Occupational Stressors, Well-being, and Treatment Adherence Among Employees with Type 2 Diabetes in Nigeria: Investigating the Roles of Perceived Control and Self-compassion

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Thesis Summary

In Nigeria and the entire sub-Saharan Africa, the incidence of type 2 diabetes and occupational stress is a significant health concern, impacting on employees' well-being and treatment adherence. Support for people facing these challenges is scarce. In contrast, other long-term illnesses, including cancer, HIV and malaria, continue to receive financial, psychological and medical support. Studies indicated that self-compassion and perceived control play an important role in helping people cope with such challenges. However, there is a lack of evidence on the role of these constructs in Nigerian employees with type 2 diabetes who experience stress at work. This thesis, therefore, investigates the relationship between occupational stressors, overall well-being and treatment adherence among Nigerian employees with type 2 diabetes and the role that perceived control and self-compassion play in this process. Three studies are reported in this thesis, namely a qualitative study, a survey and a brief intervention. Study 1 explored the lived experiences of 15 employees with type 2 diabetes in Nigeria, using semi-structured interviews to understand the relationship between occupational stressors, general well-being and adherence to treatment regimens. Five themes emerged: (1) effects of workplace stressors on well-being; (2) effects of work stressors on diabetic conditions; (3) current type 2 diabetes treatment; (4) support employees receive in managing their type 2 diabetes and coping with occupational stressors; and (5) influence of beliefs and the ability to self-manage type 2 diabetes and cope with work-related stress. The results highlighted the unpleasant experiences brought on by rising workloads and a dearth of support at work to help management of diabetes by employees. Many employees turned to other sources of support, particularly religious practices, family and friends, to enhance their well-being. Study 2 was a cross-sectional survey of 180 employees in Nigeria that examined whether self-compassion and perceived control moderate the relationship between

occupational stressors and treatment adherence and well-being of employees with type 2 diabetes. Higher levels of occupational stress were associated with lower treatment adherence and well-being. The relationship between occupational stress and well-being was significantly moderated and weakened by self-compassion, but not by perceived control. The relationships between occupational stress and treatment adherence were not significantly moderated by either self-compassion or perceived control. In Study 3, the effect of self-compassion manipulation on treatment adherence intentions was examined. Ninety Nigerian employees with type 2 diabetes who were experiencing occupational stress were randomly allocated to either the control condition or the self-compassion manipulation condition. The participants then completed an assessment on their intentions to adhere to their treatment plan. The participants in the self-compassion condition were found to have significantly stronger intentions to adhere to their treatment regimen than did those in the control condition. The impact of condition on treatment adherence intentions was not moderated by level of occupational stress. Taken together, the results from the three studies presented in the thesis enhance understanding of the ways in which self-compassion can be employed to handle type 2 diabetes and act as a coping mechanism for occupational stressors among Nigerian employees with type 2 diabetes. The findings indicated that employees with type 2 diabetes who are self-compassionate are better able to manage their health challenges when under occupational stress. Therefore, encouraging self-compassion among employees with type 2 diabetes may be beneficial in reducing the complications associated with type 2 diabetes and occupational stress.

Declaration

This is my official declaration that I conducted this research and that it hasn't been submitted to this or any other university for consideration for any awards. In the same vein, I attest that the thesis correctly cites every piece of information that was obtained from outside sources.

Dedication

To the glory of God Almighty, who has given me the wisdom, insight, and tenacity to accomplish this goal, I would like to dedicate my thesis. In addition, I would also like to dedicate this to my mom, who taught me what it means to live an ambitious life. Sadly, she is no more to see her dream come true for me.

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CHAPTER ONE

Background to the Study and Literature Review

Introduction

Global View of the Prevalence of Type 2 Diabetes

Diabetes mellitus (DM), or type 2 diabetes, is a pathological condition characterised by insufficient regulation of glucose levels in the blood (Sapra et al., 2023). The International Diabetes Federation (IDF, 2023) characterises it as a severe, chronic condition characterised by insufficient insulin production or impaired utilisation of the insulin produced by the body. Insulin, a hormone secreted by the pancreas, facilitates the entry of glucose from food into the cells of the body, where it is converted into usable energy. The three primary classifications of diabetes are gestational, type 1 and type 2 diabetes. Gestational diabetes is defined by Diabetes UK (2023) as hyperglycaemia that occurs during pregnancy and generally resolves itself following delivery. Type 1 diabetes is a chronic condition characterised by the destruction of insulin-producing cells by the immune system. Type 2 diabetes is the most diagnosed variant, accounting for an estimated 90% of individuals diagnosed with diabetes (Ozougwu et al., 2013). This condition, known as insulin resistance, can lead to elevated blood sugar levels by impeding the body's ability to produce enough of insulin.

Global estimates indicate that diabetes affects approximately 537 million individuals, and this figure is projected to reach 643 million by 2030 and 783 million by 2045 (IDF, 2021). Additionally, within the next decade, it is anticipated that over 6.7 million individuals aged 20 to 79 will succumb to death linked to diabetes. Evidence suggests that more than 90% of cases of diabetes worldwide are type 2 diabetes, that over three-quarters of adults with the disease reside in low- and middle-income nations, and that over 240 million people worldwide lack a proper diagnosis of diabetes (IDF, 2021). On work population, based on estimates from the

International Diabetes Federation (2019), 10.9% of the global working-age population (20-79 years old) have diabetes.

According to the International Diabetes Federation Atlas Report 2022, type 2 diabetes is one of the most rapidly expanding global health emergencies of the twenty-first century, as confirmed by prevalence data. It is a severe and growing threat to public health and significantly burdens the individuals affected, their families and nations' economies. As outlined in the International Diabetes Federation Atlas Report, people with diabetes face a heightened susceptibility to various incapacitating and potentially fatal complications, resulting in escalated healthcare requirements, diminished quality of life and untimely mortality. The financial burden of managing diabetes (related to prescriptions, hospital stays and development of complications) is huge. It was estimated that the worldwide economic impact of diabetes would significantly rise from USD 1.3 trillion in 2015 to USD 2.1 trillion by 2030 (Bommer et al., 2020). This projection underscores the critical importance of implementing efficient prevention and management strategies.

Implementing effective measures for the prevention and management of type 2 diabetes should be of utmost importance in addressing its increasing prevalence and impact. Prevention of diabetes relies on lifestyle adjustments, which encompasses appropriate dietary choices, consistent engagement in physical exercise and effective weight control (American Diabetes Association, 2021). Providing high-quality healthcare services, timely detection and suitable treatment are crucial in mitigating the adverse consequences of diabetes. Efforts aimed at prevention and management of diabetes should prioritise promotion of healthy lifestyles and provision of fair access to healthcare services. This is especially important in the wake of the COVID-19 pandemic. Huang et al. (2020) assert that people diagnosed with diabetes are at elevated risk of experiencing severe outcomes and complications associated with COVID-19. In addition, the global pandemic caused significant disruptions to regular healthcare services,

resulting in challenges in accessing essential drugs and supplies. These disruptions have further compounded the barriers to effective management of diabetes, leading to further adverse health implications for people with this condition.

Surveillance of the incidence of diabetes and comprehension of the factors influencing its occurrence are crucial for developing and implementing efficacious public health interventions and policies. The incidence of type 2 diabetes rises in correlation with advancing age, since older persons exhibit an elevated susceptibility to developing diabetes (Beagley et al., 2020). Some of the factors that contribute to this phenomenon are physiological changes that occur with age, decreases in physical activity and increases in obesity rates. Also, urbanisation and adoption of Westernised lifestyles have been associated with heightened prevalence of diabetes on a global scale. Sedentary behaviour, unhealthy food patterns and decreased physical activity levels are frequently observed in urban environments, contributing to the onset of diabetes (Huerta et al., 2020). The shift from conventional dietary patterns to consumption of processed and calorie-dense foods, along with a decline in physical activity, has resulted in elevated rates of obesity and increased susceptibility to developing type 2 diabetes. All this means that type 2 diabetes is potentially avoidable, and adoption of healthy behaviours should be encouraged to help prevent and manage this condition (IDF, 2021).

Prevalence and Incidence of Diabetes among Nigerian Employees

Mutyambizi et al. (2018) and Afroz et al. (2018) assert that diabetes imposes a substantial financial burden on nations classified as low- and middle-income, necessitating increased funding and more aggressive disease prevention and control measures by those who suffer from diabetes mellitus, their family members and the government. According to the annual report of the International Diabetes Federation (IDF, 2022), the African region is projected to experience a significant increase of 129% in the number of people affected by diabetes by 2045. Notably, Nigeria, Africa's most populous nation, is estimated to have the

highest prevalence rate, with approximately 6.6 million people affected. This surge in type 2 diabetes cases in Nigeria is a serious issue, as it surpasses the combined fatalities caused by COVID-19, tuberculosis, HIV/AIDS, malaria and cancer (Hirscher, 2015; Endocrine and Metabolism Society of Nigeria, 2021). Compounding the issue is the absence of interventions or dedicated diabetes care centres in Nigeria, resulting in numerous diabetic individuals experiencing severe complications, such as foot amputation, blindness, kidney failure, heart attacks and other critical health conditions. Most of the affected population comprises working-class individuals who face the challenges of managing diabetes and coping with workplace stress. Furthermore, healthcare service affordability has become a significant issue, with most people paying for healthcare costs out of their pockets (Balogun, 2021). The long-term economic implications of type 2 diabetes in Nigeria encompass the financial burdens associated with medication and monitoring equipment. The International Diabetes Federation projected that, between 2011 and 2021, the average cost per individual to treat diabetes would increase from $46.92 to $234.60 USD. It is anticipated that this sum will exceed $391 by 2030 and $782 by 2045. Additionally, the IDF projected that Nigeria's total healthcare expenditures associated with diabetes would reach $582,590,000 by 2021, $836,740,000 by 2030 and $1,243,380,000 by 2045.

The Federal Government of Nigeria and donor agencies subsidise medication for chronic conditions, such as HIV, tuberculosis and malaria, but this is not the case for diabetes (Ottersen, 2017). The National Health Insurance Authority (NHIA, 2022), which is supposed to provide subsidised treatment for major illnesses, does not cover essential diabetic medications. Approximately 80% of the patients rely on their own income or the income of an extended family member to pay for their medical expenses (Nwankwo et al., 2010; Ogbera et al., 2014). This makes managing their medical condition challenging. Low- and middle-income countries, like Nigeria, continue to face significant challenges regarding consistent and

affordable treatment and educational resources, which are exacerbated by poverty, illiteracy and lack of awareness about the nature of the disease (Adetuyibi, 1976; Famuyiwa et al., 1985).

Many studies have documented rising incidence of diabetes mellitus among Nigerian employees. According to a nationally representative survey by Ogbera et al. (2013), the condition's prevalence among urban workers was 6.1%. Similarly, Oguoma et al. (2017) reported a prevalence rate of 7.8% among healthcare professionals. The statistics indicate a significant prevalence of diabetes among the working population of Nigeria. Many risk factors have been identified to be associated with the onset of diabetes mellitus within the working population of Nigeria; these include sedentary behaviour, bad food habits, obesity and a family history of the disease (Ogbera et al., 2013; Oguoma et al., 2017). Besides, the working population has been shown to have an elevated risk of diabetes owing to many occupational characteristics, particularly workplace stress, extended working hours and shift work (Ogbera et al., 2013). This is on top of insufficient healthcare facilities, inadequate information of diabetes education and lack of awareness regarding the disease, which together contribute to reduced treatment adherence and control of glucose and therefore suboptimal management of diabetes (Ogbera et al., 2013; Oguoma et al., 2017).

Implications of Living with Type 2 Diabetes for Employees

The presence of diabetes mellitus can substantially affect the working population, particularly in Nigeria, where the healthcare system is inadequate. The presence of chronic hyperglycaemia has been associated with the development of microvascular problems, especially retinopathy, nephropathy and neuropathy. These disorders can harm visual acuity, as well as kidney and peripheral nerve functions. As noted by Ogbera et al. (2013), these difficulties can negatively affect work performance and productivity. It has also been observed that people with diabetes are at a higher risk of experiencing macrovascular consequences, such as cardiovascular disease and stroke. These complications can significantly impact on the well-

being and productivity of employees and result in increased morbidity, absenteeism and disability (Oguoma et al., 2017). Diabetes mellitus equally has a serious economic impact, evident in in the Nigeria healthcare system. It is estimated that the yearly direct healthcare costs associated with diabetes range from $1.071 billion to $1.639 billion, and this enormous financial burden may contribute to additional health concerns among the Nigerian workforce (Mapa-Tassou et al., 2019).

The effects of uncontrolled diabetes on employee's health and work life are profound. For instance, poor diabetes management is associated with higher absenteeism rates, poorer work concentration and higher healthcare costs for employers (Oguoma et al., 2017). To lessen these observed consequences, Nigerian employers should implement workplace interventions, such as health promotion programmes and provision of diabetes management support. As argued by Oguoma et al. (2017), it is imperative to implement health promotion initiatives that prioritise lifestyle adjustments, like promoting physical activity and encouraging healthy eating habits, to reduce complications of work-related stress and type 2 diabetes. Similarly, Ogbera et al. (2013) assert that employers should implement workplace policies that promote diabetes self-management, facilitate access to healthcare and encourage regular health screenings.

To address the upsurge of diabetes mellitus in the Nigerian workforce, policy implications are crucial. Government initiatives should place a higher priority on improving healthcare access, expanding the health infrastructure, and integrating diabetes management and prevention programmes into workplace policy. Occupational health services should provide access to regular physicals, diabetes management training and health risk assessments for workers. Oguoma et al. (2017) argue that collaboration among medical professionals, employers and occupational health teams can enhance early detection, management and prevention of diabetes at work.

Despite the body of existing research on diabetes mellitus in the Nigerian working population, there are other areas that demand more research attention. Longitudinal studies are required to assess how workplace interventions impact on employee well-being and outcomes for diabetes. Besides, since telemedicine and digital health technologies have been shown to ease management of diabetes in the workplace, research into their effectiveness may provide important information for future treatments (Oguoma et al., 2017).

It is crucial to improve health education and raise diabetes awareness among Nigeria's working population. Education programmes geared towards both employees and employers have the potential to improve knowledge of diabetes self-management, risk factors and prevention strategies. Implementing health-promoting behaviours, particularly regular physical activity and healthy dietary decisions, can significantly help people in the workforce prevent and manage diabetes (Ogbera et al., 2013).

Occupational Stressors and Diabetes Mellitus

Stressors related to the workplace can arise when employees' work environment, responsibilities and work conditions cause them to feel undue pressure. Even though the causes of occupational stress can differ from person to person and from organisation to organisation, employees in any kind of organisation, regardless of their size, may experience occupational stress. Excessive workloads, burnout, discrimination, irritability, poor communication, loss of wages and pay reductions are a few examples of these workplace stressors (Bamboo, 2021). Organisations in the twenty-first century face a significant obstacle in the form of occupational stress, which is regarded as one of the most expensive occupational health concerns (Donaldson-Feilder et al., 2011; Akintayo, 2012). People with type 2 diabetes in Nigeria experience stress at work in addition to the financial burden of managing their health condition; a significant proportion of those with the diagnosis are of working age.

Occupational stress refers to the adverse physiological and psychological reactions that arise when the demands of a job are incongruent with the employees' abilities, resources or necessities (Hurrell et al., 2012). Amiri et al. (2018) defines occupational stress as the amalgamation of stressors and job-related circumstances widely acknowledged as unpleasant by most people. International Labour Organisation (1992) identifies occupational stress as a significant threat to the health of workers and organisations. Research has shown that unclear roles, poor leadership, poor decision-making, unpredictable work hours, unpleasant tasks, segregation and high blood pressure are among the common challenges that affect workers in their workplaces (Palmer et al., 2001). Many studies have revealed the negative consequences of workplace stress; it typically results in low job performance, intention to resign, absenteeism and interpersonal conflicts (Ashton, 2017). Employees with diabetes exposed to stress are more likely to be hospitalised for longer periods of time, making them incur the highest medical costs and face a wide range of medical complications, especially kidney disease, erectile dysfunction and tuberculosis (WHO, 2007).

In a similar vein, Kaur (2011) claims that occupational stress harms employees' quality of life and overall mental and physical well-being. It also gives rise to negative emotions, like depression and anxiety, which hinder employees' capacity to perform effectively in their jobs and manage their daily lives. Borrelli et al. (2014) and Rathee (2014) contend that the balance set by health and safety policies in the workplace benefits the organisation, society and employees willing to put forth the effort and energy required to maximise productivity. All workers have the right to a healthy and safe workplace, as well as one that allows them to live a socially and economically productive life (WHO, 1994). However, this is hardly attainable, especially in low- and middle-income countries, like Nigeria, where occupational stress is among the costliest occupational health issues (Akintayo, 2012). According to Alegbeleye et al. (2014), there is significant prevalence of occupational stress within Nigerian companies.

This can be attributed to the non-compliance of Nigerian employers with the standards established by the International Labour Organisation (ILO). The ILO requires employers to implement stress management policies that promote staff morale and productivity.

There are many factors that may account for workplace stress. Some of them are overwhelming workloads and vague or poorly-defined job descriptions and expectations (Buruck et al., 2020). The main symptoms of stress at work include anxiety, restlessness, extreme exhaustion, agitation, anger, numbness, mood fluctuations, boredom and withdrawal (Nixon et al., 2011; Glise et al., 2014; Despréaux et al., 2017; Raffaelli et al., 2018). Stress is a complex phenomenon with many causes; it can be defined as the wear and tear or exhaustion of daily life (Amiri, 2019; Rostam, 2020). Also, high levels of stress, job burnout, inadequate coping mechanisms and dissatisfaction with one's job are frequently the result of workplace demands –particularly workload fluctuations, overload, role ambiguity, and role conflict – which further erodes employee commitment to the organisation and increases turnover (Lee et al., 1996).

In Nigeria, many employers of labour do not protect their workers from stress arising outside and within the workplace (Adetayo et al., 2014). A survey conducted by Yakubu (2020) identified factors related to work stress and work conditions among public service employees in Nigeria. The factors included employment expectations, overwhelming workloads, extended duty hours, financial challenges, conflict between professional and personal spheres, patient and mortality issues, and limited career advancement prospects. In a similar vein, other studies have identified a range of factors that could trigger stress in the workplace: role conflict (Weiss, 2012), heavy workload (Spector, 2008), uncertainty (Pinder, 2008), lack of recognition or engagement, long work hours (Aluko, 2007), inadequate training (Greenberg et al., 2003; Salau et al., 2014), poor relationships with supervisors and colleagues (Oakland et al., 2001; Hicks,

2007), inequality (Fadil et al., 2005; Siegel et al., 2007), poor time management (Cooper et al., 2008) and job insecurity (Monat et al., 2001).

Furthermore, occupational stress is acknowledged by ILO (1992) as a substantial obstacle to the well-being of both employees and employers. An organisation's success is contingent on its workforce and its organisational culture. According to ILO Fact Sheet (2014), a positive enterprise image, decreased absenteeism, increased motivation and enhanced productivity are all outcomes of employees who feel better and are supported in a safe and supportive workplace. Harris (2011) reported the following workplace stressors: constraints on professional development and adaptation (43%), excessive work demands (43%), impracticable job expectations (40%) and extended work hours (39%). It is the collective responsibility of governments, employers of labour, healthcare professionals and society to prevent occupational stressors, foster a healthy work-life balance and develop preventive measures.

Regarding the situation in Nigeria, Uzoeshi (2012) note that Nigerians' level of workplace stress is increasing. This is due to workers' expectations, including their basic needs and medical care, being usually unmet and their work environment not being pleasant. This situation makes most workers experience higher stress levels. Similarly, *The Nigerian Watch* of Wednesday, 11 December 2013, extracted from Global Workplace Provider Regus, claim that 75% of Nigerian workers are exposed to various forms of occupational stress-related illnesses. In a cross-sectional study, Ofoegbu et al. (2006) investigated the level of perceived stress in Nigerian universities among 228 employees. They found a high level of occupational stress among the participants. The study identified sources of work-related stress to include poor remuneration, late payment of wages, lack of regular promotions, urgent need to meet deadlines, concerns about job insecurity, lack of career development, poor worker relationships, physical environment, work overload, poor communication, role conflict and

ambiguity. The study further confirmed that Nigerians exposed to a higher stress levels tended to be absent from work and exhibit aggression, frequent tiredness, low work performance, and lack of job concentration; they might also develop psychological and physical health challenges.

Asagwara (1996) found raised high blood pressure, heart attacks, strokes, ulcers, migraine and other psychosomatic illnesses from frequent exposure to workplace stress among Nigerians. Okoro (2001) argues that exposure to work-related stress relates to high blood pressure and hypertension, rapid heartbeat, heightened anxiety, depression and anger, sleep disorder, lack of concentration, anger and eating disorders. Stress is a barrier to job enhancement in Nigerian public-sector organisations, as employees can neither improve performance when overstressed nor be satisfied when burdened with distress. An organisation can only attain its peak output and efficiency when it manages its employees' stress rates, its workers are not overstressed and it supports workers to achieve their goals (Bewell et al., 2014).

With the rise in type 2 diabetes amongst the working population and considering the long hours employees spend at work, the workplace will considerably influence how they manage their type 2 diabetes. Many people with type 2 diabetes report challenges in maintaining health-promoting behaviours at work (Ogundipe, 2006; Weijaman, 2009). Managing the disease, which involves controlling insulin administration, monitoring blood sugar and scheduling time off to attend appointments, is one of these challenges, along with decisions made at work and relationships with managers and co-workers. Research on the implementation of work adjustment, work-life balance, and health and safety policies globally has shown mixed results in terms of the effectiveness of these policies in treating type 2 diabetes (Burton, 1998; Trief, 1999; Ruston, 2013).

The challenges posed by type 2 diabetes and occupational stress can negatively affect an employee's overall well-being (Agardh et al., 2004). People with type 2 diabetes are more likely to experience occupational stressors, which can result in depression symptoms and other work-related stressors. These stressors include unfavourable physical settings, a lack of emotional and social support, role overload, role conflict, role boundary and role insufficiency (Perry-Jenkins et al., 2007; Wang et al., 2010; Sorensen et al., 2013; Shayeghian et al., 2015; Hao et al., 2015; Kim et al., 2015; Norberg et al., 2017). The relationships between treatment compliance, well-being and occupational stress in people with type 2 diabetes in Nigeria are still poorly understood; most studies in Nigeria have focused on occupational stress and psychological well-being among employees without diabetes (Adegoke, 2014; Saka et al., 2018). The risk factors for stress and treatment non-adherence in Nigerian employees with diabetes are poorly understood, despite the increasing prevalence of the disease. Researchers who have studied this diabetic population in Nigeria have also found that the population has higher rates of morbidity and mortality, poor self-management and low knowledge of diabetes (Stephani et al., 2018; Osuji et al., 2019).

Occupational Stressors and Diabetes Mellitus in Nigeria's Work Population

According to Ekpenyong and Inyang (2014), 39% of Nigerian workers suffer from stress-related disorders at work. Ofoegbu and Nwadiani (2016) and Douglas and Nkporbu (2017) assert that the work environment in Nigeria is excessively stressful. Azodo and Ezeja (2013), in a survey, found that 10% of the participants in Nigeria had extreme work-related stress.

The presence of job strain has been suggested as a potential factor in developing chronic stress, dysregulation of stress hormones and consequent metabolic abnormalities, which in turn may elevate the risk of acquiring diabetes (Adeyemi et al., 2023). Given the aforementioned obstacles encountered by Nigerian employees, it is imperative to support health promotion and

education programmes that seek to augment comprehension and awareness regarding the association between occupational stressors and diabetes management. Educating people about stress management strategies, adopting healthy coping mechanisms and emphasising the importance of maintaining a healthy lifestyle –such as adjusting work schedules to accommodate irregular sleep patterns –can enable people to effectively manage stress and reduce their risk of developing diabetes (Oluwafemi et al., 2021). People who work in shifts might experience irregular sleep schedules, alterations in mealtimes and increased exposure to artificial light. These elements could cause issues with glucose regulation and insulin sensitivity (Ogunlana et al., 2022).

Furthermore, Ogunlana et al. (2022) state that initiatives for managing and preventing diabetes can be beneficially integrated into occupational health programmes. It is essential that employers prioritise implementing policies and procedures that promote the well-being of their employees. In order to effectively manage diabetes and deal with work-related stress, it is crucial to create a work environment that supports employees, prioritises their well-being and addresses the various stressors associated with their place of work and chronic health difficulties. Employers should be able to establish and promote policies that will improve work-life balance, provide resources for managing diabetes and stress and foster a positive organisational culture and productivity. Governments and supportive work environments can mitigate the negative impacts of occupational stressors and encourage better health outcomes, including a lower risk of diabetes (Ekpenyong et al., 2022). Health and safety organisations, employers and employees must all work together to combat the detrimental effects of occupational stressors.

Oyeyemi et al. (2021) argue that diabetes risk factors and occupational stressors can be addressed through interventions that positively impact on the health and well-being of employees. Putting into practice and incorporating diabetes-prevention programmes may be

beneficial in addressing occupational stress and reducing the complexity of managing diabetes. Among these are programmes that encourage physical activity, teach lifestyle modification and offer guidance on healthy eating, and intermittent periods of movement during the workday to offset the predominantly inactive nature of specific occupations, reduce the susceptibility to diabetes and teach skills for managing stress and chronic health issues both on and off the job (Oyeyemi et al., 2021). Glycaemic control may be improved by putting into place strategies that mitigate occupational stress and provide support for diabetes self-management within the workplace (Adeyemi et al., 2023).

Exploring the Well-being of Nigerian Employees with Type 2 Diabetes

Well-being can be conceptualised as the amalgamation of positive affect and optimal functioning. It encompasses the subjective encounter with favourable emotions, such as contentment and happiness, alongside cultivation of one's capabilities, attainment of personal agency, presence of a sense of meaning, and cultivation of positive interpersonal connections (Huppert, 2009). Prioritising the well-being of employees is beneficial to both the organisation and the employees (Employee and Well-Being Fact Sheet, 2023). This is likely to promote productive work environments and employees' overall health. It follows that having type 2 diabetes and experiencing stress at work will be negative to an employee's overall well-being.

There is a strong correlation between type 2 diabetes and a higher risk of heart disease, stroke, high blood pressure, foot ulcers, lower extremity amputation, blood vessel narrowing and extended hospital stays, ranging from 15 to 122 days due to complications related to diabetes (Oguejiofor, 2014). These variables exert a significant influence on the holistic welfare of persons who have type 2 diabetes. Well-performing health systems which promote universal health coverage, improve global health security and attain health-related sustainable development goals (SDGs) are widely acknowledged to buffer the well-being of patients with diabetes. However, many low- and middle-income countries, like Nigeria, face difficulties in

strengthening their health systems to improve the overall well-being of their populations and foster economic and social development (Rouleau et al., 2023).

For their overall health, people with type 2 diabetes frequently need to follow medical recommendations, submit to routine blood tests, engage in regular exercise and avoid sedentary behaviour. As indicated by research conducted in Nigeria, type 2 diabetes patients tend to have comorbid conditions, like tuberculosis resurgence, end-stage kidney disease, erectile dysfunction and stroke (Shaeer, 2003; Arogundade, 2013; Ogbera et al., 2014). These conditions seriously affect the health of employees both at work and at home. Significant amputation cases have resulted in extended hospital stays and high medical costs because of the patients' comorbid conditions and complications (Ogbera, 2006; Odatuwa-Omagbemi et al., 2012).

The societal burden associated with various chronic conditions has been examined in a systematic review by Kemp et al. (2022). The review brought attention to the potential for improving several aspects of well-being. It looked at relationships, thoughtfulness, compassion, calmness, quality of life, coping mechanisms, positive mood and self-concept. It showed that interventions focused on these factors can improve the overall well-being of chronically ill people. By addressing and improving these well-being-related variables, individuals with chronic conditions can experience an enhanced quality of life, better coping mechanisms, positive self-perception, improved social connections and a more positive emotional state. These improvements can make a significant contribution to the overall well-being of those living with chronic conditions and alleviate the burden on healthcare systems.

It is crucial to consider how the workplace environment affects the well-being of employees with diabetes. Smith et al. (2022) assessed the psychological well-being of people with diabetes employed in a sizable corporate environment. Persons with diabetes were found to exhibit diminished levels of general well-being compared to their non-diabetic counterparts.

More specifically, they reported elevated levels of stress, anxiety and symptoms associated with depression. The implication is that the persistent nature of diabetes and the pressures associated with its care could contribute to developing unfavourable psychological effects.

An individual's well-being may be positively impacted by the presence of a supportive work environment, which is characterised by flexible scheduling, acceptable accommodations and accessibility to resources for diabetes self-management. Those with diabetes who work may experience occupational stress, discrimination and lack of social support, which may lead to increased psychological distress. For example, a study by Johnson et al. (2023) examined the impact of conditions at work on the psychological well-being of employees with diabetes. The study showed that the employees who felt that their superiors and fellow employees supported them showed improved psychological well-being. The employees who participated in workplace wellness programmes and diabetes education programmes reported less psychological discomfort. These results stressed the importance of organisational support in fostering psychological well-being among employees with diabetes.

Various psychological therapies have been found to improve the psychological well-being of persons with diabetes, including cognitive behavioural therapy (CBT). The main goals of CBT are enhancement of coping mechanisms, promotion of healthy self-care behaviours, and management of stress associated with diabetes. In a meta-analysis by Lee and Wong (2023), the efficacy of CBT in promoting psychological well-being among diabetic employees was investigated. The analysis comprised randomised controlled trials conducted within the previous five-year period. The study's findings indicated that CBT interventions significantly impacted the psychological well-being of the diabetic employees. They effectively reduced levels of stress, anxiety and depressive symptoms among the participants.

The reviewed literature suggests that having diabetes affects an employee's psychological well-being. Employees with diabetes frequently experience higher levels of

stress, anxiety, depressive symptoms and many others, when compared to their non-diabetic colleagues. However, some workplace factors, such as organisational support, resource accessibility, and initiatives, have been found to improve employee's psychological well-being. Research has also indicated that interventions involving CBT are effective in enhancing the psychological well-being of employees with diabetes. It, therefore, follows that organisations should contemplate the adoption of supportive workplace policies. Granting access to resources for diabetes self-management and adopting treatments to reduce stress and foster coping techniques are also recommended.

Given the high prevalence of type 2 diabetes, the high cost of necessary diets and medications, the difficulty in accessing healthcare facilities, and the complications (heart disease, nerve damage, eye problems, kidney disease, slow-healing sores and foot amputation), there is an urgent need to develop interventions to support employees with type 2 diabetes in Nigeria. However, there is an absence of standard interventions from international organisations, the government and employers to support the management of type 2 diabetes and manage work-related stress, in contrast to other chronic health conditions, all of which have interventions. Importantly, there is a paucity of literature that could give Nigerians the information they need to manage their type 2 diabetes and cope with work-related stress. Determining the effectiveness of psychological options is critical because they may offer coping mechanisms to enlighten, inform and educate on ways to support, control and manage medical conditions, such as type 2 diabetes, as well as occupational stressors. Self-regulatory behaviour, treatment adherence and overall well-being have been found to be facilitated by cognitive abilities, like self-efficacy, perceived control, and self-compassion (Hofmann et al., 2012; Moore et al., 2016). As a result, they may be crucial abilities to promote among Nigeria's diabetic population.

Self-compassion, for instance, entails treating oneself with kindness, admitting one's suffering and realising that suffering is a normal part of being human (Neff, 2011). Karami et al. (2018) and Charzyńska et al. (2020) found that an increased level of self-compassion was linked to better glucose control, higher life satisfaction, more effective self-management practices and an optimal HbA1c. According to Jalayer et al. (2022), building resilience through self-compassion makes it possible for people to deal with the difficulties posed by type 2 diabetes and stress at work with more vigour and strength. Similarly, feeling in control can improve strategies for coping, especially when adjusting to the uncertainties and difficulties associated with type 2 diabetes. Boosting confidence and autonomy in individuals with diabetes may lessen diabetes distress and work-related stress (Adu et al., 2019; Lau et al., 2021). It may further assist those who are experiencing medical concerns in feeling less hopeless and in adopting a healthier attitude towards their condition with the goal of modifying their behaviour and adhering to all treatment recommendations or manage stress at work.

Treatment Adherence by Nigerian Employees with Type 2 Diabetes

Adherence to medication and other treatment protocols are a unique challenge in effectively managing serious medical conditions, such as diabetes, especially among individuals who are unaware of the consequences of not adhering to treatment recommendations. According to World Health Organisation (2003), adherence is "the degree to which an individual's conduct, including medication usage, diet adherence, and lifestyle modification implementation, aligns with the prescribed recommendations of a healthcare provider" (p. 3). Treatment adherence in diabetes can be influenced by various factors, particularly lack of information about the complex regimen, coexisting disease, perception of benefits, side effects, long-term medication costs and well-being (Jo-anne et al., 2015). Structural barriers, including lack of transportation and pharmacy stock-outs, along with factors

like cost and stigma, are the most common and significant factors that adversely affect adherence in developing countries, like Nigeria (Mills et al., 2006).

The applicability of adherence strategies used in high-income countries is constrained in low-income nations, like Nigeria, by structural barriers, such as poverty, inadequate infrastructure, lack of formal social welfare services and lack of trained staff (Ikwuagwu et al., 1994). Adeponle et al. (2009) argue that clinicians must look for non-resource-intensive improvement strategies for treatment adherence that can be quickly incorporated into current treatment structures in low-income countries. Research has shown that diabetic patients who disregard treatment have worse clinical outcomes than those who adhere (Pladevall et al., 2004; Walker et al., 2006). World Health Organisation (2003) views adherence as a complex phenomenon influenced by the interplay of five components, commonly called "dimensions", which encompass the following factors: socioeconomic status, patient-related, therapy-related, medical condition-related and healthcare system-related. The causes of decreased adherence must be understood to improve medication adherence. Terline et al. (2019) reported a very high percentage of poor adherence to treatment recommendations in Nigeria (92.5%), resulting in poorer health outcomes. Similarly, it was found that 51% of Nigerian patients with chronic conditions believed their medications were unaffordable, and 57% viewed their age as a challenge to treatment adherence and noted that they lacked adequate knowledge about their medication regimen to understand it properly (Awodel et al., 2015).

Some studies have reported the prevalence of, and factors contributing to, non-adherence to diabetes treatments. For example, a cross-sectional study conducted by Raimi (2017) across both secondary and tertiary healthcare facilities in Lagos, Nigeria, indicated that, out of the 100 patients sampled, only 32% followed their treatment recommendations, 39% of non-adherence was due to lack of funds to purchase medication, 19% of non-adherence was due to forgetfulness, while 16% of the patients recovered from diabetes and 15% were unable

to find prescribed medications in the pharmacy. Other reasons for non-adherence observed were concomitant illnesses (9%), medication side effects (1%) and prescription misinterpretation (1%). Research has indicated that patients with low health literacy may have difficulty understanding their treatment plan and may be unaware of the importance of following and adhering to healthy lifestyle advice. As a result, they are more likely to experience adverse health outcomes (Onotai et al., 2008; Oladunjoye et al., 2013; Adekoya-Cole et al., 2015).

In Nigeria, research on the factors that contribute to adherence to diabetes treatment is scarce. However, several studies have shown that the working-class population with diabetes faces challenges related to poor self-care and workplace stress, which can lead to problems with adherence. The research in this thesis delves into the experiences of employees with type 2 diabetes in Nigeria, where treatment adherence has not been extensively studied in previous studies. Poor adherence to diabetes medication can cause diabetes-related complications, such as retinopathy, neuropathy and nephropathy, as well as a lower quality of life and higher healthcare costs (Idongesit et al., 2015). Poor adherence may be linked to poor access to healthcare and lack of global diagnosis and knowledge and limited medication (Wood, 2012). Many studies have evaluated the patterns of blood glucose self-monitoring around the world. In the United States, according to Karter (2000), 67% of individuals with type 2 diabetes did not adhere to the recommended frequency of self-monitoring, which is once daily for those with pharmacologically-controlled type 2 diabetes. A study conducted in India yielded comparable findings, with 23% of the participants reporting engaging in keeping track of glucose at home (Shobhana, 1999). In developing nations, like Nigeria, routine monitoring of glycaemic control is unquantifiable and is attributed to a combination of factors, including cost and a need for testing technology.

