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Assisting individuals with diabetes in the COVID-19 pandemic period: Examining the role of religious factors and faith communities

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Abstract

With the onset of the coronavirus disease 2019 (COVID-19) pandemic, diabetes management has become more challenging than it has ever been. Studies on the management of diabetes during this time are required. Unfortunately, the lack of information on the potential role of religious factors and faith communities in diabetes management during the COVID-19 era prevents us from fully understanding the issue of diabetes management during the COVID-19 pandemic period. People with chronic conditions such as diabetes may benefit from some form of religious support from faith communities and their ability to cope could be fostered by some religious factors. It is unclear how religious factors and faith communities contribute to diabetes management. In this article, the authors examine how people with diabetes can be aided in the COVID-19 pandemic period from the perspective of religious factors and faith communities. Based on the studies identified, it appears that religious factors and faith communities play an important role in managing diabetes among patients during the COVID-19 pandemic.

Key Words: COVID-19; Diabetes; Faith communities; Religious factors

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Core Tip: Diabetes is a common comorbidity among coronavirus disease 2019 (COVID-19) patients. At this time of COVID-19 pandemic, it is necessary to research the management of diabetes. In this article, the authors examine how people with diabetes can be aided in the COVID-19 pandemic from the perspective of religious factors and faith communities. The identified studies suggested that religious factors and faith communities play an important role in diabetes management during the COVID-19 pandemic.

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INTRODUCTION

The prevalence of diabetes is increasing worldwide and is one of the leading causes of morbidity and mortality[1]. Diabetes mellitus is a long-term condition in which blood sugar levels are out of balance due to insufficient insulin[2]. Type 1 diabetes and type 2 diabetes (T2D) are the most common, but the condition can appear in many different forms[3]. Diabetes type 1 occurs when the immune system attacks insulin-producing B-cells in the pancreas; T2D results from insulin resistance and B-cell failure [4]. The worldwide prevalence of diabetes is high, 9.3% of people have diabetes and 463 million people are affected[2,3]. According to prevalence data, diabetes and obesity accounted for 43.4% of all deaths worldwide in 2012, while human immunodeficiency virus/acquired immunodeficiency syndrome and tuberculosis combined accounted for 33.6%[5,6]. The long-term complications include obesity, hypertension, vasculopathy, inflammatory and hypercoagulable states, and cardiovascular disease[4,7].

Diabetes mellitus patients in countries hardest hit by the pandemic have been associated with increased morbidity and mortality from coronavirus disease 2019 (COVID-19)[5,8]. Those with chronic conditions such as high blood pressure, diabetes and heart disease may be at high risk for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection[5,9]. Consequently, diabetics have a higher chance of catching COVID-19 and a higher chance of getting sick or dying from it[10]. SARS-CoV-2 can affect the pancreas and endocrine pancreas in people with diabetes, making glycemic control more difficult[11]. The prevalence of diabetes in COVID-19 patients varies widely, depending on the local area in which they reside, the age of the population in that area, and the severity of their disease[5,11]. The prevalence of diabetes was found to be 10.3% among patients with COVID-19, which is similar to the overall prevalence of diabetes in the general population[11,12]. Conversely, patients with diabetes had a much worse condition and a higher death rate associated with COVID-19[13]. COVID-19 patients admitted to the intensive care unit had a 22% higher risk of death due to diabetes, according to Yang *et al*[14]. A study found that the overall mortality rate is 2.3%. Among diabetics, the mortality rate is 7.3% greater than that of the general population[15,16].

Some consequences of this pandemic include that people with diabetes have a harder time living a normal life in society, are more dependent on medical and nursing care, have fewer opportunities to socialize with friends and family, and have to adjust their lifestyle[4,17]. Unlike other diseases that only require medication, diabetes has a number of complex physiological, psychological, and social consequences that make it difficult to manage[17,18]. Managing diabetes is made easier by medication and lifestyle changes, such as reducing calorie intake or exercising more often[5]. However, psychological and spiritual supports are also crucial in managing diabetes[19,20]. The physical, mental, and spiritual effects of diabetes (especially physical and mental discomfort) are many (especially since diabetes can cause amputations)[17,20].

