Syndemics at play: chronic kidney disease, diabetes and COVID-19 in Pakistan

Inayat Ali

Department of Social and Cultural Anthropology, University of Vienna, Vienna, Austria

ABSTRACT

Although coronavirus disease 2019 (COVID-19) is a pandemic, it has several specificities influencing its outcomes due to the entwinement of several factors, which anthropologists have called "syndemics". Drawing upon Singer and Clair's syndemics model, I focus on synergistic interaction among chronic kidney disease (CKD), diabetes, and COVID-19 in Pakistan. I argue that over 36 million people in Pakistan are standing at a higher risk of contracting COVID-19, developing severe complications, and losing their lives. These two diseases, but several other socio-cultural, economic, and political factors contributing to structured vulnerabilities, would function as confounders. To deal with the critical effects of these syndemics the government needs appropriate policies and their implementation during the pandemic and post-pandemic. To eliminate or at least minimize various vulnerabilities, Pakistan needs drastic changes, especially to overcome (formal) illiteracy, unemployment, poverty, gender difference, and rural and urban difference.

Background

Undoubtedly, coronavirus disease 2019 (COVID-19) is a pandemic. Yet, it has several specificities due to the entwinement of the local historical, socio-cultural, environmental, economic, political factors, and structured vulnerabilities, which has caused a difference in the spread and effects of the virus in different countries [1–4]. Medical anthropologists have called this entwinement "syndemics" [5]. Currently, Bulled and Singer state, “COVID-19 syndemics in South Africa are likely to cluster among the economically, politically, and socially marginalized living in densely populated urban areas, where physical distancing and hygiene recommendations are nearly impossible to follow” [3]. Likewise, Pakistan has a vulnerable profile related to sociocultural, political, economic and healthcare system that creates a fertile ground for syndemics in which a communicable disease like COVID-19 can cause severe effects [6]. Like many low-income countries, Pakistan faces the prevalence of many communicable and non-communicable diseases that weaken the immune system while making a biosocial interaction and creating vulnerability to be infected by COVID-19 severely. That means at play are syndemics, which are critical biosocial health events involving a harmful interaction of a few diseases considerably shaped by socio-cultural patterns, environmental conditions, economic factors, and political systems [1]. Studies have revealed how various comorbidities have affected the outcome of COVID-19 worldwide [7–9]. In this article, I focus on COVID-19, chronic kidney diseases (CKDs), and diabetes in Pakistan to reveal syndemics at play.

An overview of COVID-19 in Pakistan: preparedness and response

Pakistan reported the first infection of COVID-19 in two men who returned from Iran on 26 February 2020. By the first week of November 2020, the virus has infected and affected approximately 346,000 people, out of which around 7,000 have died [10]. Analogous to other countries, Pakistan has severely been affected by the pandemic, and specific socio-cultural, economic, and political factors add specificities to it [6,11]. As predicted, the “infodemic” and second wave are already overwhelming the country like the world demonstrating several underlying factors [12]. Some people have considered the entire COVID-19 outbreak as a “political game”, and yet others believe it is a “Western” and Jew’s “plot” [11,13–15]. Various and distinct rumours have circulated regarding the
Chronic kidney disease (CKD) and diabetes in Pakistan

CKD

CKD is a serious health issue in high-income as well as low-income countries. It is an immediate or continual decrease in kidney function or efficiency for three months [17]. The epidemiological data reveal a significant increase in CKD, which is becoming an emerging global challenge [18]. At the scale of the Global Burden of Disease (GBD), CKD moved from the 27th position in the 1990s to the 18th in 2010 for significantly causing global deaths [19]. According to the same scale, its mortality rate has increased by over 134% as compared to 1990 [18]. The prevalence of CKD is higher while causing more deaths in some countries, especially in low-income countries [20]. Of approximately 500 million people having CKD worldwide, around 80% of them live in low- and middle-income countries (LMICs) [20]. Not only this, in China CKD and diabetic kidney disease (DKD) has significantly increased as compared to the past [21]. CKD is rapidly growing in Asian countries than in the global north. And, epidemiological transition in South Asian countries increases the risk factors of CKD [22–24]. There are several factors at play: behavioural, socio-economic, and urbanization [18,21,22], which better be called syndemics.