Other studies conducted in Africa have found that diabetic patients do not adhere to dietary recommendations for consuming fruits, vegetables and macronutrients (Morris et al., 1997; American Diabetes Association, 2002). An analysis was conducted on the issues related to adherence to treatment among patients with type 2 diabetes who visited the Federal Medical Centre's outpatient clinic in Owerri, Imo State, Nigeria. While 33% neglected taking their medications, 43% said they understood the importance of maintaining proper glycaemic control. Additionally, 37% of the respondents agreed that stopping medication when feeling well is a good idea, and 40% agreed that fear of hypoglycaemia was a factor in compliance (Nwaokoro et al., 2014).

Thus, additional work is needed to establish a model that could help explain and support people in learning, adapting to and implementing behavioural changes to support their treatment adherence in Nigeria. The self-efficacy model is prioritised because it highlights the importance of the individual and how a person views their own abilities as crucial determinants of successful outcomes (Gallagher, 2012).

Self-efficacy Model in Treatment Adherence

Self-efficacy is a conviction-based construct that an individual can effectively perform the actions required to achieve the intended results (Bandura, 1977). Within the realm of health, self-efficacy pertains to a person's level of belief in their capacity to engage in behaviours that promote well-being, such as sticking to prescription regimens or implementing essential lifestyle alterations. Self-efficacy is a crucial factor in comprehending and promoting treatment adherence.

Self-efficacy is believed to impact on the degree to which employees with health challenges adhere to treatment recommendations. In the view of Lorig et al. (2021), individuals with greater self-efficacy are more inclined to adhere to their prescribed treatment regimens owing to their confidence in their abilities to manage their health issues effectively. This

implies that therapies aimed at enhancing self-efficacy could enhance adherence rates. Intervention solutions grounded in the self-efficacy paradigm frequently encompass several behavioural change techniques, particularly goal formulation, problem-solving and mastery of experiences. These techniques aim to enhance patients' self-belief in their capacity to handle their health situations effectively. For example, Ogedegbe et al. (2022) reported an intervention to boost self-efficacy among African Americans diagnosed with hypertension. The intervention resulted in a significant increase in medication adherence.

The significance of technological tools in various domains has been widely acknowledged. These tools enhance productivity, efficiency and effectiveness in numerous fields. Technological tools encompass a wide range of devices and software. They can also function as a valuable supplement to self-efficacy. In a study by Wang et al. (2023), a mobile health application was employed to enhance self-efficacy among people diagnosed with type 2 diabetes. The application included personalised feedback and goal-setting functionalities. The application yielded significant enhancements in self-efficacy and treatment adherence. This points to the promising role of technology in augmenting patients' ability to manage their medical problems effectively.

The self-efficacy paradigm provides a valuable foundation for comprehending and enhancing treatment adherence. Bolstering patients' self-belief in their capacity to handle their healthcare effectively may raise adherence to treatment protocols and, as a result, improve overall health outcomes. Dehghan et al. (2017) conducted a cross-sectional study with 251 patients who had type 2 diabetes with the aim of assessing the relationship between general and diabetes management self-efficacy and glycaemic control. To ascertain factors that led to successful diabetes self-management, Krichbaum, Aarestad, and Buethe (2003) carried out a comprehensive review of the literature from 1985 to 2001. The review indicated that individuals with diabetes who were taught about the disease process, acquired the skills needed

to modify their behaviour and lifestyle, and were encouraged to express their emotions about the condition had better outcomes for their diabetes than those who did not receive diabetes self-management training. Therefore, practical skills necessary to support self-management must be included in diabetic education (Sule, 2013).

Perceived Control and Adoption of Positive Health Behaviours

People who believe that they have "control" over their lives are more likely to engage in health-promoting behaviours and less likely to engage in health-compromising ones (Peterson & Stunkard, 1989; Norman et al., 1998). Perception of control has been referred to by different names, including perceived control, locus of control, mastery, personal control and self-efficacy (Iversen, 2005). Adler et al. (1994) assert that different conceptions of control are required to shed light on the mechanisms through which perceived control affects health and health-related behaviour. Self-efficacy, in this instance, is seen as a key factor in determining behaviour because it affects the choice to act (intention), the amount of effort put in and perseverance in the face of difficulties (Bandura, 1995; 1997). Therefore, people with high levels of self-efficacy are predicted to be more likely to engage in health-promoting behaviours, such as regular exercise, following a healthy diet and maintaining glycaemic control, in order to manage type 2 diabetes. General self-efficacy, for example as measured by the General Self-efficacy Scale [GSE] (Schwarzer & Jerusalem, 1995), reflects a range of psychological constructs, like resilience, adaptive coping and perceived control. As a result, strong general self-efficacy should help people manage type 2 diabetes and cope with work-related stress.

Lachman et al. (2004) and White et al. (2011) argue that people who believe that their health is more under their control are also more likely to start and continue healthy habits, like regular exercise and preventive medical visits. Kondo et al. (2021) aver that control beliefs, such as self-efficacy, perceived health competence and perceived control, can influence the degree to which individuals engage in preventive health behaviours. There is a significant

correlation between higher levels of preventive health behaviours and higher perceived control. This means that factors like excessive workload, long hours, low pay, and the stigma associated with having type 2 diabetes in the workplace in Nigeria may cause people who are employed to engage in fewer preventive health behaviours, due to lower levels of perceived control.

Pertaining to self-efficacy, perceived control, a concept introduced by Rotter (1966), differentiates beliefs regarding the origins of outcomes governed by internal factors (an individual's actions and attributes) from those governed by external factors (dominant others, fortuitous circumstances, chance, and so forth), as in the theory of locus of control. According to Rotter (1966), the concept encompasses the sense or belief that one has control over one's healthcare. The control is influenced by five internal or external factors. These factors are (i) self-assurance in coordinating professional and informal care, (ii) self-assurance in managing health at home, (iii) the perception of support from individuals in one's social network, (iv) the perception of support from healthcare professionals and organisations, and (v) the perception of support from the healthcare infrastructure. Consequently, an individual's perception of their capacity to influence internal states, behaviours and the external environment constitutes perceived control (Lancourt, 1966; Langer, 1977; Wallston et al., 1987). Studies (Janis & Wolfer, 1975; Langer, 1977; 1983) confirmed that perceived control facilitates the overall health and mental well-being of individuals.

Described by Baumeister (2002) as the ability of individuals to recognize and adjust desires and emotions, perceived control manifests through will, self-regulation and the ability to postpone pleasure or reward. People who exhibit higher levels of physical activity and cognitive fitness tend to experience a heightened sense of agency in response to environmental changes and tend to report improved health outcomes (Mendes de Leon et al., 1996; Seeman et al., 1999; Lachman, 2006).

Also, some people may perceive varying control over their ability to complete treatment requirements. In a study focusing on individuals with diabetes residing in predominantly low-income, minority and urban regions, McAndrew et al. (2014) found that lower perceived diabetes control was linked to numerous adverse effects of diabetes. These effects included a more significant impact of diabetes, increased depressive symptoms, non-adherence to diabetic diet, elevated glucose levels and reduced physical exercise.

In addition, several studies have linked higher levels of perceived control and improved psychological adaptation in people to long-term conditions, like diabetes, cancer and arthritis. Hu et al. (2019) studied 200 people diagnosed with type 2 diabetes and found a significant relationship between lower levels of distress and higher levels of perceived control over managing the disease, as well as higher levels of confidence in managing diabetes. A study by Carver et al. (2020) found that, compared to those who felt less in control of their recovery, breast cancer survivors who felt more in control of their process had better mental health and were less likely to experience depression a year after finishing treatment.

Kondo et al. (2021) conducted a cross-sectional correlational study in Tokyo, utilising a sample size of 557 students, to examine correlations between the perceived control, preventive health behaviours and mental health of undergraduate nursing students during the COVID-19 pandemic. A significant relationship was identified between increased levels of perceived control and greater adoption of preventive health behaviours. Greater preventive health behaviours were also shown to be associated with negative mental health effects, and higher levels of perceived health competence were associated with improved mental health outcomes. Calfee et al. (2006) investigated how patients' opinions of their ability to control their asthma affected their overall management of the condition. The researchers found that patients who felt more in control of their asthma were more likely to participate in proactive management behaviours, such as adhering to medication regimes and avoiding recognised

triggers. In contrast, those who felt less in control were more likely to feel anxiety and poor asthma outcomes. A positive correlation was observed between increased perceived control and enhanced physical and mental well-being, improved quality of life, reduced depressive symptoms and decreased number of days requiring activity restriction due to asthma. Additionally, increased perceived control has been found to be associated with decreased likelihood of emergency department visits and hospital admissions for asthma (Calfee et al., 2006).

Previous studies using cross-sectional designs have provided evidence of a correlation between increased perceived control and active involvement in beneficial health practices, such as adhering to medication regimens, engaging in physical exercise and adopting healthy dietary habits, among individuals diagnosed with medical conditions, especially hypertension, chronic obstructive pulmonary disease (COPD) and human immunodeficiency virus (HIV) (Aikens et al., 2014; Gonzalez et al., 2018; Molloy et al., 2020). Cohort studies provided additional evidence that perceived control is a predictive factor for self-care engagement over time. In a three-year longitudinal study, Krishna et al. (2020) observed a cohort of 500 persons diagnosed with type 2 diabetes. They found that the initial level of perceived control exhibited by the participants at the beginning of the trial was positively associated with their subsequent engagement in diabetes self-care activities and adherence to medication regimens during follow-up evaluations. These findings indicate that perceived control is a significant cognitive element affecting chronic disease self-management over time.

Self-management programmes often aim to promote control by instructing individuals in coping mechanisms and empowering them as engaged participants in their own healthcare (Lorig et al., 1999). Preliminary evidence suggests that these interventions can enhance perceived control and outcomes (Kuijpers et al., 2013; Townsend et al., 2016). Nevertheless, further rigorous randomised studies are required to establish the effectiveness of control-

focused therapies in the context of chronic illnesses. In sum, the role of perceived control is deemed significant in the context of psychological adaptability and health behaviours among those coping with chronic illnesses. A positive relationship exists between higher levels of perceived control and improved mental well-being, as well as increased involvement in self-care practices essential for effective disease management. Interventions to enhance patients' perception of control demonstrate potential, although additional assessment is necessary. Future studies should further investigate the mechanisms of perceived control and evaluate novel strategies for improving this adaptive cognitive evaluation in various groups with chronic health conditions.

Type 2 Diabetes and Perceived Control in Nigerian Employees

Nugent et al. (2015) examined the relationship between self-management behaviours and perceived health control among 13 individuals undergoing insulin therapy for type 2 diabetes mellitus in a qualitative study. The participants indicated possessing instrumental and terminal health values, denoting desired final states and methods to achieve those states, respectively, prior to receiving a diagnosis. Nevertheless, subsequent to being diagnosed, these values assumed paramount importance in order to fulfil revised lifestyle demands and maintain their standard of living. With respect to the management of type 2 diabetes mellitus, descriptions of "conflicts" in locus of control beliefs had effect on health value and self-efficacy. The self-management of diabetes was frequently impacted by blood glucose monitoring, comorbidities, medication management, and the aetiology of type 2 diabetes mellitus, among other concerns.

Despite the efforts of healthcare providers and family members to manage and curtail complications from type 2 diabetes mellitus, people with diabetes still encounter challenges in adhering to their prescribed medications and engaging in regular exercise. These challenges arise from financial limitations that restrict access to vital medications, inadequate healthcare

facilities, lack of knowledge about diabetes, suboptimal self-management practices, and elevated susceptibility to morbidity and mortality (Stephani et al., 2018; Osuji et al., 2019). Since perceived control has been established to promote positive behaviour, the importance of promoting it to the enhancement of medication adherence, regular exercise and compliance to dietary requirements should also be advocated and practised by Nigerians living with type 2 diabetes.

The barriers to self-care for individuals with diabetes in sub-Saharan Africa, as highlighted by Mogre et al. (2019), remain poorly understood. The prevailing situation in managing diabetes in Nigeria indicates that the responsibility for managing chronic health conditions predominantly rests upon family members and friends rather than the individuals themselves. This delegation of responsibility has impeded the progress of people grappling with various health challenges (Aregbeshola, 2019). As perceived control promotes positive health outcomes for people with type 2 diabetes and other chronic ailments, it is imperative to advocate its integration into treatment plans for managing occupational stress and people with chronic health issues, such as diabetes. When people feel in control of their lives, they have better immune and cardiovascular responses, stronger bodies, longer lifespans, higher levels of life satisfaction and fewer symptoms of anxiety and depression (Pagnini et al., 2016).

The concept of perceived control in managing type 2 diabetes and the handling of occupational stress and complex health challenges is compatible with the self-efficacy model. This model proposes that behaviour is determined by expectations to engage in regular exercise, dietary compliance, accurate and consistent medication adherence and the incentive to experience positive physical and psychological well-being (Bandura, 1997). Perceived control mitigates the negative effects of daily stressors and encourages positive health-related behaviours (Khunti et al., 2019). For those with chronic health conditions, psychological adaptation and quality of life are found to be significantly impacted by their perceived control

over their illness and treatment (Taylor, 2006). People who possess greater degrees of life control exhibit better coping mechanisms and attain more favourable health outcomes than those who possess lesser degrees of life control (Skinner, 1996).

Thus, both physical health and mental health are enhanced by the perception of control. Scharloo et al. (1998), for instance, revealed that individuals with a variety of chronic health conditions –including rheumatoid arthritis, chronic obstructive pulmonary disease, diabetes, and psoriasis –experienced diminished well-being in correlation with a diminished perception of control. Perceived control has been shown to impact outcomes in employees with diabetes who are known to encounter multiple stressors (Crawford et al., 2023). Employees with diabetes report various sources of stressors, such as work deadlines, limited time attending to health needs, family disagreements, and lack of social and emotional support in the workplace (Morris et al., 2011). This may exacerbate diabetes management. Perceived control in health is, therefore, an all-encompassing concept that includes a person's beliefs about their capacity to affect their health outcomes by taking positive steps, like adopting healthy behaviours and seeking medical attention (De las Cuevas, 2023).

Self-Compassion and the Adoption of Positive Health Behaviours

Self-compassion entails providing oneself with support and understanding when facing hardship or anguish, whether from one's errors, shortcomings, or external obstacles. Practising self-compassion involves accepting and understanding oneself when one is confronted with one’s failings rather than harshly criticising and denouncing oneself for a variety of deficiencies or inadequacies (Neff, 2018). People who possess the ability to practise self-compassion appropriately have greater psychological health and overall well-being (Allen et al., 2012; Philips et al., 2013; Mtiaz et al., 2016). Homan (2016) established a correlation between self-compassion and psychological well-being, while Ferrari (2017) established association between self-compassion and self-care behaviours, such as engaging in physical activity and

preserving a healthy diet. Another positive side of self-compassion has been highlighted by Rahmani et al. (2022). They claim that people with higher levels of self-compassion are better able to set healthier goals, put forth every effort to achieve those goals (such as following through on medical treatment and adhering to doctor's directives) and evaluate the best ways to get there.

Numerous studies on self-compassion (e.g. Neff et al., 2019) have stressed its benefits for the general well-being of those who practise it. These include better relationships, better physical health, lower levels of anxiety and depression, and higher levels of motivation, happiness and life satisfaction (Breines et al., 2012; Çağlayan et al., 2016; Homan et al., 2017; Hughes et al., 2021). Experiencing self-compassion involves accepting and understanding oneself when one fails, feels pain, or believes one is undeserving of care, rather than criticising or choosing to ignore suffering (Neff, 2008). Self-compassion has been associated with a variety of significant health-related outcomes, including decreased physiological stress responses (Arch et al., 2014; Breines et al., 2014), decreased perceived stress (Allen & Leary, 2010; Sirois et al., 2015b), improved physical well-being and adoption of health-promoting behaviours (Terry et al., 2013; Sirois et al., 2015a; Dunne et al., 2016; Homan et al., 2017).

Self-compassion not only has direct beneficial health outcomes but also acts as a moderator. Samaie et al. (2011) examined the correlation between stress, self-reflection and rumination in a sample of 275 undergraduate students. Employing a moderated multiple regression analysis, the study found that self-compassion significantly moderated the relationships between stress and rumination and between stress and self-reflection. The negative effect of stress on rumination and self-reflection was weaker among those with higher levels of self-compassion, highlighting the protective role of self-compassion.

Neff (2003) emphasises the importance self-compassion as a constructive and advantageous approach to self-relation. This involves practising mindfulness, generosity and

understanding towards oneself. Self-compassion offers a multitude of benefits, such as reduced levels of stress and anxiety, alleviation of depression and chronic health conditions, and enhancement of resilience. Sirois (2022) investigated the correlations between self-compassion and self-related health outcomes, utilising a diverse range of participants to illustrate the beneficial impacts of self-compassion on health. Data from 26 samples (total $N = 6127$), comprising 6 university student, 16 community adult and 4 chronic illness samples, were included in the analysis. Associations between self-compassion and self-related health outcome were meta-analysed. The findings indicated that self-compassion was significantly associated with higher self-related health outcomes across the 26 samples ($ravg = .25$; CI: .22, .28).

A number of studies have reported that self-compassion is associated with health-promoting behaviours, such as quitting smoking, maintaining a healthy diet, exercising, seeking medical assistance, increasing physical activity, engaging in safe sexual practices and avoiding excessive nighttime sleep (Biber et al., 2019; Sirois et al., 2019; Wong et al., 2021). In a meta-analysis of 94 studies conducted by Philips and Hine (2021), a modest to moderate correlation was observed between self-compassion and health-promoting behaviours. There were also positive links between self-compassion and physical health (r =.18) and health behaviour (r =.26). Regarding physical health outcomes, such as earaches, respiratory issues, skin complaints and abdominal pain, self-compassion was associated (with small effect sizes) with relief. Research on the relationship between self-compassion, adaptive effect and self-control in health-promoting/management behaviours was synthesised by Morgan et al. (2020) using data from observational, cross-sectional, longitudinal, qualitative and randomised controlled trials studies. It was concluded that self-compassion encourages better lifestyle decisions and improved ongoing medical management. The study also highlighted gaps in the literature, recommending that future studies should delve deeper into these relationships and their implications for interventions aimed at improving health behaviour. This lays the

groundwork for identifying viable research questions, knowledge gaps, crucial concepts, theories, and methods to address contextual health challenges in the Nigerian diabetic population.

The relationship between self-compassion, on the one hand, and physical health and promoting behaviour, on the other, has been further established in a meta-analysis that involved 29,588 participants from 94 peer-reviewed studies. Self-compassion was positively associated with both physical health (r = .18) and health behaviour (r = .26). The moderation analysis revealed that the main effect on health behaviour was significantly larger than the effect on physical health (Philips 2021). The available literature indicates that self-compassion is important in improving treatment adherence, reducing stress and improving well-being. Consequently, practising self-compassion, exhibiting self-love and self-kindness, and acknowledging one's shared humanity in trying circumstances can improve adherence to treatment, reduce stress and increase general well-being. Self-compassion exercises, mindfulness meditation and self-compassion-focused therapy are ways to incorporate these practices into the course of one's life.

Ferrari et al. (2019) focused on the question of whether self-compassion can support and promote the growth of beneficial coping strategies. They carried out a meta-analysis of randomised controlled trials to determine the extent to which self-compassion interventions affect psychosocial outcomes. Eleven different psychosocial outcomes were found to be significantly improved by self-compassion interventions when compared to control conditions. Large-sized intervention effects, according to Cohen’s (1992) criteria, were found for both rumination (g = 1.37) and eating behaviours (g = 1.76). In addition, medium-sized effects were found for self-compassion (g = 0.75), stress (g = 0.67), depression (g = 0.66), mindfulness (g = 0.62), self-criticism (g = 0.56) and anxiety (g = 0.57). Moreover, gains in self-compassion were sustained over time and improvements in depression symptoms improved progressively

at follow-up. Based on this, it can be concluded that self-compassion can maintain and promote the development of healthy-coping strategies that may lower the risk of health problems relapsing. It can also serve as a springboard for resilience and self-care, empowering individuals to learn how to navigate and manage their physical and mental health obstacles so as to improve stability, comfort and resilience.

Homan et al. (2017) examined the correlation between self-compassion, perceived stress, health behaviours and an all-encompassing index of physical health in an online survey of 126 participants. Self-compassion significantly correlated with reduced perceived stress, which, in turn, was associated with a greater frequency of health-related behaviours. Self-compassion was found to have an indirect effect on physical health via both mediators and through the sequential pathway, suggesting that taking a kind, accepting and mindful stance toward one's flaws and failures may have benefits for reducing stress and promoting health behaviours. In sum, research has revealed that self-compassion exerts a substantial impact on health-related behaviours and perceived stress, which subsequently have an indirect effect on physical well-being. Thus, numerous favourable psychological outcomes are significantly facilitated by self-compassion (Neff et al., 2007b; MacBeth et al., 2012).

The usefulness of self-compassion as an active element in the prevention and treatment of anxiety and depression was investigated through a meta-analytic review and a qualitative consultation by Egan et al. (2022). Increased levels of self-compassion were found to be associated with decreased symptoms of anxiety and depression. This study supports the use of self-compassion interventions to lower anxiety and depression. The interest that people have in self-compassion interventions was evident during qualitative consultation; however, treatments should be available in multiple ways and tailored to accommodating individual differences. To further reveal the potential of self-compassion, one study used vignettes to experimentally manipulate self-compassion in people with chronic pain. The results showed

that the self-compassion manipulation was associated with lower negative effects, catastrophizing and rumination (Purdie et al., 2015). Dundas et al. (2017) found that a brief self-compassion intervention course improved emotional well-being and healthy self-regulation (such as impulse control and self-judgement reduction). These findings are in line with the contention that self-compassion is linked to the capacity to employ adaptive psychological and physiological reactions to stress in a flexible manner (Svendsen et al., 2016; Luo et al., 2018).

In clinical populations, self-compassion may improve the effectiveness of cognitive reappraisals, as noted by Diedrich et al. (2016). The results of the study showed that people with major depressive disorder who practised self-compassion as a pre-emptive measure during reappraisal had a greater decrease in their depressed mood than those who had been told to wait before reappraisal. The study focused on people with major depressive disorder; so, the findings might not apply to other groups of people. The results, however, pointed to the possibility of self-compassion being a helpful tool for people troubled by using cognitive reappraisal as a technique for emotion regulation. This finding was corroborated by Smeets et al. (2014), who conducted a three-week self-compassion group intervention to determine the efficacy of self-compassion in promoting well-being and resilience. A total of 52 female college students were randomly allocated to two groups: an intervention group, which received instruction on self-compassion skills; and an active control group, which received instruction on general time management skills. In contrast to the active control intervention, the self-compassion intervention resulted in significantly larger reductions in rumination and significantly greater increases in self-efficacy, optimism and mindfulness.

Additionally, meta-analytic research has indicated that self-compassion could improve overall well-being and act as a buffer against psychopathology (MacBeth & Gumley, 2012; Zessin et al. 2015; Muris et al., 2017). Moreover, studies (e.g. Sirois et al., 2016) have indicated

that practising self-compassion can reduce stress and address behavioural concerns, like treatment adherence, that may compromise the management of long-term illnesses. The potential result of self-compassion is the promotion of adaptive health-promoting behaviours rather than just reduction of health-related risky behaviours. Fostering self-compassion, for instance, may encourage adoption of healthy eating and exercise habits as well as better sleep hygiene by those with modifiable disease conditions, such as diabetes, cardiovascular heart disease and hypertension (Schulze et al., 2002; Buxto, 2010; Lee et al., 2012; Neff, 2023). All these outcomes can lead to improved functioning and prognosis.

The bulk of the available research on self-compassion and its relationship to other variables and participants are from developed societies. But how suitably can these findings be applied to non-Western, economically weak and developing societies? Replicating these findings in the Nigerian context is essential to ensure cross-cultural applicability and integration into diabetes treatment and stress management approaches, as both work-related stress and diabetes prevalence are on the rise in Nigeria. The purpose of this research, therefore, is to establish the necessity as well as argue for the need for educating, teaching and promoting self-compassion among clinical populations and the general public to promote health and improve well-being among this target population. The study bases its argument on an understanding of how the Nigerian population responds to and employs ideas about self-compassion.

Self-compassion and Diabetes

Despite the increase in the global burden of chronic diseases, there has been no appreciable improvement in treatment adherence (Kvarnström et al., 2018). It has been revealed by Hill et al. (2009) that adhering to healthy dietary guidelines can, in a manner comparable to pharmaceutical therapy, cure illnesses, slow the progression of illnesses and dramatically lower the risk of chronic diseases, including type 2 diabetes. People with type 2

diabetes often have poor diet adherence; these individuals struggle to understand, apply and maintain the necessary antecedents, such as motivation, comprehension, health beliefs, realistic goals, self-efficacy and social support (Al-Salmi et al., 2022). According to recent studies (e.g. Dong et al., 2022), increasing a patient's degree of self-compassion may help them adhere to their treatment plan.

The benefits of self-compassion in managing diabetes are appreciated when the damaging effects of the chronic illness are considered. Diabetes affects many of the body's organs and frequently leads to complications, like kidney damage, heart attacks, strokes, loss of vision and amputation of limbs (Roglic, 2016; Karami et al., 2018). Managing type 2 diabetes is a challenging endeavour that requires multiple psychological and physical adaptations. However, good self-management is necessary to stop or postpone the development of diabetes-related health issues (Karami et al., 2018). Significant physiological and psychological benefits result from mastering the practice of self-compassion (Sandham et al., 2023). Many studies (Ferrari et al., 2017; Jackson, 2018; Tanenbaum et al., 2018; Ventura et al., 2019; Morrison et al., 2019; Rahmani et al., 2020; Akbari et al., 2022; Loseby et al., 2022) have suggested that self-compassion could be utilised to enhance the management and treatment of chronic conditions, like diabetes.

Studies of self-kindness in health contexts and, consequently, self-compassion need to include holistic self-care (which is treating one's body and mind) and psychological well-being, in addition to one's physical health, to promote behavioural change (Mantzios et al., 2017). Understanding the elements that lead to health-promoting behaviours is essential, given the rise in non-communicable diseases and the need to prevent them (World Health Organisation, 2013). Finlay-Jones et al. (2023) state that recurrent pain, exhaustion, stigma and isolation are some of the major obstacles that people with chronic medical conditions, like diabetes, must

overcome. Engaging in self-compassion exercises can be a mindful coping technique that demonstrates one's kindness, care and concern for oneself.

Self-compassion can support the psychological well-being and self-care behaviours of diabetic patients. This has been established by the research of Majidzadeh et al. (2022) on diabetes mellitus. They incorporated self-compassion into diabetic psychotherapy protocols based on its positive impacts on psychological health and self-care behaviours. Adopting self-compassion is necessary to reach a state of maximum physical and mental functioning. Besides, self-compassion may provide how to improve the way long-term conditions, like diabetes, are treated and managed (Ferrari et al., 2017; Jackson, 2018; Tanenbaum et al., 2018; Ventura et al., 2019; Morrison et al., 2019; Rahmani et al., 2020; Loseby et al., 2022; Akbari et al., 2022). In a similar vein, research has shown that self-compassion positively impacts on health behaviours relevant to managing chronic illnesses, especially treatment adherence. Terry et al. (2013), for example, asserts that people with heart disease who demonstrate higher levels of self-compassion are more likely to practise self-care behaviours, like eating a balanced diet and exercising regularly. Brief self-compassion interventions can positively affect several areas, including improving body image, encouraging greater appreciation of healthy activities and encouraging adherence to medical recommendations (Sirois, 2015).

Persistent medical conditions, such as diabetes, can present a great deal of difficulties for people, such as fatigue, isolation, stigma and recurrent pain (Finlay-Jones et al., 2023). Self-compassion exercises can be a strong coping strategy to manage these condition if one shows oneself kindness, concern and care.

In relation to the current study, many studies have examined the benefits of self-compassion that have been linked to better outcomes (both mentally and medically). Moreover, cultivating self-compassion as positive health regulation behaviour may be particularly beneficial, considering the often-limited access to treatment for these conditions (Finlay-Jones

et al., 2023). Ferrari et al. (2017) found significant correlations between self-compassion and enhanced well-being, higher adherence to dietary care and physical activity, and more optimal glycated haemoglobin (HbA1c) levels among adults diagnosed with type 1 or type 2 diabetes. Furthermore, Sirois (2019) discovered that self-compassion was positively associated with intentions to engage in health-promoting behaviours. Terry and Leary (2011) view self-compassion to be a quality that includes three dimensions which can help foster key self-regulatory processes, such as attention to and evaluation of ongoing behaviour and emotional regulation. Reviews have also indicated that people with high self-compassion report better physical health in several areas, including physical fitness (Arts-de Jong et al., 2018), few symptoms of illness (Hall et al., 2013), low pain intensity (Allen et al., 2012) and adaptive physiological responses to stress (Breines et al., 2014).

Friis et al. (2015) found comparable outcomes. Self-compassion among adult patients with type 1 and type 2 diabetes was identified as a significant predictor of reduced depression and diabetes distress, showing self-compassion acted as a buffer against elevated diabetes distress and suboptimal HbA1c levels. This suggests that cultivating self-compassion despite experiencing anguish may offer some protection against the adverse metabolic consequences associated with diabetes distress. Self-compassion facilitates adaptive behavioural and affective responses in individuals with diabetes (i.e. prediabetes, types 1, 2, and gestational diabetes), according to a review of eleven studies (N = 3488) by Morgan et al. (2020). For instance, a systematic review conducted by Wong et al. (2021) found a negative correlation between self-compassion and distressing affective states, particularly diabetes distress. The study also found that the interventions significantly reduced HbA1c levels (blood glucose), diabetes distress, and depression when compared to the control groups. Notably, these effects maintained for up to 30 months after the interventions.

Sirois et al. (2019) sought to determine the extent to which perceived stress contributed to the relationship between dispositional self-compassion and adherence in five distinct medical samples (including those with cancer, fibromyalgia and fatigue). A positive relationship was found between dispositional self-compassion and adherence in all five samples, suggesting that individuals diagnosed with cancer, fibromyalgia, chronic fatigue syndrome and other illnesses who possess dispositional self-compassion, which reduces stress levels, are more likely to adhere to their prescribed medical regimens. This relationship was partially explained by the fact that dispositional self-compassion is associated with better medical adherence among the population. In line with this viewpoint, Scheier et al. (1985) identify dispositional optimism as a relatively stable, generalised expectation that positive outcomes would occur across important life domains. Specifically, optimism encompasses health-promoting elements (e.g. medication adherence, physical exercise and diet), avoidance of destructive behaviours (e.g. substance abuse), social support, self-confidence and agency, active and approach-oriented coping. All of these factors may contribute to the way individuals overcome stressors (i.e. resilience), leading to both positive and negative health outcomes (Scheier et al., 1985). Overall, the study highlighted the potential benefits of self-compassion in improving health-related behaviours in various medical populations (Sirois et al., 2019).

Also, in a cross-sectional study involving 150 nurses from four institutions in Tehran, Abdollahi et al. (2020) examined the associations between self-compassion, perceived stress, and job burnout. It was found that higher levels of self-compassion were associated with lower levels of job burnout among the nurses, whereas perceived stress was associated with higher levels of job burnout. According to the results of the interaction-moderation analysis, the influence of perceived stress on exhaustion in the nursing profession was moderated by self-compassion such that perceived stress had a weaker effect on job exhaustion when self-compassion was high.

With respect to coping and managing diabetes, Sandam et al. (2023) state that diabetes is a difficult task that calls for numerous psychological and physical adjustments. However, developing the skill of self-compassion has many advantageous psychological and physiological outcomes. Because it delays or prevents the onset of health complications related to diabetes, effective self-management of this condition is crucial (Karami et al., 2018). As reported by Sirois et al. (2014), self-compassion consistently showed a positive association with greater engagement in a range of health-promoting behaviours across 15 independently collected samples comprising 3,252 participants. These behaviours included healthy eating, regular exercise, stress management and restful sleep patterns –all of which may be important for people with diabetes.

Self-compassion, tender humility and meaningful detachment provide a more comprehensive framework for professionals and, potentially, their clients to maintain optimal performance amidst the challenging nature of operating in an environment where daily attention is directed towards trauma, abuse and suffering, in addition to conventional self-care practices, such as maintaining a healthy diet, engaging in regular physical activity and practising self-reflection (Prescott, 2023). Professionals must prioritise self-compassion given that both self-compassion and compassion can significantly influence treatment (Prescott 2023).

Finally, self-compassion is beneficial to the human immune system. People with greater levels of self-compassion exhibited a more favourable response to a standard laboratory-based stressor (Brienes et al., 2014). This was also reported by a group of individuals who had received brief self-compassion training (Arch et al., 2014). It appears that self-compassion is beneficial for both mental and physical health. It is evident from the reviewed literature that increased levels of self-compassion are likely to be associated with improved glucose control, a more favourable HbA1c, greater life satisfaction and more effective self-management

strategies. Sandham et al. (2023) revealed a positive correlation between self-compassion and enhanced regimen adherence, HbA1c levels and psychological well-being.

Theoretical Perspectives

Managing diabetes is a difficult task that calls for psychological and physical adjustments. However, as it delays or prevents the onset of diabetes-related health complications, effective self-management of this condition is essential (Karami et al., 2018; Sandham et al., 2023).

Diabetes Self-efficacy Approach

The aim of this study is to better understand how employees with type 2 diabetes manage work-related stress and how well they adhere to treatment regimens to improve their overall well-being. Studies have revealed that employees who experience work-related stressors and challenging health conditions, like type 2 diabetes, have unpleasant stories, particularly in an environment where employees' well-being is not prioritised. Such employees in Nigeria are thought to be exposed to an unfavourable environment, where access to healthcare facilities is difficult, the economic situation for necessary medications is poor, a healthy, recommended diet is unaffordable and regular exercise to improve health concerns are lacking. Thus, the study investigated how self-compassion and perceived control can act as mitigating factors when employees with type 2 diabetes in Nigeria try to cope with these challenges.

Having type 2 diabetes and working in a stressful environment mean that one has to set a lot of goals to improve one’s overall well-being. Some of these goals include eating a healthy diet, taking recommended medications on time and exercising frequently. The integration of Self-efficacy Theory with self-compassion and perceived control can facilitate the development of goals for people to cope with stressful life events and chronic illnesses (such as type 2 diabetes), improve treatment adherence and cultivate a more resilient mindset towards

surmounting chronic health challenges (Terry et al., 2011; Skinner et al., 2012; Sirois, 2015; Sirois et al. 2016; Sirois et al., 2019). Self-efficacy Theory, put forth by Albert Bandura in 1977, places a strong emphasis on a person's self-belief in their capacity to complete tasks and reach objectives. Regarding the management of diabetes, self-efficacy pertains to an individual's belief in their ability to effectively manage their condition, comply with prescribed treatment regimens and handle stressors related to their health and career. Individuals with a strong sense of self-efficacy learn from their mistakes and confront situations by considering how to solve them rather than dwelling on the worst-case scenario (Bandura, 1977b).

The difficulties faced by the Nigerian diabetic population include limited access to healthcare facilities, stressful work environments, a difficult economic situation that forces them to seek alternative treatments rather than medications to control their conditions and inability to obtain support that will improve their well-being. Therefore, developing interventions that encompass aspects of empowerment strategies to improve perceived control and self-compassion could be beneficial for employees with type 2 diabetes experiencing occupational stress.