A growing body of research has been conducted to find new ways to help diabetics, particularly for those who suffer from COVID-19-related complications[2,21]. Around the world, discussions have taken place regarding the role of religion and spirituality in the care of diabetic patients[18,22]. Also, as diabetes is a potentially fatal and long-term condition, patients must take an active role in their own treatment[23]. Considering faith communities' management methods, such as prayer and meditation, are highly recommended[24,25]. Unfortunately, the lack of information on the potential role of religious factors and faith communities in diabetes management during the COVID-19 era prevents us from fully understanding the issue of diabetes management during the COVID-19 pandemic period. This article adds to the body of knowledge in this field. In this review, we examine the role of religious factors and faith communities in assisting diabetics during the COVID-19 era.

LITERATURE SEARCH STRATEGY

For the literature search, the authors utilized a variety of databases and sources including Google Scholar, PubMed, MEDLINE, Proquest, Scopus, JSTOR, *Reference Citation Analysis* (<https://www.referencecitationanalysis.com/>) and APA PsycNet to retrieve peer-reviewed journal articles, student dissertations, and books on diabetes management and the COVID-19 pandemic. Search terms included COVID-19 and diabetes; COVID-19 and religion; diabetes and religion; and diabetes and faith communities. Qualitative and quantitative papers and materials published in English were searched for, appraised, selected and synthesized by the authors.

DISCUSSION

Relationship between diabetes and COVID-19

COVID-19 and diabetes mellitus are correlated in a bidirectional manner, according to research[26]. Diabetes mellitus is a common comorbidity among COVID-19 patients[27]. Diabetes exacerbates disease severity and mortality, increasing the probability of infection with SARS-CoV-2[28]. COVID-19-associated complications and mortality are more common among people with diabetes mellitus[29,30]. Coronaviruses, which are human pathogens, interact with target cells *via* the angiotensin-converting enzyme whose expression may be increased in diabetics' epithelial cells and intestines, kidneys, and blood vessels[10]. COVID-19 infection and subsequent development of severe disease have been associated with individuals with T2D[31,32]. There is evidence that COVID-19 may increase the risk of hospitalization and mortality in individuals with T2D[31,33]. It has been determined that T2D is a sole risk factor for COVID-19 severity[34]. A higher incidence of severe COVID-19 in diabetic patients is attributed to the deregulated renin-angiotensin-aldosterone system, deterioration of the inflammatory response, hypercoagulability, and physiological and structural changes that result from elevated blood sugar[35]. The impaired glucose control may lead to angiotensin-converting enzyme-2 glycosylation, which may act as a portal for the transmission of SARS-CoV-2[36]. In another study, the authors found that uncontrolled diabetes is a significant risk factor for COVID-19 patients, especially when it is associated with substantial blood glucose variability[15]. In a study of 52 intensive care patients in China, diabetes was present in 22% of the 32 non-survivors[37]. An analysis of COVID-19 using intensive care patients compared with non-intensive care patients found that the incidence of diabetes was twofold higher in intensive care patients[34].

Studies concerning Chinese, Italian, and American patients found that a non-critical form of the infection was present in 3% to 25% of cases[38,39]. In a meta-analysis of Chinese studies, the overall prevalence of diabetes was between 8% and 10% among COVID-19 patients[12]. Italian researchers have found that COVID-19 is prevalent in 8.9% of hospitalized patients in Europe[12]. Conversely, diabetes and its complications increase the risk of contracting a more severe strain of COVID-19 and may result in death[2,14]. Diabetic patients have a wide range of risk factors for infection, including hyperglycemia that causes immune dysfunction[40,41].