In Pakistan, for instance, growing urbanizing exposes around 180 million people to chronic diseases, such as diabetes and hypertension, by the low birth weight associated with reduced renal reserve [22]. Also, diabetes and hypertension significantly contribute to CKD or end-stage kidney disease [18,21,22]. Specifically, in low-income countries, the significant reasons for CKD include diabetes mellitus (DM), hypertension (HTN), obesity, and cardiovascular disease [25,26]. This reveals an entanglement of numerous biosocial factors that make an individual prone to CKD. In March 2020, Pakistan’s Dawn newspaper reported that over 17 million people are suffering from kidney diseases in Pakistan that puts this country at the eighth number due to kidney diseases worldwide [27]. And, CKD is rapidly increasing due to kidney stone disease, increasing diabetes, and high blood pressure.

Due to reporting issues, it is difficult to estimate the number of people suffering from end-stage renal disease and needing renal replacement therapy (RRT) [28]. Although kidney transplantation is the most viable long-term option, transplant activities are seriously lagging behind demand, mainly due to insufficient financial support and a lack of organized transplant programs for deceased donors. Most implants come from living donors. Inadequate organ procurement networks, lack of facilities to supply potential donors, and inadequate public education result in the exploitation of deceased as well as living donors that led the Pakistani government to pass a law in 2007 and 2009 [28].

Diabetes in Pakistan

Diabetes, a chronic disease, occurs when the pancreas is no longer able to make insulin or when the body cannot make fair use of the insulin it produces [29]. Without defining its three types—type 1 diabetes, type 2 diabetes, and gestational diabetes—I move forward to the epidemiological data, demonstrating that diabetes analogs to CKD, is a rapidly growing health challenge of the current century. According to the International Diabetes Federation [29], in 2000, 151 million adults lived with diabetes, which grew by 88% to 285 million in 2009. Currently, around 9.3% of adults aged 20–79 years that can be around 463 million, are living with diabetes (ibid.). Additionally, around 1.1 million children and adolescents under the age of 20 live with type 1 diabetes. An estimation was made in 2010 that there will be 438 million people with diabetes worldwide in 2025, but now the projection seems there will be around $25 million in 2025. Of these figures, as many as 19.4 million people live in Pakistan [30].

Similar to CKD, a rapid escalation of diabetes demonstrates a complex interplay of socio-cultural, economic, demographic, political, environmental, and
genetic factors around the globe [29]. The risk factors for type 2 diabetes include expanding obesity, unhealthy diets, and widespread physical inactivity. The confounders are growing urbanization, changing lifestyle habits, such as higher calorie intake, increasing consumption of processed foods, and sedentary lifestyles (ibid.).

Syndemics of CKD, diabetes and COVID-19

Several studies have highlighted the critical relationship between COVID-19 and existing comorbidities, including CKD and diabetes (see Table 1). Owing to the article’s focus, the following sections discuss (a) syndemics of CKD and COVID-19; and (b) syndemics of diabetes and COVID-19.

Table 1. Characteristics of selected studies showing syndemics at play.

