

### Abstract

**Background:** Nepal Government had declared a lockdown from 24th march till 21st July 2020 for prevention and control of spread of Covid 19 pandemic. This has made patients with diabetes mellitus unable to do their physical activity outside home, not able to visit physicians or healthcare workers on time, buy medicines on time, check blood sugar as scheduled. In this study we aimed to study the effect of lockdown on glycemic control of Diabetes patients. **Methods:** This study was done at National Academy of Medical sciences, Bir Hospital-Endocrine Unit outpatients department. After the ease of lockdown certain patients visited us with past and new reports of Blood glucose and HbA1c. We kept a record of variation of glycemic control, lack of physical activities, continuation of medications and daily food habits. **Results:** Total of 91 Diabetes Mellitus patients visited our OPD in 3 weeks period after lockdown was eased. 58% were Female and 42 % were Male. Only 7% of patients had good control of Diabetes, 32% had fairly controlled Diabetes and 61% had poorly controlled Diabetes in males. In females 3% had good control of Diabetes, 27% had fairly controlled and 70% had poorly controlled Diabetes. 46-65 age group in both male and female had uncontrolled blood sugar. Among males 49% had increased food habits, 32% had decreased physical activity and 10% of them left or decreased medicine. In similar among females 23% had increased food habits, 39% decreased physical activity, 38% had left or decreased medicines. **Conclusion:** Lockdown during Covid 19 pandemic had adverse effect on glycemic control of patients. This will lead to further complications of diabetes mellitus. Patients must do normal physical activities. They can do normal exercise inside their house and increase activities with family members in a small area, where possible. We must advise our patients to learn how to perform self glucose monitoring and self adjustment of Insulin and diet. Learning how to access to physicians, healthcare workers and pharmacist through telemedicine is very important during lockdown period.

**Key words:** Covid 19, lockdown, Diabetes mellitus

### Introduction:

Corona virus disease, an infectious disease developed by severe acute respiratory syndrome also known as covid 19 has progressively spread globally and is a concern of public health as pandemic disease<sup>(1)</sup>. This disease initially detected in Wuhan in year 2019 has already spread as pandemic in more than 200 countries<sup>1-3</sup>. Although all morbidity patients are affected, diabetes mellitus patients are affected more than those who don't have diabetes<sup>4</sup>. At

the same time Diabetes Mellitus has become an independent predictor for admission patients in hospital<sup>5</sup>.

To prevent the spread of corona virus, Nepal government declared a lockdown from date 24th March till 20th July 2020. During this period of time, Diabetes mellitus patients were mostly affected as they were not able to see the physician on time and check blood glucose on time. Patients were inbound inside the house, which cause them for less physical activities. At the same time they had increase amount of feeding with more amount of snacks during day time. This has caused a more increase

### Correspondence Author

Dr Dipak Mall, Assistant Professor, National Academy of Medical Sciences, Bir Hospital

**ORIGINAL ARTICLE**



**OPEN ACCESS**

in blood glucose and later development of complications as well .However as a result of nationwide lockdown, the glycemic control was poorly maintained by the patients<sup>6</sup>. In this study we aimed to study the possible cause of uncontrolled blood sugars during a lockdown period.

**Material and Methods**

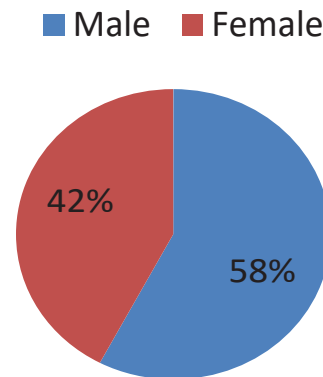
This study was done at National Academy of Medical sciences, Bir Hospital-Endocrine Unit outpatients department. After the ease of lockdown certain patients visited us with past and new reports of Blood glucose and HbA1c. We kept a record of variation of glycemic control ,lack of physical activities, continuation of medications and daily food habits.