The Rationale for the PhD Research

The prevalence of type 2 diabetes in Nigeria is increasing, while well-being and adherence in this patient population are low. The complications of diabetes, cost of diabetic regimens, lack of access to medications, complexity of the treatment regimen and lack of knowledge of the impact of non-adherence are among the factors responsible for this scenario. In addition to this, many patients with type 2 diabetes in Nigeria are of the working age and face considerable occupational stressors, adding to the burden of managing their chronic condition. There is the need to investigate potential protective factors, such as perceived control and self-compassion, which have been shown to increase well-being and adherence of patients

with different chronic health conditions. Therefore, the goal of this thesis is to investigate occupational stressors, overall well-being and treatment adherence among employees with type 2 diabetes in Nigeria, with particular emphasis on the moderating roles of perceived control and self-compassion.

Many of the type 2 diabetes patients in Nigeria are working-age individuals who are under stress from their jobs. This naturally makes it challenging for them to take their prescribed medications on time, exercise regularly and adhere to prescribed diet. In Nigeria and Africa, friends and family are typically tasked with supporting and providing the medical needs and obligations of loved ones who are ill since they feel that these individuals do not make enough effort to improve their conditions (Hoffman et al., 2012; Yakubu et al., 2018; Chukwu et al., 2022). The research reported in this thesis sought to assess the impact of diabetes and occupational stress on Nigerian employees and examine the extent to which the psychological constructs of self-compassion and perceived control may affect treatment adherence and well-being.

Research Questions

The thesis sought to address a number of questions intended to support decision-making concerning the management of type 2 diabetes and occupational stress. These questions examined the role of self-compassion and perceived control on treatment adherence, coping mechanisms for occupational stress and overall well-being of employees with type 2 diabetes in Nigeria.

The first part of this thesis is qualitative research that explores the lived experiences of employees with type 2 diabetes confronted with work-related stress. The following questions were addressed in this initial investigation:

i. What are the work-related stressors employees with type 2 diabetes experience?

ii. What are the effects of work-related stress on treatment adherence and well-being of employees with diabetes in Nigeria?

iii. What are the support services available for employees with type 2 diabetes in Nigeria?

After understanding the lived experiences of employees with type 2 diabetes, the thesis then reported a cross-sectional survey that examined the effect of occupational stressors on treatment adherence and well-being of Nigerian employees with type 2 diabetes as well as the moderating roles of self-compassion and perceived control in the management of and coping with these challenges. The following questions were posed:

i. To what extent does occupational stress affect the treatment adherence and well-being of employees with type 2 diabetes in Nigeria?

ii. To what extent do self-compassion and perceived control moderate the effect of occupational stress on the treatment adherence and well-being of employees with type 2 diabetes in Nigeria?

The thesis concluded by presenting an experimental study which investigated the effects of self-compassion manipulation on the treatment adherence intentions of employees with type 2 diabetes. The study addressed the following question:

- Does self-compassion manipulation enhance treatment adherence intentions in employees with type 2 diabetes dealing with occupational stressors?

CHAPTER TWO

Exploring the Experiences to Workplace Stress, Treatment Adherence, and the Well-Being of Employees with Type 2 Diabetes in Nigeria (Study 1)

Background: It is difficult for the Nigerian working population to manage both type 2 diabetes and workplace stress. In Nigeria's typical work environments, employees receive little or no support, forcing those with type 2 diabetes to rely on friends and family. Given these factors and the ongoing prevalence of type 2 diabetes and workplace stress among this population, which are worsened by a lack of adequate healthcare facilities and accessible interventions, this study explored the challenges of managing type 2 diabetes and coping with workplace stress for Nigerian employees.

Objectives: The purpose of the study was to provide insights into how Nigerian employees with type 2 diabetes manage their condition and deal with work-related stress, how hard it is for them to adhere to medical advice, and how they enhance their overall well-being.

Methods: In-depth interviews were conducted with 15 participants chosen using a convenience sample from diabetic outpatient appointment clinics at two hospitals in central Nigeria.

Results: A thematic analysis was conducted on the interview data using NVivo 12. Five themes emerged: (1) the effects of workplace stressors on well-being; (2) the effects of workplace stressors on adherence to diabetic regimens; (3) the use of alternative therapy for diabetes management; (4) the support employees receive in managing their type 2 diabetes and coping with workplace stressors; and (5) the influence of beliefs and the ability to self-manage type 2 diabetes and cope with work-related stress. As particular evidence of workplace stress, the employees stated that workplace stress often resulted from an excessive workload and long hours at work, which led to mental exhaustion, persistent headaches, stigma and muscle pain. The employees also indicated that managing their condition was difficult financially and working in unsafe and unsupportive environments that did not prioritise well-being led to

engagement in constant prayer to God for healing and use of traditional or alternative therapies. Employers offered little or no assistance to employees in managing their conditions and this, on top of the challenges of managing type 2 diabetes under demanding circumstances, affected their adherence to treatment and general well-being.

Conclusion: Having type 2 diabetes while working in a stressful environment, especially one that does not prioritise employee well-being, imposes a significant physical and psychological burden affecting well-being and treatment adherence. Employees confronted by these challenges may need to employ psychological strategies to promote positive health behaviours rather than relying on government and non-governmental organisations for assistance or intervention. Workplace health and safety standards should be strengthened and enforced to minimise stress-inducing factors, like excessive work hours and unsafe conditions; this would protect all employees but is especially important for those with medical vulnerability, like type 2 diabetes.

Introduction

Nigeria, the country with the largest population in Africa, faces significant and persistent prevalence of type 2 diabetes (Ogbera et al., 2014; Mbanya et al., 2019). Projections from the International Diabetes Federation (IDF, 2019) indicate that, by 2045, the number of Nigerians living with type 2 diabetes will reach 6.6 million, pointing to the escalating burden of this disease. In Nigeria, type 2 diabetes has caused more deaths than HIV/AIDS, tuberculosis and malaria combined (Adeloye et al., 2017). Compounding the issue is the absence of adequate healthcare facilities and notable intervention programmes.

A large percentage of Nigerians living with type 2 diabetes experience severe complications, such as heart attacks, kidney failure, blindness and limb amputation (Chinenye et al., 2011). Such complications predominantly worsen diabetic self-care for the working-class population, who also struggle to deal with work-related stress. The challenges faced by this working population are twofold: exposure to stressors in the workplace and difficulty in adhering to treatment recommendations, both of which could worsen their health outcomes. Mongkhon et al. (2018) describe adherence as one of the most significant challenges in healthcare, as non-compliance with medications can have adverse effects on patients' health, and long-term well-being and escalate healthcare costs through increased resource use.

Nigerian employees living with type 2 diabetes are likely to encounter obstacles arising from their job-related roles. These individuals are likely to suffer more from their conditions owing to the demanding workloads, unrealistic deadlines, multitasking, stigmatisation, hostility, burnout and non-standard work hours, all of which could significantly impact on their overall health. This situation is exacerbated by a lack of interventions and dedicated diabetes care centres in the country, leaving many at risk of serious complications, such as foot amputation, blindness, kidney failure, heart attack and other life-threatening conditions.

Evidence points to the fact that workplace stress can have a range of negative effects on individuals, including absenteeism, intention to quit, strained relationships with colleagues and poor job performance (Ashton, 2017). Employees with diabetes face additional challenges, as they often have longer hospital stays, incur higher medical expenses and experience a multitude of medical complications, like tuberculosis, kidney disease and erectile dysfunction (Shaeer et al., 2003; Ogbera et al., 2006; 2013; Danesi, 2007; Odatuwa-Omagbemi et al., 2012; Arogundade, 2013). The stringent dietary requirements and the high cost of medication associated with diabetes can further contribute to stress among patients (Dike, 2014). This is compounded by the additional pressures of learning new skills, demanding workloads, heightened job competition, increased job insecurity, reduced benefits and limited time for socialising (WHO, 2007). Ruston et al. (2013) argue that workplaces have the potential to support or hinder self-management of diabetes, but little research has been undertaken to examine the effect of workplace stress on diabetes. The combined impact of workplace stressors and the burdens of managing diet and medication could be overwhelming for some employees living with diabetes, and significantly affect their overall well-being and adherence.

The literature on lived experience in Nigeria focuses primarily on lifestyle control and modification, as well as differences in quality of life (QoL) among diabetic patients based on their sex, ethnicity, type of diabetes, or physical complications, like occasional body weakness, burning sensation, tingling and numbness in the feet, fatigue, loss of libido and occasional visual disturbance (David et al., 2020; Okurumeh et al., 2022). Additionally, the experience of employees with type 2 diabetes regarding work-related stress is largely ignored. The overall aim of this study is to explore the lived experiences of Nigerians with type 2 diabetes, with particular attention to the difficulties they encounter in adhering to treatment regimens, managing work-related stress and enhancing general well-being.

Aim of the Study

The purpose of the study was to provide insight into how Nigerian employees with type 2 diabetes manage their condition and deal with work-related stress, how hard it is for them to adhere to medical advice, and how they enhance their overall well-being.

Research Questions

The study sought answers to the following questions:

- What are the work-related stressors employees with type 2 diabetes experience?
- What effect does work-related stress have on treatment adherence and well-being of employees with diabetes in Nigeria?
- What are the support services available for employees with type 2 diabetes in Nigeria?

Method

Study Design

To understand the experiences of Nigerian employees who have been clinically diagnosed with type 2 diabetes, this study utilised a qualitative approach. This methodological choice was made with the aim of exploring participants' experiences as well as the significance they attribute to their experiences. A qualitative approach allows for in-depth data collection and analysis of participants' perspectives, facilitating the generation of meaningful and applicable findings (Hennink, 2011; Creswell, 2013).

Participants and Procedure

Fifteen participants with type 2 diabetes who self-identified as experiencing stress at work were recruited from the Jos University Teaching Hospital and Plateau State Specialist Hospital in Nigeria's central region using the purposive sampling technique. This allowed for the collection of detailed descriptions of the experience and the representation of aggregate findings.

The following inclusion criteria were applied to ensure that the individuals in the study were eligible:

1. being diagnosed with type 2 diabetes;
2. attending regular appointments at the mentioned hospitals;
3. being employed in private or public establishments;
4. experiencing stress at work;
5. being able to understand, speak and write English; and
6. being aged 20-70.

The concept of data saturation was used to determine the sample size. Recruitment ceased once the data began to repeat itself, indicating redundancy. The recruitment process for the study involved posting advertisements on notice boards in the endocrinology units of two different hospitals. The advertisements sought to recruit workers with type 2 diabetes who have regular appointments with their healthcare provider and have experienced stress at work. Interested individuals responded to the advertisement by sending emails expressing their willingness to participate in the research. Prior to the recruitment process, necessary approvals were obtained from the Research Ethics Committee at the University of Sheffield (Ref: 039098) and permission was granted from the two sampling sites (Jos University Teaching Hospital and Plateau State Specialist Hospital).

Owing to the difficulty in collecting data using face-to-face interviews during the COVID-19 pandemic and the poor Internet connection for video calls in Nigeria, the study employed the Interactive Google Doc app. This served as a computer-mediated communication tool employed to obtain data from the participants. The participants were presented with a series of questions and were asked to provide immediate responses by typing them directly into the Google Docs app. To achieve this, potential participants had to have functional Google

accounts, and the researcher collaborated with staff members from the selected hospitals. This collaboration provided necessary support and guidance for installing the Google Docs app for those who volunteered to participate. The participants were given the opportunity to indicate their preferred date and time for the interview. A week before the scheduled interview, the participants, via their email addresses, received an information sheet outlining details about the study, as well as a consent form requesting them to affirm that they had type 2 diabetes and had experienced work-related stress.

The interviews took 20 to 30 minutes to complete and were structured around the following questions:

- **Employees' experience of workplace stressors and how they affect well-being**

1. What specific stress do you experience as an employee living with type 2 diabetes in the workplace?
2. What has been your experience of workplace stressors, particularly as they affect your diabetic condition?
3. How does workplace stress affect your well-being?

- **Participants' current diabetic treatments and the effect of workplace stress on adherence**

1. What type of treatment are you currently receiving?
2. How do these stressors in the workplace affect your treatment adherence?
3. What other workplace challenges do you face as an employee with type 2 diabetes?
4. How does that affect your adherence to treatment conditions?

- **What support is in place for employees to help manage their diabetes?**

1. What kind of support are you currently receiving to manage your diabetes?
2. How is your organisation involved in your diabetic management?
3. What are the challenges in managing diabetes in your workplace?

4. What plans or structures does your organisation have to reduce incidences of workplace stress on employees with diabetes?
5. How can your general well-being and that of other employees with similar health challenges be improved upon by organisations?

Positionality

I acknowledge that the research topic and the formulation of my research questions are likely influenced by my background as a Nigerian with diabetes. This background is likely to give me insights into the experiences of participants when dealing with stress at work and its impact on self-management. I also understand how important it is to speak up for marginalised voices and address power dynamics. My study's focus on the experiences of employees with type 2 diabetes was motivated by my dedication to social equity. However, as a researcher, I am also aware of the need to maintain objectivity. So, I took time to reflect on my interpretations though discussion with my supervisors as well as with the endocrinologist and diabetic nurses at the participating hospitals. In addition, I approached this research with a keen theoretical perspective in self-compassion and perceived control.

Data Analysis

To achieve reliable study outcomes, the researcher collaborated with three research supervisors and a qualitative analyst to synchronise resources and knowledge for the data analysis process. Thematic analysis was applied to the data. This methodology was selected because it facilitates data organisation, data description, collaboration and visualisation. Thematic analysis, as defined by Braun and Clarke (2006), entails the identification, examination and communication of recurring patterns (referred to as themes) within the collected data. The NVivo 12 software was employed to facilitate labelling and organising the themes and sub-themes that emerged from the data.

Iterative procedures were used in this qualitative descriptive methodology, with the analysis process commencing with the first question and proceeding through participant-specific probes and the final question before concluding with formal data analysis. This made it easier to incorporate data collected at one stage of the research process into the remaining stages, which aided the process of making decisions. In the analysis, the themes developed reflected the participants' experiences of occupational stress, treatment adherence and the well-being of type 2 diabetes employees in Nigeria. The analysis involved many stages, including familiarisation with the data, generation of initial codes, searching for themes, reviewing themes, defining and naming themes and producing a final report (Braun & Clarke, 2006). Thematic analysis is an iterative process in which these steps are repeated to refine the analysis and ensure that the themes accurately reflect the data. The standard procedure for this involves classifying each line of the transcript line by line; this concerns assigning a distinct code to each sentence that pertains to the phenomenon being examined (Larking et al., 2006).

The transcribed data were thereafter coded to identify specific patterns, themes, and illustrative quotations reflecting these themes. This involved several stages. First, each transcribed interview was read and re-read to identify initial codes on new ideas and insights by applying semantic content and language exploration. Condensation was the second stage, through which the researcher got closer to the basics of what the research participants actually said by breaking down the lengthy statements into shorter sentences across themes and sub-themes (Smith et al., 2009). Third, after all the participants' interviews had been analysed, patterns across the participants' narratives were inspected and superordinate categories were created to capture the collective experiences of the participants.

Confirmability and dependability were supported by using direct quotes from the participants and having a team of researchers assess and confirm interpretations or findings of the research process. In addition, my supervisors provided feedback on the emerging themes

and closely observed the research procedures. These, along with discussions with the endocrinologist and diabetic nurses at the participating hospitals, helped to identify and mitigate potential biases.

Confidentiality and Participants' Consent

The participants in this study received letters of introduction assuring them of confidentiality and the aim and objectives of the study. Prior to submitting the questionnaire, the participants were informed that taking part in the study was entirely voluntary and that they could withdraw at any time without repercussion for doing so. They were also told that the information gathered would be anonymous and that no report or publication would be able to identify them. The researcher ensured that the participants understood what was required of them and consented to take part in the study before they were interviewed.

Results

Socio-demographic Characteristics of the Participants

The participants' characteristics, including age, gender, years of living with type 2 diabetes and occupation, are presented in Table 1. The table indicates that most of the participants were aged 50 and above and had been diagnosed with type 2 diabetes for 5-10 years.

Table 2.1

Characteristics of the Participants

	Frequency
Age Group	
40-49 years	3
50-59 years	6
60-69 years	6
Gender	
Male	7
Female	8
Years Living with Diabetes	
5-10	7
11-15	5
16-20	3
Occupation	
Public servant	8
Private sector	7

Analysis and Presentation of Overarching Themes

Five overarching themes emerged from the analysis (Table 2): (1) effects of workplace stressors on well-being (sub-themes: physical and psychological stressors); (2) effects of workplace stressors on adherence to diabetic regimens; (3) use of alternative therapy for

diabetes management (sub-themes: ceaseless prayer, traditional/herbal therapy); (4) the support employees get in managing their type 2 diabetes and coping with occupational stressors (sub-themes: family and friends, religious organisations); and (5) the influence of beliefs and the ability to self-manage type 2 diabetes and cope with work-related stress.

Theme 1: Effects of Workplace Stressors on Well-being

The theme of "effects of workplace stressors on well-being" was divided into two sub-themes: physical stressors and psychological stressors which impact on their well-being. Organisational changes, excessive workload and burnout, inflexible deadlines, multitasking, irregular schedules, inconsistent health policies and role ambiguity were all identified as physical stressors. The psychological stressors included tension, stigmatisation, being called lazy, hatred, discrimination and threat of losing one's job, all of which had a negative impact on well-being.

The participants' responses to the physical stressors are highlighted in the following quotes:

Participant 8 expressed that *"working long hours reduces my productivity. It causes me not to give it my all and I'm prone to making numerous mistakes and errors."* Furthermore, the same participant reported that *"a lack of concentration while on the job and managing diabetes."*

Highlighting the effect of psychological stressors on their well-being, Participant 2 expressed the stress of living with type 2 diabetes: "*Colleagues I've worked with for years have suddenly developed an unusual hatred for me, labelling me as lazy, which has, of course, led to me developing self-hatred."* Similarly, Participant 11 asserted that: *"It's not easy; I've been stigmatised, and easily become upset and sad at work…. I no longer feel welcomed by the people with whom I've come to share interests."* Participant 4 raised the concern that employers are under pressure to set up rigid work schedules: *"Unrealistic deadlines are set even though*

they are aware of my frequent hospitalisation and the effects of stress on my health conditions." The same participant added: *"I wish I had another means to survive because my health condition has gotten worse because of the long hours I've been putting in and the stress of work expectations I've been under, causing me to not adhere to my treatment plans."*

From the foregoing, it is evident that employees with type 2 diabetes experience an array of work-related stressors. These have many negative effects on their well-being.

Theme 2: Effects of Workplace Stressors on Adherence to Diabetic Regimens

The participants admitted that stress at work contributed to forgetfulness in adhering to treatment recommendations correctly and consistently, frequent hospitalisation due to diabetic complications, work exhaustion contributing to complacency in treatment requirements, and panic about ingesting a large amount of medication. For example, Participant 2 asserted that: *"My frequent hospitalisations are caused by the effect of having diabetes mellitus and exposure to work stress."* Participant 14 expressed a similar concern: *"I'm very worried about my health, and the stress at work is primarily to be blamed for my forgetting to take my regular medications and perform the exercises I'm supposed to do on a regular basis."* Participant 7 asserted that: *"I mostly get exhausted to remain steadfast to my treatments due to my struggle with diabetes and exposure to stress at work. It's an unpleasant experience!"*

According to Participant 4, *"After being under so much stress at work, I easily become irritated by the large amounts of medications I have to swallow."* P4 added that, "*Above all, it is depressing and breath-taking to live with diabetes mellitus under stressful work conditions; in fact, it affects my management of diabetes."* In the same vein, Participant 10 stated that: *"I'm made to take my medications between times, even at work, but the side effect of metformin is without a doubt strength draining, making it difficult for me to get to work right away."*

It can thus be concluded that workplace stress contributes to more complications and difficulties in managing diabetes. Above all, it appears to have an impact on the participants' general well-being and adherence to treatment regimen.

Theme 3: Use of Alternative Therapy for Diabetes Management

Many of the participants expressed their dissatisfaction with the lack of workplace healthcare policies and the financial difficulties in paying for medications and following the recommended diets, which often prompt them to look for alternative solutions. For example, Participant 8, in anger, expressed his inability to obtain the recommended medications: *"When I find it difficult to eat properly, how can you expect me to use my meagre earnings to purchase medications?"*

In addition to the well-known insulin therapy, many participants mentioned continuous prayers, traditional herbal therapy, and Chinese supplements as ways to manage their condition and boost their well-being. For example, Participant 5 stated that: *"My involvement in never-ending prayers is attributed to my balanced physical and psychological well-being."* Similarly, Participant 8 had this to say: *"Involving both herbal and Chinese therapy has yielded a more positive result in my well-being more than any other therapy."* Participant 5 averred that*: "I lived solely on herbal remedies for four years because they are readily available, affordable, and efficient."*

Discussing adherence to recommended diets as a plausible way to manage diabetes, Participant 1 affirmed that: *"The side effects of the medications are unimaginable, but I can confirm that I'm healthier now than when I was taking Novolin R ReliOn since I started eating right."* Participant 6 claimed that his strength was in Jeremiah 30:17 *"'But I will restore you to health and heal your wounds,' declares the LORD."*

It can be deduced that the participants' use of alternative therapy for managing diabetes was prompted by their inability to afford the prescribed medications and diets. They also

acknowledged that the side effects of some medications were a reason they researched alternative therapies that were equally effective in managing their diabetes.

Theme 4: The Support Employees Get in Managing Their Type 2 Diabetes and Coping with Occupational Stressors

The fourth theme focused on the support available for employees living with type 2 diabetes and exposed to occupational stress. Many of the participants admitted that they did not receive any support from the organisations they worked for. The sources of support were primarily their own personal earnings, donations from religious institutions and support from family and friends. Expressing her dissatisfaction, Participant 3 said, *"I believe I work for the worst organisation that does not prioritise the well-being of her employees. They are primarily concerned with maximising productivity"*. The same participant further explained, *"My health condition is never supported, and I am always expected to complete the assigned task in a short time."*

Similarly, Participant 15 claimed that: *"My organisation does not support my health condition. In this moment, they detest the fact that I have diabetes and wish they could get rid of me."* The participant went on to say, *"I can't even begin to express how appreciative I am for my family and friends,"* Participant 7 added, *"Family and friends have helped in a variety of ways, including providing moral, personal care, and financial support."* In the same vein, Participant 8 said, *"My church family regularly remembers me in their prayers and donates money to help with my regular medical expenses.*" Participant 1 asserted thus: *"The Lord is my Shepherd; I shall not want. He has provided for my diabetes management and made it easier for me because my church family has been a source of strength."*

All participants in public establishments expressed not receiving any kind of assistance from their employers, which was clearly caused by poor administration and underinvestment in health (Senkubuge et al., 2014). Participant 12, an employee in a private establishment, was

the only one to say, *"I had the good fortune to receive a few days of sick leave as a private employee with... during one of my crisis times. There was, however, no financial aid to offset the cost of the medication."*

The findings highlighted various unpleasant experiences, such as the discomfort of trying to control type 2 diabetes, which the participants experienced while working in a setting with greater demands. The participants acknowledged that they operated in a difficult environment, with little or no assistance from government, non-governmental, or their own organisations. This realisation prompted these participants to look for assistance from any source that could enhance their quality of life.

Most of the participants noted that the organisations they worked for did not provide them with the anticipated level of assistance. They had to turn to their families, friends and religious organisations for financial, emotional, and personal care support. The majority of the participants mentioned not receiving any encouragement or support from their employers to maintain their general well-being, with the exception of a smaller group of individuals who worked for private organisations and acknowledged receiving support.

Theme 5: The Influence of Beliefs and the Ability to Manage Type 2 Diabetes and Cope with Work-related Stress.

The fifth theme focused on the belief in one's ability to control and self-manage type 2 diabetes, as well as cope with workplace stress. This theme centred on subthemes: ability to apply self-help to belief, stay dedicated to fasting, and engage in infinite prayer to manage their health challenges. Above all, the theme emphasises the potential benefits of self-belief, prayer and fasting as obligations that aid the healing processes of individuals facing these challenges. Participant 12 shared the pattern of his prayer: *"O Allah, Lord of mankind, take away my suffering." Heal (me), for You are the one healer, and there is no other therapy save Yours that will eliminate all illnesses (Al-Bukhari)*." Similarly, in connection to beliefs, Participant 6 noted

that Jeremiah 30:17 ("I will restore your health and heal your wounds, says the LORD") was his source of strength and that he continued to recite it daily. In the same vein, while showing ways for improving the overall well-being of employees dealing with similar medical challenges, Participant 3 reported that she was having trouble adhering to treatment recommendations and felt her efforts were insufficient. However, she admitted to putting up more effort and capacity in seeking God's guidance to overcome the medical condition.

The participants stressed the importance of adherence to medication and dietary recommendations to help them manage their diabetes. Participant 1 stated that, *"I can certify that I am healthier now; I consistently pray, take Novolin R ReliOn and eat whatever I want, because I have accepted responsibility of God to my healing."* Blood sugar control transcripts revealed that, a significant portion of the participants claimed they could not regulate their blood sugar levels. Participants1, 4, 7 and 11reiterated that, given the necessary position of God in the healing process, they intended to engage religious practices to control their diabetes and deal with the stress connected to their jobs.

Finally, many participants understood the significance of embracing responsibility for their overall well-being; they mentioned attempting to stop thinking poorly about their diabetic condition. They, however, believed that thinking about self-help and implementing beliefs in certain religious practices would have a significant impact on their position and ability to manage type 2 diabetes and cope with work-related stress. Participant 6 reported *"*that, "*The belief that God is responsible for my healing is the basis for my better blood sugar control."* Participant 3 also noted that, *"Knowing that there is no one for support to improve my well-being. I have to evaluate my coping mechanisms and level of dependence on God so as to keep managing and controlling my diabetes."*

Table 2.2

Sample Quotes Illustrating Responses from Employees with Type 2 Diabetes

Themes	Sub-themes	Sample Quotes
Theme 1: Effects of workplace stressors on well-being	Physical and psychological effects: Burnout, frequent hospitalisation, stigmatisation, exhaustion, and tension	*"It's truly unjustifiable that I have to endure this kind of physical abuse."* *"It is strange to see colleagues who have known me, and my abilities for years suddenly start to label me as someone who wants to avoid work for the reason, I have diabetes mellitus."* *"There are too many tasks to get done in a short period of time. The task assignments have never considered my diabetes, which has an impact on my general well-being."*
Theme 2: Effects of workplace stressors on adherence to diabetic regimens	Forgetfulness: Doing regular exercise, eating recommended diet and taking medications correctly and consistently	*"I'm made to take my medication consistently and correctly, but due to my hectic schedule at work, I frequently fail to follow all treatment guidelines."* *"Most of the time, skipping medication has been caused by getting caught up in work-related tasks."* *"And due to the task demand, I lose the strength that I have no option other than to eat eba (energy-giving food) which in turn will result in glucose rise."*
Theme 3: Use of alternative therapy for diabetes management	Ceaseless prayers, Herbal alternatives and Chinese therapy	*"Since I started using herbal remedies to supplement metformin, I can attest to its effectiveness to my overall well-being."* *"My God is my healer, and I have remained devoted to him. Thank you very much, Most High."*

Theme 4: The support employees get in managing their type 2 diabetes and coping with occupational stressors.	The support by religious, public and private organisations, assistance from family and friends.	*"Yes, I can categorically state that during the 12 years I have worked…while living with diabetes, I have not received any support from my employers. My amazing family is the reason I can do what I do."* *"I have a prayer chain group where members are mostly supported by prayers and shared resources to support whatever predicaments any member finds himself/herself in."*
Theme 5: The influence of Beliefs and the ability to self-manage type 2 diabetes and cope with work-related stress.	Self-help to belief, steadfastness in prayer and fasting	*"My religious practices, which include fasting, reciting bible verses and prayer, aid in my recovery and dealing with life's challenges.* *"My strength lies on myself and my belief in God.... Philippians 4:13, "I can do all things through Christ who strengthens me".*

Discussion

Through in-depth interviews, the study explored the experiences of Nigerian employees with type 2 diabetes about work-related stressors, their effects on treatment adherence and overall well-being. The five themes that were identified in this study are as follows: (1) effects of workplace stressors on well-being; (2) effects of workplace stressors on adherence to diabetic regimens; (3) usage of alternative therapy for diabetes management; (4) the support employees get in managing their type 2 diabetes and coping with occupational stressors, and (5) the influence of beliefs and the ability to manage type 2 diabetes and cope with work-related stress.

The two sub-themes of physical and psychological workplace stressors were found to have effects on the participants' well-being. These included burnouts, being tagged lazy, stigma, being put under pressure to meet strict deadlines, inconsistent work schedules, uncertain roles and hatred from colleagues. Their overall ability to cope with life and their health issues were found to be negatively impacted by these stressors.

The findings of the study are further supported by the growing amount of data pertaining to employees' work-related stress (Global Workplace Report, 2021). Similar circumstances that have a detrimental impact on employees' general well-being and productivity seem to affect many workers worldwide. According to the report, the amount of stress experienced by workers on a daily basis hit an all-time high in 2020, with 43% of the respondents in over 100 countries reporting stress, from 38% in 2019. Quick et al. (1997) classify the stressors that affect employees' overall well-being as interpersonal, physical (temperature, workplace design and lighting) and job-related (occupation, careers, workload and job insecurity).

Undoubtedly, stressors such as heavier workloads, job insecurity (Monat & Lazarus, 2001), uncertainty (Pinder, 2008) and excessive working hours, low perceived job control and

lack of workplace social support have been found to be predecessors to stress impacting employees' well-being (Weinberg et al., 2000; Aluko, 2007; Fiabane et al., 2013; Magnavita et al., 2014). Warr and Nielsen (2018) revealed that occupational stressors that employers overlook but which affect employees' capacity to manage type 2 diabetes include diabetic stigma, hatred, longer work hours, threats from superiors and increased work volume. This is consistent with the findings of this study, in which the participants asserted that, despite the concern about exposure to stress in the workplace while also managing diabetes, their employers remained unperturbed about their plights, further affecting their general well-being and adherence. The disregard shown by Nigerian employers for their employee's health runs counter to the 1969 report by the International Labour Organisation, which advised employers of labour in Nigeria and other countries to implement a stress-management strategy (which Nigeria helped to develop, establish, and advise on). It is necessary to continue to call the attention of Nigerian employers of labour to these calls for support.

The theme that followed revealed that workplace stressors had a negative effect on participants' adherence to all treatment recommendations, which in turn made their health conditions more complicated. Many of these work-related stressors resulted in forgetting to exercise regularly, follow dietary recommendations, and take medication as recommended. In a 2019 Compsych employee survey, 61% of the respondents stated that they frequently felt exhausted and uncontrollably overwhelmed by daily expectations as a result of work-related stress. In this survey, the findings showed that work stress indeed had a major negative impact on the participants' well-being; among them, one-fifth reported missing six days or more annually. Adherence to treatment will become difficult for individuals with type 2 diabetes who are exposed to stress at work. This could result in poor glycaemic control, increase in morbidity and mortality, higher costs for outpatient care, emergency regular visits, hospitalisation and managing diabetes complications (Polonsky et al., 2016).

Another theme that emerged was the use of alternative therapy for the management of diabetes. As revealed by this theme, the typical work environment in Nigeria does not prioritise the welfare and well-being of its employees, which leads to physical and mental exhaustion as well as complications from diabetes that force employees to look for other forms of treatment. There exists a relationship between an individual's overall well-being and their work-related stress levels, particularly in the Nigerian context. However, many Nigerian employers do not place priority on the well-being of their employees, undermining the comprehensive programmes offered by the Nigerian civil service that meet employees' diverse health requirements by offering interventions like mindfulness training, counselling services, and stress-reduction techniques (Wada et al., 2021; Abasili et al., 2023). Irregular access to essential diabetes treatments and medications, particularly insulin, further hinders the effective treatment of diabetes mellitus in Nigerian diabetic patients (Gill et al., 2009). In this study, many of the participants admitted to using alternative therapies, like traditional/herbal medicine and Chinese therapy. Less than 5% of Nigerians are covered by the National Health Insurance Agency (NHIA). For most Nigerians, the costs of medications, particularly insulin, exceeds their monthly wages. Affordability is critical to the use of medications (Oguejiofor, 2004; Gill et al., 2009). Only a few of the participants in this study had the financial capacity to procure insulin and other diabetes medications; the less privileged depended on traditional and herbal remedies. This theme indicates that employees' inability to find support at work requires them exploring alternative means of managing their circumstances.

Another theme considered the support services offered in Nigerian workplaces that promote the well-being of type 2 diabetes employees who are exposed to work-related stressors. It revealed that the participants received no support from their employers to enhance their overall well-being and supplement their medical conditions. Therefore, they sought support from family and friends and took part in continuous prayer sessions with the leader of

churches and mosques. The perspective of McLellan (2017) is noteworthy, as he notes that unhealthy workers are more likely to be disabled, absent and less productive, and to use more healthcare resources. McLellan avers that the highest priority should be given to job benefits, support for health, and a work environment that safeguards and fosters employees' physical and mental well-being.

Importantly, the promotion and application of policies that support and advance the overall well-being of employees is something that employers of labour are expected to be actively involved in. In CIPB Guide (2022), employers are charged to foster a compassionate culture and empower employees to take proactive steps to manage their health. Employees with health challenges should prioritise self-care and self-management of their symptoms in order to maintain their health and work. However, the culture of many organisations in Nigeria includes long work hours, erratic work schedules and a general lack of support mechanisms and work-life policies, such as flexi-time options. As a result, many employees working under such adverse conditions are unlikely to achieve work-life balance (Adisa et al., 2021).

In the current study, it was revealed that employees in the public sector with type 2 diabetes who experienced stress at work reported no support from their employers. Similarly, those in the private sector acknowledged receiving little or no support. Employers of labour in Nigeria frequently make working conditions worse with extended work hours, unrealistic deadlines and increased volumes of work. The position above contradicts the International Labour Organisation (1992) standard that identified stress as a major threat to workers' health and the health of any organisation. The World Health Organisation (WHO, 2012) describes a workplace environment as a place where workers and managers collaborate to use a continuous improvement process to promote and protect employees' health, safety, and well-being as well as the sustainability of the workplace, with emphasis on the physical and psychosocial work environment. If employers of labour, both private and public organisations, adopt this

dimension, a better work-life balance and overall well-being will ensue, especially for employees who are challenged by work-related stress and chronic health conditions, like type 2 diabetes.

Nigeria has ratified protocols and standards that the International Labour Organisation (ILO) and the World Health Organisation (WHO) have established to guarantee a safe workplace. These standards emphasise how important it is for employers to put stress management procedures in place because it boosts productivity and organisational effectiveness while also fostering employee well-being. However, Nigeria is not fulfilling its obligations. Most of the participants with type 2 diabetes who worked in the private sector were pleased to some extent with the little assistance they received from their organisations. Some said that they received a little financial assistance and reduced work hours, while some were appreciative of health tips symposiums their organisations organised for them to raise awareness, particularly on modalities for eating and living well.

Furthermore, the current study found an association between a participant's ability to manage type 2 diabetes and cope with work-related stress and their religious beliefs. In particular, participants reported a willingness and steadfastness in adhering to specific religious beliefs with the aim to improve their diabetic healing. These participants reported that they fasted frequently, prayed ceaselessly, and studied religious texts for knowledge to help them through the compassionate phases of their diabetic recovery process. Like the other themes, this final theme highlighted the challenges posed by diabetes as well as the steps taken to manage their diabetes. The choice to substitute beliefs for other forms of treatment —such as diet, exercise, and medication—when apparent health improvements were lacking was a notable study finding.