| Authors               | Study type                  | Publication year | Total no. of Patients | Comorbidities                                                                 | Severe events | Definition of serious events       |
|-----------------------|-----------------------------|------------------|-----------------------|-------------------------------------------------------------------------------|---------------|-----------------------------------|
| Chen et al. [32]      | Retrospective               | 2020             | 274                   | Chronic hypertension and other cardiovascular comorbidities                   | 113           | Death                             |
| Cheng et al. [33]     | Prospective cohort study    | 2020             | 701                   | Chronic kidney disease, chronic obstructive pulmonary disease, hypertension, diabetes, and tumour | 294.4         | Severely ill and death            |
| Atkins et al. [34]    | Cohort                      | 2020             | 269,070               | Hypertension, history of fall or fragility fractures, coronary heart disease, type 2 diabetes, and asthma | 507           | Critically ill and death          |
| Barron et al. [41]    | Whole population study      | 2020             | 61,414,470            | Diabetes 1, diabetes 2 and other types of diabetes                            | 7,869         | Death                             |
| Onder et al. [43]     | Observational study         | 2020             | 147                   | COVID-19-associated pulmonary aspergillosis, diabetes, and acute respiratory distress syndrome (ARDS) | 23            | ICU and death                     |
| Asghar et al. [47]    | Single-center retrospective | 2020             | 100                   | Diabetes, hypertension, ischaemic heart disease, CKD, and chronic liver disease | 33            | ICU and death                     |
| Zeb et al. [48]       | Retrospective               | 2020             | 25                    | Hypertension, diabetes, CKD, ischaemic heart disease (IHD), chronic liver disease CLD and COPD | 25            | Death                             |
| Nandy et al. [39]     | Systematic review and meta-analysis | 2020     | 3,994                 | Hypertension (HTN), Diabetes mellitus (DM), Cardiovascular diseases (CVD), COPD and (CKD) | 526           | ICU admission, novel coronavirus pneumonia (NCP), mechanical ventilation, ARDS, and death |
| Emami et al. [7]      | Systematic review and meta-analysis | 2020     | 76,993                | Hypertension, cardiovascular diseases, diabetes mellitus, smoking, COPD, malignancy, and CKD | 3,403         | Hospitalized patients             |
| Yin et al. [37]       | Systematic review and meta-analysis | 2021     | 12,000                | COPD, cardio-cerebrovascular diseases, diabetes, hypertension, and CKD | –             | –                                 |
| Singh et al. [35]     | Systematic review and meta-analysis | 2020     | 14,558                | Hypertension, diabetes, CVD, COPD, CKD and cancer | –             | Critical infection and death Severe disease and death |
| Dorjee et al. [36]    | Systematic review and meta-analysis | 2020     | 38,906                | Heart disease, COPD, CKD, COPD and CKD, hypertension, smoking history, diabetes | 1,867.4       | Severe disease                    |
| Guan et al. [8]       | A nationwide analysis       | 2020             | 1,590                 | Hypertension, cardiovascular diseases, cerebrovascular diseases, diabetes, hepatitis B infections, COPD, CKD, malignancy and immunodeficiency | 254.4         | Severe disease                    |
| Richardson et al. [9] | –                           | 2020             | 5,700                 | Hypertension, obesity, and diabetes                                          | 553           | Hospitalization, and Mortality    |

**CKD and COVID-19**

The interaction of CKD and COVID-19 has been highly documented, resulting in severe complications, including deaths. Ssentongo et al. show that people underlying several diseases such as cardiovascular disease, hypertension, diabetes, and CKD, were at a considerable risk of mortality after being infected with COVID-19 as compared to those people who do...
not have these comorbidities [31]. In their sample of around 800 people, Chen et al. [32] found that 28% of those who died due to COVID-19 had CKD. Another study from China found 42% of 701 people infected with COVID-19 had comorbidities, in which CKD appeared decisive risk factor [33]. In England, CKD, and diabetes were among the significant pre-existing comorbidities that increase the risks to be infected by COVID-19 and develop critical complications, including deaths [34]. Three other studies showed a substantial relationship between CKD and critical COVID-19 complications [9,35,36]. In contrast, Yin et al. in 2021 found that although people with chronic obstructive pulmonary disease (COPD) and CKD seem at a low risk to contract COVID-19, they face critical effects once they are infected [37].

**Diabetes and COVID-19**

Merril Singer has already revisited the interactive nature of diabetes and COVID-19 [1]. Several characteristics make diabetic people prone to COVID-19. For instance, it is said that the virus causing COVID-19 activates higher stress levels that then appears to greater release of hyperglycaemic hormones causing increased blood glucose levels [38].

Nandy et al. found in their systematic review and meta-analysis that diabetes mellitus (DM) have shown a substantial effect on the mortality rate in COVID 19 patients [39].

One study of around 45,000 COVID-19 infected people in China reported an overall case-fatality rate (CFR) of 2.3%, which was higher among people with underlying health conditions, such as 10.5% for people with cardiovascular disease and 7.3% for diabetes [40]. Similarly, another study in China with around 1600 infected people showed that people with diabetes had developed critical COVID-19 infection [40]. In England, Barron et al. claim to cover almost England’s entire population and nearly the whole population diagnosed with type 1 and type 2 diabetes and found both types had greater odds of in-hospital death with COVID-19 than people without a diagnosis of diabetes [41]. In the USA, Muniyappa and Gubbi show that individuals with DM, hypertension, and severe obesity are at a significant risk to be infected and develop severe complications, including death, from COVID-19 [42]. In Italy, Onder et al. studied 355 people who died due to COVID-19, and of that, 35% (126) had diabetes [43]. Likewise, Huang et al. found that diabetes was significantly associated with severity, mortality, and acute respiratory distress syndrome in COVID-19 [44]. In India, Hussain et al. demonstrates that people with diabetes were at a higher risk of mortality and ICU admission [45]. In Pakistan, diabetes was among the considerable comorbidities in people infected with COVID-19 in Karachi and Rawalpindi [46–48].