As a result of severe SARS-CoV-2 infection and its associated inflammation, hyperglycemia can also occur either through a negative indirect effect on insulin target tissues or a direct toxic effect on pancreatic B-cells[42]. As a result of hyperglycemia, the prognosis of COVID-19 can be exacerbated[43,44]. In patients with impaired glucose regulation or diabetes mellitus, COVID-19 is frequently associated with glycemic disorders[45]. Patients with insulin dependence requiring high doses of insulin have been associated with SARS-CoV-2 infection[45]. There is a possibility that diabetic patients are more likely to become infected due to a defect in innate immunity affecting phagocytosis, neutrophil chemotaxis, and cell-mediated immunity[21]. The development of complications related to diabetes such as coagulation dysfunction, inflammatory tissue status, nephropathy, and cardiovascular disease is associated with predisposing factors[2,21]. The mortality rate for COVID-19 patients with diabetes was found to be three times higher than that of patients without diabetes according to a large epidemiological study of 72314 COVID-19 patients conducted in China[43].

The mortality rate for COVID-19 is 0.7% to 10.8%[46,47]; thus, the relationship between diabetes and COVID-19 may be detrimental. Advanced age populations and patients with comorbidities experience a decline in survival and complications[48]. People with chronic diseases, such as type 1 diabetes mellitus, are concerned about this negative trend[49], as metabolic inflammation impairs the immune system, reducing its ability to fight infections. This results in a slowed healing process, resulting in a delayed recovery. According to the literature[50], COVID-19 is more likely to cause death among diabetic patients. Diabetes should be studied further as a prognostic risk factor or marker, as most patients with severe and critical COVID-19 have multiple comorbidities which have also been linked to an increased risk of COVID-19 infection or death[11,51]. The management of patients with diabetes who contract COVID-19 may require modification of the treatment plan to accommodate the possibility of adverse effects[52].

Patients with COVID-19 who suffer from diabetes, which is a chronic condition, must both receive medical and therapeutic care. Religious factors and faith communities must be considered in the development of management strategies. In studies, adherence to religious doctrines in faith communities has been shown to be effective in managing diabetes[23,53]. Several religious doctrines and practices have been proven to improve acceptance and self-care behavior in diabetes and other psychologically threatening diseases[23]. Religious practices and doctrines in faith communities have assisted married people with T2D in managing their blood sugar levels[54].

Role of religious factors in diabetes management during the COVID-19 period

Research has found that religious practices can be useful in managing diabetes[55]. Several religious practices such as praying, meditation, singing, wearing talismans, reading the Koran, reciting Bible verses, or even belonging to a faith-based community can improve the health of persons with chronic diseases and illnesses, according to research[56]. Religious practices are fundamental and critical in diabetes management especially during the COVID-19 period. Individuals' physical and mental health benefit significantly from religious factors such as meditation, and prayers[17,25,57]. Several religious factors, such as religious practices and religious values, may make an impact on patients with serious health conditions, such as diabetes and complications due to COVID-19[58,59]. Religious practices can help with depression, desolation and hopelessness and other psychological challenges associated with diabetes in the pandemic period. Religious practices are the levels of engagement in and compliance to a religion's teachings and organized activities; it involves factors such as religious orientation, commitment, and affiliations[60].

Religious orientation includes beliefs about the existence and nature of God or gods, religious moral prescriptions, and collective and individual mysticism[60]. There are two types of religious orientations that people can have: intrinsic and extrinsic orientations[61]. Intrinsic religious orientation is a personal, non-instrumental motivation for religion that is characterized by strict adherence to religious doctrine, integration of religion into everyday life, and trying to seek deep significance *via* religious activities orientations[61]. Research indicates that people with intrinsic religious orientation experience greater subjective well-being than people who are extrinsically oriented[62].

Religion is a goal or end in and of itself for those with an intrinsic religious orientation, rather than being a means to achieving safety and comfort[61]. Despite the fact that an intrinsic religious orientation is associated with feelings of anxiety and distress, it is also associated with feelings of well-being and happiness[63-66]. In contrast, extrinsically religious people use religion as a means of connecting with others or expressing sympathy[61]. Negative emotions[67] such as anxiety, guilt[68], depression[69], and shame[70] have been associated with individuals' external religious orientation. Findings point to the importance of religious commitment in an individual's overall well-being[71,72]. Religious commitment refers to how involved a person is in their religion[60]. An individual's commitment to and application of religious values, beliefs, and practices in their daily lives can be defined as their religious commitment. The interaction between people's religious awareness and participation is termed "religious commitment." It is a way to find out how deeply a person believes in his or her religion.