Thus, the most common response from participants was the belief that God can influence good health habits to control diabetes and cope with work-related stress. According

to Craig Brian Larson in 2019, God's heart is moved by human suffering. He feels pity and sympathy for those in pain and desires to alleviate disease. Observing this viewpoint of God's kindness for his people, participant 8 reported, "His truth shall be my buckler and shield; I shall take refuge under His wings, and He shall cover me with His feathers."— Psalm 91:4. This viewpoint reveals a belief in the ability of faith in God to overcome one's medical concerns and general life challenges. In related studies, Watkins et al. (2013) and Gupta and Anandarajah (2014) found prayer to be one of the most important religious and spiritual coping mechanisms that diabetes patients used to improve their physical, psychological, and spiritual health and well-being. Permana (2018) and Choi (2019) reported that patients also pray for courage to manage their health issues and control their blood glucose fluctuations. Similarly, Choi (2019) noted that diabetes patients facing health challenges view God as a "supportive actor" and as a "positive image rather than a negative image".

Many of the themes indicated that participants felt a lack of control over their condition - e.g., in terms of coping with stress at work and diabetes self-management - and instead turned to religious and traditional practices. Practices, such as praying, fasting, provided them with comfort and is consistent with the belief in the compassionate nature of God. These results are in line with research that has shown that perceived control and self-compassion have positive impacts on mental and physical health as well as being a strong predictor of life achievements (Verena et al., 2019). They also highlight the importance of a positive and caring attitude towards oneself in the face of personal shortcomings and failures (Zessin et al., 2015). Leotti et al. (2010) and Khalili et al. (2021) found that these concepts are potent psychological phenomena that substantially influence human behaviour, cognition, and well-being. Thus, the next study will assess the extent to which perceived control and self-compassion are associated with better self-management (i.e., treatment adherence) and general well-being in workers with type 2 diabetes in Nigeria.

Limitations of the Study

The current study has several limitations that should be noted. First, given that the study recruited a small sample from two hospitals in an urban area in central Nigeria, its results may not apply to all Nigerian employees with type 2 diabetes or other types of diabetes in stressful work environments. However, the findings are in line with previous research that has also indicated that employees with type 2 diabetes who experience stress at work often struggle to manage their condition (Cosgrove et al., 2012). The current qualitative study provides a more in-depth analysis of people's lived experiences with work-related stress and diabetes, with emphasis on the means that individuals use to overcome physical and mental health challenges.

Second, the current study employed Google Docs to collect data from the participants, which might have impacted the quality and richness of the data. For example, it was not possible to ensure that the participants were free from distractions while typing their responses to the interview questions, which might have limited the amount of text they provided. Having to type responses might have affected the depth and/or richness of the data compared to in-person, telephone or online interviews. In particular, the researcher was unable to pick up on or respond to tone of voice and non-verbal cues which could have been used to explore certain issues in more depth. The use of Google Docs also limited the opportunity to build trust and develop rapport with the participants who might have been less candid in their responses. However, given the difficulty in conducting face-to-face interviews during the COVID-19 pandemic and the poor Internet connection for video calls in Nigeria, the use of Google Docs was a pragmatic research decision. In view of the content and nature of the themes that were identified in the transcripts and the extent to which they coincided with previous research, it can be argued that the themes represent key issues for employees with type 2 diabetes in Nigeria.

Third, the positionality of the researcher might have impacted on the analysis and interpretation of the data. As a Nigerian with type 2 diabetes, I would have shared many of the issues highlighted by the participants. While my experiences have the potential to bias my interpretations of the data, they also allowed me to have a deeper understanding of these issues, which might be particularly useful given the more limited qualitative data likely to have been collected through the use of Google Docs. Moreover, my interpretations of the data were developed through discussions with my supervisors and the endocrinologist and diabetic nurses at the participating hospitals in order to strengthen quality control.

Implications of the Study

Many implications flow from the current findings. First, employees may find it difficult to attend hospital appointments due to factors like transportation costs, getting time off work, and appointment scheduling. Different obstacles might face those who are more disadvantaged. Second, the actual hospital setting may offer patients some informational or social support, such as raising their level of health consciousness, which is lacking for others. Participants' viewpoints may be favourably impacted by this context.

When extrapolating the outcomes to the situation of all Nigerian employees with diabetes, these implications suggest that the results may have less external validity and wider applicability. The employees may report more stressors and receive sufficient levels of coping and support because of their higher adherence to hospital care. Cross-level experience comparisons may shed light on issues facing more vulnerable populations. The study notes that greater positive adherence may have been reported by the sample than by the overall population.

Conclusion

The results of the current study revealed that the sampled Nigerian employees with type 2 diabetes recognised that working in a stressful environment negatively impacted on their

adherence to dietary, exercise and medication recommendations as well as their general well-being. Overall, the participants reported that having type 2 diabetes and being under stress at work are physically and mentally challenging, especially in a demanding workplace, where employees are subjected to tough working conditions, like long hours, unreasonable deadlines, and increased workload, which compromise well-being. Therefore, prioritising employees' well-being in accordance with a standard policy, as outlined in the ILO workplace standards and procedures, will benefit both employers and employees by promoting positive health behaviour, job satisfaction and positive work environment.

To improve the general well-being of employees in Nigeria's work environment, there should be concerted effort by employers to support those who are dealing with health issues at work with coping resources. Finally, the findings of the study have revealed that because the workplace policy does not prioritise employees' welfare and well-being, their experiences are unpleasant. Owing to lack of funds to purchase diabetes medications and eat the recommended diets to manage their health challenges, the employees were forced to rely on alternative treatment remedies to care for themselves, such as constant prayer (a religious practice) and use of herbal and Chinese remedies, all of which have not been effectively validated for diabetes management. These findings support a behavioural approach to examining the roles of psychological variables, particularly self-compassion and perceived control, which are associated with self-care and promote beneficial health behaviour across a wide range of life circumstances.

Further research into the moderating roles of self-compassion and perceived control is recommended since the findings of the qualitative study emphasised the importance of believing in one's own ability to manage type 2 diabetes and cope with stressors instead of assigning caregiving responsibilities to family and friends and employers.

CHAPTER THREE

Impact of Occupational Stressors on the Treatment Adherence and Well-Being of Employees with Type 2 Diabetes in Nigeria: Investigating the Moderating Roles of Self-Compassion and Perceived Control (Study 2)

Background: Employees with type 2 diabetes mellitus exposed to occupational stress are less likely to adhere to recommendations from their physicians, eat healthily and exercise regularly – all of which are critical to overall well-being. Based on this contextual background, the study centred on perceived control and self-compassion as potential protective factors that might help employees with type 2 diabetes manage medical concerns and deal with stress at work.

Objective: The study examined the effect of occupational stressors on treatment adherence and well-being of Nigerian employees with type 2 diabetes as well as the moderating roles of self-compassion and perceived control in the management of, and coping with, these challenges.

Method*:* In this cross-sectional study, 180 employees with type 2 diabetes (94 females and 86 males) within the age range of 20-70 (M = 53.01, SD = 11.70) were recruited from outpatient clinics at two hospitals in central Nigeria. The participants completed copies of a questionnaire assessing occupational stress, treatment adherence, well-being, self-compassion and perceived control.

Results: Occupational stress was significantly associated with lower well-being and treatment adherence. Self-compassion significantly moderated and weakened the relationship between occupational stress and well-being. Self-compassion did not significantly moderate the relationship between occupational stress and treatment adherence, although the results indicated a similar pattern (i.e. a buffering effect of self-compassion). Perceived control did not significantly moderate the relationship between occupational stress and well-being or treatment adherence.

Conclusion: The findings of the study confirmed the negative impact of occupational stress and well-being and treatment adherence of Nigerian employees with type 2 diabetes. It also demonstrated the potential value of self-compassion in reducing occupational stress and improving employees' well-being. There is the need to test this in an interventional design in future studies.

Introduction

Study 1 revealed that the employees with type 2 diabetes in Nigeria experienced a range of stressors at work, particularly excessive workload, job insecurity, role conflicts, hate, and rigid work hours. This, in addition to the lack of support they received at work, had a negative impact on their well-being and their ability to manage their condition. Many of the themes identifies in the study indicated that the participants felt a lack of control (i.e., they did not feel able to effectively manage their condition) and instead turned to traditional remedies and religious practices. For example, many participants reported that engaging in prayer provided them with comfort and is consistent with the belief in a compassionate God. These findings highlight the importance of perceived control and experiencing compassion for well-being and for coping with stress. They are also consistent with other studies that have shown that perceived control and self-compassion help to reduce self-criticism, promote self-kindness, and enable individuals to maintain a sense of agency and control in the face of challenges (Leary et al., 2007, Neff, 2003a; Perry et al., 2010; Sirois et al., 2015). The current study therefore examines the extent to which perceived control and self-compassion are associated with well-being and treatment adherence in employees with type 2 diabetes in Nigeria who are experiencing stress at work.

In Study 1, a number of negative work-related experiences, including long workdays, heavy workloads, stigma, hatred and interpersonal conflicts, were found to be specific stressors 1 that made the patients' diabetes worse and reduced their adherence to treatment recommendations. The employees reported that they did not receive any support at work to encourage healthy behaviour. Government and non-governmental organisations also did not provide them with any form of support. This contrasts with the support available for malaria, HIV/AIDS, tuberculosis, cancer and leprosy in Nigeria. Consequently, the employees often had to show resilience, exhibited capacity, and engaged in religious healing practices to manage

their medical conditions and to obtain compassion. The employees also acknowledged shifting responsibility of care to family and friends as well as seeking herbal and Chinese treatments as alternative measures due to lack of personal control.

The focus of the current study was to quantitatively investigate the relationship between occupational stress, treatment adherence and well-being of employees with type 2 diabetes. The study also examined the moderating roles that perceived control and self-compassion have on how these challenges are handled and managed. Previous research has reported that higher levels of self-compassion and perceived control can help people deal with a range of health challenges (Homan et al., 2017; Kondo et al., 2021). Akintayo (2022) observes that a significant proportion of working adults in Nigeria who have type 2 diabetes experience high levels of workplace stress. These individuals tend to lack access to healthcare support and sustainable wages to cover their daily expenses and medical bills, which exposes them to distressing circumstances that could affect how they handle the stress of their illness and their work. Thus, they will need additional efforts to adhere to treatment instructions and handle occupational stress.

With the lack of support and unaffordable and inaccessible medical services to manage these conditions among this population, it is necessary to investigate the potential role of self-compassion and perceived control in managing type 2 diabetes and coping with work-related stress, as they have been shown to promote health competence and general well-being (Sirois et al., 2017; Kondo et al., 2022). According to Neff (2011), self-compassion involves treating oneself with kindness, as well as understanding and acceptance when experiencing pain or difficulty. Perceived control entails an individual's belief in their ability to influence and control their environment and outcomes (Wallston et al., 1987). Both self-compassion and perceived control are, therefore, likely to be helpful in managing chronic illnesses, like type 2 diabetes.

Friis et al. (2015) found that self-compassion moderated the relationship between distress and blood sugar level such that higher levels of distress were associated with higher blood sugar level when self-compassion was low, but not when it was high. Perceived control over health is noted as a critical behavioural construct that can assist those with type 2 diabetes in self-managing their condition (Nugent et al., 2015). Therefore, it can be deduced that, when people show love and kindness and believe they have control over their diabetic management, they are more likely to engage in positive behaviours, like adhering to treatment requirements, adopting healthy lifestyles and buffering the negative impact of stress and non-adherence to treatment, which result in improved physiological responses.

As noted by Wallston et al. (1987), perceived locus of control is characterised as a person's consistent beliefs about their capacity to affect outcomes in a range of situations. It is also known as an internal locus of control orientation, perceived personal control, perceived competence, self-efficacy or a sense of mastery) predicated on belief that one can influence one's own internal states and behaviour, influence one's environment and/or achieve desired outcomes (Wallston et al., 1987). Better adherence to medications and nutrition advice, as well as regular exercise, can all contribute to a desirable outcome in type 2 diabetes management.

In a longitudinal study involving 188 diabetes patients attending low-income clinics, Hernandez-Tejada et al. (2012) examined how perceived diabetes control relates to the physical and mental aspects of overall well-being. Positive correlations were found between perceived control and physical and mental quality of life. The findings suggested that enhancing perceived control through mass education and adopting coping skills, like self-efficacy, could lead to increased well-being within disadvantaged populations affected by diabetes (Hernandez-Tejada et al., 2012). High levels of perceived control have also been found to be associated with more preventive health behaviours (Kondo et al., 2021), more adaptive coping strategies (Lachman et al., 2006), and lower levels of emotional reactivity to daily stressors

(Ong, Bergeman, & Bisconti, 2005). Findings from some laboratory studies (e.g., Bollini et al., 2004; Sanz & Villamarín, 2001) have indicated that individuals with greater control beliefs may be less psychologically and physiologically reactive to acute lab-based stressors.

According to Bandura (2004), Benight et al. (2004), Ironson et al. (1996), Kim et al. (2006), Lachman (2006) and Schwarzer et al. (2008), perceived control over an individual's health have many benefits, such as promoting engagement in regular exercise, healthy eating habits, adherence to medical recommendations, employing appropriate problem-solving skills, maintaining a positive outlook in the face of health-related difficulties, enhancing coping abilities and improving overall health and well-being. It has been found to be associated with psychological and physical health in various studies (e.g., Breslin et al., 2013; Kondo et al., 2021; Langer et al., 1975; Langer & Rodin, 1976; Rodin & Langer, 1977). White, Wójcicki, and McAuley (2012) assert that individuals with chronic health challenges who adopt perceived control mechanisms are more likely to have the capacity to maintain healthy behavioural practices, like regular exercise, following a healthy diet and adhering to the advice of medical professionals in their treatment requirements. Subsequently, it has also been established as a key component of health throughout the life (Heckhausen et al., 1995). To emphasise its benefits, Dempster et al. (2015) stated that perceived control is crucial for effective adjustment to chronic illness in general. Similarly, in multiple clinical populations, higher levels of self-efficacy, perceived control, and increased feelings of personal and symptom control have all been found to be consistently associated with medication adherence in individuals with chronic conditions (Zarotti et al., 2024).

Research has shown that individuals with high self-efficacy are better at managing their emotions, resisting negative influences, and maintaining focus on their goals, all indicators of self-control (Schunk & DiBenedetto, 2021; Mesurado et al., 2018). In a similar vein, high self-efficacy can lead to greater persistence and effort in achieving goals, which is a crucial

component of self-control (Lian et al., 2017). Relatedly, Gecas (1989) maintains that self-efficacy has numerous dimensions, the most important of which is perceptions of control. Perceived self-control and self-efficacy are therefore both concerned with the perceived ability to perform a particular behaviour. Generalised self-efficacy scales are a useful and effective tool for evaluating an individual's confidence in their ability to exert control over their behaviour. They are widely used, reliable, and validated across diverse populations and settings, making them an appropriate choice for measuring perceptions of control (Luszczynska et al., 2005). As a result, a generalised self-efficacy measure was adopted in the current study to "assess diabetes patients' beliefs about their capabilities to exercise control over their own level of functioning and over events that affect their lives" (Bandura, 1991, p. 257). For example, patients suffering from diabetes must have self-efficacy to perform mandatory self-care tasks.

Self-compassion has been shown to have many benefits in the management of diabetes. It has been shown to reduce diabetes-related distress and improve overall psychological functioning, which promotes self-care behaviours by fostering a non-judgmental and supportive attitude toward oneself (Sirois et al., 2015; Schmitt et al., 2018). Philip et al. (2021) examined the associations between self-compassion and health-promoting behaviour and physical health in 950 peer-reviewed articles, comprising a large aggregated sample (N=29,588). Self-compassion was discovered to be positively correlated with health behaviour and physical health. It can be inferred that self-compassion as a cognitive-behavioural intervention could improve psychological and medical outcomes (Sandham & Deacon, 2013). Similarly, Ventura et al. (2019) found that higher levels of self-compassion were associated with reduced anxiety, depression, stress and other health-challenging behaviours. This protective mechanism involves employing a kind, compassionate and accepting stance toward

oneself during difficult times (Neff, 2003b), which helps individuals to achieve healthy physical and behavioural outcomes.

Self-compassion has also been shown to be an effective tool for resilience for people dealing with health issues, like chronic pain (Lanzaro et al., 2021), cancer (Siwik et al., 2022) and diabetes (Morgan et al., 2020), and better medical adherence (Sirois et al., 2015). It has also been found that individuals suffering from chronic illnesses who are self-compassionate exhibit more adaptive coping strategies (like accepting the situation or positively reframing it) and fewer maladaptive coping strategies (like quitting or blaming oneself). Higher levels of self-compassion have also been linked to better glucose regulation, which improves life satisfaction and helps diabetics achieve an ideal HbA1c (Karami et al., 2018; Charzyńska et al., 2020). Self-compassion enhancement interventions were conducted by Friis et al. (2016) and Tanenbaum et al. (2020). The recorded a significant decrease in HbA1c levels and an improvement in the participants' overall mental health after the intervention training. Sandham et al. (2023) argue that self-compassion is an effective self-resource that people with diabetes can use to manage their illness, based on a synthesis of known studies using the simplified systematic review process.

Abdollahi et al. (2021) investigated the relationship between perceived stress, self-compassion and job burnout among nurses in Tehran. The study also tested the buffering role of self-compassion in the link between perceived stress and job burnout. The findings of the moderation analysis indicated that self-compassion had a mitigating impact on the relationship between felt stress and job burnout. The partial least square-structural equation modelling showed greater levels of perceived stress associated with greater levels of job burnout and greater levels of self-compassion associated with lower levels of job burnout in nurses. Those exhibiting elevated levels of self-compassion demonstrated a greater propensity for relaxing, soothing, gentle and compassionate reactions to stressful circumstances, as opposed to

excessively critical and harsh responses towards themselves. In the light of the foregoing, it is possible for self-compassion to have an impact as a moderator in the management of stress and diabetes mellitus.

The well-being of individuals with type 2 diabetes who experience occupational stress is likely to be dependent on the effectiveness of their coping resources, particularly in terms of adherence to medication regimens, regular exercise, adoption of a healthy lifestyle and use of coping strategies and recommended treatments. Thus, the emphasis on self-compassion and perceived control is justified, as they have been found to promote positive health behaviours and protect against the negative effects of daily stressors (Neff et al., 2007; Sirois et al., 2016; Breines et al., 2012; Khunti et al., 2019). Looking at the high prevalence of type 2 diabetes globally and the prediction that, by 2030, it will rank as the seventh leading cause of death (World Health Organisation, 2011), the management of this condition is a significant challenge in terms of treatment adherence and overall well-being for Nigerian employees who are exposed to work-related stressors and experience inadequate healthcare resources to address their medical conditions. Thus, it is imperative to provide support for this population. The best way to do this is to conduct research aimed at enhancing the general well-being and adherence to treatment of employees who have type 2 diabetes.

Above all, studies have shown the efficacy of self-compassion and perceived control as cognitive-behavioural strategies for promoting positive behaviours. While studies on perceived control (in all its forms, including locus of control, self-efficacy, causal attributions, confidence, and perceived competence) have documented its role in supporting constructive mastery-oriented coping at all phases of life, self-compassion is viewed as a healthy and positive attitude towards the self, involving treating oneself with love and understanding in times of suffering, personal inadequacies and life difficulties (Neff, 2003).

Aim of the Study

There is no prior research on the moderating roles of self-compassion and perceived control in the context of Nigerian employees who have type 2 diabetes or other chronic health conditions. Therefore, the present study investigated the effect of occupational stressors on treatment adherence and well-being of employees with type 2 diabetes in Nigeria as well as the moderating roles of self-compassion and perceived control.

Research Questions

The study sought answers to the following questions:

1. To what extent does occupational stress affect the treatment adherence and well-being of Nigerian employees with type 2 diabetes?
2. To what extent do self-compassion and perceived control moderate the effect of occupational stress on the treatment adherence and well-being of Nigerian employees with type 2 diabetes?

Research Hypotheses

The following hypotheses were tested:

H1: Occupational stressors will be significantly negatively associated with well-being.

H1a: Self-compassion will moderate this relationship so that the relationship between occupational stressors and well-being will be weaker for those with higher self-compassion.

H1b: Perceived control will moderate this relationship so that the relationship between occupational stressors and well-being will be weaker for those with higher perceived control.

H2: Occupational stressors will be significantly negatively associated with treatment adherence.

H2a: Self-compassion will moderate this relationship so that the relationship between occupational stressors and treatment adherence will be weaker for those with higher self-compassion.

H2b: Perceived control will moderate this relationship so that the relationship between occupational stressors and treatment adherence will be weaker for those with higher perceived control.

Method

Participants and Procedure

A cross-sectional design was adopted to understand the relationship between occupational stress, treatment adherence and well-being of employees with type 2 diabetes and to understand the moderating role of self-compassion and perceived control on the relationships between occupational stress and treatment adherence and well-being. Participants were recruited using the convenience non-probability sampling technique. People receiving outpatient care for diabetes at Plateau State Specialist Hospital and Jos University Teaching Hospital in central Nigeria were recruited. These participants were chosen not because they were the most representative of Nigeria's diabetic population, but because they were the easiest to access given the time constraints of the study. The choice of these hospitals was based on the availability and affordability of medical facilities to attend to diabetes and other chronic health challenges. In selecting the participants for the study, the following inclusion criteria were implemented:

a) diagnosed with type 2 diabetes,
b) working population,
c) experiencing stress at work,
d) understanding, speaking, and writing English, and
e) aged between 20 and 70.

A sample size of N = 180 was estimated using a priori power analysis, with a medium effect size d= .30, α = .05, and β = .80 to test the relationship between occupational stressors and treatment adherence and well-being of Nigerian employees with type 2 diabetes as well as the moderating roles of self-compassion and perceived control.

The data collected for this study involved face-to-face administration of copies of a questionnaire with the help of five research assistants recruited and trained on the modalities of administering a face-to-face questionnaire. Ethical clearance was sought from and approved by the University of Sheffield Research Ethics Committee (Ref: 046019); the hospitals used also gave approval for the study. Subsequently, an advert for the study was posted on the notice boards of both hospitals, requesting potential participants to respond to the advertisement by sending an email to the lead researcher. They were to indicate their interest in participating in the study based on the inclusion criteria mentioned. The participants who met the inclusion criteria were notified and invited to participate.

The participants were made aware of the purpose of the project; however, they were advised not to submit their consent form until they were fully aware of what participation involved. The participant information sheet outlined the purpose of the study and what participation would involve, as well as information about their right to ask questions and that participation in the study is completely voluntary. It was possible for the participants to withdraw from the study at any time before submitting their completed forms and doing so did not have any unintended consequences. To confirm that they had read and comprehended the information and were willing to participate in the study, the participants signed a consent declaration at the bottom of the information sheet. The participants then completed the questionnaire.

Table 3.1. Sample Characteristics

Participants' Characteristics (N = 180)

		Mean	SD	N	%
Age (Years)		53.01	11.70		
Age diagnosed with type 2 diabetes		43.03	13.71		
Gender					
	Male			86	47.80
	Female			94	52.20
Marital status					
	Married			118	65.6
	Single			17	9.4
	Divorced/Separated			7	3.9
	Widowed			38	21.1
Highest level of educational					
	Non-formal			5	2.8
	Primary			32	17.8
	Secondary			57	31.7
	Tertiary			86	47.8
Ethnic Background					
	Hausa			34	19.7
	Igbo			10	5.8
	Yoruba			4	2.3
	Others			132	73.3
Duration of health condition					
	0-12 months			10	5.6
	1-2 years			27	15.0
	3-5 years			38	21.1
	> 5 years			105	58.3
Employment status					
	No response			12	6.7
	Full-time			98	58.3
	Part-time			45	26.8
	Self-employed			25	14.9

The participants comprised 180 employees with type 2 diabetes in Nigeria, with a mean age of 53.01 (*SD* = 11. 70). The mean age of the participants when diagnosed with type 2 diabetes was 43.03 (*SD* = 13.71), with the majority (58%) of the participants having lived with the disease for over five years. There were 86 males and 94 females, and the majority (66%) were married. Furthermore, the majority (52%) had no tertiary education. Also, 58% of them worked full-time, and 63 ethnic groups, out of Nigeria's more than 450 ethnic groups, took part

in the survey. Despite the negligible percentages, the three main ethnic groups –Hausa, Igbo and Yoruba –had higher representation.

Measures

All measures for the study were validated instruments with high validity and reliability.

Independent Variable

Occupational Stress

The Job Stress Measure by Sakketou et al. (2014) consists of 16 self-report items that are each assigned a Likert rating between 1 and 5, according to how much stress at work they are likely to have caused. According to this scale, "1" indicates that the item produces no stress, "2" produces little stress, "3" produces some stress, "4" produces quite a bit, and "5" produces a great deal.

The measure's divergent and convergent validity scores have been examined to assess its construct validity (Sakketou et al., 2014). This measure specifically focuses on work relationships, work-life balance, overload, control, physical health and psychological well-being. According to Sakketou et al. (2014) and Cartwright et al. (2002), the measure is reliable, with alpha coefficients of .74 and .91, respectively. In the current study, Cronbach's alpha =.95.

Moderator Variables

Self-compassion

The Self-compassion Scale (SCS) Form was used. It was originally designed by Neff (2003), but in order to lessen its burden and give researchers the opportunity to collect opinions from participants who might be unable or unwilling to complete the original long-form version, Raes et al. (2011) modified the scale to produce a short form (SCS-SF). Twelve of the original 26 SCS items are included in the short form version. The SCS-SF assesses the three main domains of self-compassion (and their negative counterparts): Self-kindness (Self-judgement), Common Humanity (Isolation), and Mindfulness (Over-identification). It includes both

positively ("I try to be loving toward myself when I am feeling emotional pain") and negatively ("I am disapproving and judgmental about my flaws and inadequacies") worded items reflecting the six components of self-compassion (Neff, 2003a). All items are prefaced with the statement "How I typically act toward myself during difficult times", and respondents indicate how often they behave in the described way using response options ranging from 1 (Almost Never) to 5 (Almost Always). When the negative items are reverse-coded and the mean subscale scores are averaged, the resulting total self-compassion score is calculated. The correlation between the long-form SCS and the SCS-SF was nearly perfect (r=0.97 across all samples), and their internal consistency was adequate (Cronbach's alpha = 0.86 across all samples). Particularly when examining total self-compassion scores, the SCS-SF is a dependable substitute for the long-form SCS. Raes (2011) posits that having two items in each subscale results in diminished reliability (r's spanning from .54 to.75). The scale had 12 items in its original version. In this study, a Cronbach alpha coefficient of 0.6 was initially observed, which was considered to be weak. The scale's alpha coefficient rose to.87 when three items were deleted. Following that, analyses (e.g., correlations and regressions) were conducted using the updated scale.

Perceived Control

The General Self-efficacy (GSE) Scale was utilised to assess perceived control. A variety of challenging life demands can be assessed using this ten-item psychometric scale that measures optimistic self-beliefs. Many studies have made use of the scale, developed by Jerusalem and Schwarzer (1995). It assesses optimism, which explicitly refers to personal agency, i.e. the belief that one's actions are responsible for a positive outcome. Participants were asked to respond to each item (e.g. "It is easy for me to stick to my aims and accomplish my goals") on a 4-point scale that ranges from "Not at all true" (1) to "Exactly true" (4). The total score is the sum of the items. Higher scores indicate higher perceived control. The scale

has also been found to be reliable (Cronbach's alpha = .87) and valid in a type 2 diabetes population (Qiu et al., 2020). In the current study, Cronbach's alpha =.83.

Dependent Variables

Treatment Adherence

The Diabetes Self-Management Questionnaire (DSMQ) was originally developed at the Research Institute of the Diabetes Academy Mergentheim and revised by Schmitt et al. (2013) to assess treatment adherence behaviours for people with type 2 diabetes. The items were adopted in the current study to measure regular medications (4 items) and adherence to diabetes-related aspects of diet (5 items). The items were rated on a four-point Likert scale with the response options "does not apply to me" (0), "applies to me to some degree" (1), "applies to me to a considerable degree" (2), and "applies to me very much" (3). The responses were scored such that higher scores are indicative of stronger adherence behaviour to recommended treatment for diabetes. For the total scale, an α coefficient of .84 was observed (Schmitt et al. 2013). In the current study, Cronbach's alpha =.72.

Well-being

The Scale of General Well-being (14-item SGWB) was used to assess various aspects of well-being (Longo et al., 2017). It was originally a 65-item tool with 14 different aspects being assessed, but it was condensed to 14 items. The scale lists 14 aspects of well-being: happiness, vitality, calmness, optimism, involvement, self-awareness, self-acceptance, self-worth, competence, development, purpose, significance, congruence and connection. The SGWB's psychometric development was divided into four stages: (1) item construction based on currently used measures to evaluate 14 components; (2) content validation by a group of six well-being professionals; (3) improved item selection and factor analysis on 507 respondents, which suggested that well-being can be conceptualised hierarchically with 14 lower-order

factors and one general factor; and (4) testing of dimensionality, invariance across age and gender, longitudinal invariance, test-retest reliability, and criterion validation with a sample of 989 respondents. The correlation between the short- and long-forms of general well-being scores was .96, and each item in the short-form had a significant relationship with its corresponding item in the long-form scale. Each item was rated on a 5-point response format, where 1 = not at all true, 2 = a bit true, 3 = somewhat true, 4 = mostly true, and 5 = very true. High scores indicated high levels of well-being. In the current study, Cronbach's alpha =.83.

Data Analysis

Correlations were carried out to investigate the relationships between the independent (occupational stress), moderator (self-compassion and perceived control) and dependent (treatment adherence and well-being) variables. Additional analyses were also conducted to examine whether any of the demographics or diabetes-related factors were associated with treatment adherence and well-being using correlations, t-tests and between-participants ANOVAs as appropriate. Hayes' PROCESS Macro was used in SPSS to examine whether self-compassion and perceived control moderated the associations between occupational stress and treatment adherence and well-being. Four moderation analyses were conducted in which occupational stress was entered as the independent variable, self-compassion or perceived control as the moderator variable, and treatment adherence and well-being as the dependent variable. Any significant interactions were explored further using simple slopes analysis to plot the regression line between the independent variable and the dependent variable at low (M - 1SD), moderate (M) and high (M + 1SD) levels of the moderator. Prior to conducting these analyses, assumptions underlying regression were checked, i.e. multicollinearity and the distributions of the residuals.

Results

Assumptions

The assumptions underlying regression were for each moderation analysis. Considering multicollinearity, as shown in Table 1 indicates that the independent and moderator variables were weakly correlated therefore indicating that multicollinearity was not an issue. Inspection of the plots of the residuals for each analysis indicated the assumptions of linearity, normality, and homoscedasticity were broadly met (see Appendix 7-8).

Correlations

Table 3.2. *Means/Standard Deviations and Correlations between the Independent, Dependent, and Moderator Variables*

		1	2	3	4	5
1.	Self-compassion	-				
2.	Perceived control	.15	-			
3.	Occupational stress	-.10	-.22**	-		
4.	Treatment adherence	.19*	-.04	-.29**	-	
5.	General well-being	.11	.63**	-.35**	-.13	-
Mean		42.33	31.26	53.86	25.33	53.37
SD		7.83	5.81	19.10	7.80	11.33

*$p < .05$, **$p < .01$, two-tailed.

The means, standard deviations, and correlations between treatment adherence, occupational stress, self-compassion, perceived control, and overall well-being are displayed in Table 3.2. The correlation results showed that occupational stress had significant negative correlations with both treatment adherence and well-being. In addition, self-compassion was significantly positively correlated with treatment adherence and there was a strong significant positive correlation between perceived control and well-being.

Table 3.3. Associations with Demographic and Medical factors

Variable	*M*	*SD*	1	2	3	4
1. Age	53.03	11.69	-			
2. Age diagnosed with diabetes	43.01	13.13	.71**	-		
3. Treatment adherence	25.33	7.80	.13	.13	-	
4. General well-being	45.96	9.83	-.12	-.14	-.12	-

Note. ** $p < .01$

As shown in Table 3.3, age had non-significant correlations with treatment adherence well-being. Similarly, age of diabetes diagnosis also had non-significant correlations with treatment adherence and general well-being.

Table 3.4. Zero-order Correction Showing the Relationship Between Occupational Stress, Self-Compassion, Perceived Control, Treatment Adherence, and General Well-Being

Variable	M	SD	1	2	3	4	5
1. Occupational stress	44.16	16.27	--				
2. Self-compassion	17.30	6.67	.103	--			
3. Perceived control	31.26	5.81	-.223**	.207**	--		
4. Treatment adherence	25.33	7.80	-.285**	-.024	-.036	--	
5. General well-being	45.96	9.83	-.255**	.257**	.390**	-.120	--

Note. ** $p < .01$

As shown in table 3.4, occupational stress showed significant negative correlations with perceived control and general well-being but a negative correlation with treatment adherence. Self-compassion was positively correlated with perceived control and general well. Also, perceived control revealed a positive correlation with general well-being. Treatment adherence did not show significant correlations with self-compassion, perceived control, or general well-being. Lastly, general well-being was negatively correlated with occupational stress, self-compassion, and perceived control.

An Independent-samples t-test was conducted to compare treatment adherence and general well-being between male and female participants. The results are presented in Table 2.

Table 3.5. Comparison of Treatment Adherence and General Well-being by Sex

Variable	Males		Females		*t*	*df*	*p*
	M	***SD***	***M***	***SD***			
Treatment adherence	25.75	7.55	25.39	7.76	0.31	175	.754
General well-being	45.07	10.34	46.75	9.42	-1.13	175	.260

There were no significant differences in treatment adherence or general well-being between males and females.

Table 3.6. One-Way Analyses of Variance of Treatment Adherence and General Well-being by Education Level

Variable	Source	*SS*	*df*	*MS*	*F*	*p*
Treatment Adherence	Between Groups	117.21	3	39.07	0.64	.591
Within Groups	10764.79	176	61.16			
Total	10882.00	179				
General Well-being	Between Groups	306.03	3	102.01	1.06	.369
Within Groups	16987.61	176	96.52			
Total	17293.64	179				

As shown in Table 3.6, the ANOVAs revealed no statistically significant differences in treatment adherence or general well-being scores between the different education levels.

Table 3.7. One-Way Analyses of Variance of Treatment Adherence and General Well-being by Marital Status

Variable	Source	*SS*	*df*	*MS*	*F*	*p*
Treatment Adherence	Between Groups	402.63	3	134.21	2.25	.084
Within Groups	10479.37	176	59.54			
Total	10882.00	179				
General Well-being	Between Groups	375.19	3	125.06	1.30	.276
Within Groups	16918.45	176	96.13			
Total	17293.64	179				

As shown in Table 3.7, the ANOVAs revealed no significant differences in treatment adherence and general well-being scores between the different marital status groups.

Table 3.8. One-Way Analyses of Variance of Treatment Adherence and General Well-being by Ethnic Group

Variable	***Source***	***SS***	***df***	***MS***	***F***	***p***
Treatment Adherence	Between Groups	342.32	3	114.11	1.91	.130
Within Groups	10539.68	176	59.89			
Total	10882.00	179				
General Well-being	Between Groups	473.27	3	157.76	1.65	.179
Within Groups	16820.38	176	95.57			
Total	17293.64	179				

As shown in Table 3.8, the ANOVAs revealed no statistically significant differences in treatment adherence and general well-being scores between the different ethnic groups.

Table 3.9. One-Way Analyses of Variance of Treatment Adherence and General Well-being by Diabetes Duration

Variable	Source	*SS*	*df*	*MS*	*F*	*p*
Treatment Adherence	Between Groups	232.56	3	77.52	1.28	.282
Within Groups	10649.44	176	60.51			
Total	10882.00	179				
General Well-being	Between Groups	53.27	3	17.76	0.18	.909
Within Groups	17240.38	176	97.96			
Total	17293.64	179				

As shown in Table 3.9, the ANOVAs revealed no statistically significant differences in treatment adherence and general well-being scores between the different diabetes duration groups.