**Syndemics of diabetes, CKD, and COVID-19 make Pakistan vulnerable**

There are several intertwined reasons for interaction that explain the relationship between diabetes, CKD, and COVID-19 [1,38], which I do not go into details. The literature already cited shows that people with certain pre-existing comorbidities such as CKD and diabetes are at a higher risk of COVID-19 to be severely affected, including to die. Pal and Bhadada call the co-presence of diabetes and COVID-19 “an unholy situation” because both complement each other [49].

Nevertheless, based on the body of literature, one can easily add CKD into this “unholy” relationship since these prior comorbidities together multiply the severe effects. Owing to this “unholy” relationship, around 36.5 million people in Pakistan stay at a higher risk during this COVID-19 to develop a severe infection, including deaths.

**Conclusion**

Syndemics of CKD, diabetes, and COVID-19 have been well studied now, globally. The evidence make a low-income country like Pakistan highly vulnerable in the face of a critical outbreak of COVID-19. Not only CKD and diabetes that have affected over 36 million Pakistan allow the novel coronavirus to significantly affect the country but also Pakistan’s institutionalized forms of socio-cultural, economic, and political disparities add further risks to the already at-risk populations. Like Mexico, as noted earlier, there are high rates of several communicable and non-communicable diseases, historical and structural factors in Pakistan. These syndemics—the biosocial [1] interactions—have roots in the country’s history of national and global governance that have encouraged Pakistan’s dominant class to structure specific webs resulting in many critical states such as increasing poverty, corruption, dependency on foreign aid, malnutrition, critical environmental effects of anthropogenic climate change. Around 25% of Pakistan’s population still lives below the poverty line; a significant number of women and children are malnourished, corruption is chronic and growing; climate changes are causing floods,
earthquakes, heatwaves, and fog in the country; and there is a dearth of sufficient and efficient healthcare services and providers.

**Practical suggestions**

Both the pandemic and syndemics have reminded a country like Pakistan to devise and implement effective and appropriate policies to overcome these vulnerabilities that result in critical “biosocial events”. During the pandemic, the government needs appropriate policies and implementation to protect a substantial number of people with underlying conditions and be ready for dealing with critical consequences of the entwinement of syndemics. While, after the pandemic, the country needs rapid and substantial changes to increase the rate of formal education, enhance the healthcare services and provision, decrease the growing poverty, overcome the gender gap, reduce the difference between rural and urban areas, eliminate malnutrition, minimize climate changes, and deal appropriately with a rapidly growing population. Otherwise, the structural vulnerabilities will keep Pakistan always at the top allow communicable and noncommunicable diseases to affect thousands of people and keep them in the face of syndemics to substantially impact a considerable number of people.

**Disclosure statement**

No potential conflict of interest was reported by the author(s).

**ORCID**

Inayat Ali [http://orcid.org/0000-0003-1659-8492](http://orcid.org/0000-0003-1659-8492)

**References**

[1] Singer M. Deadly companions: COVID-19 and diabetes in Mexico. Med Anthropol. 2020;39(8):660–666.

[2] Team V, Manderson L. How COVID-19 reveals structures of vulnerability. Med Anthropol. 2020;39(8):671–674.

[3] Bulled N, Singer M. In the shadow of HIV & TB: A commentary on the COVID epidemic in South Africa. Glob Public Health. 2020;15(8):1231–1243.

[4] James JJ. From COVID-19 to COVID-20: one virus, two diseases. Disaster Med Public Health Prep. 2020;1–5.

[5] Singer M, Clair S. Syndemics and public health: re-conceptualizing disease in bio-social context. Med Anthropol Q. 2003; 17(4):423–441.