Individuals who identify themselves as members of one or more religious groups, such as the Methodists, are referred to as members of a "religious affiliation." Religions like Judaism, Islam, and Christianity are practiced by some people. Health-related behaviors and guidelines adhered to by religious adherents are influenced by their affiliations' religious beliefs, practices and doctrines[73]. Patients can benefit from religious practices in a variety of ways, including comfort, increased knowledge about their disease[74-76], and increased adherence to treatment, all of which can lead to better self-care and the prevention of chronic conditions[77,78].

Those with chronic health conditions such as diabetes mellitus can benefit from religious activities [79], which can help them accept and cope with the reality of living with an incurable disease[80]. People often turn to faith communities for meaning, hope, comfort, and inner peace when confronted with stressful and unstable situations, such as a long-term illness like diabetes. The physical and emotional well-being of those who follow a religious path is also considered to be enhanced[81,82]. An increasing number of studies[83,84] have shown that these three practices can be effective coping mechanisms for both physical and mental health issues, especially in the context of chronic illness[85]. This is known as spiritual-religious coping when religious ideas, attitudes, or practices are used to alleviate emotional stress caused by life events beyond one's control[86]. Having a purpose gives suffering meaning and makes it easier to bear. Some previous studies[87,88] looked at religious activities and T2D patients' management. Health outcomes such as diabetes management, coping skills, wellness, emotional stress, health-related quality of life and glycemic control have been linked to these variables[18,89]. It has been found that religious practices have a positive impact on the quality of life of people with chronic conditions, as well as on their outlook on life[90]. Emotional well-being can be enhanced by a person's religious or spiritual beliefs[17,91]. Diabetes management is viewed as a daily battle that can only be fought with God's help; God is frequently invoked for assistance; and a strong belief in God, as well as prayer and meditation, in addition to support from faith communities, provided comfort.

Studies have shown that people turn to religious practices and beliefs when they are going through a difficult time or are ill[92,93]. By encouraging positive mental treatments, religious practices aid in the management of patients' health[93]. Diabetes acceptance and self-care behavior have been improved by religious activity-based support and a holistic approach to coping with diabetes can be achieved by integrating religious coping strategies with other psychosocial support strategies[92]. In a group of 51 diabetic patients, researchers in India studied how spirituality and religious activities were used as coping mechanisms[94]. It showed that dietary support from spouses is important for both sexes, with women believing religion and spirituality can help them control their blood sugar levels[94]. Conversely, Quinn *et al*[95] believe that religious beliefs can hinder successful coping, even though religious activities have been shown in several studies to be effective in the management of chronic health conditions. Only a few studies have examined the role of religious practices on diabetic self-management[22], despite evidence that they are linked[96]. Table 1 shows some studies related to the role of religious factors in diabetes management. It can be seen from Table 1 that a number of studies found that religious factors performed well in the management of diabetes.

Role of faith communities in the management of diabetes during the COVID-19 period

Faith-based organizations, through adjustment of their doctrinal positions, can encourage people who have chronic health conditions in their organization, to adopt and maintain certain healthy and safe behaviors during the pandemic in order to cope with the challenges that it brings[101]. Churches, synagogues, mosques, assembly halls, and other places of worship are examples of faith-based institutions. They can take the form of congregations, regional networks, or stand-alone organizations. Faith communities can make a significant contribution to the lives of those who belong to them[102]. The shared trust in information offered by faith-based groups has the potential to be quite effective. Faith and spirituality have a crucial impact on people's conceptions of health, disease, and healing, according to healthcare professionals[20]. Faith-based groups can help members learn about diabetes, promote healthy surroundings, and participate in diabetes prevention and control activities.

