

Diabetology

KEYWORDS: Diabetes

Mellitus, Covid-19,
Questionnaire's, Health care
professional

HEALTHCARE PHYSICIAN RESPONSE TO QUESTIONNAIRE'S IN REGARDS TO COVID- 19 IMPACT IN DIABETES MELLITUS PATIENTS



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Dr. Gururaj Kulkarni

Professor of Medicine MNR Medical College MNR Nagar, Fasalwadi, Narsapur Road,
Sangareddy – 502294

Dr. Mohd Riyaz*

Professor of Medicine MNR Medical College MNR Nagar, Fasalwadi, Narsapur Road,
Sangareddy – 502294*Corresponding Author

**Dr. Dilip Kumar
Kandar**

Senior Consultant Diabetologist Kandar Diabetes Centre- KDC 12-13-416/1B,
Street no:1, Tarnaka, Hyderabad- 500017

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**ABSTRACT**

Aim: To identify whether the health care professional and Diabetes mellitus patients are aware of Corona virus infection with the help of questionnaires and its implication on the health of individuals.

Material and Methods

Questionnaires were formulated and it was send to the medical health care professional. After obtaining the consent, the parameters were assessed using a questionnaire format. We had formulated 22 questionnaires and forwarded to all healthcare physicians. Both positive and negative response against each question was recorded in a excel sheet. In addition to the above age, gender type was also recorded. The data obtained was analyzed using spss 20.0 software. **Results:** Total 152 numbers of subjects had responded to the questioners. It was found that majority of the healthcare professional and patients were well versed with COVID-19 and its impact on the health. Nearly 78.90% of diabetic patient were aware about the impact on human being based on replies given by health care providers. It was well established by the answers to various question that there was increased weight of patients and glycemic profile of patients were deranged due to multiple factors. Almost 67.10% of patients were aware of ICMR guidelines as per the feedback by the healthcare providers. Many of patients were confused due to repeated changes in guidelines from multiple health organizations. All preventive methods and various do's and don'ts were well known by all the Healthcare profession and to larger extend it was also well known to general population which includes established diabetes mellitus patients. Based on the feedback on questioners in this study it was noted that almost 32.40% patients gained weight due to multiple factors. In terms of diet it was seen based on reply that nearly 49% of patients had skipped one meal which could be breakfast, lunch or dinner. It was noted from the reply of questioners that there were many treatment and prevention protocols which were provided by various infection control boards. **Conclusion** COVID -19 is seen as a major pandemic, it has caused higher mortality in people with high risk individual predominantly. This study based on questioners have shown that almost all the healthcare professional are trying to educate their patients and majority of patient are well versed with the covid and its impact in diabetes population also.

Introduction:

Coronavirus disease 2019 (COVID-19) is an infectious disease which is developed by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). This disease was reported in December 2019 in Wuhan city (China) and then rapidly spread to other cities and also

to all the countries, resulting in the on-going pandemic in more than 200 countries worldwide. [1-3] Covid -19 is the single most critical issue in worldwide and on-going researches for effective therapeutic and preventive agents for the treatment and management of COVID-19. [2-6]

DM increases the complications of COVID-19 and the risk of COVID-19 related mortality. Current evidence demonstrates that patients with DM are more likely to experience severe symptoms and complications than patients without DM due to COVID-19. One hypothesis is that hyperglycemia facilitates the virus entry into the cells since ACE2 and virus both need glucose for their function. Although to understand the interactions between COVID-19 and DM requires more research [6]

Material and Methods

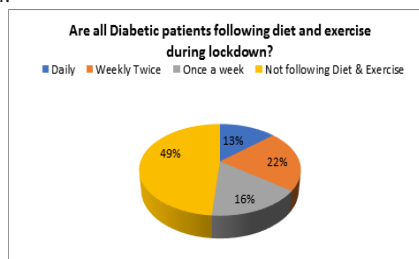
22 Questionnaires were formulated and circulated to all the health care practitioner's, only after obtaining the consent the data was collected, Total 300 practitioners were send the Questionnaires and only 152 practitioners have provide the feedback on all the Questionnaires.

Questionnaires were formulated and it was send to the medical health care professional. After obtaining the consent, the parameters were assessed using a questionnaire format.

Both positive and negative response against each question was recorded in a excel sheet. In addition to the above age, gender type was also recorded. The data obtained was analyzed using spss 20.0 software.

Questionnaires were as follows:**Results:**

- 1) Age: In this study there were people in range between 18 years to 70 years who have given the consent for the feedback on the Questionnaires
- 2) Gender: male patient (n=83), Female patients (n=65), Prefer not to say (n=4)
- 3) Are Diabetic patients following diet and exercise during lockdown?