[6] Ali I, Ali S. Why may COVID-19 overwhelm low-income countries like Pakistan? Disaster Med Public Health Prep. 2020;

[7] Emami A, Javanmardi F, Pirbonyeh N, et al. Prevalence of underlying diseases in hospitalized patients with COVID-19: a systematic review and meta-analysis. Arch Acad Emerg Med. 2020;8(1):e35-e.

[8] Guan W-J, Liang W-H, Zhao Y, et al. Comorbidity and its impact on 1590 patients with COVID-19 in China: a nationwide analysis. Eur Respir J. 2020;55(5):2000547.

[9] Richardson S, Hirsch JS, Narasimhan M, et al. Presenting characteristics, comorbidities, and outcomes among 5700 patients hospitalized with COVID-19 in the New York City area. JAMA. 2020;323(20):2052–2059.

[10] Imran U. ‘Ghabrana nahi hai!’: here’s everything Pakistan has done so far to fight the coronavirus pandemic. Islamabad, Pakistan: Dawn. 2020. 16 March.

[11] Ali I. Impacts of rumors and conspiracy theories surrounding COVID-19 on preparedness programs. Disaster Med Public Health Prep. 2020;1–6.

[12] Ali I. COVID-19: are we ready for the second wave. Disaster Med Public Health Prep. 2020;14(5):e16–e18.

[13] Ali I. The COVID-19 pandemic: making sense of rumor and fear. Med Anthropol. 2020;39(5):376–379.

[14] Ali I. Anthropology in emergencies: the roles of anthropologists during the COVID-19 pandemic. Practicing Anthropology. 2020; 42(3):16–22.

[15] Ali I, Sadique S, Ali S. COVID-19 significantly affects maternal health: a rapid-response investigation from Pakistan. Front Glob Womens Health. 2020;1:1-8

[16] Ali I, Davis-Floyd R. The interplay of words and politics during COVID-19: contextualizing the universal pandemic vocabulary. Practicing Anthropol. 2020;42(4):20–24.

[17] Levey AS, Coresh J, Bolton K, et al. K/DOQI clinical practice guidelines for chronic kidney disease: evaluation, classification, and stratification. Am J Kidney Dis. 2002;39(2 SUPPL. 1):51–266

[18] Collaborators GMaCoD. Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013: Lancet. 2015;385(9963):117–171.

[19] Jha V, Garcia-Garcia G, Iseki K, et al. Chronic kidney disease: global dimension and perspectives. The Lancet. 2013;382(9888):260–272.

[20] Stanifer JW, Muiru A, Jafar TH, et al. Chronic kidney disease in low- and middle-income countries. Nephrol Dial Transplant. 2016; 31(6):868–874

[21] Duan J-Y, Duan G-C, Wang C-J, et al. Prevalence and risk factors of chronic kidney disease and diabetic kidney disease in a central Chinese urban population: a cross-sectional survey. BMC Nephrol. 2020;21(1):1–13.

[22] Jessani S, Bux R, Jafar TH. Prevalence, determinants, and management of chronic kidney disease in Karachi, Pakistan - a community based cross-sectional study. BMC Nephrol. 2014; 15(1):90.

[23] Jafar TH, Schmid CH, Levey AS. Serum creatinine as marker of kidney function in South Asians: a study of reduced GFR in adults in Pakistan. JASN. 2005;16(5):1413–1419.

[24] Hasan M, Sutradhar I, Gupta RD, et al. Prevalence of chronic kidney disease in South Asia: a systematic review. BMC Nephrol. 2018; 19(1):291.
Imtiaz S, Salman B, Qureshi R, et al. A review of the epidemiology of chronic kidney disease in Pakistan: a global and regional perspective. Saudi J Kidney Dis Transpl. 2018;29(6):1441–1451.

Imtiaz S, Alam A, Salman B. The role of the poultry industry on kidney and genitourinary health in Pakistan. Pak J Med Sci. 2020;36(1):S67–S74.

Dawn. World Kidney Day. Islamabad, Pakistan: Dawn. 2020. 12 March.

Jha V. Current status of end-stage renal disease care in India and Pakistan. Kidney Int Suppl. 2013;3(2):157–160.

International Diabetes Federation. IDF diabetes atlas; 2020 [cited 2020 Nov 7]. Available from: https://diabetesatlas.org/en/sections/worldwide-toll-of-diabetes.html.