A recent study has highlighted the critical importance of religious faith communities in promoting members' health and well-being[103], as they can significantly determine health promotion behaviors and the concept of health education and promotion[87]. The religious leaders of faith communities encourage their congregations to adopt healthy habits and take care of their health through advice and guidance, by focusing on health as a whole and by integrating health and wellbeing[87,104]. Research by Newlin *et al*[59] discovered that faith communities can be a tremendous source of support for diabetic patients, especially when it comes to glycemic management. According to Darvyri *et al*[57], patients with type 2 diabetes mellitus who have an extensive and dynamic faith in God are more likely to be well-managed. Similarly, Jafari *et al*[90] found that inner serenity and vigor protect diabetics from unpleasant emotions, resulting in improved management and glucose control. When additional religious disciplines were investigated, it was discovered that participating in religious activities in faith groups reduced stress levels[105], which influenced glycemic control directly[105]. The complications of diabetes may lead to amputation of the patients' body parts, this makes patients physically and mentally disabled[54]. It predisposes them to severe stress, depression and they explore different ways to cope and adapt to life[106]. Koenig *et al*[106] believes that religious teachings among the community members creates a positive attitude towards the world and makes the patients surmount the challenges associated with such chronic diseases. This increases their ability to tolerate and accept the fact that some medical conditions cannot be changed. Table 2 summarizes some of the studies related to the role of faith communities in the management of diabetes. According to Table 2, faith communities contribute significantly to the management of diabetes through programmes within religious groups.

Implications and suggestions for further studies

People with chronic illnesses can cope better when religious factors and faith communities are present as they can provide them with hope, confidence, and support[53,111]. Religious factors and faith communities can promote a positive outlook on diabetes complications[112]. Often, patients and physicians turn to prayer and faith-based approaches to alleviate chronic illness (as is common with diabetes) when conventional medicine fails to provide relief[44,113]. This study has provided insight into how religious factors and faith communities can be beneficial to people with diabetes. It is recommended that further study be conducted into the positive influences of religious factors and faith communities on diabetes management. There may be a need for further research in order to develop and validate an effective faith-based and spiritual intervention model that is applicable to a wide range of religious groups. It is imperative that researchers employ a faith-based paradigm in order to expand diabetes management access across religious denominations and communities. Diabetic patients have religious beliefs, which are crucial to reducing the level of stress and emotional distress related to diabetes treatment in the COVID-19 era. It is important to examine the relationship between religious variables and health-related issues in order to understand the impact of religious factors and faith communities in diabetes management[57]. More research is needed to understand how beliefs, religious considerations, and faith-based therapies interact with diabetes management. As religious factors such as prayer, meditation, and scripture reading are linked to diabetes management, and the present study only analyzed existing studies regardless of flaws in methodology, correlational studies are

Table 1 Results on the role of religious factors in diabetes management

Ref.	Study objective	Method	Result
Watkins <i>et al</i> [97]	This study looked at how spiritual and religious beliefs, social support, and diabetes self-care activities among African Americans with type 2 diabetes are linked, and it was expected there would be a positive link	This was a cross-sectional study	According to the results, there was a significant association between spiritual and religious beliefs and practices and the general diet
Ahmad <i>et al</i> [98]	The purpose of this study was to identify the religious beliefs of Indian migrants in Australia and their impact on diabetes self-management practices	This was a qualitative exploratory study	The results indicated that prayers aided participants in relieving stress and improving their diabetes management. Additionally, the participant believed that receiving blessings/prayer from religious leaders aided in the prevention or cure of diseases such as diabetes
How <i>et al</i> [99]	A central goal of this study was to determine the relationship between religiosity, religions, and type 2 diabetes mellitus glycemic control	This is a cross-sectional study conducted at an urban, university-based, teaching outpatient clinic	The results indicated a higher level of religiosity among Moslems was associated with significantly better glucose control. As compared to patients of other religions, those who attended church recorded better glycemic control
Darvyri <i>et al</i> [57]	An evaluation of the impact of spirituality/religiosity on the management of T2DM was the goal of the study	This was a systematic review	A positive correlation was found between religiosity/spirituality and the improvement of T2DM management in this study
Fatima <i>et al</i> [100]	In this study, the purpose was to evaluate religious coping in the time of the COVID-19 pandemic	It was an online survey	According to the study, it was found that positive religious coping in the Nigerian population was significantly higher than that in the Indian population

T2DM: Type 2 diabetes mellitus; COVID-19: Coronavirus disease 2019.