**Results:**

Total of 91 Diabetes Mellitus patients visited our OPD in 3 weeks period after lockdown was eased. 58% were Female and 42 % were Male. Only 7% of patients had good control of Diabetes,32% had fairly controlled Diabetes and 61% had poorly controlled Diabetes in Males.

Age group 45-65 in both male and female were seen to have more uncontrolled blood sugar. In females 3% had good control of Diabetes, 27% had fairly controlled and 70% had poorly controlled Diabetes.46-65 age group had uncontrolled blood sugar. Among males 49% had increased food habit,32% had decreased physical activity and 10% of them left or decreased medicine. In similar among females 23% had increased food habit,39% decreased physical activity ,38% had left or decreased medicines.

**Pie chart 1:** Showing ratio of male and female with uncontrolled blood sugars who attended out patients department after the lockdown was partially opened.

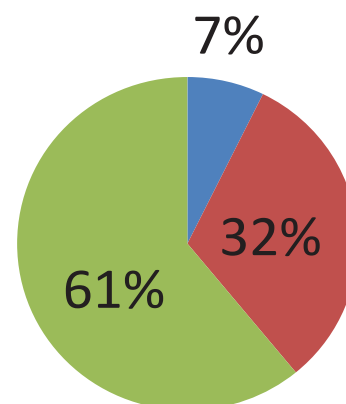


**Table 1 : Ratio of male and female who attended out patients department**

Sex	Number of patients
Male	56
Female	41
<b>Total</b>	<b>97</b>

**Glycemic control of patients using Hba1c levels in Males**

■ Good control ■ Fairly controlled ■ Poor control



**ORIGINAL ARTICLE**



**OPEN ACCESS**

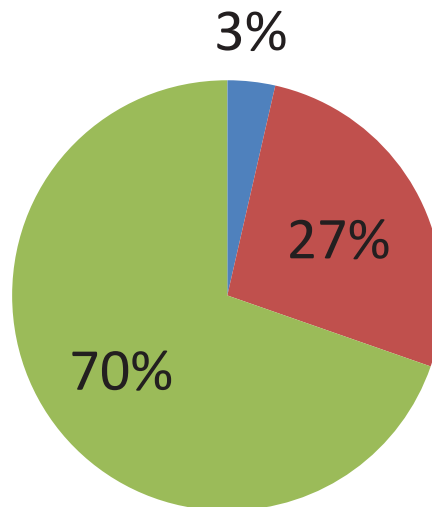
**Pie 2: Pie chart showing glyceimic control using HbA1c level in males**

**Table 2: Glyceimic control of Male patients using HbA1c level**

Status of Glyceimic control	Number of patients
Good control	3
Fairly controlled	13
Poor control	25
<b>Total number of Male patients</b>	<b>41</b>

**Glyceimic control of patients using Hba1C level in females**

■ Good control   ■ Fairly controlled   ■ Poor control



**Pie chart 3 : Pie chart showing glyceimic control using HbA1c level in Females**

**Table 3 : Glyceimic control of female patients using Hba1c level**

Status of Glyceimic Control	Number of patients
Good control	2
Fairly controlled	15
Poor control	39
<b>Total number of Female patients</b>	<b>56</b>

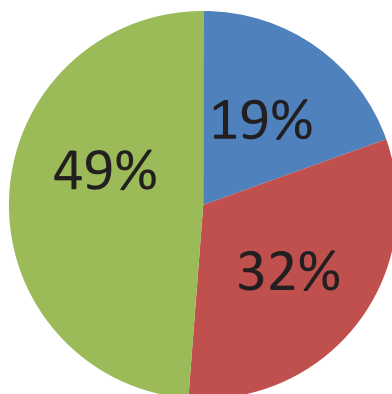
ORIGINAL ARTICLE



OPEN ACCESS

## Possible causes of uncontrolled Blood sugar During covid 19 lockdown in males

- Left Medicine/Decreased medicine
- No/Decreased physical activity
- Increased food habits



