Older Patients Diabetes and Its Types

Posted on September 22, 2018

Abstract

Purpose

The researchers aim to understand the real-life experience of nurses, specialists, and healthcare practitioners in the management of hypoglycemia and its impact on the cognitive state of older patients.

Methodology

This study is a qualitative research study because it draws on various theoretical frameworks related to diabetes and hypoglycemia as well as dementia. This research study will be using a qualitative research methodology because the researchers aim to understand the real-life experience of nurses, specialists, and healthcare practitioners in the management of hypoglycemia and its impact on the cognitive state of older patients. The study's aim will be to construct a case study on the basis of understanding and evaluation of the experiences of various individuals in a shared setting. This approach is known as the Phenomenological approach, and the authors have deemed it the most appropriate and suitable for this study.

Findings

The research findings will be able to provide insight into the caring and nursing as well as management of hypoglycaemic episodes in older patients at risk of dementia.

Practical Implication

The research findings will assist the National Health Service Primary Care Trust to reduce the costs of unnecessary hospital admissions on occurrences of hypoglycemia. The research findings will be able to provide insight into the caring and nursing as well as management of hypoglycaemic episodes in older patients at risk of dementia.

Conclusion

The research findings will be able to provide insight into the caring and nursing as well as management of hypoglycaemic episodes in older patients at risk of dementia. In addition to this, the study will be able to provide information about the challenges involved in taking care of hypoglycaemic older patients at risk of dementia.

Background Of The Research

The development of the medical industry throughout the world has led to the introduction of several diseases and medical conditions that pose challenges for both doctors and patients. Such conditions include diabetes and hypoglycemia, as well as dementia in older patients. With advancements in medical sciences and the healthcare industry, an increasing trend can be seen in patient-centered management strategies that not only treat diseases but also prevent them. However, there are still cases of complex medical conditions that are so interlocked and have an age-related complexity that it becomes extremely difficult to treat and prevent these conditions unless the relationship between the conditions can be examined carefully.

With growing concern for a healthy lifestyle, it becomes extremely important to understand and treat the presence of cognitive dysfunctionality known as dementia in diabetic patients because it is known to affect the diabetes management of these old-age patients. World medical records show that the rate of spread of diabetes has been rising exponentially all around the globe over the last few decades.

Diabetes And Its Types

Diabetes is a chronic disease that may occur when a person’s body lacks the ability to use the completely produced insulin in the body (WHO, 2008). Due to this inability to utilize the produced insulin, the blood sugar levels rise, resulting in a diagnosis of diabetes (Holt and Kumar, 2010). Medical research shows that there are two main types of diabetes. Type 1 is a condition that occurs due to a total deficiency of insulin produced by the body and is known as diabetes mellitus. This is commonly categorized as an autoimmune disease that leads to the degeneration and destruction of insulin-secreting cells in the pancreas. On the other hand, another condition in which there is a partial deficiency in insulin produced by the body is known as Type II Diabetes Mellitus. Type II diabetes has various levels of insulin deficiency that are usually managed through continuous diet control, physical exercise, weight loss management, and insulin maintenance medicine. The increased deficiency of insulin in the body of type II diabetic patients over a longer period of time may lead to insulin doses being administered daily.

Projections Of Diabetes

The global number of adults living with diabetes continues to increase. The International Diabetes Federation's 2025 Diabetes Atlas estimates that 589 million adults aged 20–79 were living with diabetes in 2024 and projects that the figure will reach 853 million by 2050. Medical research supports the fact that around 75% of the patients who have been diagnosed with dementia have also been diagnosed with type II diabetes. As mentioned in the literature review section, type II diabetes is known to have a link with the onset of cognitive problems like dementia and Alzheimer's in adult patients (Ojo and Brooke 2015). In recent years, the role of diabetes in the development of cognitive decline and dementia has been the subject of research studies and discussion.

Relationship Between Hypoglycaemia And Dementia In Older People With Diabetes

Prior research on the issue of the relationship between hypoglycemia and dementia in older people with diabetes has shown that there is a bidirectional association between occurrences of low blood glucose in patients who also suffer from old-age dementia. Research brings evidence that diabetes in old-age people has a high probability of increasing the risk of developing several cognitive impairments, which include Alzheimer's disease and vascular dementia (Fisher, 2010). This connection between hypoglycemia in older patients with dementia and diabetes has led to several research interests in this subject area so that various treatments can be initiated to prevent the onset of cognitive decline in the form of severe dementia. This suggests that when blood sugar lowers to extremely low levels, it can affect a patient's cognitive function. Longer episodes of hypoglycaemia may end up resulting in neural damage.