Table 3.10. Comparison of Treatment Adherence and General Well-being by Employment Status

Variable	**Full-time (*n* = 110)**		**Part-time (*n* = 70)**		***t*(178)**	***p***
	M	SD	M	SD		
Treatment adherence	26.09	7.96	24.14	7.43	1.64	.102
General well-being	46.27	9.66	45.46	10.15	0.54	.589

As shown in Table 3.10, there were no statistically significant difference in treatment adherence and general well-being scores between full-time and part-time employed participants.

Moderation analyses predicting well-being

The first moderation analysis examined if self-compassion moderated the relationship between occupational stress and well-being (see Table 8). A significant 18.7% of the variance in well-being was explained by occupational stress, self-compassion, and their interaction, F (3,176) = 5.81, $p < .001$. As shown in Table 2 both occupational stress and the occupational stress × self-compassion interaction were significant independent predictors of well-being. The direction of the significant interaction indicated that increasing levels of self-compassion significantly weakened the relationship between occupational stress and well-being. This finding indicates that higher levels of self-compassion serve to buffer the impact of occupational stress on well-being.

Table 3.11. Summary of Moderated Regression Analysis Predicting Well-Being: Occupational Stress × Self-Compassion

Variable	Coefficient	SE	*p*	LLCI	ULCI
Occupational Stress	-.268	.047	<.001	-.362	-.175
Self-Compassion	.182	.099	.068	-.013	.379
Occupational Stress × Self-Compassion	.016	.007	.017	.003	.029

The simple slopes analyses below (see Figure 1) indicated that the relationship between occupational stress and wellbeing was negative and significant at low (M +/-SD), B = -.398, SE = .071, p <.001, and moderate (M) levels of self-compassion, B = -.268, SE = .047, p < .001, but non-significant at high (M + 1SD) levels of self-compassion, B = -.140, SE = .072, p = .053.

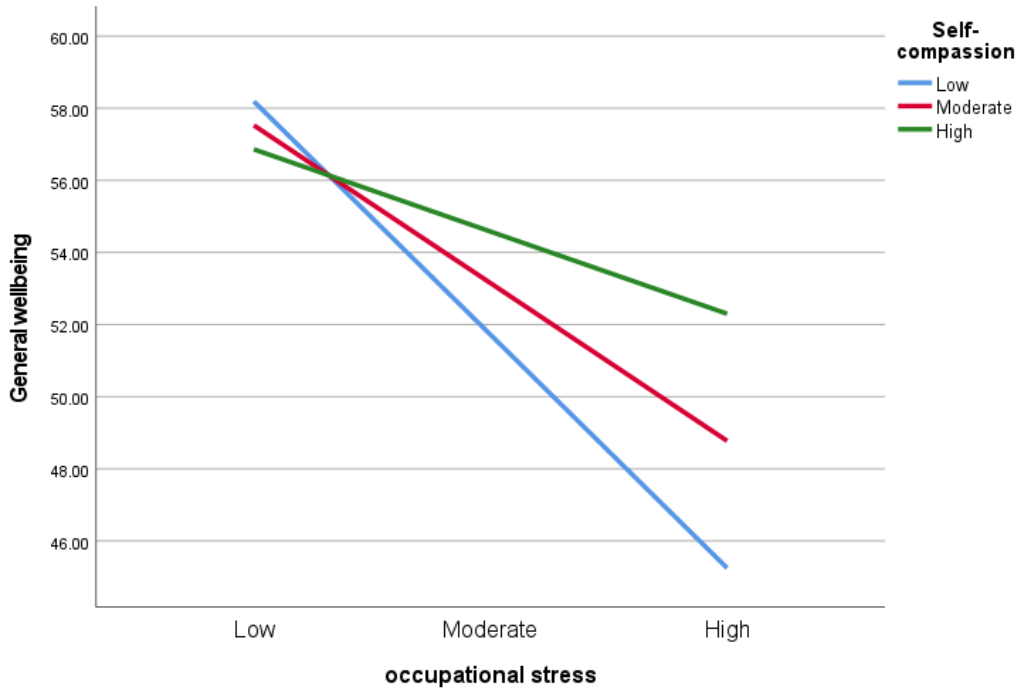

Figure 1. *Graph of the Relationship between Occupational Stress and Wellbeing, at Low, Moderate and High Levels of Self-Compassion*

The second moderation analysis tested whether perceived control moderated the relationship between occupational stress and well-being (see Table 9). Occupational stress, perceived control, and the interaction between occupational stress and perceived control explained a significant 46.2% of the variance in wellbeing, $F\ (3,176) = 50.47,\ p < .001$. Occupational stress had a significant independent effect on well-being. However, the interaction term was not significant indicating that perceived control did not moderate the relationship between occupational stress and wellbeing ($p = .08$).

Table 3.12. Summary of Moderated Regression Analysis Predicting Well-Being: Occupational Stress × Perceived Control

	Coefficient	SE	*p*	LLCI	ULCI
Constant	53.63	.64	<.001	52.36	54.90
Occupational stress	.18	.04	<.001	.10	.25
Perceived control	1.08	.11	.78	.86	1.30
Occupational stress x Perceived control	-.012	.007	.08	-.03	.01

Moderation Analyses Predicting Treatment Adherence

The third moderation analysis tested whether self-compassion moderated the relationship between occupational stress and treatment adherence (see Table 104). Occupational stress, self-compassion, and the interaction between occupational stress and self-compassion explained a significant 11.9% variance in treatment adherence, F (3,176) = 54.50, p < .001. Occupation stress had a significant independent effect on treatment adherence. The interaction term was not significant, indicating that self-compassion did not moderate the relationship between occupational stress and treatment adherence (p = .11).

Discussion

The current study also explored whether self-compassion moderates the relationship between occupational stress and treatment adherence. The interaction term between occupational stress and self-compassion was not significant, suggesting that self-compassion had no moderating effect on the association between treatment adherence and occupational stress (although the direction of the interaction was consistent with the proposed buffering effect of self-compassion). Sirois et al. (2019) examined the extent to which perceived stress accounted for the relationship between dispositional self-compassion and adherence in five distinct medical samples. Adherence and self-compassion showed a positive correlation in each

of the five samples. The study's overall findings suggested that dispositional self-compassion was linked to better medical adherence in individuals with chronic fatigue syndrome, fibromyalgia and cancer. In a cross-sectional study involving 214 cancer patients, Khalili et al. (2021) investigated treatment adherence and self-compassion. The cancer patients' adherence to treatment was found to increase with self-compassion-promoting interventions.

To investigate the effect of this moderator (self-compassion) on encouraging positive behaviour in individuals, studies have employed diverse methodologies. One example of an experimental research that aimed to cultivate a self-compassionate mindset is Leary et al. (2007). In this research, participants were guided through a series of writing prompts designed to elicit feelings of self-pity, contemplation and a sense of shared humanity as they reflected on an experience that had negatively affected their self-esteem. Negative affect was observed to decrease to a greater extent among the participants in the self-compassionate writing condition compared to those in the control condition. Lower self-compassion levels at the outset predicted reduced levels of depression, anxiety and negative affect after six months, according to a longitudinal study by Stutts et al. (2018). Like the aforementioned study, Lee et al. (2021) discovered that over a five-year duration, increases in self-compassion correlated with decreased levels of psychic distress and isolation.

Also, self-compassion's mediating effect on the psychological health of students was examined in a correlational study that used multiple regression analyses. The result showed that self-compassion mediated the relationships between various forms of distress and well-being. The study revealed that self-compassion, which is characterised by self-kindness, common humanity, and mindfulness, played a significant role in enhancing well-being and reducing suffering among the students (Fong et al., 2015). In fact, higher levels of self-compassion were associated with more well-being (such as life satisfaction and positive affect) and less distress (such as stress, negative affect, burnout and depression).

Self-compassion has been found to be related to decreased pain magnitude, pain interference and psychological distress in addition to enhanced quality of life, self-efficacy and self-care behaviours (Lanzaro et al., 2021). However, it is not appropriate to use it in place of medical care. Instead, to help people deal with the challenges of chronic medical conditions, it can be a useful addition to medical treatment (Mistretta et al., 2022). Future research could utilise mixed method approaches to uncover complex relationships and obtain a deeper understanding of the interplay of occupational stress, self-compassion, treatment adherence and general well-being. However, the efficacy of a self-compassion intervention in Nigeria is yet to be explored.

The current study found that perceived control did not significantly moderate the relationship between occupational stress and treatment adherence. However, in a study on the influence of perceived control on well-being in later life by de Quadros-Wander et al. (2013), a moderated mediation effect was found, implying that, in later life, secondary perceived control influences primary perceived control, which in turn influences satisfaction with various domains. As a result, primary control is important for overall well-being.

Individuals with low levels of perceived control feel that most of what happens to them is beyond their control. In contrast, individuals with high levels of perceived control believe that they can influence the events and outcomes of their lives (Ross & Drentea, 1998; Infurna, Ram, & Gerstof, 2012; Son & Wilson, 2017). Studies have found a relationship between perceived control and psychological and physical health (Krantz & Schultz, 1980; Rohe & Stegman, 1994; Kaur, 2017; Jibeen, 2019).

According to Wallston et al. (2007), self-management of type 2 diabetes correlates with an individual's self-efficacy in performing health behaviours and their beliefs, values and conviction in their ability to do so. In a sample of 43 diabetic adolescents, Vicki et al. (2007) examined the role of perceived control in managing the condition. As predicted by the

hypothesis, there was a strong relationship between perceived control and adjustment, indicating that perceived control was associated with both adjustment and health behaviours.

In their study, Nugent et al. (2015) examined the relationship between self-management behaviours among adults diagnosed with type 2 diabetes mellitus and health value and perceived control over health. A relationship was observed between complications associated with the disease and changes in self-efficacy, health value and beliefs regarding locus of control. Many interconnected variables, including the individual, the nature of the condition, psychological aspects and the social and environmental context, may have an impact on how well perceived control applies to managing type 2 diabetes and stress at work. For example, individuals experiencing elevated levels of anxiety or depression may encounter challenges in feeling in charge of their circumstances, which could impede their capacity to competently handle their conditions. Other factors that may support this view include the need for adequate knowledge and education about their condition, treatment options and self-management strategies as well as a strong support network that includes family members and medical professionals.

Li et al. (2022) carried out a cross-sectional study that included 1,856 students investigating the relationship between risk perception, perceived stress, perceived control and mental health and found a positive correlation between mental health and risk perception. The same also reported mental health to be significantly predicted negatively by the interaction between perceived stress and perceived control. When perceived control was low, mental health was substantially impacted by perceived stress. However, the relationship between perceived stress and mental health vanished when perceived control was high (Li et al., 2022).

The Nigerian healthcare system suffers from a dearth of medical professionals, inadequate facilities and equipment and a high rate of embezzlement of the meagre funds allocated to the health sector (Okoebor, 2021). As a result, support from the healthcare system

for individuals with type 2 diabetes and other long-term medical conditions is lacking. Patients might not be able to manage their condition well due to lack of adequate support in the environment. Instead, people may need to rely on their own actions, which are likely to be supported by strong perceptions of personal control. Kondo et al. (2021) found a positive relationship between perceived control and preventive health behaviours in a cross-sectional study involving nursing students from three Tokyo universities. Vengros et al. (2004) found that lower levels of perceived control were associated with reduced adherence to dialysis treatment in a sample of 49 participants recruited from five haemodialysis facilities connected to the University of Iowa hospitals and clinics. Perceived control can be seen to be essential to psychological and physical health because it shows that people who feel in control of their lives have stronger immune systems, healthier hearts, longer lifespans, higher levels of life satisfaction, and less anxiety and depressive symptoms (Pagnini et al., 2016).

Since self-management is imperative in diabetes and work-related stress, setting goals, pursuing them and controlling behaviour will be ideal for attaining the anticipated results of improved general well-being, given the limitations of managing chronic health issues and work-related stress. Requirements for treatment adherence, resources for managing stress, and general well-being are the anticipated results of this study. To achieve these desired outcomes, a practical framework posited by Social Cognitive Theory is required to successfully learn and perform the skills and knowledge to manage diabetes and cope with work-related stress (Bandura, 1986). According to Ockleford et al. (2008), healthcare practitioners ought to customise self-management assistance for patients in accordance with the level of personal accountability they are willing to place on managing their diabetes and stress.

Research on perceived control and self-compassion from a range of methodological and demographic perspectives gives credence to the notion that they are beneficial for people's well-being. The current study also found that self-compassion was associated with better

treatment adherence and perceived control was associated with greater well-being. However, only self-compassion was found to have a buffering effect on the impact of occupational stressors on general well-being. Other moderation effects for self-compassion and perceived control were non-significant, although they were in the predicted direction. Additional experimental work is needed to assess whether manipulating self-compassion leads to more positive outcomes.

Limitations of the Study

The study has some limitations. First, the sample was recruited from only two hospitals in central Nigeria. The extent to which the current findings can be generalised to patients from other areas, particularly rural communities, of Nigeria can be questioned. Second, only one of the moderation analyses was significant, with the others approaching significance ($p < .10$). As a result, the study was slightly under-powered to be able to reliably detect the proposed moderating effects of self-compassion and perceived control. However, given the multiple tests of the moderation hypothesis, it is possible that the one significant moderation effect could have been a chance finding. One solution to this issue is to employ Bonferroni corrections to reduce the likelihood of making a type 1 error. However, doing so increases the likelihood of making a type 2 error. Third, the study employed the cross-sectional correlation design. With this, the direction of effects (i.e. causality) cannot be determined. Fourth, the study's non-significant results could be explained by not controlling for the effect of exercise or other coping mechanisms; this could be a direction for future research and lastly, no control measures were found especially to assess control in type 2 diabetes and occupational stress management among employees, and because the Generalised Self-Efficacy Scale conceptually overlaps with locus of control. The Generalised Self-Efficacy Measure was used to assess the participants' beliefs concerning their own agency and their capacity to manage their medical conditions and

proceed beyond any challenges that may arise. Consequently, the notion of using this scale for measuring control highlights a limitation of the study.

Conclusion

As highlighted in Study 1, Nigerian employees with type 2 diabetes identified several challenges that limit their ability to consistently follow scheduled exercise routines and medication adherence schedules and employ stress-coping mechanisms for improved overall well-being. In the current study, the experience of work-related stressors was associated with lower treatment adherence as well as poorer general well-being. These findings are in line with other studies conducted in Nigeria, which found occupational stress to negatively impact all spheres of functioning, including physical, psychosocial, cognitive and behavioural functioning, which all have an impact on the well-being of employees (Akintayo, 2012). The current study also found that self-compassion moderated the relationship between occupational stress and well-being, such that the relationship between occupational stress and well-being weakened with increasing levels of self-compassion. This suggests that self-compassion may act as a buffer against some of the negative impacts on occupational stress. However, since the current findings are based on a cross-sectional correlation study, it is necessary to conduct experimental research to test whether manipulating self-compassion leads to more positive outcomes in Nigerian employees with type 2 diabetes who are experiencing occupational stressors.

CHAPTER FOUR

The Effect of a Self-Compassion Manipulation on Treatment Adherence Intentions among Employees with Type 2 Diabetes in Nigeria (Study 3)

Background: Work-related stress has been found to be significantly associated with lower treatment adherence in Nigerian employees with type 2 diabetes. Most Nigerian employers of labour offer such employees little to no support.

Study Objective: This study investigated the effect of self-compassion manipulation on the treatment adherence intentions of Nigeria employees with type 2 diabetes.

Methods: Ninety employees with type 2 diabetes who were experiencing occupational stress were recruited for the study. The participants were randomly allocated to one of two conditions (self-compassion manipulation or control); they then completed a measure of treatment adherence intentions.

Results: Treatment adherence intentions were higher among the participants in the self-compassion condition than among those in the control condition. The effect of condition on treatment adherence intentions was not moderated by baseline occupational stress.

Conclusion: It has been shown that self-compassion manipulation significantly impacts the intentions of type 2 diabetes employees to adhere to their treatment regimens. Self-compassion should, therefore, be prioritised as a means of enhancing positive well-being in employees who are exposed to stress and type 2 diabetes.

Introduction

"A healthy workplace is one in which workers and managers collaborate to use a continual improvement process to protect and promote the health, safety, and well-being of all workers and the sustainability of the workplace" (Burton & World Health Organisation, 2010, p. 83). As noted in studies by Quick et al. (1997) and Warr et al. (2018), chronic health conditions, like diabetes, are negatively impacted by workplace stressors. These stressors include excessive workload, multitasking, unscheduled overtime at work, health stigma, hatred, job insecurity, poor interpersonal relationships with colleagues, threats of job loss, and being fired due to extended absences from work because of hospitalisation (Schwartz et al., 2014; Remes et al., 2018).

According to Wang et al. (2017), occupational stress is present in all professions, and high levels of occupational stress are viewed as a detrimental aspect of the work environment, often linked to decreased psychological and physical well-being. Frequent exposure to workplace stressors is inextricably linked to (non-)adherence to treatment recommendations, as it hampers employees' management of their condition (Vasanth et al., 2017), which results in poorer health, exacerbation of diabetes, mood distortion and mental tiredness (Schwabe et al., 2010; Scott et al., 2011; Roohafza, 2014).

Against this backdrop, it is evident that exposure to workplace stress contradicts the World Health Assembly's (2012) global plan of action, in which the member states were urged to take measures on workers' health. These include building capacity for the primary prevention of diseases, occupational hazards and injuries, introducing healthy work practices, and establishing mechanisms to stimulate the development of healthy work practices. According to WHO (2012), a workplace environment involves workers and managers working together to implement a continuous improvement process to enhance and safeguard workers' health, safety

and well-being, as well as the sustainability of the workplace, with emphasis on the physical and psychosocial work environment.

The results of Studies 1 and 2 presented in this thesis indicated that the experience of workplace stress is common among Nigerian employees with type 2 diabetes. Study 1 revealed that the participants reported little or no support from their employers and typically sought assistance from religious groups, family and friends in the form of financial and emotional support as well as personal care. When they did not receive the necessary support for their required diet and medications, they usually used simple, affordable and easily accessible herbal therapies to manage their diabetes, which could not alleviate their condition completely.

In Study 2, the moderating effects of self-compassion and perceived control on the treatment adherence and well-being of Nigerian employees with type 2 diabetes were examined. Self-compassion was discovered to have a significant moderating effect on the relationship between occupational stress and well-being. As self-compassion levels increased, the influence of occupational stress on well-being diminished. This aligns with prior research that has identified positive impacts of self-compassion on diabetes results. Ferrari et al. (2017) aver that self-compassion consistently correlates with improved outcomes, such as various self-management behaviours, glycated haemoglobin (HbA1c) levels, and psychological well-being. The findings of Study 2, therefore, suggest that a self-compassion intervention might help employees with type 2 diabetes in Nigeria who are experiencing stress at work to better manage their condition.

Friis et al. (2016) carried out an 8-week mindful self-compassion intervention with people with type 1 and type 2 diabetes. They found that the intervention resulted in significantly lower levels of depression and diabetes distress in the self-compassion group, and these effects persisted at three-month follow-up. Conversely, those in the waitlist control group did not exhibit any noticeable alterations in their levels of depression or diabetes distress. Rafiee et al.

(2019) conducted a study where they implemented a 4-week self-compassion programme with individuals diagnosed with type 2 diabetes. The study revealed that those who underwent the self-compassion intervention exhibited elevated levels of hope immediately after the intervention and over the 1-month follow-up compared to those in the control group. Findings from previous studies and the wider literature suggest that self-compassion manipulation may have positive effects on treatment adherence intentions and perceptions of occupational stress among employees with type 2 diabetes who are experiencing work-related stress. Moreover, it is likely that the positive effects of self-compassion may be stronger among employees who are experiencing higher levels of work-related stress.

Aim of the Study

The present study sought to provide an experimental test of the effect of a self-compassion intervention on treatment adherence intentions among Nigerian employees with type 2 diabetes who experience occupational stress.

Research Question

Does self-compassion manipulation enhance treatment adherence intentions among employees with type 2 diabetes dealing with occupational stressors?

Hypotheses

H1: Employees with type 2 diabetes experiencing occupational stressors who receive self-compassion manipulation will report stronger treatment adherence intentions than those who do not receive the self-compassion manipulation.

H2: Employees with type 2 diabetes who are exposed to self-compassion manipulation will report reduced perceptions of occupational stress.

H3: Baseline occupational stress will moderate the effect of self-compassion manipulation on treatment adherence intentions, such that the effect will be stronger among employees who experience higher levels of baseline occupational stress.

H4: Baseline occupational stress will moderate the effect of self-compassion manipulation on occupational stress, such that the effect will be stronger among employees who experience higher levels of baseline occupational stress.

Method

Study Design

Data were collected through an in-person method using a between-groups pre- and post-test design. This design allows for the assessment of the impact of self-compassion manipulation on the dependent variable (treatment adherence intentions) by comparing the outcomes of the experimental group to the control group. This design has good internal validity due to the use of pre-test measures, which guarantees that the groups are similar and controlled for in analyses. This design was suitable for this study because it allowed for the comparison of the final post-test results between the two groups (control and experimental) while controlling for baseline scores of occupational stresses, thus providing an indication of the overall effectiveness of self-compassion manipulation. The independent variable was condition (self-compassion manipulation vs. control), while the dependent variables were treatment adherence intention and occupational stress. The moderating effect of baseline occupational stress on the effects of self-compassion manipulation was also assessed.

The study was able to realise sufficient power to find the expected effect by using G*Power to conduct an a priori power analysis. A sample size of $N = 90$ was selected with a medium effect size of $d = 0.50$, $\alpha = .05$, and $\beta = .80$ to test for differences in the strength of treatment adherence intentions in participants in the experimental (self-compassion manipulation) versus control conditions, with 45 participants randomly assigned to each condition.

Participants

A total of 90 participants with type 2 diabetes met the inclusion criteria (high score on occupational stress) and were selected from a pool of 97 participants who were administered the occupational stress measure at baseline. The participants were employees of private and public organisations who attended regular clinic appointments at Jos University Teaching Hospital and Plateau State Specialist Hospital, Jos, central Nigeria. Ethical approval was obtained from the University of Sheffield, and ethical clearance and approval to conduct the study in the study sites were also obtained from the aforementioned hospitals. An advertisement for the study was posted on the notice boards of Jos University Teaching Hospital and Plateau State Specialist Hospital requesting potential participants to respond to the advertisement by sending an email to the lead researcher indicating their interest in participating in the experiment. The inclusion criteria were being diagnosed with type 2 diabetes, attending regular appointments at the aforementioned hospitals, experiencing occupational stress (i.e. scoring > 40 on the Job Stress Measure, Sakketou et al., 2014), being employed in private or public establishments, being able to understand, speak and write English, and aged 20-70.

Experimental Conditions

A brief self-compassion manipulation, in line with Rockliff et al. (2011), was used to promote self-compassion in the study. The participants in the experimental condition received a self-compassion prime that involved showing participants self-compassionate comments to momentarily promote self-compassion. This approach is frequently used in experimental research to examine how self-compassion affects multiple outcomes, including mood, behaviour and cognition (Rowe et al., 2016). The participants in the control condition did not receive the self-compassion prime.

Instructions – Experimental Group

Self-compassion Manipulation

The participants were asked to think critically and write a few sentences briefly describing a stressful situation at work, how it affected their ability to manage their type 2 diabetes and how it made them feel whilst maintaining a balanced perspective. They were also asked to write some kind, reassuring, accepting and compassionate words or phrases about themselves while keeping in mind that everyone, including those with type 2 diabetes, occasionally makes mistakes. They were reassured that they were not the first or the last employee with type 2 diabetes to experience stress at work which could affect how well they followed their prescribed treatment. The participants spent ten minutes on the exercise.

Instructions – Control Group

The participants in the control condition were given five minutes to think and write about a stressful situation at work that has affected their ability to manage their type 2 diabetes and how it impacted their treatment adherence.

Measures

***State Self-compassion Scale – Short Form (SSCS-S)*:** Neff et al. (2021) validated the State Self-compassion Scale to assess a painful or difficult situation that one is currently experiencing (See Appendix 6). The participants were asked to indicate how well each statement applied to how they were feeling toward themselves at that moment, for example their thought about the stressful work situation, rating their responses on a 5-point scale, ranging from 1 (Not at all true) to 5 (Very much true). According to Neff et al. (2021), SSCS-S had a near-perfect (r = .96) correlation with SSCS-L (the long form). The short form (SSCS-S) also demonstrated good reliability (α = .86). To calculate a total state self-compassion score,

the means of the six subscales are added to obtain the total mean. Higher mean scores indicate a high level of self-compassion. In the current study, Cronbach's alpha at pre-test = .77, while at post-test Cronbach's alpha = .90.

Treatment Adherence Intentions: The Diabetes Self-Management Questionnaire DSMQ (See Appendix) was developed at the Research Institute of the Diabetes Academy Mergentheim. It assesses treatment adherence behaviours for people with type 2 diabetes. Items were selected from the original scale and adapted to measure intentions to take medication regularly (4 items) and to adhere to diabetes-related aspects of diet (5 items). Items were rated on a four-point Likert scale with the response options "does not apply to me" (0), "applies to me to some degree" (1), "applies to me to a considerable degree" (2), and "applies to me very much" (3). Responses were scored such that higher scores indicated stronger intentions to adhere to recommended treatment for diabetes. High internal consistency has been found for all DSMQ scales (Total scale: α = .96, Glucose Management: α = .91; Dietary Control: α = .88; Physical Activity: α = .89; Health-care Use: α = .73) (Schmitt et al., 2013). In this sample, Cronbach's alpha at the pre-test = .72 and .71 at the post-test.

Occupational Stress: The Job Stress Measure (Sakketou et al., 2014) (See Appendix) consists of 16 self-report items rated on a Likert scale from 1 to 5: "produces no stress" (1), "produces little stress" (2), "produces some stress" (3), "produces quite a bit of stress" (4) and "produces a great deal of stress" (5). The scale assesses stress and workload, job insecurity and difficulties in working relationships, physical and mental condition, communication, and beliefs about work. Scores on the measure can range from 16 to 80. This measure has been validated and it showed good internal consistency of .87 (Sakketou et al., 2014). In the current study, Cronbach's alpha =.86. Participants in this study with scores of 40 or higher on the job stress measure (the midpoint) were deemed to be experiencing high levels of occupational stress.

Procedure

In addition to increasing self-kindness and love, as well as a sense of common humanity, as acknowledged by Neff (2003a), the self-compassion manipulation in this study focused primarily on words of encouragement, acceptance, and compassion, regardless of the participants' medical conditions. The mindfulness component was excluded from this experimental manipulation in preference for highlighting the characteristics of self-kindness and shared humanity. Participants were told to cultivate self-kindness and share their human experiences, which may not properly address pleasant and negative emotions. Importantly, the idea is for the participants to show how, instead of deliberately criticising themselves, they would prefer to treat themselves with compassion and understanding to manage their diabetes and stress associated to their jobs.

Above all, the study was conducted in person at these hospitals' epidemiology units, where participants routinely visit for their medical check-ups. To confirm that they had experienced occupational stress, the participants filled out the job stress measure when they arrived. This was followed by the Self-compassion Scale and the Diabetes Self-management Questionnaire. The participants were then randomly allocated to the experimental (self-compassion) or control condition.

After completing the experimental (self-compassion) or control tasks, all participants completed the self-compassion and treatment adherence intention measures again. They were debriefed at the end of the session. It took 40-60 minutes to complete the data collection and debriefing process.

Table 4.1. Overview of the Procedure

Pre-test measures	Job Stress Measure		
	Self-compassion Scale		
	Diabetes Self-management Questionnaire		
Experimental conditions	Self-compassion Manipulation	vs	Control Condition
Post-test measures	Self-compassion Scale		
	Diabetes Self-management Questionnaire		
	Job Stress Measure		

Data Analyses

To determine the equivalence of the experimental groups, independent t-tests were used to compare the two groups on the pre-test measures of job stress, self-compassion and treatment adherence intentions. In addition, the two groups were compared on demographic and clinical measures with independent t-tests for continuous variables and chi-square tests for categorical and dichotomous variables. Assumptions underlying the Analysis of Covariance (ANCOVA) analyses were also tested (e.g., tests of normality, homogeneity of variance).

Analysis of Covariance was used to test the effect of self-compassion manipulation on treatment adherence intentions, with condition (self-compassion manipulation vs. control) as the independent variable and post-test treatment adherence intentions as the dependent

variable, with pre-test treatment adherence intentions entered as a covariate. Analysis of Covariance was also used to test the effect of self-compassion manipulation on occupational stress, with condition (self-compassion manipulation vs. control) as the independent variable and post-test occupational stress as the dependent variable, with pre-test occupational stress entered as a covariate.

Hayes' Process Macro was utilised to test whether occupational stress moderates the effect of self-compassion manipulation on post-test treatment adherence intentions, with condition (self-compassion manipulation vs. control) as the independent variable and post-test treatment adherence intentions as the dependent variable, and pre-test occupational stress entered as the moderator.

Table 4.2. Participant Characteristics by Condition: Categorical Variables

Variables	Condition				χ^2	*p*
	Expt		Control			
	N	%	*N*	%		
Gender						
Male	25	55.6	17	37.8	2.86	.09
Female	20	44.4	28	62.2		
Total	45	100.0	45	100.0		
Highest Level of Education						
Non formal	2	4.4	8	17.8	6.83	.08
Primary	9	20.0	11	24.4		
Secondary	18	40.0	9	20.0		
Tertiary	16	35.6	17	37.8		
Total	45	100.0	45	100.0		
Marital Status						
Married/living with an intimate partner	29	64.4	25	55.6	2.19	.54
Never married	7	15.6	5	11.1		
Divorced/Separated	2	4.4	4	8.9		
Widowed	7	15.6	11	24.4		
Total	45	100.0	45	100.0		
Occupation						
Private employee	27	30.0	23	25.6	0.53	.26
Public employee	18	20.0	22	24.4		
Total	45	100.0	45	100.0		

The demographic information about the study's participants is summarised in Table 1. It contains information on gender, highest education level, marital status, and occupation. Participants were evenly split between men (47%) and women (53%). Most of the sample (56%) were employed by private sector organisations, 67% of those who participated had at least a secondary education and 60% were married.

Table 4.3. Participant Characteristics by Condition: Continuous Variables

Demographic	Condition						*t*	*df*	*p*
	Experimental		Control		Full				
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*			
Age	54.58	11.80	56.18	11.25	55.38	11.49	0.66	88	.512
Duration of type 2 diabetes	8.09	6.508	7.58	5.08	7.83	5.81	-0.41	88	.679
Occupational stress (Pre-test)	27.89	13.22	26.00	13.96	26.94	13.55	-0.666	88	.512
Treatment adherence (Pretest)	15.13	7.69	13.67	7.95	14.40	7.81	-0.89	88	.376
Self-compassion (Pre-test)	20.20	5.62	18.24	6.66	19.22	6.21	-1.50	88	.068

Table 2 summarises the study participant's characteristics by condition. This consists of details on age, duration of type 2 diabetes, occupational stress (pre-test), and treatment adherence intentions (pre-test). The sample's mean age was 55.38 years (*SD* = 11.49) and the mean time with type 2 diabetes was 7.83 years (*SD* = 5.81). Age, duration of type 2 diabetes, occupational stress (pre-test), treatment adherence (pre-test) and self-compassion (pre-test) did not differ significantly between the conditions.

Table 4.4. Summary of ANCOVA Showing the Effectiveness of a Self-compassion Manipulations on Post-Test Self-Compassion

Source	Type III Sum of Squares	df	Mean Square	F	*P*	Partial Eta Squared
Self-compassion	17.401	1	17.401	2.81	.01	.031
Condition	730.283	1	730.283	117.72**	.00	.575
Error	539.710	87	6.204			

a. R Squared = .598 (Adjusted R Squared = .589)

Note. ***** p<.001.***

Table 3 reports the findings of an Analysis of Covariance (ANCOVA) result showing the condition had a significant effect on self-compassion scores. This suggests that the manipulation of self-compassion had a significant impact on the participants' post self-compassion scores. Furthermore, Levene's Test of Equality of Error Variances indicated that the assumption of homogeneity of variance was met. This suggests that the variances of the two groups were not significantly different.

The overall model explained a significant portion of the variance in post-test self-compassion scores, with an R^2 of .598 (adjusted R^2 = .589). This indicates that approximately 59.8% of the variance in post-test self-compassion can be attributed to the condition under which participants were assessed.

Table 4.5. Summary of ANCOVA Showing the Effect of Self-Compassion on Treatment Adherence Intention controlling for Pretest Self-Compassion Scores

Source	Type III Sum of Squares	df	Mean Square	F	*P*	Partial Eta Squared
Self-compassion pretest	70.053	1	70.053	3.939	.051	.050
Self-compassion posttest	981.018	13	75.463	4.243	.000	.424
Error	1333.995	75	17.787			

a. R Squared = .426 (Adjusted R Squared = .319)

Note. ***** p<.001.***

The Analysis of Covariance (ANCOVA) above shows the effect of self-compassion on treatment adherence intention, controlling for pretest self-compassion scores. The model explained 42.6% of the variance in treatment adherence post-test scores, $F(14, 75) = 3.978$, $p < .001$, partial $\eta^2 = .426$.

Self-compassion post-test scores significantly predicted treatment adherence, suggesting a strong relationship between self-compassion and treatment adherence after the intervention. The pre-test self-compassion scores was significant as a covariate, indicating a potential influence of initial self-compassion levels on treatment adherence outcomes. Therefore, these results suggest that changes in self-compassion are associated with treatment adherence intention, with post-test self-compassion scores accounting for a substantial portion of the variance in treatment adherence. The significant effect of pretest self-compassion scores implies that initial levels of self-compassion may also play a role in treatment adherence outcomes.

Table 4.6. Summary of ANCOVA Testing the Effect of a Self-Compassion Manipulation on Treatment Adherence Intentions

Source	Type III Sum of Squares	df	Mean Square	*F*	*p*	Partial Eta Squared
Treatment adherence pre-test	151.227	1	151.227	6.469*	.01	.069
Condition	112.196	1	112.196	4.799*	.03	.052
Error	2033.884	87	23.378			
R Squared = .125 (Adjusted R Squared = .105)						

Note.*p<.05. *** p<.001.

An ANCOVA revealed that there was a significant main effect of condition (self-compassion manipulation) on treatment adherence intentions at post-test when controlling for pre-test treatment adherence intentions (see Table 3). Inspection of the estimated marginal means, controlling for pretest treatment adherence intentions, revealed that participants in the experimental condition had stronger post-test treatment adherence intentions (M = 14.83, SE = 0.72) than participants in the control condition (M = 12.59, SE = 0.72).

Homogeneity of variance was evaluated using Levene's test. This test assesses if the variations of treatment adherence intention scores among the groups are same. Levene's test showed no significant variation in variances across the groups, confirming homogeneity of variance. Tests of normality (Kolmogorov-Smirnov (K-S) test, Shapiro-Wilk test) indicated that the treatment adherence intention measure was not normally distributed (see Appendix 8). However, parametric tests, such as ANOVA, are relatively robust to violations of normality, especially when sample sizes are large (i.e., > 40) and when other assumptions (e.g., homogeneity of variance) are met.

The effect size, represented by the partial eta-squared (partial η2) value, was .052. This indicates that approximately 5.2% of the variance in treatment adherence scores can be attributed to the self-compassion manipulation. The covariate, pre-test treatment adherence intention, also had a significant effect on treatment adherence intention. These findings collectively suggest that the self-compassion manipulation positively impacts treatment adherence intentions (even when controlling for pretest intentions).