The feedback from the healthcare practitioner was very significant in regard to Diabetic patients following exercise and diet during lockdown, it was seen that 13% of population was following the diet and exercise dialy whereas majority of patients i.e. 49% were not following diet and exercise as per the feedback given by healthcare practitioner.

(4) Frequency of testing blood sugar during the lockdown by DM Patients?

In this feedback on questionnaires, it was noticed that people who were checking blood sugar levels regularly constituted only 27.80% whereas almost 72.70% were checking the blood glucose levels sometimes.

1)	Age	
2)	Gender	M/F/Prefer not to say
3)	Are Diabetic patients following diet and exercise during lockdown?	1)Daily 2) Weekly Twice 3) Once a week 4) Not following Diet & Exercise
4)	Frequency of testing blood sugar during the lockdown by DM Patients?	1)Regularly 2) Sometimes 3) Rarely 4) Never
5)	Duration of diabetes?	1)less than 5yrs 2) 5-10years 3) > 10years
6)	Type of diabetes which you have seen more in Lockdown?	1)Type 1 DM 2) Type 2 DM 3) Others
7)	Are you and your patient worried about corona virus?	1)Yes 2) No 3) Maybe
8)	Is your Diabetic patient aware how corona virus affects human being?	1)Yes 2) No 3) Maybe
9)	Are you aware of latest ICMR guidelines?	1)Yes 2) No 3) Maybe
10)	Have you read about articles in relation to COVID-19?	1)Yes 2) No 3) Maybe
11)	Is your Diabetic patient aware of the symptoms of the COVID-19?	1)Fever 2) Tiredness 3) Sore throat 4) Cough 5) Diarrhoea 6) Shortness of breath 7) Joint pain 8) Loss of taste 9) Myalgia 10) Other
12)	How does the spread of COVID disease occur is known to your Diabetic patient?	1)Air Borne 2) Close Contact 3) Droplet Transmission 4) Contagious 5) Touch 6) Hand shaking
13)	Are your Diabetic patients avoiding Social / public gathering?	1)Yes 2) No 3) Maybe
14)	Who should wear a face mask is known to your Diabetic patients?	1)Health care professional 2) person coughing 3) sick patients with respiratory manifestation 4) patient with nasal congestion 5) patient with h/o of sneezing 6)Others
15)	How frequency your Diabetic patients were washing hands during this pandemic?	1)1-2 times /day 2) 2-5 times /day 3) 5-10 times /day 4) > 10times per day
16)	Do your patients believe there is treatment for this Disease?	Yes 2) No 3) Maybe
17)	Weight change during COVID-19 in your Diabetic Patients?	1)Lost weight 2) Gained 3) some weight 4) weight stable 5) Don't Know

18)	During COVID pandemic, probability of skipping one of the main meals (breakfast/lunch/dinner) changed in your Diabetic Patients?	1) Yes 2) No
19)	During COVID pandemic, how has intake of a balanced diet (including healthy ingredients such as whole wheat, pulses, legumes, eggs, nuts, fruits and vegetables) changed?	1)Yes 2) No
20)	During COVID pandemic, interest in learning healthy eating tips from the media (newspaper articles/magazines blogs/videos/TV shows/text messages) changed in your Diabetic Patients?	1)Strongly Disagree 2) Disagree 3) Neutral 4) Agree 5) Strongly Agree
21)	During COVID pandemic, stress and anxiety levels changed in your Diabetic Patients?	1)Yes 2) No 3) Maybe
22)	During COVID pandemic, intake of nutrition supplements to boost immunity changed in your Diabetic Patients?	1) Yes 2) No 3) Maybe

5) Duration of diabetes?

In this study, it was found that people with newer onset or less than 5 years duration of diabetes mellitus were nearly 19.40% whereas patient with chronic diabetes of more than 10 years duration were almost 33.30%, with this we can assume the occurrence of newer onset of diabetes patients were not huge which was predicted by many experts.

6) Type of diabetes which you have seen more in Lockdown?

It is interesting finding that many practitioners have seen predominantly Type 2 Diabetes mellitus patients which constituted to almost 96% and 3% type 1 diabetes mellitus and 1% other causes leading to diabetes; it is difficult to evaluate how many were new onset of diabetes mellitus patient, which will be done in follow-up study.

7) Are you and your patient worried about corona virus?

This question was very significant because it was not the patient but the practitioners were also worried of covid-19 infection, due to multiple factors. Almost 81.60% replied as Yes they were worried and 7.90% said Not worried, and Remaining were not sure.