Bidirectional Relationship

Research by other authors shows that the relationship between hypoglycemia in patients with dementia and diabetes is a bidirectional relationship because it has been seen that low blood sugar usually occurs in patients with Diabetes Mellitus, which ends up negatively impacting cognitive ability and leads to dementia. On the other hand, this situation of dementia, in turn, can have a negative impact on the management of Diabetes Mellitus, making it difficult to maintain steady blood sugar levels, and hypoglycemia may occur.

The relationship between these two variables is further signified by the evidence that diabetic patients who have suffered from a hypoglycaemic occurrence usually have a two-fold increased risk of developing early-onset dementia as compared to diabetic patients who never experience hypoglycemia. The evidence is substantial, as medical records show 34.4 percent versus 17.6 percent. This calls for a preventive treatment technique that prevents diabetic old-age patients with

episodes of hypoglycemia from developing dementia as well.

Evidence from medical records of old-age diabetic patients with dementia shows that such patients are at higher risk of suffering from a hypoglycaemic occurrence compared to patients with diabetes who were not suffering from dementia. A rate of 14.2 percent versus 6.3 percent also calls for new management techniques of healthcare services for patients with dementia. Such evidence calls for preventive treatment measures that can limit and prevent the onset of dementia in patients with diabetes Mellitus. In addition to this, healthcare for older patients with dementia should be managed to make sure they do not suffer from episodes of hypoglycemia, which may worsen their cognitive decline. The major aim is to devise practices and policies that are going to work on reducing this bidirectional relationship between hypoglycemia and dementia in old-age diabetic patients and its impacts.

Not only are these patients at risk of developing dementia, but hypoglycemia can further threaten and worsen the cognitive ability of older patients with Diabetes Mellitus (DM) and lead to Alzheimer's disease and other severe forms of dementia. The risk factors increase even more, and preventive treatment measures become more pertinent when the medical and theoretical evidence also suggests that older patients diagnosed with both diabetes and dementia have a higher probability of having hypoglycaemic episodes where the blood glucose levels drop dangerously low. Hypoglycemia episodes may vary in nature and severity from mild dizziness to hospitalization. With the world at risk for the increasing prevalence of type II diabetes, the risk for hypoglycemia and dementia among older diabetic patients also increases potentially. Therefore, it is extremely important to recognize, understand and evaluate the relationship between these two conditions.

The Rationale Of The Research

The major concern of this study is to understand how hypoglycaemia can impact patients' cognitive skills due to repeated low blood sugar. In the community care setting for diabetes, it is the ability of the caregiver to make choices and decisions about managing the lives of diabetic patients (Feil et al. 2011). The major concern that this research study is going to focus on is that hypoglycemia is a common occurrence in patients who are diagnosed with diabetes Mellitus, and medical records and studies have shown that hypoglycaemic episodes in old-age patients may lead to a negative impact on cognitive functionality leading to dementia.

On the other hand, cognitive impairment like Dementia can make it extremely difficult to manage blood sugar levels in old-age patients with type II diabetes, leading to severe occurrences of hypoglycemia. It becomes extremely important to understand the role and relationship between hypoglycemia and Dementia in adult diabetic patients because this relationship and connection between the two variables is the only way through which management systems can be assembled that prevent cognitive impairment as well as hypoglycaemic episodes in old-age patients with diabetes (Whitmer et al., 2009). The results of various medical studies on the relationship and

impacts of Hypoglycaemia in older diabetic patients with dementia have shown that these two conditions can lead to the creation of a vicious cycle in which continuous and regular episodes of low blood sugar continue to damage the brain over a period of time, leading to patients' inability to manage their diabetes, which in turn results in repeated occurrences of hypoglycemia.

Research shows that the careful management of diabetes can help patients in preventing memory decline. However, the risk factor that increases the chances of dementia in patients is that hypoglycemia is a common occurrence for patients who take insulin shots or medicine to regulate or lower their blood sugar. On the other hand, people who suffer from dementia may not be cognitively active enough to maintain healthy blood sugar levels, leading to complications like hypoglycemia (McAulay, Deary, and Frier, 2002). It is important to understand that there are certain medicines in the market that are used to regulate blood sugar but have been revealed to have a high risk of causing hypoglycemia and are not suitable for older diabetic patients with diagnosed dementia or patients at risk for dementia.