Table 4.7. Summary of ANCOVA Testing the Effect of a Self-Compassion Manipulation on Post-Test Occupational Stress

Source	Type III Sum of Squares	df	Mean Square	*F*	p	Partial Eta Squared
Occupational stress pre-test	7583.849	1	7583.849	309.99***	<.001	.781
Condition	6504.987	1	6504.987	265.89***	<.001	.753
Error	2128.462	87	24.465			

R Squared = .861 (Adjusted *R* Squared = .858)

Note. *** $p < .001$.

The ANCOVA revealed a main effect of condition (self-compassion manipulation) on occupational stress at post-test when controlling for pretest occupational stress scores (see Table 4). Inspection of the estimated marginal means, controlling for pre-test occupational stress, revealed that participants in the experimental condition had lower post-test occupational stress scores ($M = 9.60$, $SE = 0.74$) than participants in the control condition ($M = 26.65$, $SE = 0.74$).

Levene's test was used to evaluate the assumption of homogeneity of variance. The Levene's test result showed no significant variation in variances between the groups, confirming the assumption of homogeneity of variance. This finding supports the assumption that the variances of occupational stress scores are approximately equal in both groups. These results present the findings from two normality tests applied to the variable " "Occupational stress": the Kolmogorov-Smirnov test (with Lilliefors Significance Correction) and the Shapiro-Wilk test. These tests are commonly used to assess whether a dataset follows a normal distribution, which is a fundamental assumption for many statistical analyses.

For the Kolmogorov-Smirnov test, we observe a statistic of 0.075, with 180 degrees of freedom, and a significance level (p-value) of 0.016. This p-value, being less than the

conventional threshold of 0.05, suggests that we should reject the null hypothesis of normality. The Shapiro-Wilk test, which is generally considered more sensitive, especially for smaller sample sizes, yields a statistic of 0.965, also with 180 degrees of freedom, and a significance level below 0.001. This provides even stronger evidence against the assumption of normality.

The consistent result from both tests indicates that the "Occupational stress" variable deviates significantly from a normal distribution. This finding has important implications for subsequent statistical analyses. Researchers working with this data should be cautious about using parametric tests that assume normality. Instead, they might consider employing non-parametric alternatives, data transformation techniques, or robust statistical methods that do not rely on the assumption of normality. Additionally, it would be beneficial to visually inspect the data using histograms or Q-Q plots to gain a better understanding of the specific nature of the non-normality, such as skewness or kurtosis, which could inform the choice of appropriate analytical methods or transformations.

The large partial eta-squared value (.753) indicates a strong effect size. This value suggests that a substantial portion of the variability in post-test occupational stress scores can be attributed to self-compassion manipulation, even when accounting for pre-test scores. The result shows that there was a significant effect of the self-compassion manipulation on post-test occupational stress. This shows that the self-compassion manipulation significantly reduced the level of occupational stress among participants.

Table 4.8. Summary of Moderation Analysis Predicting Post-Test Treatment Adherence Intentions

	(LLCI-ULCI)	***SEB***	***t***	***p***
Condition	2.232 [-.018, 4.482]	1.132	.207	.052
Occupational stress	.011 [-.093, .115]	.052	.071	.837
Condition * Occupational stress	.007 [-.193, .207]	.100	1.53	*.944*
Treatment adherence pre-test	.161 [-.48, .371]	.105	1.532	*.129*

A moderation analysis using the PROCESS macro examined whether occupational stress moderated the effect of the self-compassion manipulation on post-test treatment adherence intentions (see Table 5). Condition (self-compassion manipulation vs control) was entered as the independent variable, along with pre-test occupational stress, the interaction between condition and pre-test occupational stress, and pre-test treatment adherence intentions as a covariate. Post-test treatment adherence intention was the dependent variable. Overall, the model was significant, explaining 13% of the variance, F (4,85) = 3.06, p = .02. However, the interaction between condition and occupational stress was non-significant, indicating that occupation stress did not moderate the effect of the self-compassion manipulation on treatment adherence intentions.

Table 4.9. Summary of Moderated Analysis Predicting Post-Test Occupational Stress

	(LLCI-ULCI)	***SEB***	***t***	*p*
Condition	1.57 [.44, 2.70]	.57	2.76	.01
Occupational stress	1.54 [1.46, 1.62]	.04	39.76	<.0001
Condition * Occupational stress	-.61 [-.66, -.56]	.03	-24.08	*<.0001*

A moderation analysis using the PROCESS macro examined whether occupational stress at pre-test moderates the effect of a self-compassion manipulation on post-test occupational stress (see Table 6). Condition (self-compassion manipulation vs. control) was entered as the independent variable, along with pre-test occupational stress, and the interaction between condition and pretest occupational stress. Post-test occupational stress was the dependent variable. Overall, the model was significant explaining 98% of the variance, F (3,86) = 1423.13, $p < .001$. The interaction between condition and occupational stress was significant, thereby indicating that occupation stress at pre-test moderated the effect of the self-compassion manipulation on occupational stress at post-test. The direction of the interaction indicates that the effect of condition on post-test occupational stress became stronger as pre-test occupational stress scores increased from low (M - 1SD), B = -7.91, SE = 0.56, $p < .001$, to moderate (M), B = -17.91, SE = 0.40, $p < .001$, to high (M + 1SD), B = -26.11, SE = 0.56, $p < .001$, levels. Thus, the self-compassion manipulation had a greater effect at higher levels of pretest occupational stress (see Figure 1).

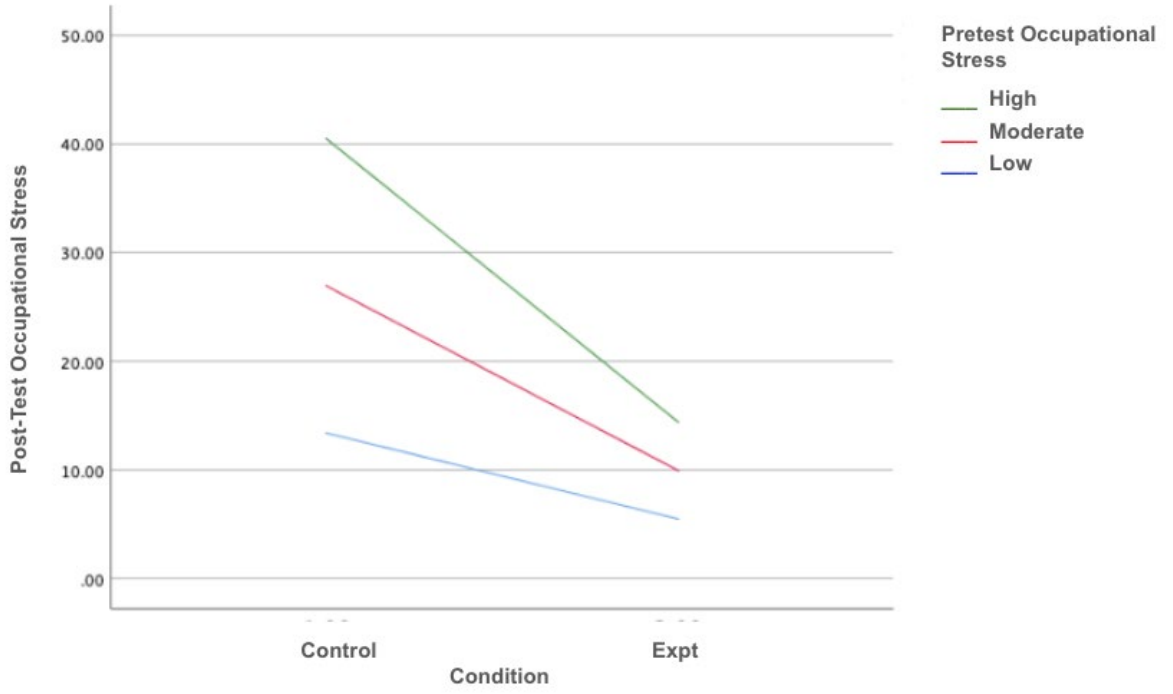

Figure 1. *Simple Slope Analysis of the Effect of Condition on Post-Test Occupation Stress at Low (M-1SD), Moderate (M) and High (M + 1SD) Levels of Pre-Test Occupational Stress.*

Discussion

The current study employed an experimental design to investigate the effect of brief self-compassion manipulation on occupational stress and treatment adherence intentions of employees with type 2 diabetes who were experiencing stress at work. The participants who were exposed to self-compassion manipulation reported reduced levels of occupational stress in comparison to those in the control group. According to Kotera et al. (2021), there is no previous evidence substantiating the effectiveness of self-compassion interventions in the workplace. The current study is novel in the Nigerian context, as it examined self-compassion treatment adherence and occupational stress. It suggests that employees with type 2 diabetes who are stressed at work and are exposed to chronic medical concerns could benefit from a self-compassion intervention. Neff (2003a) posits that, rather than reacting negatively when faced with hardship or unpleasant situations, individuals could benefit from practising self-compassion.

The current study also examined whether receiving self-compassion manipulation would cause employees with type 2 diabetes who are under stress at work to report stronger intentions to adhere to their treatment regimen than those who do not. When controlling for the pre-test score of treatment adherence intentions, a significant main effect of condition (self-compassion manipulation) was found on treatment adherence intentions at post-test. This indicated that those who were subjected to self-compassion manipulation expressed strong intentions to adhere to their treatment better than those in the control group. The findings imply that self-compassion interventions have the potential to produce significant improvements in diabetes treatment adherence intentions. The results support Friis et al. (2015), who argue that self-compassion might assist individuals with diabetes in better controlling their diet and medication. Similarly, higher levels of self-compassion have consistently been found to be associated with better psychological well-being (MacBeth et al., 2012; Zessin et al., 2015),

whereas lower levels of self-compassion have been linked to increased depressive and post-traumatic stress disorder symptoms (Krieger et al., 2013; Ehret et al., 2015; Hiraoka et al., 2015).

Hope et al. (2014) found that self-compassion may help people progress closer to their goals by reducing the increase of negative emotions in challenging circumstances, such as finding difficulty in following treatment recommendations. In a cross-sectional study, Ashouri (2021) examined the relationship between self-compassion and treatment adherence in 214 cancer patients. The results indicated that adherence to treatment was significantly predicted by education and the recognition of suffering as a part of humanity. Sirois et al. (2018) claim that self-compassion could be advantageous for medical populations and medical adherence. Their study found that dispositional self-compassion enhanced adherence in individuals with cancer, fibromyalgia and chronic fatigue syndrome by reducing stress. Sirois et al. (2014) also conducted a meta-analysis which revealed that self-compassion is consistently and favourably associated with engaging in health-promoting behaviours crucial for managing chronic illnesses, such as stress reduction, regular exercise, good diet and consistent sleep patterns.

Existing research also supports the beneficial effect of self-compassion on various health-related outcomes. In the context of chronic illnesses, self-compassion has been found to be a highly significant predictor of improved quality of life (Pinto-Gouveia et al. 2013; Edwards et al., 2019). Khalili (2021) examined the correlation between cancer patients' adherence to treatment and their level of self-compassion and revealed a strong relationship between the two measures. The self-regulatory system embedded in having self-compassion was noted, as the participants became conscious of their obligations to maintain steadfastness with diet, exercise and treatment requirements. Consequently, it can be inferred that self-compassion can serve as an adaptive emotion-regulation strategy in times of distress. It promotes overall well-being by lowering negative emotions and thoughts about oneself,

feelings of isolation, self-criticism and avoidance of unpleasant experiences (Neff, 2003a). In Kyeong's (2013) study, the moderating role of self-compassion in the relationship between psychological health and academic burden was investigated. Self-compassion was found to moderate the relationship between depression and academic burnout as well as the association between academic burnout and psychological health. All these studies revealed the potency of self-compassion across human domains, including chronic health challenges, like type 2 diabetes.

The effect of self-compassion manipulation on levels of occupational stress among employees with type 2 diabetes was also assessed. After controlling for the occupational stress score from the pre-test, self-compassion manipulation was found to have a main effect on occupational stress at the post-test. Those exposed to self-compassion manipulation reported significantly lower levels of occupational stress than those in the control group, who were not. The results are, therefore, in line with Sirois et al. (2015), who hypothesise that greater use of adaptive coping mechanisms results in decreased stress. Self-compassion has been linked to lowered levels of stress, anxiety, depression, body dissatisfaction and fear of failing (Raes 2010; Daye et al., 2014; Finlay-Jones et al., 2015). More compassionate individuals function better in daily life, have better emotional balance and experience less pain from chronic illnesses (Costa et al., 2010; Wren et al., 2012).

The self-compassion group in the current study experienced lower levels of occupational stress after the manipulation, which has practical significance, particularly in situations where occupational stress can negatively impact people's well-being, work performance and general quality of life. Based on the findings of this study, it can be argued that self-compassion interventions may aid stress reduction in workplace settings. It has been noted that people who are highly self-compassionate have better physical health in a number of areas, including physical fitness (Arts-de Jong et al., 2018), lack of illness symptoms (Hall

et al., 2013), low pain intensity (Allen et al., 2012) and adaptable physiological responses to stress (Breines et al., 2014). Enhancing or cultivating self-compassion holds promise as a helpful asset in the realm of preventive healthcare. The utilisation of this technique has the potential to enhance people's ability to effectively regulate their physical well-being, which could mitigate the occurrence or intensity of many diseases and disorders. The correlation between self-compassion and the ability to respond physiologically to stress is essential. Considering the detrimental impact of prolonged stress on physiological well-being, the presence of any psychological characteristic capable of alleviating such consequences may yield significant advantages for overall health.

The strength of self-compassion cannot be understated. Terry et al. (2011) found that self-compassion can support self-regulation by enhancing adherence to medical advice, decreasing defensiveness, and lowering emotional states and self-blame that obstruct self-regulation. In the view of Putnam et al. (1994), patients frequently disregard medical advice from their medical professionals, sometimes by overdoing it physically or by failing to take prescribed medications as instructed. Medical adherence rates are thought to be less than 50% (Vermeire et al., 2001) and identifying the characteristics that are consistently associated with adherence have proven to be elusive for researchers. Yet, self-compassion is reported to be associated with lower levels of self-reported stress in medical and non-medical populations (Allen et al., 2010; Sirois et al., 2015), exercise and healthy eating (Dunne et al., 2018; Sirois et al., 2015), self-care in medical populations (Ferrari et al., 2017), healthy emotion regulation (Sirois et al., 2015; Sirois et al., 2019) and medical adherence (Dowd et al., 2017; Sirois et al., 2019). Thus, these results and the results of the current study imply that self-compassion interventions could be beneficial in addressing medical concerns, including intentions to adhere to treatment even in stressful situations.

The current study also examined whether the effect of self-compassion manipulation on treatment adherence intentions and occupational stress was moderated by pre-test levels of occupational stress; in other words, it tested whether self-compassion manipulation is more (or less) effective among employees experiencing higher (or lower) levels of occupational stress. It was found that self-compassion manipulation had a stronger effect on post-test perceptions of occupational stress when baseline occupation stress was relatively high than when it was relatively low. This suggests that self-compassion interventions may be particularly effective for those experiencing high levels of stress at work. However, baseline levels of occupational stress did not moderate the effect of self-compassion manipulation on treatment adherence intentions, suggesting that self-compassion interventions may be equally effective for supporting treatment adherence regardless of the level of occupation stress.

In sum, self-compassion manipulation increased treatment adherence intention and reduced occupational stress for the participants in this study. People can manage the stress and strains of their jobs and therapies better if they practise self-compassion, which teaches them to be understanding and compassionate to themselves. To help individuals adhere to their regimens and improve their overall quality of life, healthcare professionals and those who have health challenges –such as Nigerians with type 2 diabetes –can collaborate to build and develop self-compassion skills.

Implications of the Study

The results of this study's manipulation of self-compassion indicate that when individuals, especially Nigerian employees with type 2 diabetes, have self-compassion skills, they will be better able to manage the challenges posed by their medical condition. In particular, this study shows that employees who possess these skills will be more resilient and willing to adopt more positive health behaviours that will improve their diabetes and overall well-being.

As highlighted in Study 1, Nigerian employees with type 2 diabetes often face stigma, threats of losing their jobs and resentment from colleagues. Being able to self-compassionately manage these uncomfortable emotions may lead to a stronger sense of self-worth. Thus, cultivating resistance to unfavourable emotions and deeply-ingrained self-defeating beliefs through self-compassion is likely to advance overall well-being. In these situations, such employees ought to receive adequate guidance and support to assist them develop and apply self-compassion skills that will help them process their emotions.

Limitations of the Study

The current study has a number of limitations that should be acknowledged. First, although the study was adequately powered, the sample size was still small and therefore the results may require replication. The capacity to draw strong conclusions regarding the efficacy of self-compassion that are generalisable to other employees with type 2 diabetes who experience stress at work may be hampered by the small sample size. Second, the study focused on employees' intentions to adhere to treatment recommendations rather than their actual behaviour. The extent to which these more positive intentions translate into greater treatment adherence remains to be tested. Strong intentions do not always translate into behaviour – what is known as the intention-behaviour gap (Sheeran et al., 2016). Further research is therefore needed to examine whether self-compassion manipulation also impacts on subsequent treatment adherence behaviour. Third, the current study only assessed the impact of self-compassion manipulation immediately after pre-test. Longitudinal studies would therefore be beneficial to examine the longer-term effects of self-compassion interventions on treatment adherence intentions (and behaviour) and occupational stress.

Future research should seek to replicate these studies with larger, more diverse samples to increase the generalisability of the results. This will include gathering data from the same employees with type 2 diabetes over a long period of time –often months or even years. In this

instance, the objective will be to identify trends and patterns, make accurate assessment of long-term impact and the practical considerations of the impact of self-compassion interventions on managing and coping with work-related stress among Nigerians with types 2 diabetes. Longitudinal research can offer a more robust and thorough assessment of the long-term effects of self-compassion therapies on treatment adherence and occupational stress. This makes it possible for researchers to consider individual variations, coping mechanisms and stress types, all of which lead to a more thorough evaluation of the intervention's efficacy.

The current study tested the short-term impact of a brief self-compassion manipulation. To produce longer-term effects on treatment adherence and occupational stress, it may be necessary to use more intensive self-compassion interventions. In addition, it should be noted that self-compassion manipulation was based on Neff's (2023) conceptualisation of self-compassion, which emphasises reduced self-judgments, reassuring, acceptance and compassion, as well as self-kindness and common humanity. However, this approach to self-compassion manipulation did not include a mindfulness component, which could be considered in future research.

Conclusion

The current study investigated whether a brief self-compassion manipulation increases treatment adherence intentions among Nigerian employees with type 2 diabetes exposed to occupational stressors. It was found that these employees had better treatment adherence intentions and lower occupational stress when they had been exposed to self-compassion manipulation. To improve one's health, following medical advice, taking medication on time and making lifestyle changes are crucial and require concentrated self-regulation (Terry et al., 2011). Most medical regimens are time-consuming, costly or uncomfortable, forcing patients to either forgo enjoyable activities or subject themselves to difficult chores (Terry et al., 2011).

A greater degree of self-compassion may help patients to better manage their conditions and cope with external stressors.

The current findings indicate that self-compassion manipulation is an effective strategy that has a favourable impact on intentions to adhere to treatment regimens and perceptions of occupational stress. Given that employing self-compassion mechanisms is beneficial for individuals, especially employees with health issues and work-related stress, it is recommended that employees, employers of labour and medical professionals adopt, reinforce and give self-compassion a high priority in order to improve the overall well-being of employees.

CHAPTER FIVE

General Discussion

The findings of this thesis highlight the challenges associated with having type 2 diabetes while under occupational stress, particularly in Nigeria, where government- and employer-provided interventions and support services are lacking. In such situations, the development of diabetes management techniques and coping mechanisms for work-related stress becomes crucial. Because type 2 diabetes treatment plans lay strong emphasis on self-care, they place demands on a person's psychological, behavioural and financial health, making it more difficult to effectively manage the condition.

This thesis sheds light on the impact of self-compassion and perceived control on the well-being and adherence to treatment of Nigerian employees with type 2 diabetes who are experiencing work-related stressors, based on the results of the qualitative, quantitative, and experimental studies. The analysis of each of these studies has enhanced our understanding of the experiences of type 2 diabetes employees working in demanding environments; the relationships between self-compassion and perceived control on occupational stress, well-being, and adherence; and the impact of self-compassion manipulation on treatment adherence intentions of Nigerian employees with type 2 diabetes who are experiencing occupational stress. The discussion is organised thematically along the initial research questions set out at the beginning of the thesis.

Evidence of the experiences of occupational stress, treatment adherence and the well-being of Nigerian employees with type 2 diabetes

Diabetes mellitus has been found to have impact on all facets of human wellness, including physical, psychological and financial aspects (Christian et al., 2021). Study 1 employed a qualitative approach to investigate the experiences of Nigerian employees with type 2 diabetes who were under stress at work. The thematic analysis identified five themes:

(1) the effects of workplace stressors on well-being; (2) the effects of workplace stressors on diabetic conditions; (3) the current type 2 diabetes treatment; (4) the support employees receive in managing their type 2 diabetes and coping with occupational stressors; and (5) the influence of beliefs and the ability to self-manage type 2 diabetes and cope with work-related stress.

The theme "the effects of workplace stressors on well-being" was further divided into two sub-themes: "physical stressors" and "psychological stressors" that affect employees' well-being. Organisational changes, excessive workload, burnout, rigid deadlines, multitasking, erratic schedules, inconsistent health policies and role ambiguity were all highlighted as physical stressors; while the psychological stressors identified included tension, stigmatisation, being called lazy, hatred, discrimination and the threat of losing one's job. All of these stressors had adverse effects on the well-being of the participants. A transactional model by Lazarus and Folkman (1987) emphasises the relationship between the individual and the environment (i.e. the workplace). It provides a theoretical framework for understanding the participants' experiences. According to Lazarus and Folkman (1987), stress is a process that depends on a person's appraisal of the situation, how well they are able to cope with it. The participants in the study revealed that combining type 2 diabetes management with work-related stress was challenging, making it difficult to adhere to treatment regimens, which naturally affected their general well-being.

Cognitive appraisal and coping are the model's primary constituents. Cognitive appraisal is the process of evaluating a situation to see if it is dangerous, threatening, or difficult, while coping refers to the mechanisms people employ to manage stress (Lazarus et al., 1987). The research presented in the thesis found a strong relationship between occupational stress and lower levels of well-being and treatment adherence among type 2 diabetes employees. The people experiencing work-related stress reported experiencing behavioural, psychological and physical challenges, which can have detrimental impacts on

them and their organisations (Folkman, 2008; European Agency for Safety and Health at Work (EU-OSHA), 2015). Therefore, it is advised that work policies and regulations that promote well-being be accessible to all employees and updated periodically to take into account changes to work policies and procedures. Regular training sessions should also be held to ensure that employees are knowledgeable about safety protocols, recognising hazards and emergency response approaches. Organisations can create a comprehensive and integrated approach to occupational safety and health by combining well-being-promoting policies and regulations. This will foster a work environment where employees' well-being is prioritised in terms of receiving all-around support.

The second main theme concerned how workplace stress affected employees' adherence to diabetes treatment plans. Stress at work was found to affect the participants' adherence to treatment plans, workplace errors and likelihood of forgetting recommended treatment regimens. These outcomes could lead to a variety of diabetes complications, anxiety, tension and exhaustion, as well as frequent hospitalisation for patients. Employees with diabetes may face physical and psychological distress, which may intensify if they reject all of the insights provided in this thesis regarding adherence and comprehensive diabetes care.

The use of alternative therapies for the management of diabetes mellitus in this population was identified as the third theme. Owing to the lack of support, the participants committed to managing their diabetes using less expensive alternatives. Many of the participants reported using Chinese and herbal remedies, as well as regular prayer to the Almighty God, which they acknowledged helped to improve their well-being.

Many common herbs have been noted to lower blood glucose levels. Several recent clinical studies on human subjects have reported that medicinal plants with antidiabetic potential include *Scoparia dulcis*, *Cinnamomum cassia*, *Ficus racemosa* bark, and *Portulaca oleracea* seed (Karim, 2013; Senadheera et al., 2015; Anderson et al., 2016). Evaluating trial

primary outcomes using the Cochrane Handbook for Systematic Reviews of Interventions, Yu et al. (2018) found that, of the 58 studies, 56 demonstrated the effectiveness of Chinese herbal remedies in lowering blood sugar levels, insulin resistance and clinical symptoms of patients with type 2 diabetes. The effectiveness of herbal remedies was also highlighted by participants in this study; however, no other studies in Nigeria have supported this claim. There is also no solid evidence that supplements or herbs help diabetics (American Diabetes Association, 2022). Nevertheless, some studies indicated that a number of natural treatments for type 2 diabetes, particularly when combined with oral medication, can help control blood sugar levels (Wong, 2023).

The fourth theme focused on the support employees under work-related stress can get to manage their type 2 diabetes. On the occasion of Diabetes Day in 2023, the non-profit organisation Diabetes UK gave employers a list of seven steps they should take to assist employees who have diabetes to manage it and prevent its onset. The steps were acknowledging diabetes as a serious workplace health condition, promoting openness and transparency, and reducing stigma; acknowledging that employers may need to make accommodations for employees with diabetes; installing a "hypo" box; educating people about the warning signs; encouraging healthy lifestyle changes; considering proactive health screening as well as health promotion; and acknowledging that there are available resources that can be helpful. However, the participants in this study indicated that there was no organisation or advocacy group in Nigeria acting as a bridge between them and their employers, thereby making the management of diabetes more difficult and challenging. Many of the workers admitted that their employers did not always prioritise their welfare, which had negative effects on their well-being.

The employees acknowledged reliance on their own efforts to secure medications and required diets as well as relying on their friends, relatives and religious leaders to secure the support they needed to improve their general well-being. They confirmed that they struggled

to meet their financial needs with their meagre earnings, which were insufficient to feed their families, pay for their children's schooling and purchase necessary medications. With all these difficulties, the employees were further burdened by the difficulties of having diabetes, exposure to workplace stress and being hampered in getting the assistance they required. This situation contrasts with the fundamental principles of occupational health and safety established by the International Labour Organisation, which emphasises employees' health promotion as a key component of occupational health practice; this stresses the need for improvement to employees' physical, mental and all-round well-being.

The influence of beliefs on one's capacity to manage type 2 diabetes and cope with stress at work was the fifth, and final, theme. This theme described the participants' belief in and capacity for self-control through initiatives that improve adherence to taking prescription medications as directed and on time, working out frequently to burn off excess blood sugar in the body, and maintaining a healthy diet based on the capacity to incorporate religious rituals managing health challenges. Examining this theme further revealed that their capacity to autonomously manage their type 2 diabetes and cope with stressors related to their jobs was influenced by their practice of fasting and constant prayer as religious rituals. In addition, the following sub-themes –self-help, ability, steadfastness to treatment, fasting, and prayer –were identified by the participants as being beneficial in helping them manage their condition.

The final theme indicated that many of the participants engaged in rituals related to religion to help them to cope with their situation. Most of the themes highlighted that people felt inadequate in tackling their situation which included stress at work and type 2 diabetes management. Those who practised faith-based behaviours –like the perseverance to fast regularly and pray nonstop –benefitted from a deep sense of consolation and support that improved their general well-being. The focus of this research was to explore factors related to improved self-management (treatment adherence) and overall well-being among Nigerian

workers with type 2 diabetes. The results of this study indicated that many participants felt a lack of personal control over managing their diabetes and stress at work. Instead, they relied on traditional remedies and religious practices to manage their condition and to seek compassion.

In view of the adverse effects that occupational stress has been found to have on the treatment adherence and overall well-being of employees with type 2 diabetes, as well as the lack of support available to help them manage their condition, Study 2 identified protective factors that individuals may employ to reduce the negative effects of occupational stress on these outcomes, specifically self-compassion and perceived control.

Evidence of the moderating effects of self-compassion and perceived control on the relationship between occupational stressors and type 2 diabetes employees' treatment adherence and well-being

Study 2 used a cross-sectional correlational design to examine the impact of occupational stressors on the treatment adherence and well-being of Nigerian employees with type 2 diabetes as well as the moderating role of self-compassion and perceived control in the management of, and coping with, these challenges.

Previous research has indicated that self-compassion and perceived control enable individuals to handle distressing thoughts and feelings in a way that improves their physical and psychological well-being. According to Friis et al. (2015), self-compassion may empower individuals with the emotional stability they require to manage their health, even in the face of the discomfort associated with changing crucial health behaviours, like diet and exercise. Eriksson et al. (2018) found that self-compassion reduces burnout; Delaney et al. (2018) discovered that self-compassion promotes increased resilience; and Alkema et al. (2008) and Dev et al. (2018) found that employees who practise self-compassion report higher levels of

well-being and lower levels of burnout and emotional exhaustion. Infurna et al. (2013) investigated how well perceived control predicted health over a 16-year period, both in terms of level and change. Eighteen years later, they discovered evidence of bidirectional relationships: higher levels of perceived control predicted better health and well-being; and higher levels of well-being and health predicted greater perceived control. High levels of perceived control have been found to improve general quality of life, shield against misfortune and aid self-control when pursuing objectives (Chipperfield et al., 2017). Perceptions of control are likely to facilitate an adaptive emotional response to the inevitable setbacks that occur when trying to change health behaviours (Sirois et al., 2015a). Self-compassion and perceived control over one's circumstances are therefore useful coping mechanisms for managing and overcoming health challenges.

The findings of Study 2 supported the themes identified in the qualitative study, with occupational stress being significantly associated with reduced treatment adherence and poorer well-being. In contrast, self-compassion and perceived control were associated with better well-being and reduced occupational stress. Contrary to expectations, perceived control did not significantly moderate the relationships between occupational stress and either treatment adherence or well-being. It is possible that the occupational stress that the participants were experiencing led to loss of perceived control; for example, stress has been shown to make people feel less in control of the things they do (PsychCentral, 2022). Bhanji et al. (2016) argues that having a sense of control frequently shields a person from the effects of prior stress and encourages maintenance of healthy, positive behaviours. As such, rather than perceived control, what may be more important for this group is self-efficacy, which is the belief that one can carry out a particular task or adopt the necessary behaviours to accomplish a task, handle stress and improve overall well-being (Lee et al., 2016; PsychCentral, 2021). This can involve setting reasonable, doable objectives that will produce outcomes that are beneficial for the

treatment of chronic conditions like type 2 diabetes. Hence, self-efficacy empowers individuals with long-term medical issues to better manage their medical condition and overcome setbacks.

With respect to self-compassion, the results of the moderation analysis indicated that the relationship between occupational stress and well-being was significant when self-compassion levels were low, but not significant when self-compassion levels were moderate or high. High levels of self-compassion can therefore mitigate the effects of work stress on well-being. However, self-compassion did not act as a moderator of the connection between occupational stress and treatment adherence. Research has shown that self-compassion can lessen or attenuate the link between negative psychological factors and health outcomes in both mental health (Körner et al., 2015) and physical health (Fris et al., 2015). Abdollahi et al. (2019) conducted a study to examine if self-compassion influenced the connection between perceived stress and self-care activities in health problems. Perceived stress and self-compassion were both identified as important factors in predicting self-care activities. Self-compassion moderated the relationship between perceived stress and self-care practices, resulting in reduction in the adverse impact of stress on self-care behaviours as self-compassion levels increased.

Majidzadeh et al. (2022) examined how self-compassion influences the connection between perceived stress and physiological well-being as well as self-care activities. Perceived stress in patients with type 2 diabetes mellitus significantly correlated with lower psychological well-being and self-care practices. Self-compassion was strongly associated with psychological well-being and self-care activities. A study on HIV-positive patients found that self-compassion was linked to improved medical and treatment adherence, along with reduced levels of stress and anxiety (Brion et al., 2014). The study found that individuals who possess self-compassion are more inclined to pursue medical assistance when needed, participate in self-care practices and avoid consuming alcohol.

In a study of 110 patients with diabetes, Friis et al. (2015) investigated the effects of self-compassion on glycated haemoglobin, depression and diabetes-specific distress. At lower but not higher levels of self-compassion, greater distress was associated with higher HbA1c. This outcome implies that cultivating self-compassion as an intervention could reduce a range of health problems and life challenges and have a positive impact on an individual's general well-being. Some people may oppose engaging in self-compassion practice or favour a critical self-approach for a number of interconnected reasons that stem from their fundamental misunderstanding of what engaging in self-compassion practice entails (Kelley et al., 2016). Anxiety, doubt and emotional difficulties related to cultivating self-compassion were recognised as causes for concern and uncertainty about the efficacy of self-compassion. The empirical investigations by Zessin et al. (2015), Neff et al. (2018a) and Phillips et al. (2021) showed a significant relationship between self-compassion and well-being. For instance, Zessin et al. (2015) conducted a meta-analysis and found a moderate to large effect size relationship between self-compassion and higher levels of happiness, positive affect and life satisfaction. All these point to the importance of self-compassion. Developing greater self-compassion will facilitate the development of bonds between employers and employees by encouraging them to prioritise their well-being, adopt better strategies for coping, adopt positive mindsets, and prioritise their health, all of which will result in better well-being (Kelly et al., 2020).

The findings of Study 2 are promising, as they showed signs that self-compassion helped to improve the ability of the participants to cope with work-related stress and increase their overall well-being. However, the mean levels of self-compassion in the sample were low, which points to the need for greater education and motivation of self-compassionate behaviours. People may believe incorrectly, for instance, that self-compassion equates to being conceited or selfish (Neff, 2003b); therefore, a higher state of enlightenment is constantly

required. Self-compassion practice has its barriers associated with negative attributes, such as laziness and self-indulgence and could lead to complacency or irresponsibility (Robinson et al., 2016; Chwyl et al. 2021). Therefore, interventions may be required to help people to be more self-compassionate.

In sum, the findings of Study 2 are broadly in line with those of previous studies that have examined the effect of self-compassion on well-being and health-promoting behaviours. These findings suggest that self-compassion could enhance the well-being of Nigerian employees with type 2 diabetes experiencing occupational stress and support their adherence to prescribed medications, diet and exercise regimens.

Evidence of self-compassion manipulation on treatment adherence intentions of employees with type 2 diabetes

Taking into account the benefits of self-compassion, as shown in Study 2 and previous studies in various populations, Study 3 examined the effect of self-compassion manipulation on the intentions of Nigerian employees with type 2 diabetes to adhere to treatment regimens using a between-groups experimental design. The purpose of using an experimental design was to further consolidate, establish and strengthen the results on the benefits of self-compassion, since the previous cross-sectional study could not establish causation.

The results showed that, after controlling for the pre-test score of treatment adherence intentions, there was a main effect of self-compassion manipulation on treatment adherence intention at post-test. The participants exposed to self-compassion manipulation expressed stronger intentions for treatment adherence than those in the control group, who were not exposed to self-compassion manipulation. The findings of this research are consistent with those of previous studies on both clinical and non-clinical populations (Allen et al., 2012; Sirois et al., 2015; Mantzios et al., 2017; Egan et al., 2018; Egan et al., 2019), which claim that higher self-compassion levels are associated with better ability to cope with pain, increased well-

being, adaptive responses to illness and increased engagement in health-promoting behaviours. Abdollahi et al. (2021) examined the correlation between self-compassion and perceived stress as predictors and job burnout as an outcome. They revealed that increased levels of perceived stress were associated with higher levels of job burnout in nurses, whereas higher levels of self-compassion were related to reduced burnout. The results of the moderation analysis revealed that self-compassion lessened the effect of perceived stress on nurses' job burnout. Moreover, self-compassion-focused therapies in the workplace have been shown to enhance employees' stress management (Mahon et al., 2017).