8) Is your Diabetic patient aware how corona virus affects human being?

It was confirmed by this question that majority of patients i.e. 78.90% were aware about the covid-19 and its impact on human beings, 13.20 % of thought it is still not a virus which was communicated to healthcare practitioners by their patients and 7.90% were not sure and not confident.

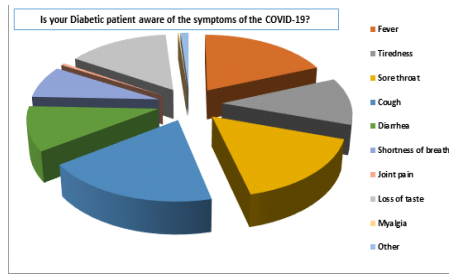
9) Are you aware of latest ICMR guidelines?

It is a very important question for health care practitioners, because multiple guidelines and various regimens were circulated and a lot of confusion was there. Based on the information it was established that 67.10% were well known about the latest guidelines by the ICMR and Health care Ministry of India consensus guidelines and utilised these guidelines in practice, whereas 19.70 were aware of latest guidelines due to multiple factors, and 13.20% were not fully aware only partially aware.

10) Have you read about articles in relation to COVID-19?

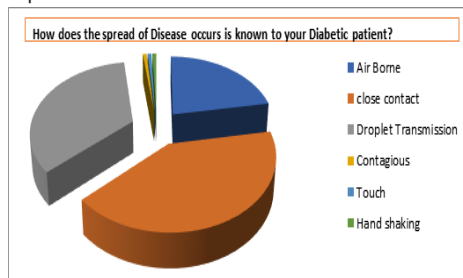
Almost 90% of healthcare profession were updated and have been constantly updating their knowledge in regards to covid-19.

11) Is your Diabetic patient aware of the symptoms of the COVID-19?



This was very important question to know what the diabetic patient think or whether they have knowledge of symptom's or signs in regards to Covid-19. It is very clear that majority of patient were well aware of symptoms and signs in regards to covid-19 infection. Based on the information individual symptom was graded and it was clear that majority of responders to practitioners said that common symptoms is fever and cough which constituted to almost 96% and above.

12) How does the spread of COVID-19 occur is known to your Diabetic patient?



This was a very interesting question which was given to healthcare practitioners, as there were huge different rumours going around in relation to COVID-19 and its mode of transmission. As the reply of healthcare practitioners, the majority of patients were aware that infection of covid-2 would spread via Droplet transmission and Airborne and remaining though it could be due to other modes of transmission, which required some awareness.

13) Are your Diabetic patients avoiding Social/ public gathering? Majority of Diabetic patient were avoiding the social gathering which, but few patients who doubted the incidence and occurrence of disease were not convinced of this. Health care practitioners have given knowledge and information in this regard. Almost 81.60% were avoiding social or public gathering, and 7.90% were of neutral opinion, and 10.5% were not avoiding social gathering

14) Who should wear a face mask is known to your Diabetic patients?

It is very clear by the answer of this question, that everyone was aware of the wearing mask by all including health care profession.

15) How frequency your Diabetic patients were washing hands during this pandemic?

The response given to this question is very important, it given an idea that people during this period of lockdown and fear of infection, were washing the hand almost 5-10 times a day i.e. almost 35.50% people. People with 2-5 times /day hand washing were 27.60%, and >10times were 23.70%, and 1-2 times per day 13.20%. In nutshell all diabetic patients were washing hand more often than regular times

16) Do your patients believe there is treatment for this Disease?

This gives an idea that majority of patients believed that the treatment of covid-19 is doubtful, but almost 48.70% population believed in the treatment which was given. 26.30% believe there is

no treatment and 25% are confused in regards to treatment.

17) Weight change during COVID-19 in your Diabetic Patients?

It gives a clear idea that 32.40% patients who followed up to the responding physician were having weight gain, and surprising there were almost 27% of patient have lost weight, 18.90% weight was stable as there were health conscious.

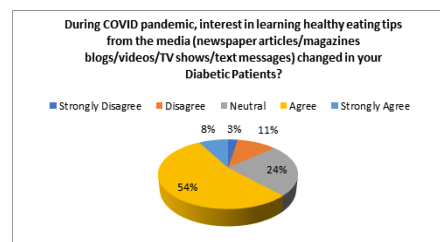
18) During COVID pandemic, probability of skipping one of the main meals (breakfast/lunch/dinner) changed in your Diabetic Patients?