It becomes extremely important to study the possible effect of diabetes on the cognitive state of older patients because of hypoglycemia's relationship with the onset of dementia and other cognitive ailments. In addition to this, there is an important consideration of the reverse effect of dementia on repeat episodes of hypoglycemia because the patients lose their cognitive ability to maintain and regulate their blood sugar levels. There is a need to maintain healthcare systems for patients with dementia or hypoglycemia so that their blood sugar levels can be regulated and monitored carefully. This study will focus on the extent to which nursing specialist practitioners assist in the management of hypoglycemia in older patients with dementia and vice versa.

Research Aim

The research study will aim to explore the extent to which nursing specialist practitioners assist in the management of hypoglycemia in adult patients with dementia in the community.

Objectives Of The Research

A. To explore the extent to which the experiences of nurses and specialist practitioners have contributed to the management of cognitively impaired diabetic cases in the community.

B. To explore the extent to which the challenges nursing professionals face inhibit/impact the care of cognitively impaired patients already diagnosed with hypoglycemia.

C. To highlight and suggest possible ways of alleviating these challenges.

Literature Review

A vast amount of research has been carried out to understand the relationship between hypoglycemia and dementia in diabetic patients. Although the precise mechanism through which diabetes and hypoglycemia lead to cognitive impairment, like dementia, is not yet confirmed, a vast amount of evidence through medical studies has led to this belief that there is a bidirectional relationship between the two variables. Research shows that there has been a rise in the prevalence of cognitive degenerative disorders like dementia and Alzheimer's, and the steady increase is a major cause of concern. Various important medical studies by practitioners have concluded that type II diabetes plays a major role in substantially increasing the risk of dementia in diabetic patients of old age (Rhee, 2017). In addition to just dementia, there are several other cognitive functionality disorders that occur because of type II diabetes.

Management of type II older diabetic patients, therefore, gains excessive importance because hypoglycemia, which is a condition of extremely low blood sugar levels, is a leading cause that has a direct relationship with the onset of dementia in older diabetic patients. A study carried out by the Korean National Diabetic Program (KNDP) showed evidence that the presence of Hypoglycaemic episodes in patients younger than 50 years old was only limited to 3.7 cases per 1000 patients. However, the results showed an exponential increase to 25.7 cases per 1000 patients in the older age group above 50. This shows that, indeed, hypoglycemia has a negative impact on the cognitive ability of older diabetic patients and can cause dementia. A study by KNDP showed an acute increase in cognitive impairment (Dementia) in patients who experienced hypoglycemia (Yaffe et al., 2013). The results of this study showed that the risk and severity of dementia increased proportionally to the increase in hypoglycaemic events.

Research also shows that older patients are much more vulnerable to hypoglycaemic episodes due to various other factors as compared to younger patients. It becomes increasingly difficult for older patients to manage their blood sugar levels in a moderated manner because their lifestyle, diet plan, exercise, and medicine are very different compared to younger diabetic patients. When older patients suffer from hypoglycaemic episodes, impairment of cognitive abilities can lead to hypoglycaemic encephalopathy, which is a condition of repeated hypoglycaemic occurrences (Meneilly and Tessier, 2016). Research shows that even though the exact mechanism is not fully understood by the researchers, type II diabetes and hypoglycemia are found to be important causes of dementia and cognitive impairment in the form of severe functional disorders.

Research shows that diabetes mellitus is one of the major chronic diseases that are prevalent throughout the world. The fact that glucose is the major fuel for the human brain makes it extremely important to maintain and regulate the level of glucose that travels through the brain. It has to be maintained with zero chance for error so that normal brain activity can be maintained without any impairment (Morrison, J., 2004). Past research and literature show that unregulated levels of glucose, be it too high or too low, can have a negative impact on the brain structure and its activity and

functionality, leading to cognitive impairment like dementia.

Albeit as opposed to the trust that hypoglycemia could prompt dementia in diabetic patients as connoted by different scientists, Kosiborod et al. (2009) figured that hypoglycemia can't be the immediate reason for dementia all alone. He contended that it is conceivable that others neglected to recognize hypoglycemia that came about because of different diseases from those that happen from glucose-lowering solutions. The author prescribed that when hypoglycemia finding is done, restorative issues and way of life, by and large, should be viewed as well, for example, past history of hypoglycemia, escalated glycaemic control, undetected night-time hypoglycemia, poor infusion system, long length of diabetes, impeded attention to hypoglycemia, debilitated renal capacity, polypharmacy, and terminal ailment. Way of life issues, for example, lacking nourishment consumption, mal-ingestion of sustenance, unpredictable eating design, expanding age, knotty over-utilized infusion locales (lipo hypertrophy), and insufficient blood glucose checking should be thought about as well (NHS, Diabetes, 2010).