Basit A. The diabetic foot worldwide. In: Boulton AJM, Rayman G, Wukich DK, editors. The foot in diabetes. Oxford, UK: Willey; 2020. p. 47–49.

Ssentongo P, Ssentongo AE, Heilbrunn ES, et al. Association of cardiovascular disease and 10 other pre-existing comorbidities with COVID-19 mortality: a systematic review and meta-analysis. PLOS One. 2020;15(8):e0238215.

Chen T, Wu D, Chen H, et al. Clinical characteristics of 113 deceased patients with coronavirus disease 2019: retrospective study. BMJ. 2020;368:m1091.

Cheng Y, Luo R, Wang K, et al. Kidney disease is associated with in-hospital death of patients with COVID-19. Kidney Int. 2020;97(5):829–838.

Atkins JL, Masoli JAH, Delgado J, et al. Preexisting comorbidities predicting COVID-19 and mortality in the UK Biobank community cohort. J Gerontol A Biol Sci Med Sci. 2020;75(11):2224–2230.

Singh AK, Gillies CL, Singh R, et al. Prevalence of comorbidities and their association with mortality in patients with COVID-19: a systematic review and meta-analysis. Diabetes Obes Metab. 2020;22(10):1915–1924.

Dorjee K, Kim H, Bonomo E, et al. Prevalence and predictors of death and severe disease in patients hospitalized due to COVID-19: a comprehensive systematic review and meta-analysis of 77 studies and 38,000 patients. PLOS One. 2020;15(12):e0243191.

Yin T, Li Y, Ying Y, et al. Prevalence of comorbidity in Chinese patients with COVID-19: systematic review and meta-analysis of risk factors. BMC Infect Dis. 2021;21(1):200.

Wang A, Zhao W, Xu Z, et al. Timely blood glucose management for the outbreak of 2019 novel coronavirus disease (COVID-19) is urgently needed. Diabetes Res Clin Pract. 2020;162:108118.

Nandy K, Salunke A, Pathak SK, et al. Coronavirus disease (COVID-19): a systematic review and meta-analysis to evaluate the impact of various comorbidities on serious events. Diabetes Metab Syndr. 2020;14(5):1017–1025.

Wu Z, McGooan JM. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72,314 cases from the Chinese Center for Disease Control and Prevention. JAMA. 2020;323(13):1239–1242.

Barron E, Bakhai C, Kar P, et al. Associations of type 1 and type 2 diabetes with COVID-19-related mortality in England: a whole-population study. Lancet Diabet Endocrinol. 2020;8(10):813–822.

Muniyappa R, Gubbi S. COVID-19 pandemic, coronaviruses, and diabetes mellitus. Am J Physiol Endocrinol Metab. 2020;318(5):E736–E741.

Onder G, Rezza G, Brusaferro S. Case-fatality rate and characteristics of patients dying in relation to COVID-19 in Italy. JAMA. 2020;323(18):1775–1776.

Huang I, Lim MA, Pranata R. Diabetes mellitus is associated with increased mortality and severity of disease in COVID-19 pneumonia – A systematic review, meta-analysis, and meta-regression. Diabet Metab Syndr. 2020;14(4):395–403.

Hussain S, Baxi H, Chand Jamali M, et al. Burden of diabetes mellitus and its impact on COVID-19 patients: A meta-analysis of real-world evidence. Diabet Metab Syndr. 2020;14(6):1595–1602.

Nasir N, Farooqi J, Mahmood SF, et al. COVID-19-associated pulmonary aspergillosis (CAPA) in patients admitted with severe COVID-19 pneumonia: an observational study from Pakistan. Mycoses. 2020;63(8):766–770.

Asghar MS, Haider KS, Ahmed KN, et al. Clinical profiles, characteristics, and outcomes of the first 100 admitted COVID-19 patients in Pakistan: a single-center retrospective study in a tertiary care hospital of Karachi. Cureus. 2020;12(6):e8712-e.

Zeb S, Shahid R, Umar M, et al. Analysis of COVID-19 mortality in allied hospitals of Rawalpindi Medical University Pakistan. Biomedica. 2020;36:260–264

Pal R, Bhadada SK. COVID-19 and diabetes mellitus: An unholy interaction of two pandemics. Diabet Metab Syndr. 2020;14(4):513–517.