Based on the reply it is clear that 49% of patient had skipped one of the main meals and 51% patient didn't skipped meals

19) During COVID pandemic, how has intake of a balanced diet (including healthy ingredients such as whole wheat, pulses, legumes, eggs, nuts, fruits and vegetables) changed?

It is very clearly evident that majority of patient have favoured and changed their diet to balanced diet. In feedback reply it was observed clearly that 75.70% of patient have changes to balanced diet to improve the health status. It was encouraged by all healthcare physicians to their patients that they have good balanced diet.

20) During COVID pandemic, interest in learning healthy eating tips from the media (newspaper articles/magazines blogs/videos/TV shows/text messages) changed in your Diabetic Patients?



Majority of patients during this pandemic were keen on health and nutritious diet, they learned many newer tips and modalities of preparing good and nutritious food. Based on the reply of healthcare professional it was evident that 54.10% patient agreed with learning newer tips of healthy eating via various form of media.

21) During COVID pandemic, stress and anxiety levels changed in your Diabetic Patients?

During pandemic, patient and healthcare providers both were in stress, based on the reply to this questionnaire it is clear that majority were in stress due to multiple factors. Based on feedback 97.30% were stressed and only 2.70% were no feeling stressed

22) During COVID pandemic, intake of nutrition supplements to boost immunity changed in your Diabetic Patients?

It is clear that almost maximum people were taking immunity booster and nutritional supplement to keep immunity on boost. Almost 86.50% of the people were on immunity booster or self-taking immune booster supplements. Nearly 8.10% patients didn't took any immunity booster things, whereas 5.40% were partially adhering to the immunity booster things.

Discussion:

Questionnaires can assist in the quick assessment of lifestyle-related behaviour of people, diet, adherence to therapy; awareness of COVID-19, etc. thus provides a beneficial information in regards to Diabetic patients especially during pandemic situations.

Restrictions imposed due to COVID pandemic have led to serious disruptions in the daily routine of people. Lockdown at initial phases in the country led to the repercussions in the food supply and utilization thus placing the burden on usual food-related behaviour.

Moreover, the closure of many places like gyms, fitness centres and strict restrictions imposed on visiting parks, playgrounds etc. to curb the spread of COVID has limited the access to many forms of physical activity which has led to a major impact on all set of life. This has led to confinement to a smaller area and which has impacted on sleep patterns, dietary habits also. There was a wider Deviation from a healthy lifestyle by many people which could not only increase the risk of development of T2DM but also worsen the state of patients already suffering from it. In view of the stated concerns, it is crucial to discover how significant is the impact of this pandemic and its associated restrictions on lifestyle-related behaviour of people including their eating habits, physical activity and sleep patterns.¹⁶⁻¹⁰

The lungs are the primary organ for SARS-CoV-2. However, it may also infect the gastrointestinal tract, central nervous systems, and cardiovascular system. SARS-CoV-2 binds to the host cells via linking to angiotensin-converting enzyme type 2 (ACE2), which is responsible for catalyzing the hydrolysis of angiotensin II (Ang II) into angiotensin (1-7) (a vasodilator). This enzyme is abundantly expressed on the alveolar type II cells of the pulmonary tissues but also exists in other types of the cells such as neurons and myocardial cells. Hence, blocking the ACE2 expression and activity may provide protective effects against COVID-19 infection. However, there is evidence suggesting that ACE2 inhibitors may increase the risk of COVID-19 complications and needs more research.^[10-11]

Glucotoxicity is also able to induce other pathophysiologic pathways as oxidative stress, inflammation, fibrosis, apoptosis, and necrosis in multiple tissues. Hence, it is now accepted that glucotoxicity has major indirect roles in hyperglycemia-dependent histological damages in various tissues including the lungs and respiratory tract. [10-12] Therefore, maintaining the homeostatic state of the glucose in these patients could markedly prevent the severity of COVID-19 infection and reduce.

Conclusion:

This COVID -19 is seen as a major pandemic, it has caused higher mortality in high-risk individual. Prompt empathic updates and regular awareness programmes by various means has helped all human beings apart from health care individual.

The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes, so it's important that you also practice respiratory etiquette. The best way to prevent and slow down transmission is be well informed about the COVID-19 virus, the disease it causes and how it spreads. Protect yourself and others from infection by washing your hands or using an alcohol based rub frequently and not touching your face. At this time, there are no specific vaccines or treatments for COVID-19. However, there are many on-going clinical trials evaluating potential treatments. This study based on questionnaires have shown that almost all the healthcare professional are trying to educate their patients and majority of patient are well versed with the covid and its impact in diabetes population also.

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