Leary et al. (2007) conducted a study where participants were asked to recall a negative event and then engage in writing prompts to foster self-compassion, mindfulness, common humanity and kindness. The study found that the participants in the self-compassionate writing group experienced a more significant decrease in negative emotions than those in the control group. Breines et al. (2012) discovered that cultivating self-compassion towards personal weaknesses, failures and prior offences led to increased drive to change, greater effort in learning, and prevention of repeating previous errors. In their meta-analysis of randomised controlled studies, Ferrari et al. (2019) discovered that self-compassion therapies resulted in a notable enhancement in 11 psychosocial outcomes compared to control groups. Self-compassion interventions significantly impacted eating behaviour and rumination indicators. Medium-sized effects were discovered for outcomes concerning self-compassion, stress, depression, mindfulness, self-criticism and anxiety. The results demonstrated the efficacy of self-compassion therapies in various outcomes and among different demographics.

The results from Study 3 also revealed a main effect of self-compassion on occupational stress at post-test when controlling for the pre-test score of occupational stress. The participants exposed to self-compassion manipulation reported reduced levels of occupational stress compared to those in the control group. It has been demonstrated that stress, whether emotional

or physical, can cause changes in blood sugar levels, which can be problematic for those with diabetes (Global Diabetes Community UK, 2023, January Review). Alao et al. (2022) found that 62% of the participants in their study on the impact of work-related stress on perceived health status in a Nigerian population felt that their health was bad. The participants' perceived health status as significantly correlated with workplace stress, years in a residency programme, designation and work hours on the least busy workday. However, only workplace stress was able to independently predict the poor perceived health status. It can be concluded that work-related stress is an important factor to deal with in the workplace. Self-compassion intervention is a promising approach to lessening the negative effects of occupational stress on employees' well-being.

Neff (2023) claims that self-compassion refers to being supportive toward oneself when experiencing suffering or pain, caused by personal mistakes and inadequacies or external life challenges. Theoretically, self-compassion is beneficial because it helps those who suffer from chronic illnesses, like type 2 diabetes, in managing their feelings and behaviours, by promoting changes in affect attention and self-efficacy (Terry et al., 2011; Sirois, 2015; Sirois et al., 2016; Sirois et al., 2019). The theoretical framework of self-compassion presented in this study included reduced self-judgment, reassuring, accepting, and compassionate words, as well as increased self-kindness and common humanity. However, the mindfulness component was not included as part of self-compassion manipulation. Future research should therefore consider all aspects of the self-compassion theoretical model when testing interventions with the Nigerian diabetic population who are exposed to stressful work environments. Based on research and the findings by Neff (2023), practising self-compassion can be a productive strategy for addressing thoughts and emotions that encourage mental and physical well-being. The potential of self-compassion for helping individuals cope with a range of stressors is supported by a growing corpus of empirical research. Evidence points to a relationship between self-

compassion and well-being (Zessin et al., 2015; Neff et al., 2018a; Phillips et al., 2021). In addition, given the relationship with better psychological and medical outcomes in the context of chronic illnesses and overall well-being, self-compassion may be an effective target for physical and psychological treatment and intervention (Arch et al., 2016; Yang et al., 2017). However, with the exception of the research conducted in this thesis, the evidence base for the positive benefits of self-compassion in Nigeria is currently lacking.

Synthesis and Discussion of the Overarching Findings

A growing number of adult Nigerians suffer from type 2 diabetes (Dahiru et al., 2016). Most of these people are in the working age and are exposed to occupational stress, which exerts a significant impact on their ability to manage their diabetes and their overall well-being. Many of these employees draw on religious beliefs to self-manage their conditions owing to lack of extensive support services that provide psychosocial support, financial aid and rewarded sick pay. The overarching goal of this thesis was to examine, among Nigerian employees with type 2 diabetes, the relationships between occupational stressors and treatment adherence and general well-being, as well as the moderating roles of perceived control and self-compassion. The participants knew that they had no access to any kind of support to assist them overcome their challenges, as they searched for the best way to manage their type 2 diabetes and cope with stress at work.

The research presented in this thesis also considered the potential benefits of psychological resources, such as self-compassion and perceived control, that could be used to help employees with type 2 diabetes to better cope with occupational stressors and better manage their condition. Psychological resources have been shown to be beneficial to people going through challenging times in life, particularly those who have chronic health conditions, like type 2 diabetes, to manage and cope (Taylor et al., 2011; Chew et al., 2017). Research conducted in developed countries has shown that self-compassion promotes psychological

well-being by substituting more adaptive emotion-regulation techniques (such as self-kindness, common humanity and mindfulness) for maladaptive ones (such as self-judgement, isolation, rumination, and avoiding unpleasant thoughts, experiences and emotions) (Neff, 2003a). Self-compassion has also been found to protect people from the emotional consequences of illness and is associated with adherence to medical advice (Leary et al., 2013).

Leary et al. (2013) conducted a study involving 187 people with HIV and found that self-compassion was associated with better adjustment, including reduced stress, anxiety and shame. Homan et al. (2017) investigated the relationship between self-compassion, perceived stress, health behaviours and a comprehensive index of physical health. Self-compassion was found to indirectly affect physical health via a sequential pathway focusing on a variety of behavioural and cognitive factors that can lessen occupational stressors and encourage individuals with type 2 diabetes to adhere to their treatment regimens, which can improve their sense of overall well-being beyond just their physical health. This implies that adopting a kind, accepting and mindful stance towards one's flaws and failures could help reduce stress, thereby promoting healthy behaviours.

With regard to the workplace, Babenko et al. (2019) found that self-compassion can be a useful tool for handling challenging and uncertain circumstances in a way that enhances professional well-being and reduces work-related fatigue. Self-compassion has been found to strengthen social and interpersonal ties and increase motivation for self-improvement (Breines et al., 2012; Crocker et al., 2012; 2017).

With respect to perceived control, it has been consistently found that a high sense of belief in control is associated with being happy, healthy, wealthy, and wise (Lachman et al., 2009). Infurna et al. (2013) investigated the degree to which perceived control and its evolution over a 16-year period predicted health outcomes. They found evidence of bidirectional relationships, wherein higher levels of perceived control were associated with improved health

and well-being 16 years later (and vice versa). It can be concluded that strong control beliefs serve as a buffer against tough situations in life. Therefore, perceiving more control is good for better mental and emotional health as well as better health, including longevity (Kunzmann et al., 2002; Lachman et al., 2008; Infurna et al., 2013; Turiano et al., 2014). Hernandez-Tejada (2012) conducted a survey among 188 patients with diabetes from a low-income clinic and found significant relationships between perceived control and physical and mental quality of life.

The research presented in this thesis examined the extent to which self-compassion and perceived control buffer the effect of occupational stressors on general well-being and treatment adherence in Nigerian employees with type 2 diabetes. This was achieved through a cross-sectional survey to examine the relationships between these variables and an experimental study in which self-compassion was manipulated. The findings were broadly in line with those reported in previous studies, especially for self-compassion. The cross-sectional survey, for example, showed that occupational stress was significantly associated with poorer adherence and well-being, whereas perceived control was significantly associated with better well-being and self-compassion was significantly associated with greater treatment adherence. Besides, self-compassion significantly moderated and weakened the relationship between occupational stress and well-being. Furthermore, the experimental study revealed that manipulating self-compassion increased treatment adherence intentions and reduced perceptions of occupational stress.

Based on the findings reported in this thesis, and those of previous studies, it can be concluded that, through adaptive health-related cognitions and self-regulation of healthy behaviours and goals, self-compassion is beneficial in promoting, cultivating and helping people to engage in positive health-promoting behaviours. In particular, self-compassion could help Nigerian employees with type 2 diabetes to manage medical concerns and cope with

occupational and life stresses. These strategies should be promoted by healthcare providers, friends and families as well as by the diabetes community. Self-compassion enables people to suffer less and helps them thrive (Neff et al., 2015).

Implications of the Findings

The findings have many implications for improving the general well-being of individuals with type 2 diabetes who experience occupational stress, particularly how closely they will adhere to treatment recommendations and cope with stressors generally. The results highlighted the significant inputs that self-compassion and perceived control may bring to the Nigerian population with type 2 diabetes, employers of labour, the government, policy makers and relevant medical professionals.

Study 1 noted that living with type 2 diabetes in Nigeria is associated with a variety of negative experiences. They suffer frequent hospitalisation as a result of excessive workloads, strict work schedules, stigma and threats of losing their jobs. The participants in the study opted to look for assistance from friends, relatives, religious leaders and intense prayers to God, but these resources were often insufficient to meet their needs. Their challenging circumstances are disregarded at work since the organisation's commitment to prioritising their welfare is lacking. For the benefit of both employers and employees, it is crucial to prioritise employees' well-being in line with workplace best practices and procedures that guarantee job satisfaction, foster positive health behaviours and provide a positive work environment.

The participants had to resort to alternative therapies, like herbal and Chinese remedies as well as religious beliefs, engaging in continuous prayer since they lacked the money to purchase diabetic medications and follow the prescribed diet. These findings point to the need for a behavioural approach to investigating the psychological factors that could assist diabetic patients in managing their condition and well-being while managing stress at work.

The study examined how perceived control and self-compassion contribute to the promotion of healthy behaviours. These ideas have been found to be beneficial in addressing concerns pertaining to general well-being and because it is still unrealistic to expect organisations, family and friends to provide the necessary support. In the face of stressors, these individuals are urged to put kindness and self-love before anything else.

The high prevalence of type 2 diabetes, the stressors associated with their jobs, and the lack of psychological, financial, and physical support to help them manage their medical concerns are undoubtedly major issues for Nigerian employees. Therefore, psychologists and health professionals should educate on and train their patients in the skills of perceived control, especially self-compassion.

The effectiveness of developing self-compassion skills to manage occupational stressors and diabetes should be encouraged in patients by demonstrating in a laboratory or clinic setting interventions related to adherence intentions to medication, diet, and regular exercise. This will help to further uncover the effectiveness of self-compassion. As revealed in this study, those employees with challenging health issues who prioritise practising self-compassion had improved well-being. Furthermore, earlier scholars (Biber & Ellis, 2017; Rahimi-Ardabili et al., 2018) have noted that self-compassion and related interventions may have positive effects on health behaviour and health-related psychological constructs. Sirois et al. (2014) found that self-compassion is indeed associated with adaptive emotions and is an invaluable quality to cultivate for promoting healthy behaviours. Employers who prioritise employee engagement, whether in the public or private sector, should develop healthcare policies that prioritise the well-being of their workforce.

Type 2 diabetes is becoming more common. There are other factors at play as well, such as occupational stress, medication errors and patients' failure to adhere to recommended treatment regimens, adopt healthy lifestyles and exercise frequently to improve their well-

being. Employers, healthcare facilities, government agencies and non-governmental organisations should prioritise holding regular health talks in the form of conferences, workshops and symposiums to discourage sedentary lifestyles, support medication adherence and encourage regular exercise so that employees can gain knowledge on how to handle health-related concerns. These views align with the International Labour Organisation's (ILO-OSH, 2001) Guidelines on Occupational Safety and Health Management Systems, which required employer organisations to respect these three core work principles: work should be performed in a supportive, safe and healthy environment; working conditions should be commensurate with workers' well-being and human dignity; and work should present opportunities for personal growth, self-fulfilments and service to society.

It has been found that individuals with high levels of self-compassion tend to engage in a range of health-promoting behaviours (Sirois et al., 2015; Rahimi-Ardabili et al., 2018; Sirois et al., 2019) that may promote physical health (Homan et al., 2017). Therefore, it is important to develop self-compassion self-help resources to help individuals become more capable of managing complications emanating from adherence to treatment of type 2 diabetes and occupational stress.

Policymakers and occupational health practitioners must prioritise, promote, maintain, and improve workers' health and capacity to make the workplace safer and healthier, since it was revealed in this study that there are no workplace policies in Nigeria that accommodate and promote a safe work environment where employees can thrive and have better well-being. Policy makers and occupational health practitioners should produce stringent regulations outlining the repercussions for employers who fail to put their employees' well-being foremost. Based on the findings of this study and the views of International Labour Organisation (2019) and Akinsanya et al. (2020), it is imperative to give top priority to creating work environments

that support the health and safety of employees exposed to work stressors and chronic medical conditions.

In view of the findings of this study and other reviews that revealed the benefits of self-compassion to individuals with type 2 diabetes and other chronic health conditions, it is critical that those involved in managing type 2 diabetes in Nigeria support and value self-compassion in adhering to dietary, exercise and medication regimens for optimal well-being. This can be achieved by regularly getting enlightened and engaging in self-compassion exercises.

Finally, owing to the widespread prevalence of these medical conditions, it is important to consider how family members may be impacted directly and indirectly. Thus, it is advised that family members be involved in the process of promoting self-compassion practices as a family-based intervention approach, as this approach has been shown to support challenging life circumstances and health issues. This means starting conversations and sharing stories about the benefits and efficacy of the practice in fostering self-kindness, mindfulness and a sense of oneness with others, as well as reducing feelings of loneliness, over-identification, and self-judgement when managing health problems and stress at work.

Limitations of the Research

In line with the specific limitations of each study presented in chapters 2, 3 and 4, there are several limitations that cut across all three studies presented in this thesis. First, all the employees with type 2 diabetes who participated in the studies were recruited from just two hospitals in Jos, the Plateau State capital. The experiences of employees in rural areas may differ. As a result, the generalisability of the studies' findings can be questioned. Similarly, the study's geographic scope was limited to central Nigeria, leaving the other five zones unaccounted for, which further limits the generalisability of the findings. Second, the research was solely focused on the roles of self-compassion and perceived control. It is likely that other factors may make employees effectively manage type 2 diabetes and cope with occupational

stressors. For example, high self-efficacy may assist individuals to create realistic, attainable goals that will lead to results that are helpful in the management of long-term illnesses, like type 2 diabetes. People with type 2 diabetes who experience stress at work may benefit from adopting health-promoting behaviours and lifestyle changes, such as regular exercise, taking a balanced diet, adhering to prescribed treatment plans and stress management. Therefore, it is important to understand that self-efficacy enables individuals with this chronic medical concern to manage their condition more effectively, bounce back from setbacks and persist in advocating health management.

Future Directions

There are many directions for future research arising from the current thesis. The International Diabetes Federation (2021) asserts that, of Nigeria's 96,812,400 adult population, 3,623,500 have diabetes mellitus, representing a prevalence rate of 3.7 percent of the country's adult population. The current research only sampled a very small proportion of the population of Nigerians with type 2 diabetes. As such, the generalisability of the study's findings can be questioned. Therefore, future research should seek to recruit larger samples from all states and zones to represent the lived experiences of Nigeria's adult diabetes population more accurately. All six zones (North Central, North-East, North-West, South-South, South-West and South-East) and the Federal Capital territory (Abuja) have rural communities. To gain insight into the management of type 2 diabetes in the context of occupational stress, future research should expand data collection to include all states and a sizable number of rural areas.

Subsequent research endeavours should also focus on the acquisition and utilisation of self-compassion intervention skills by health psychologists and other medical practitioners. The focus of this work should be on teaching how to develop a self-compassion mindset that will ensure that individuals with diabetes consistently take their prescribed medications, learn

appropriate exercise techniques, and take measures to ensure that diet aligns with diabetes treatment.

To provide further insights into the benefits of perceived control –which strongly correlated with well-being and self-compassion practices for managing type 2 diabetes and occupational stressors –further research is needed to help clarify why Nigerians with type 2 diabetes struggle with or are unable to adhere to prescribed exercise regimens, dietary guidelines or medication schedules correctly and consistently. Interventions that increase perceived control, as well as self-compassion, need to be tested in future research with this population.

Conclusion

This study aimed to improve knowledge and understanding of the effects of occupational stress on the general well-being and treatment adherence of Nigerian employees with type 2 diabetes as well as the moderating roles of self-compassion and perceived control. The study identified many factors related to type 2 diabetes management, occupational stress and potential coping strategies that affect an individual's overall well-being. The participants in Study 1 disclosed that occupational stress substantially impaired their capacity to follow treatment regimens and maintain general well-being. Study 2 found that high levels of self-compassion buffered the effects of occupational stress on well-being. Study 3 showed that self-compassion manipulation can improve treatment adherence intentions and reduce perceptions of occupational stress.

The main objectives of the research have been satisfactorily realised. First, the lived experiences of employees with type 2 diabetes dealing with stress at work have been explored; second, the impact of occupational stressors on treatment adherence and the well-being of employees with type 2 diabetes has been examined, along with the moderating roles of

perceived control and self-compassion; and third, the effect of self-compassion manipulation on the treatment adherence intentions of Nigerian employees with type 2 has been tested.

The results of the research have important implications for many people, especially those who have diabetes, those who are at risk for developing the disease, healthcare professionals and caregivers. This is because self-compassion has been shown to be a potential mechanism for reducing the burden of chronic illnesses, like diabetes mellitus, reducing occupational stress and enhancing well-being. This research also revealed some unhealthy habits, such as the use of herbal remedies as a substitute for conventional treatments to control diabetes. This may lead to a number of health complications, like cancer, conditions affecting memory, liver disorders, peptic ulcer, inflammatory disorders, hypertension and other cardiovascular diseases, diabetes mellitus, tuberculosis, dermatological infections, and other conditions affecting the brain and urinary tract (Choudhury et al., 2018).

The results of this study advance understanding of the best ways to assist people with type 2 diabetes, especially with their treatment needs, to help them deal with discomfort and stress at work and promote diabetes coping behaviours, like consistent exercise, healthy diet and medication adherence. The findings of this research can guide evidence-based policymaking at the workplace to improve health outcomes by addressing the issue of workplace stress and the lack of support systems for Nigerian employees with type 2 diabetes. Most importantly, this research highlights the importance of encouraging self-compassion and, will help develop interventions that enhance the capacity to treat oneself with kindness when faced with difficulties and fortify the determination to keep setting and accomplishing goals that will support the successful management of stress and diabetes by encouraging the adoption of positive health behaviours.

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APPENDIX 1

STUDY ONE

DIABETES - STUDY ONE INTERVIEW STRUCTURE

Experiences of Workplace Stress, Treatment Adherence and General well-being of Employees with Type 2 Diabetes in Nigeria

Instruction

Hello,

My name is Ismaila Yakubu, a PhD student in the Department of Psychology at the University of Sheffield, United Kingdom. This is an academic exercise, and you will be asked a series of questions using a Google Doc Technology where you will be asked to respond by typing your response on a Google Doc on the above topic. Your insight and that of other participants will be highly appreciated.

Be rest assured that your response will be held in utmost confidentiality.

Thank you.

Interview Schedule

General Questions

(a) Age …… (b) Sex ……. (c) Occupation ……

d) How long have you been diagnosed with this type 2 diabetes?

Specific Questions

The interview guides were as follows:

Employees' experience of workplace stressors and how they affect well-being

1. What specific stress do you experience as an employee living with type 2 diabetes in the workplace?
2. What has been your experience of workplace stressors particularly as they affect your diabetic condition?
3. How does workplace stress affect your well-being?

Participants' current diabetic treatments and the effect of workplace stress on adherence

1. What type of treatment are you currently receiving?
2. How do these stressors in the workplace affect your treatment adherence?
3. What other workplace challenges do you face as a diabetic employee?
4. How does that affect your adherence to treatment conditions?

What support is in place for employees to help manage their diabetes

1. What kind of support are you currently receiving to manage your diabetes?

2. How is your organisation involved in your diabetic management?

3. What are the challenges in managing diabetes in your workplace?

4. What plans or structures does your organisation have to reduce incidences of workplace stress on employees with diabetes?

5. How can your general well-being and that of other employees with similar health challenges be improved upon by organisations?

APPENDIX 2-

STUDY 2

General Information

SECTION 1:

The *questions about you will help the researcher to better understand and interpret the results.*

1. **What is your age (years) _____?**

2. **What is your Sex?** Male ☐ Female ☐ Others ☐

3. **In what Country and State do you currently, please specify**_____

4. **What is your highest level of education to date?** No formal education ☐ Primary education ☐ secondary education ☐ University education ☐

5. **What is your marital status?** Married/Living with an intimate other ☐ Never Married ☐ Divorced/Separated ☐ Widowed ☐

6. **What is your first language**?

   _____

7. What ethnic/cultural background do you most identify with? (For example: White, Chinese, Latin American, Black, etc.)

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8. **How long have you been living with type 2 diabetes?** I don't have diabetes ☐ 0-12 months ☐ 1-2 years ☐ 3-5 years ☐ > More than 5 years ☐

9. **What is your Occupation?** Private Employee ☐ Public Employee ☐ Unemployed ☐

SECTION 2:

SC.

HOW I TYPICALLY ACT TOWARDS MYSELF IN DIFFICULT TIMES

INSTRUCTION:

Please read each statement carefully before answering. Indicate how often you behave in the stated manner, using the following scale:

1 = Almost Never 2 3 4 5 = Almost Always

1. When I fail at something important to me I become consumed by feelings of inadequacy.

2. I try to be understanding and patient towards those aspects of my personality I don't like. 3. When something painful happens I try to take a balanced view of the situation.

4. When I'm feeling down, I tend to feel like most other people are probably happier than I am.

5. I try to see my failings as part of the human condition.

6. When I'm going through a very hard time, I give myself the caring and tenderness I need.

7. When something upsets me I try to keep my emotions in balance.

8. When I fail at something that's important to me, I tend to feel alone in my failure

9. When I'm feeling down I tend to obsess and fixate on everything that's wrong.

10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.

11. I'm disapproving and judgmental about my own flaws and inadequacies.

12. I'm intolerant and impatient towards those aspects of my personality I don't like.

GSES

Please respond to the following statements by ticking the number that best describes your opinion

1= Not at all true 2 = Hardly true 3 = Moderately true 4 = Exactly true

1	I can always manage to solve difficult problems if I try hard enough.	1	2	3	4	
2	If someone opposes me, I can find the means and ways to get what I want.	1	2	3	4	
3	It is easy for me to stick to my aims and accomplish my goals.	1	2	3	4	
4	I am confident that I could deal efficiently with unexpected events.	1	2	3	4	
5	Thanks to my resourcefulness, I know how to handle unforeseen situations.	1	2	3	4	
6	I can solve most problems if I invest the necessary effort.	1	2	3	4	
7	I can remain calm when facing difficulties because I can rely on my coping abilities.	1	2	3	4	
8	When I am confronted with a problem, I can usually find several solutions.	1	2	3	4	
9	If I am in trouble, I can usually think of a solution.	1	2	3	4	
10	I can usually handle whatever comes my way.	1	2	3	4	

DSMQ

INSTRUCTION: The following statements describe self-care activities related to your diabetes. Thinking about your self-care over the last 8 weeks, please specify the extent to which each statement applies to you.

3 = Applies to me very much **2 = Applies to me to a considerable degree**
1 = Applies to me to some degree **0 = Does not apply to me**

1	I check my blood sugar levels with care and attention. ☐ *Blood sugar measurement is not required as a part of my treatment.*	3	2	1	0
2	The food I choose to eat makes it easy to achieve optimal blood sugar levels.	3	2	1	0
3	I keep all doctors' appointments recommended for my diabetes treatment.	3	2	1	0
4	I take my diabetes medication (e. g. insulin, tablets) as prescribed. ☐ *Diabetes medication / insulin is not required as a part of my treatment*	3	2	1	0
5	Occasionally I eat lots of sweets or other foods rich in carbohydrates.	3	2	1	0
6	I record my blood sugar levels regularly (or analyse the value chart with my blood glucose meter ☐ *Blood sugar measurement is not required as a part of my treatment.*	3	2	1	0
7	I tend to avoid diabetes-related doctors' appointments.	3	2	1	0

8	I do regular physical activity to achieve optimal blood sugar levels.	3	2	1	0
9	I strictly follow the dietary recommendations given by my doctor or diabetes specialist.	3	2	1	0
10	I do not check my blood sugar levels frequently enough as would be required for achieving good blood glucose control. ☐ *Blood sugar measurement is not required as a part of my treatment.*	3	2	1	0
11	I avoid physical activity, although it would improve my diabetes.	3	2	1	0
12	I tend to forget to take or skip my diabetes medication (e. g. insulin, tablets). ☐ *Diabetes medication / insulin is not required as a part of my treatment.*	3	2	1	0
13	Sometimes I have real ‘food binges’ (not triggered by hypoglycaemia).	3	2	1	0
14	Regarding my diabetes care, I should see my medical practitioner(s) more often.	3	2	1	0
15	I tend to skip planned physical activity.	3	2	1	0
16	My diabetes self-care is poor.	3	2	1	0

INSTRUCTION: Indicate the extent to which each of the items below produces stress at work for you.

1 = Produces no stress, 2 = Produces little stress, 3 = Produces some stress,

4 = Produces quite a bit of stress, 5 = Produces a great deal of stress

1	The number of projects and/or assignments I have.	1	2	3	4	5
2	The amount of time I spend at work	1	2	3	4	5
3	The amount of time I spend in meetings	1	2	3	4	5
4	The number of phone calls and office visits I have during the day	1	2	3	4	5
5	The degree to which politics rather than performance affects organizational decisions.	1	2	3	4	5
6	The inability to clearly understand what is expected of me on the job	1	2	3	4	5
7	The volume of work that must be accomplished in the allotted time	1	2	3	4	5
8	The extent to which my position presents me with conflicting demands	1	2	3	4	5
9	The amount of red tape I need to go through to get my job done	1	2	3	4	5
10	The time pressures I experience	1	2	3	4	5
11	The lack of job security I have	1	2	3	4	5
12	The amount of responsibility I have	1	2	3	4	5
13	The scope of responsibilities my position entails	1	2	3	4	5
14	The degree to which my career seems “stalled”	1	2	3	4	5
15	The opportunities for career development I have had	1	2	3	4	5
16	The amount of traveling I must do	1	2	3	4	5

SGWB:

INSTRUCTION: Below you'll find fourteen statements about your experiences. Please indicate how true each statement is regarding the EXPERIENCES IN YOUR LIFE OVERALL. There are no right or wrong answers. Please, choose the answer that best reflects your experience rather than what you think your experience should be.

1 = Not at all true 2 = A bit true 3 = Somewhat true 4 = Mostly true 5 = Very true

1	I feel happy	1	2	3	4	5
2	I feel energetic	1	2	3	4	5
3	I feel calm	1	2	3	4	5
4	I'm optimistic	1	2	3	4	5
5	In my activities, I feel absorbed by what I'm doing	1	2	3	4	5
6	I'm in touch with how I really feel inside	1	2	3	4	5
7	I accept most aspects of myself	1	2	3	4	5
8	I feel great about myself	1	2	3	4	5
9	I am highly effective at what I do	1	2	3	4	5
10	I feel I am improving	1	2	3	4	5
11	I have a purpose	1	2	3	4	5
12	What I do in my life is worthwhile	1	2	3	4	5
13	What I do is consistent with what I believe I should do	1	2	3	4	5
14	I feel close and connected to the people around me	1	2	3	4	5

Appendix 3

Downloaded:
28/12/2023 Approved:
18/05/2021

Ismaila Yakubu
Registration number:
190335650 Psychology
Programme: Ph.D.

Psychology Dear

Ismaila

PROJECT TITLE: Experiences of Workplace Stress, Treatment Adherence and General well-being of Employees with Type 2 Diabetes in Nigeria.
APPLICATION: Reference Number 039098

On behalf of the University ethics reviewers who reviewed your project, I am pleased to inform you that on 18/05/2021 the above-named project was **approved** on ethics grounds, on the basis that you will adhere to the following documentation that you submitted for ethics review:

- University research ethics application form 039098 (form submission date: 14/05/2021); (expected project end date: 22/07/2021). Participant information sheet 1089605 version 3 (13/05/2021).
- Participant consent form 1089576 version 2 (07/04/2021).
- Participant consent form 1090864 version 4 (14/05/2021).

If during the course of the project you need to deviate significantly from the above-approved documentation please inform me since written approval will be required.

Your responsibilities in delivering this research

project are set out at the end of this letter. Yours

sincerely

Department Of Psychology
Research Ethics Committee
Ethics Administrator
Psychology

Please note the following responsibilities of the researcher in delivering the research project:

- The project must abide by the University's Research Ethics Policy:
- https://www.sheffield.ac.uk/research-services/ethics-integrity/policy The project must abide by the University's Good Research & Innovation Practices Policy: https://www.sheffield.ac.uk/polopoly_fs/1.671066!/file/GRIPPolicy.pdf
- The researcher must inform their supervisor (in the case of a student) or Ethics Administrator (in the case of a member of staff) of any significant changes to the project or the approved documentation.
- The researcher must comply with the requirements of the law and relevant guidelines relating to security and confidentiality of personal data.
- The researcher is responsible for effectively managing the data collected both during and after the end of the project in line with best practice, and any relevant legislative, regulatory or contractual requirements.

Appendix 4

Downloaded:
28/12/2023
Approved:
22/04/2022

Ismaila Yakubu
Registration number:
190335650 Psychology
Programme: PhD

Psychology Dear Ismaila

PROJECT TITLE: Investigating the Role of Self-compassion and Perceived Control on the relationship between workplace Stressors, Treatment Adherence and Well-being of Employees with Type 2 Diabetes in Nigeria.
APPLICATION: Reference Number 046019

On behalf of the University ethics reviewers who reviewed your project, I am pleased to inform you that on 22/04/2022 the above-named project was **approved** on ethics grounds, on the basis that you will adhere to the following documentation that you submitted for ethics review:

- University research ethics application form 046019 (form submission date: 22/04/2022); (expected project end date: 01/06/2022). Participant information sheet 1104196 version 6 (22/04/2022).
- Participant consent form 1104197 version 2 (01/04/2022).
- Participant consent form 1104826 version 2 (20/04/2022).

The following amendments to this application have been approved:

- Amendment approved: 23/05/2022

If during the course of the project you need to deviate significantly from the above-approved documentation please inform me since written approval will be required.

Your responsibilities in delivering this research

project are set out at the end of this letter. Yours

sincerely

Department Of Psychology
Research Ethics Committee
Ethics Administrator
Psychology

Please note the following responsibilities of the researcher in delivering the research project:

- The project must abide by the University's Research Ethics Policy:
- https://www.sheffield.ac.uk/research-services/ethics-integrity/policy The project must abide by the University's Good Research & Innovation Practices Policy: https://www.sheffield.ac.uk/polopoly_fs/1.671066!/file/GRIPPolicy.pdf
- The researcher must inform their supervisor (in the case of a student) or Ethics Administrator (in the case of a member of staff) of any significant changes to the project or the approved documentation.
- The researcher must comply with the requirements of the law and relevant guidelines relating to security and confidentiality of personal data.
- The researcher is responsible for effectively managing the data collected both during and after the end of the project in line with best practice, and any relevant legislative, regulatory or contractual requirements.

Appendix 5

Downloaded: 28/12/2023
Approved: 13/02/2023

Ismaila Yakubu
Registration number:
190335650 Psychology
Programme: PhD

Psychology Dear Ismaila

PROJECT TITLE: The Effect of a Self-Compassion Manipulation on Treatment Adherence Intentions among Employees with Type 2 Diabetes in Nigeria
APPLICATION: Reference Number 051334

On behalf of the University ethics reviewers who reviewed your project, I am pleased to inform you that on 13/02/2023 the above-named project was **approved** on ethics grounds, on the basis that you will adhere to the following documentation that you submitted for ethics review:

- University research ethics application form 051334 (form submission date: 12/02/2023); (expected project end date: 30/05/2023). • Participant information sheet 1116620 version 2 (12/02/2023).
- Participant consent form 1116621 version 1 (25/01/2023).

If during the course of the project you need to deviate significantly from the above-approved documentation please inform me since written approval will be required.

Your responsibilities in delivering this research

project are set out at the end of this letter. Yours

sincerely

Department Of Psychology
Research Ethics Committee
Ethics Administrator
Psychology

Please note the following responsibilities of the researcher in delivering the research project:

- The project must abide by the University's Research Ethics Policy:
- https://www.sheffield.ac.uk/research-services/ethics-integrity/policy The project must abide by the University's Good Research & Innovation Practices Policy: https://www.sheffield.ac.uk/polopoly_fs/1.671066!/file/GRIPPolicy.pdf
- The researcher must inform their supervisor (in the case of a student) or Ethics Administrator (in the case of a member of staff) of any significant changes to the project or the approved documentation.
- The researcher must comply with the requirements of the law and relevant guidelines relating to security and confidentiality of personal data.
- The researcher is responsible for effectively managing the data collected both during and after the end of the project in line with best practice, and any relevant legislative, regulatory or contractual requirements.

APPENDIX 6

Self-compassion manipulation

Thinking about the stressful workplace, write similar kind and compassionate words or phrases about yourself. Please note that making mistakes is a very common human weakness that almost every employee with Type 2 diabetes experiences at some point. Neither are you the first employee with Type 2 diabetes experiencing stress at work that affects your adherence to treatment nor will you be the last.

It's very common for people with Type 2 diabetes to be hard on themselves when they feel stressed at work. This has a negative impact on their treatment adherence. But being hard on yourself about your condition will not change what happened and can actually make things worse. Try instead to take a balanced perspective on this troubling work-related stressful event and treatment adherence to Type 2 diabetes, and how you felt. Be kind, accepting, and compassionate towards yourself about what happened.

Now, please try to express kindness for yourself by writing out kind and compassionate words on a paper provided for you. Please address yourself in the second person. Write kind, understanding and soothing words. Express that you are important to yourself and try to find a kind and soothing tone. For example,

- "Be kind and understanding toward yourself".
- "Treat yourself with the same kindness and compassion that you would offer to a good friend."

This may feel a bit odd at the beginning. Try to engage in the exercise and see what happens. (You have 15 minutes for this exercise).

SECTION A: DEMOGRAPHIC DATA

The questions about you will help the researcher to better understand and interpret the results.

- **What is your age (years) _____?**
- **What is your sex?** Male ☐ Female ☐ Others ☐
- **In what country and state do you currently live? Please specify**_____
- **What is your highest level of education to date?** No formal education☐ Primary education ☐ secondary education ☐ University education ☐
- **What is your marital status?** Married/Living with an intimate other ☐ Never Married ☐ Divorced/Separated ☐ Widowed ☐
- **What is your first language**? _____
- **What ethnic/cultural background do you most identify with** (For example White, Chinese, Latin American, Black, etc.) ----------
- **How long have you been living with type 2 diabetes?** I don't have diabetes ☐ 0-12 months ☐ 1-2 years ☐ 3-5 years ☐ > More than 5 years ☐
- **What is your occupation?** Private Employee ☐ Public Employee ☐ Unemployed

SECTION B:
SSCS-S

Think about a situation you are experiencing right now that is painful or difficult. It could be some challenges in your life, or perhaps you are feeling inadequate in some way. Please indicate how well each statement applies to how you are feeling toward yourself right now as you think about this situation, using the following scale:

Not at all true for me				**Very true for me**
1	**2**	**3**	**4**	**5**

1. I'm giving myself the caring and tenderness I need.

2. I'm obsessing and fixating on everything that's wrong.

3. I'm remembering that there are lots of others in the world feeling like I am.

4. I feel intolerant and impatient toward myself.

5. I'm keeping things in perspective.

6. I feel like I'm struggling more than others right now.

DSMQ

INSTRUCTION: The following statements describe intentions to engage in various self-care activities related to your diabetes treatment. Please specify the extent to which each statement applies to you. (Please indicate if any of these activities are not required as part of your treatment).