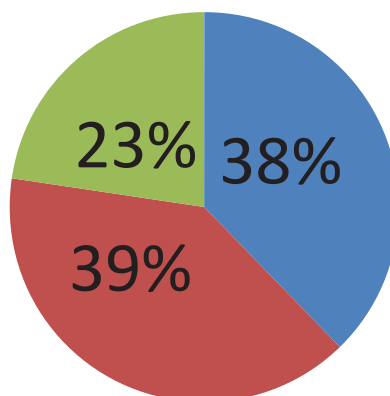
Pie 4: Pie chart showing possible causes of uncontrolled blood sugar level in Males

Table 4: Possible causes of uncontrolled Blood sugar in Males

Possible causes of Uncontrolled blood sugar	Number of patients
Left Medicine/Decreased medicine	8
No/Decreased physical activity	13
Increased food habits	20
<b>Total number of Male patients</b>	<b>41</b>

## Possible causes of uncontrolled Blood sugar during Covid 19 lockdown in females

- Left Medicine/decreased medicine
- No physical activity
- Increased food intake



**ORIGINAL ARTICLE**

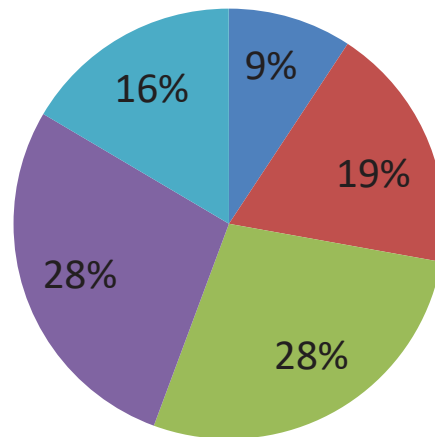


**OPEN ACCESS**

**Pie 5: Pie chart showing possible causes of uncontrolled blood sugar level in Females**  
**able 5: Possible causes of uncontrolled blood sugar level in Females**

**Age wise distribution of patients presented With uncontrolled Blood sugar**

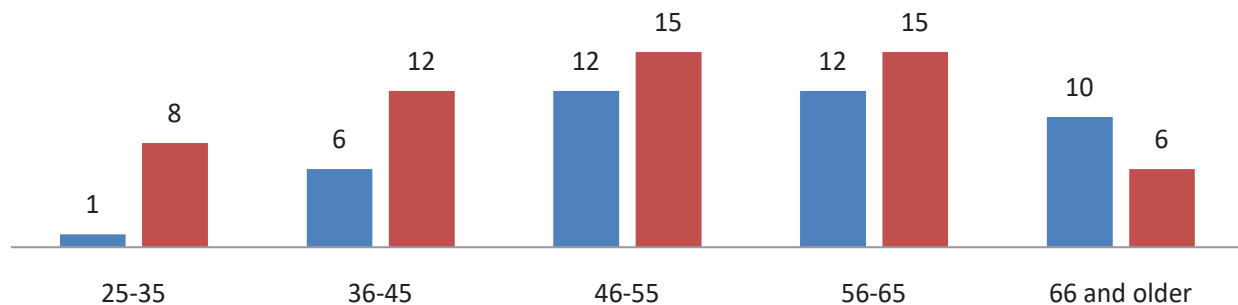
■ 25-35 ■ 36-45 ■ 46-55 ■ 56-65 ■ 66 and older



**Pie 6: Pie chart showing age wise distribution of total Patients**

**Male/Female distribution with age distribution with**

■ Male ■ Female



## ORIGINAL ARTICLE



## OPEN ACCESS

### Discussion:

Several factors are associated with uncontrolled blood sugars in Diabetes mellitus patients during lockdown period. Social distancing, sedentary life styles ,psychological stress,fear of getting covid, quarantine fear, lack of knowledge on self glucose measurement, unavailable of appointments of physicians and unable to buy proper amount of medications may play a role in worsening of glucose control during lockdown period. This was mostly found in elder populations and signs and symptoms of Depression was also more in this group of patients<sup>7</sup>.