Table 2 Results on the role of faith communities in diabetes management

Ref.	Study objective	Method	Result
Pengpid <i>et al</i> [107]	The purpose of this study was to determine the efficacy of a community (church)-based lifestyle intervention program in Gauteng, South Africa, to control high normal blood pressure and/or high normal blood glucose in church members	The study is a cluster randomized controlled evaluation of a group-based program	The results indicate that the church-based lifestyle intervention was effective in reducing participants' high normal blood pressure and/or high normal blood glucose
Sukarno and Pamungkas [108]	The purpose of this study was to investigate the meaning of religiousness in relation to diabetes management in T2DM patients by selecting a concept, defining the analysis purpose, identifying a model case, examining attributes, antecedents, and consequences, and defining empirical referents	This research utilized a concept analysis method	The findings identified religiousness-related characteristics such as religious belief, religious practice, religious support, and religious coping in the context of diabetes care management
Heidari <i>et al</i> [109]	Specifically, the purpose of this study was to investigate the relationship between religious practices and self-care among people who have type 2 diabetes	A descriptive cross-sectional survey was conducted on 154 diabetic patients	The results showed significant positive correlations between religious practices and self-care activities in diabetic patients
Dehning <i>et al</i> [110]	This survey was designed to assess how religious adherence affects patients' perceptions of disease and treatment	This was a descriptive survey at an ophthalmology clinic in Missouri	The researchers found that the more adherent a patient was to faith-based activities or exhibited knowledge of fundamental dogmas, the greater their feelings of well-being were

T2DM: Type 2 diabetes mellitus.

recommended to investigate the impact of religious beliefs and doctrinal teachings on diabetes management. Studies need to be conducted to determine a more dynamic and pragmatic approach to diabetes care, by utilizing experimental methodologies. It is hoped that this will help identify which religious elements contribute to better diabetes management in faith communities. Diabetes management can be highly optimized by synergizing the beneficial effects of religious factors and the support of faith communities during a pandemic such as COVID-19. There is a need for further studies to also examine these issues through a systematic review approach in order to provide more insights on how religious factors and faith communities impact the extent to which diabetic patients manage their condition during a pandemic.

If clinicians hope to achieve effective outcomes in the management of diabetes, they must consider factors such as patients' comorbidities, gender, age, and educational level that may affect perceptions of diabetes management on the part of patients and their relatives. As reported by Ciarambino *et al*[114] in a retrospective study, there were differences between male and female patients with hypertension and

diabetes who contracted SARS-CoV-2. There was a longer hospital stay, an increased number of admissions to the intensive care unit, and an increased death rate for male patients compared to female patients, according to their findings. In a prospective observational study of 148 family members of 151 patients with suspected COVID-19, Ciarambino *et al*[115] found that older women and low educational levels influence perceived satisfaction with COVID-19 management. Their research indicates that age, gender, and education level matter in the satisfaction of family members of patients with suspected COVID-19. On the other hand, it was found in another study that men and younger COVID-19 patients felt more apprehensive of probable clinical errors, but that the level of satisfaction with the care they received improved with their educational level as well[116]. Research also indicates that the immune response to COVID-19 differs with gender and age; testosterone, for example, decreases the vaccination response and delays the cytokine response in male individuals[117]. Also, evidence indicates that the immune system's function declines with age, especially in older female patients[117]. Therefore, in order to properly assist diabetic patients with COVID-19, it is necessary to take into account the gender, educational level and age of the patient.

CONCLUSION

One of the most serious threats to global health in human history is the COVID-19 pandemic. While adapting to this new normal, it is imperative that individuals remain aware of the ways in which certain behaviors may increase their risk of infection or exacerbate COVID-19 issues. Chronic disease patients, such as those with diabetes, were severely affected by this pandemic. The identification of appropriate treatment and coping options is crucial, particularly for individuals suffering from chronic conditions such as diabetes. COVID-19 may impair the efficacy of diabetic medications, thus putting diabetics at risk. In this study, the researchers examined the role of religious factors and faith communities in the management of diabetic conditions. The literature suggests that religious factors and faith communities play a crucial role in managing diabetes.

FOOTNOTES

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