0 = Does not apply to me
1 = Applies to me to some degree
2 = Applies to me to a considerable degree
3 = Applies to me very much

1	I intend to check my blood sugar levels with care and attention. *Blood sugar measurement is not required as a part of my treatment.*	0	1	2	3
2	I intend to take my diabetes medication (e. g. insulin, tablets) as prescribed. *Diabetes medication/insulin is not required as a part of my treatment*	0	1	2	3
3	I intend to avoid diabetes-related doctor's appointments.	0	1	2	3
4	I intend to do regular physical activity to achieve optimal blood sugar levels.	0	1	2	3
5	I intend to strictly follow the dietary recommendations given by my doctor or diabetes specialist.	0	1	2	3
6	I intend to forget to take or skip my diabetes medication (e. g. insulin, tablets). *Diabetes medication/insulin is not required as a part of my treatment.*	0	1	2	3
7	I intend to sometimes have real 'food binges' (not triggered by hypoglycaemia).	0	1	2	3
8	I intend to see my medical practitioner(s) more often regarding my diabetes care.	0	1	2	3
9	I intend to skip planned physical activity.	0	1	2	3

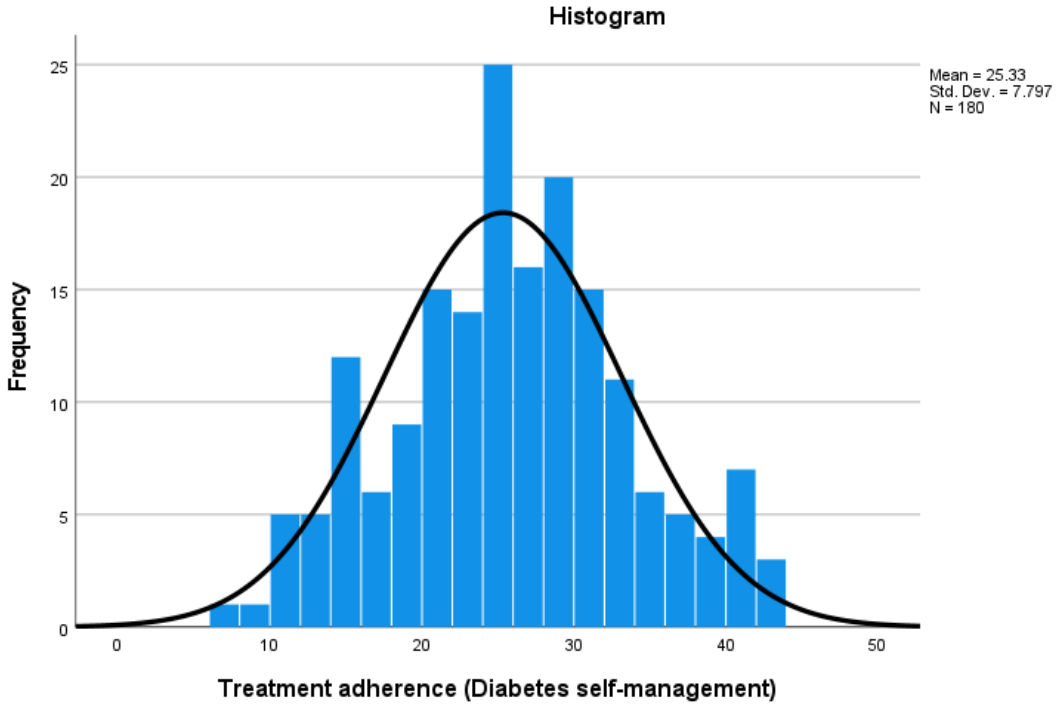
JSM

INSTRUCTION: *Indicate the extent to which each of the items below produces stress at work for you.*

1 = Produces no stress, 2 = Produces little stress, 3 = Produces some stress,
4 = Produces quite a bit of stress, 5 = Produces a great deal of stress

1	The number of projects and/or assignments I have.	1	2	3	4	5
2	The amount of time I spend at work	1	2	3	4	5
3	The inability to clearly understand what is expected of me on the job	1	2	3	4	5
4	The volume of work that must be accomplished in the allotted time	1	2	3	4	5
5	The amount of red tape I need to go through to get my job done	1	2	3	4	5
6	The time pressures I experience	1	2	3	4	5
7	The lack of job security I have	1	2	3	4	5
8	The amount of responsibility I have	1	2	3	4	5
9	The scope of responsibilities in my position entails	1	2	3	4	5

Appendix 7



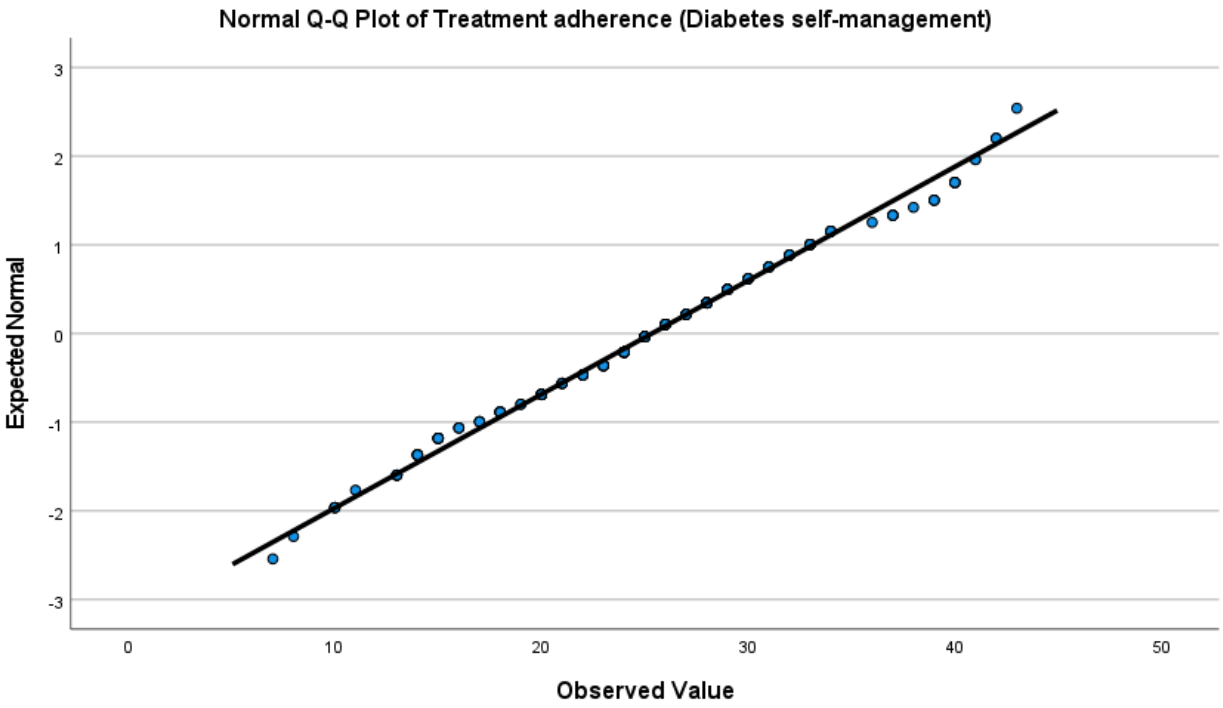
Explore

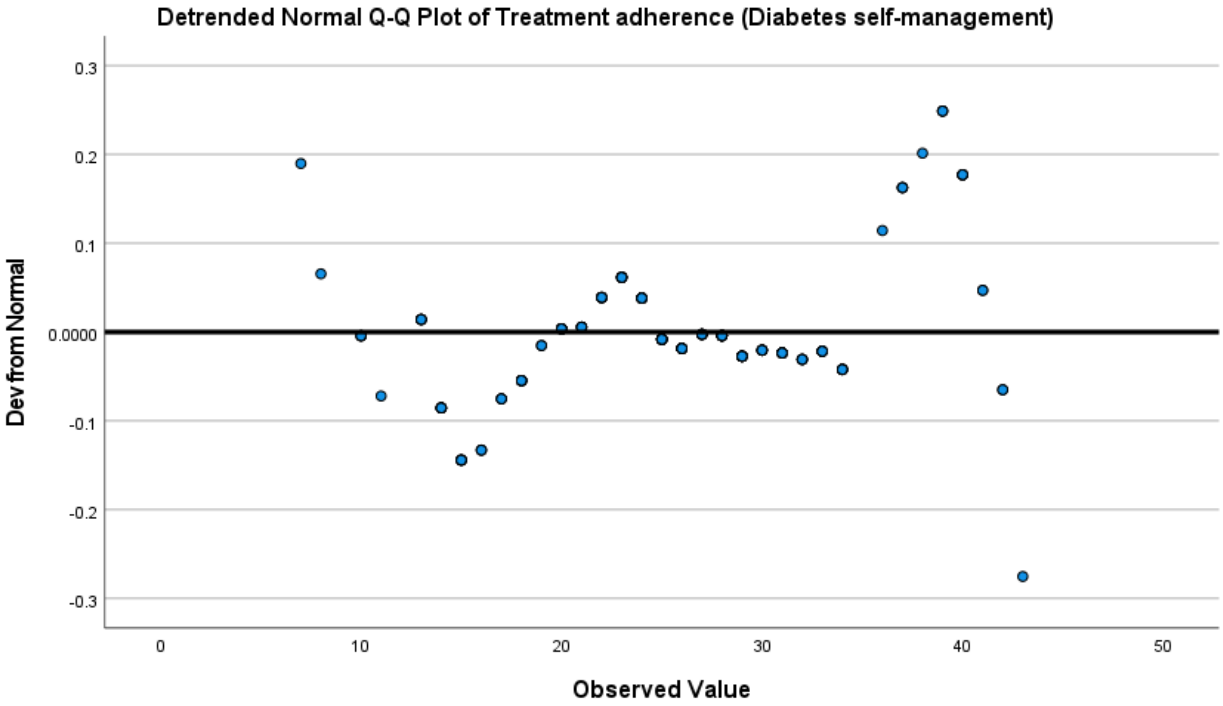
Tests of Normality

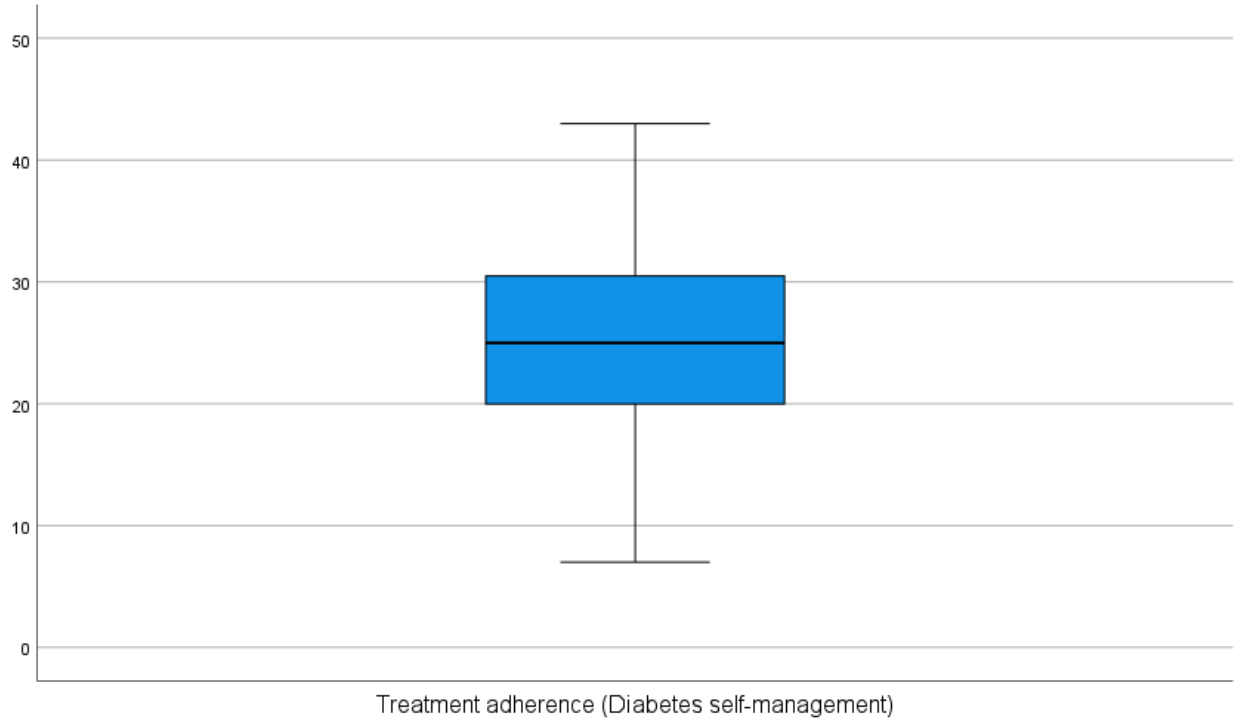
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Treatment adherence (Diabetes self-management)	.054	180	.200*	.989	180	.164

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction


Normal Q-Q Plot of Treatment adherence (Diabetes self-management)
Expected Normal
3
2
1
0
-1
-2
-3
0
10
20
30
40
50
Observed Value


Detrended Normal Q-Q Plot of Treatment adherence (Diabetes self-management)
Dev from Normal
0.3
0.2
0.1
0.0000
-0.1
-0.2
-0.3
0
10
20
30
40
50
Observed Value

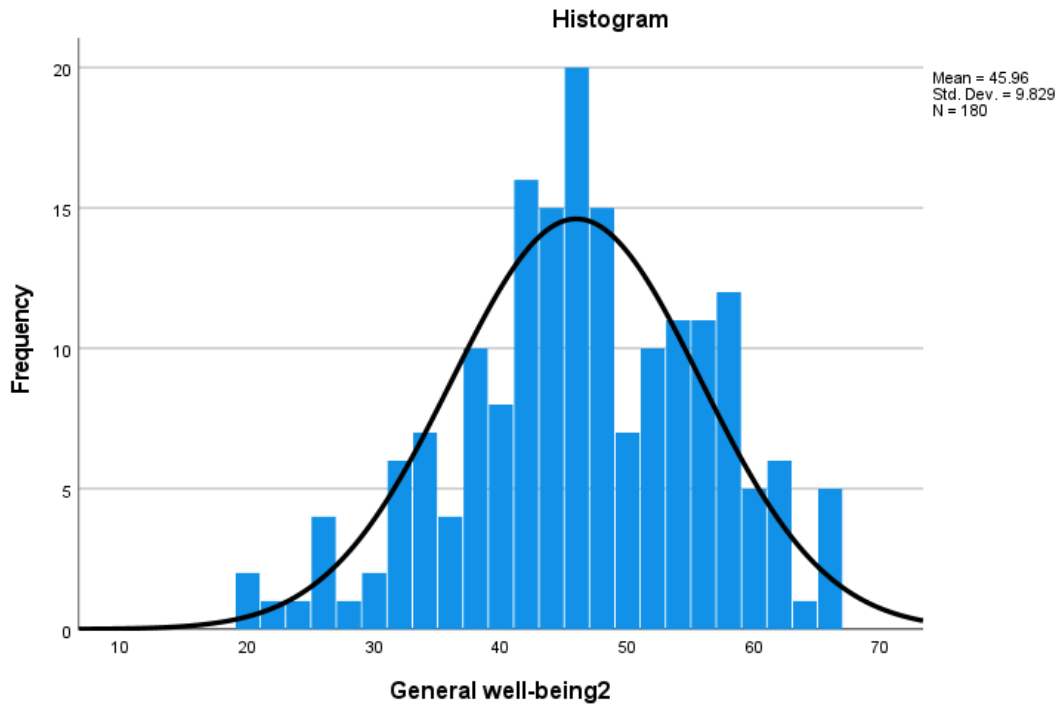


Frequencies

Statistics

General well-being2

N	Valid	180
	Missing	0



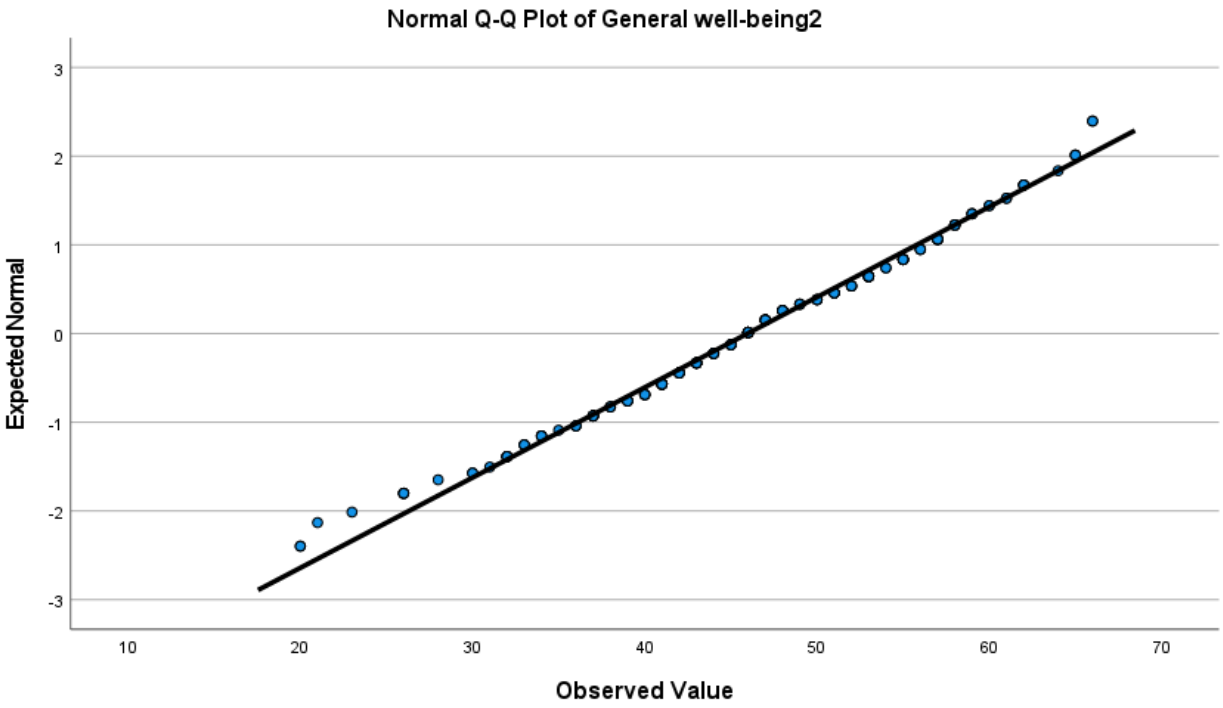
Explore

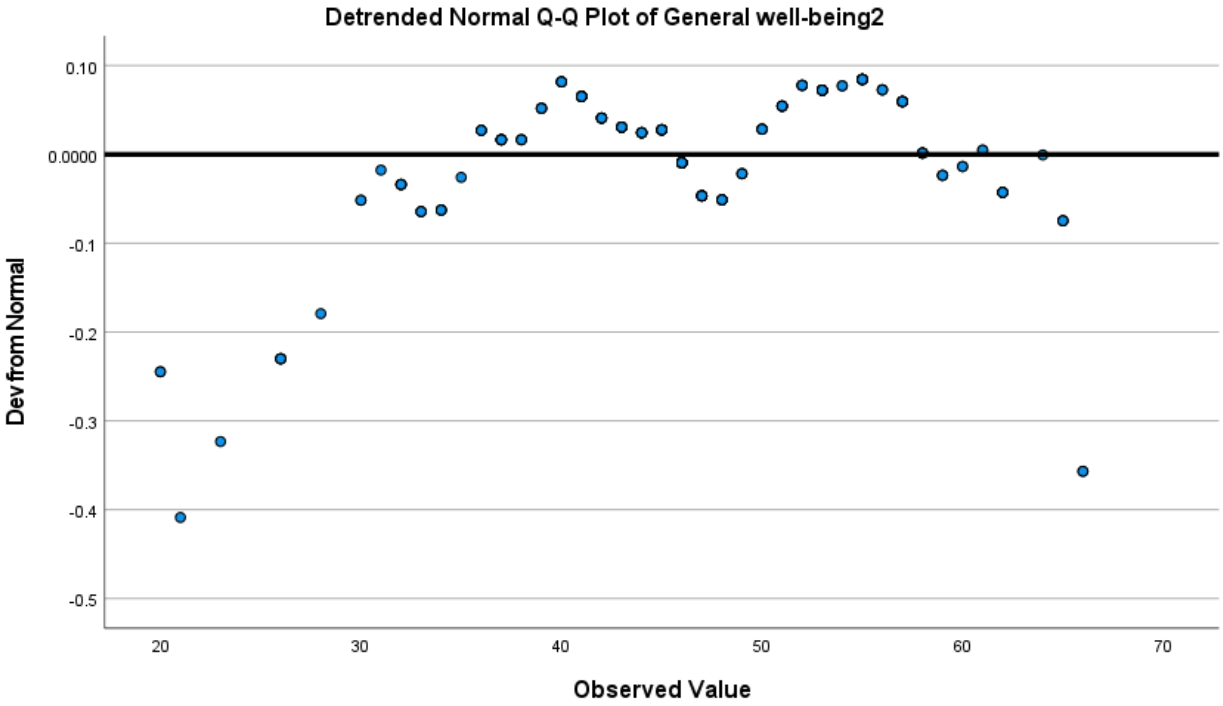
Tests of Normality

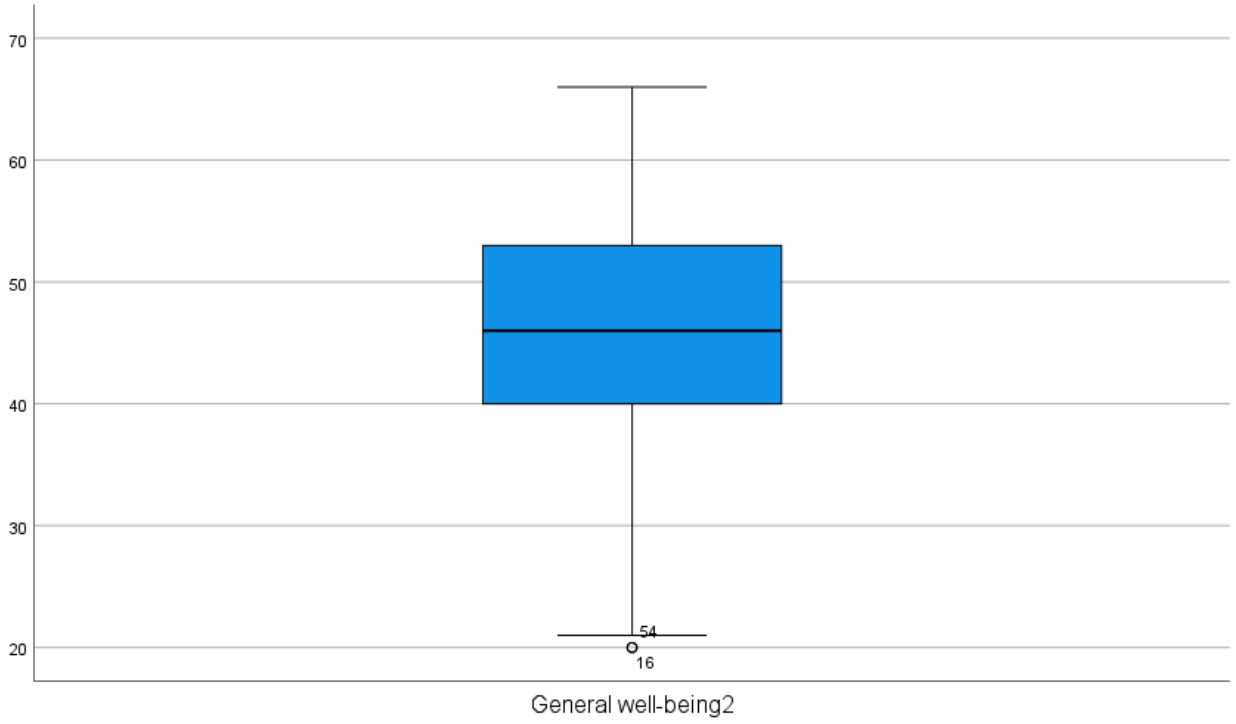
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
General well-being2	.052	180	.200*	.988	180	.132

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction


Normal Q-Q Plot of General well-being2
Expected Normal
3
2
1
0
-1
-2
-3
10
20
30
40
50
60
70
Observed Value


Detrended Normal Q-Q Plot of General well-being2
Dev from Normal
0.10
0.0000
-0.1
-0.2
-0.3
-0.4
-0.5
20
30
40
50
60
70
Observed Value


70
60
50
40
30
20
54
16
General well-being2

Appendix 8

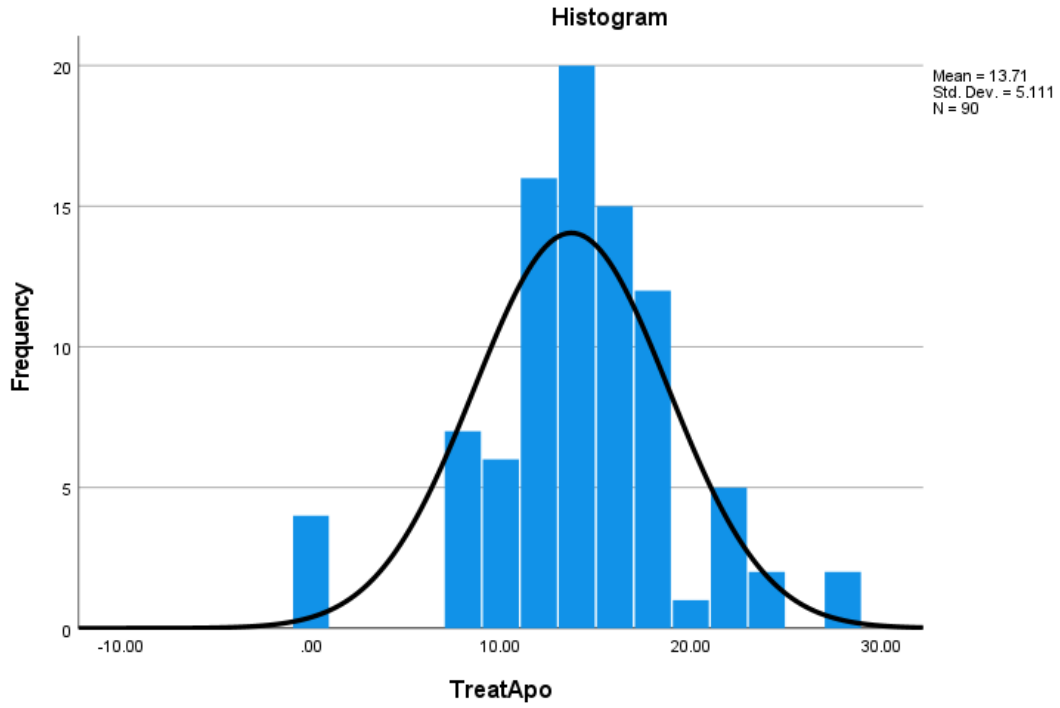
Preliminary analysis

Frequencies

Statistics

TreatApo

N	Valid	90
	Missing	0
Skewness		-.243
Std. Error of Skewness		.254
Kurtosis		1.487
Std. Error of Kurtosis		.503



Explore

Case Processing Summary

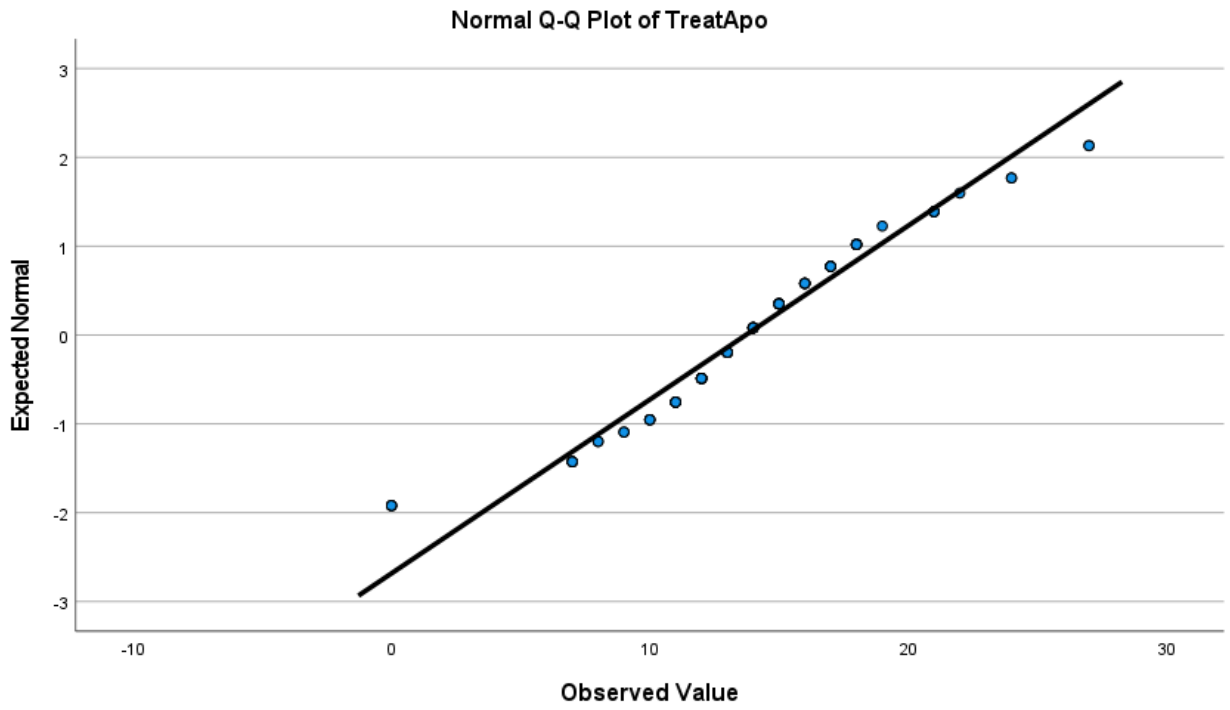
	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
TreatApo	90	100.0%	0	0.0%	90	100.0%

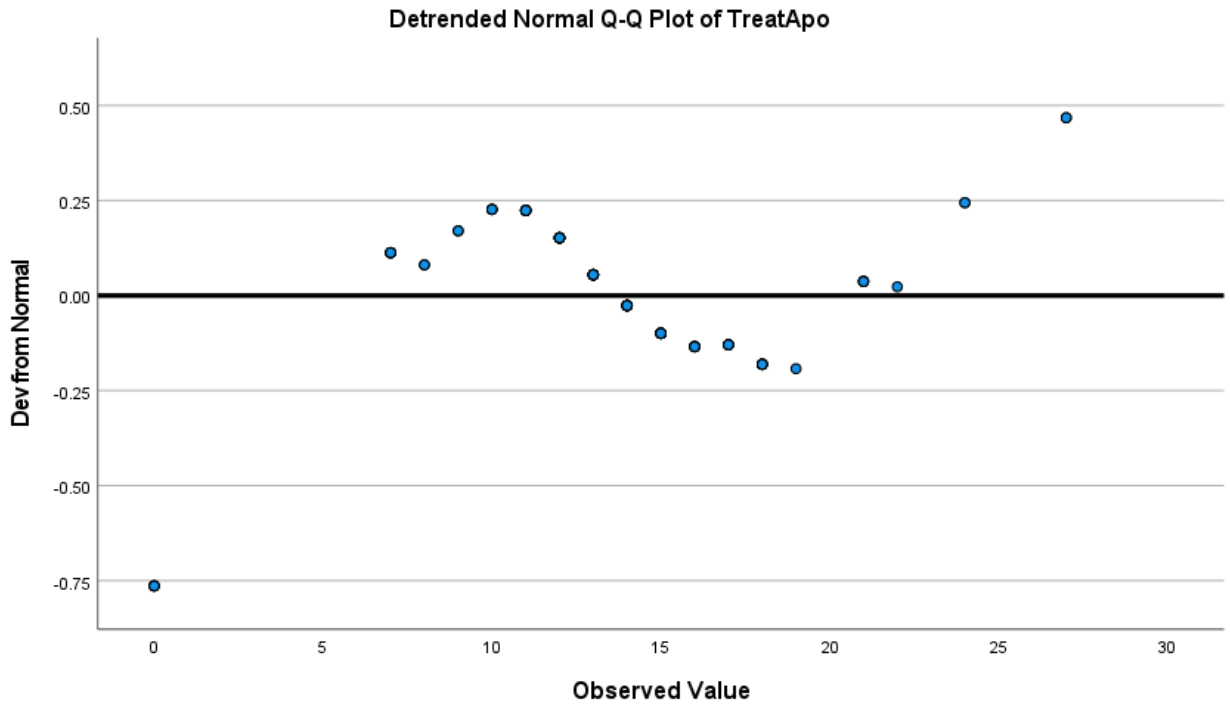
Tests of Normality

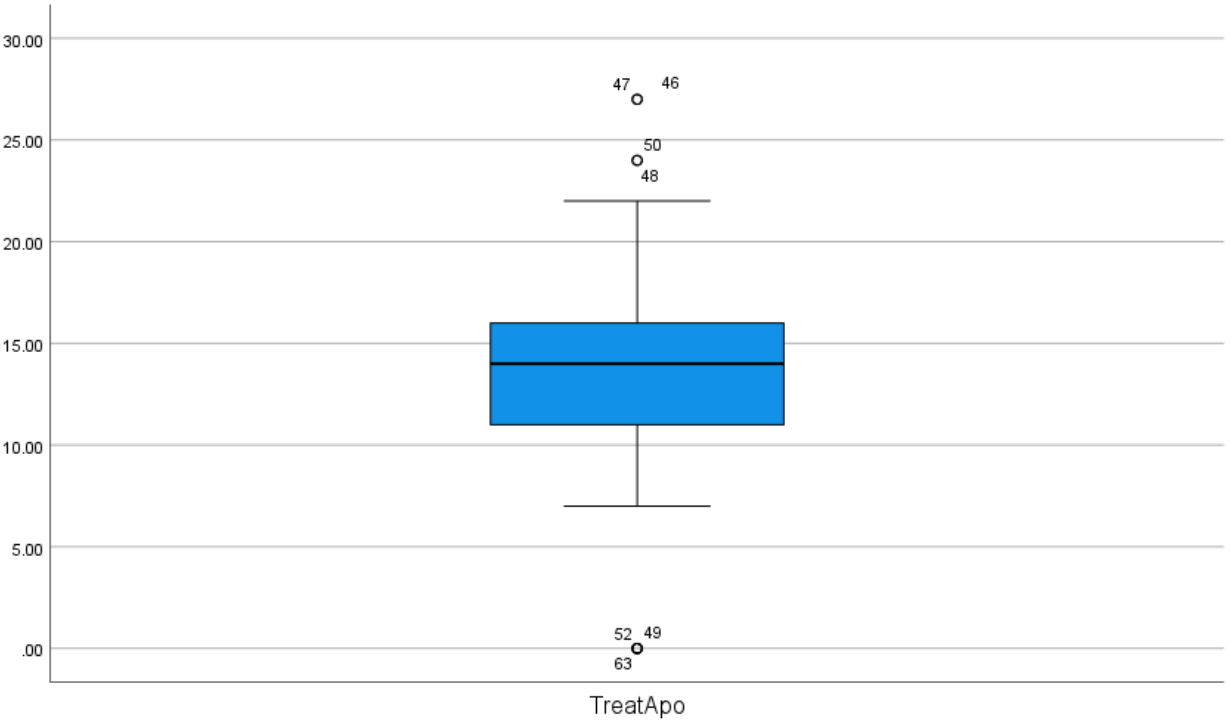
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
TreatApo	.113	90	.006	.953	90	.002

a. Lilliefors Significance Correction

TreatApo




Detrended Normal Q-Q Plot of TreatApo
Dev from Normal
0.50
0.25
0.00
-0.25
-0.50
-0.75
0
5
10
15
20
25
30
Observed Value


30.00
25.00
20.00
15.00
10.00
5.00
.00
47
46
50
48
52
49
63
TreatApo

One Way

Descriptives

TreatApo

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Control	45	12.4667	3.40187	.50712	11.4446	13.4887	7.00	19.00
Experimental	45	14.9556	6.17162	.92001	13.1014	16.8097	.00	27.00
Total	90	13.7111	5.11056	.53870	12.6407	14.7815	.00	27.00

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
TreatApo	Based on Mean	3.478	1	88	.066
	Based on Median	3.560	1	88	.062
	Based on Median and with adjusted df	3.560	1	61.040	.064
	Based on trimmed mean	3.636	1	88	.060