In south asian countries like Nepal India,Pakistan, Bangladesh, people consume large amount of carbohydrate in their meal, which is one of the main cause of increase glucose level in blood. In our study we found that 49% of male and 23 % of female were consuming more amount of food during lockdown in compare to other normal days. The similar result was shown by Joshi SR and et all stating that the consumption of more amount if carbohydrate will increase the blood glucose during lockdown as fresh vegetables were not available<sup>8</sup>.A calculation of approximate total daily calorie intake must be calculated and teach every patients to calculatate it<sup>9</sup>.

Lack of physical activity always lead to uncontrolled blood glucose. Long period of lockdown leads to restriction of outdoor

physical activity for all people.This has a negative impact on Diabetes mellitus patients. In our study 39% female and 32% male had uncontrolled blood glucose just because of lack of physical activity.60 mintute of muscle strengthening exercises ,work activity and aerobic activity would be recommended for blood glucose control<sup>10</sup>.

In our study 38% female and 10% male patients left medicine or decreased the dose of medicine due to unavailability of medicines easily as most of the transportation were closed. That made them difficult to visit the nearby pharmacy on time. At the same time, physician or healthcare workers consultation was also restricted. A good knowledge of self glucose monitoring and medication adjustment and use of smart phones could help to contact with treating physicians and manage blood glucose on time.

### Conclusion:

Lockdown during Covid 19 pandemic had adverse effect on glycemic control of patients. This will lead to further complications of diabetes mellitus. Patients must do normal physical activities indoors during lockdown. Healthy diet as per diabetics diet plan should be strictly followed during lockdown period also. We must advice our patients to learn how to perform self glucose monitoring and self adjustment of Insulin and diet. Learning how to access with physicians, healthcare workers and pharmacist through telemedicine consultation

## ORIGINAL ARTICLE



## OPEN ACCESS

is very important during lockdown period.

### References:

- 1) Lai C, Shih T, Ko W, Tang H, Hsueh P. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019(COVID-19): the epidemic and the challenges. *Int J Antimicrob Agents* 2020;105924.
- 2) Y.-Y. Zheng, Y. T. Ma, J. Y. Zhang, and X. Xie, "COVID-19 and the cardiovascular system," *Nature Reviews Cardiology*, vol. 17, no. 5, pp. 259-260, 2020
- 3) Huang C, Wang Y, Li X. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 2020;395:497e506.
- 4) Zhou J, Tan J. Diabetes patients with COVID-19 need better blood glucose management in Wuhan, China. *Metabolism* 2020;107:154216.
- 5) Guan W, Liang W, Zhao Y, Liang H, Chen Z, Li Y, et al. Comorbidity and its impact on 1590 patients with covid-19 in China: a nationwide analysis. *Eur Respir J* 2020:2000547
- 6) Pal R, Bhansali A. COVID-19, diabetes mellitus and ACE2: the conundrum. *Diabetes Res Clin Pract* 2020:108132.
- 7) Roy T, Lloyd CE. Epidemiology of depression and diabetes: a systematic review. *J Affect Disord* 2012;142:S8e21.
- 8) Joshi SR, Bhansali A, Bajaj S, Banzal SS, Dharmalingam M, Gupta S, et al. Results from a dietary survey in an Indian T2DM population: a STARCH study. *BMJ Open* 2014;4:e005138.
- 9) Misra A, Sharma R, Gulati S, Joshi SR, Sharma V, Ghafoorunissa, et al. Consensus dietary guidelines for healthy living and prevention of obesity, the metabolic syndrome, diabetes, and related disorders in asian Indians. *Diabetes Technol Therapeut* 2011;13:683e94
- 10) Misra A, Nigam P, Hills AP, Chadha DS, Sharma V, Deepak KK, et al. Consensus physical activity guidelines for asian Indians. *Diabetes Technol Therapeut* 2012;14:83e98