Another important study by Robin et al. (2001) attempted to promote preventative strategies with regard to hypoglycemia and diabetes and concluded that social and economic factors challenge the maintenance of a healthy lifestyle in diabetic patients. The authors argued that decreasing disposable income levels and educational achievements could increase the risk of developing diabetes and also lead to hypoglycemia. Another important piece of literature evidence was provided by Biessel et al. (2006), who concluded that there is a higher and increased risk of dementia, a 1.5 to 2-fold increase in older people with type 2 diabetes mellitus.

Another important research study that focuses on the cognitive dysfunction of older diabetic patients concluded that cognitive impairment is also closely associated with the self-care awareness and routine of diabetic patients in old age (Mielke, Taghibiglou, and Lui, 2006). The appropriate use of health and social services is important for maintaining a healthy cognitive state. The results of this study revealed that patients who are diagnosed with permanent type II diabetes mellitus showed a greater risk of having cognitive dysfunction and impairment in the form of dementia, which was the result of poor self-care awareness in diabetic patients and higher dependence on others for care and looking after (Sylar et al., 2009). Patients who suffer from hypoglycemia may enter the early stages of dementia and may become dependent on others because they are no longer able to undertake their daily routine activities in a steady manner. As the cognitive impairment and decline continue, these patients may need 24-hour care round the clock with nurses and other professionals in the healthcare industry. Such patients are no longer able to take proper care of themselves and can mess up their medicine routine, leading to major and severe episodes of hypoglycemia.

Methodology

This study is a qualitative research study because it draws on various theoretical frameworks related to diabetes and hypoglycemia as well as dementia. This research study will make use of literature

with a longitudinal perspective as well as a few cross-sectional studies aimed at evaluating the relationship between hypoglycemia and cognitive impairment (dementia) in older diabetic patients. The purpose of selecting these studies will also be to understand the possible impact of cognitive functionality disorders on the ability of diabetic patients to manage their disease. Even though the literature may be able to evaluate the relationship that the authors sought, further evidence will be taken from the primary data collected using semi-structured interviews with nurses, specialists, and healthcare practitioners in order to manage the hypoglycemia's effect on patients' cognitive state.

Research Approach

This research study will be using a qualitative research methodology because the researchers aim to understand the real-life experience of nurses, specialists, and healthcare practitioners in the management of hypoglycemia and its impact on the cognitive state of older patients. The study's aim will be to construct a case study on the basis of understanding and evaluation of the experiences of various individuals in a shared setting. This approach is known as the Phenomenological approach, and the authors have deemed it the most appropriate and suitable for this study. The authors contemplated choosing a different method, like the evaluation research method or user surveys to collect data, but rather than focusing on getting information directly from patients who have experienced hypoglycemia and are diagnosed with dementia, the authors found it more important to understand the techniques that can be used to manage the condition in older diabetic patients.

The major reason for reaching out to nursing professionals is because they have a better understanding of the causes behind the repeated occurrences of hypoglycaemic episodes, and they are well aware of possible preventive and treatment strategies that can be used to regulate the blood sugar levels in hypoglycaemic patients at risk of dementia. The time limitations make it extremely inappropriate for the authors to make use of an experimental approach. When collecting experiences from real-life professionals in the healthcare industry, it is natural to use a qualitative and interpretive approach to focus on the individual responses and bring out a holistic output from the overall collected information through interviews.

Research Design And Data Collection

The interviews will be semi-structured with a series of open-ended questions aimed at gaining rich details from nurses and other professionals. For the purpose of capturing all the relevant information, the interviews will be tape-recorded with the permission of the respondents.

Later on, these tapes will be documented in interview transcripts. Notes will be constructed out of these transcripts to observe common details and new aspects in the subject area. The questions of the research will be devised after careful study of the prevalent literature because the research available will provide insight and give direction to this research study.

Sampling

The sample will be selected purposefully. With this in mind, the authors will select nurses and professionals who have a rich amount of experience in the field of diabetic patient management. Nurses with more than five years of experience in managing and caring for patients with hypoglycemia in type II diabetes will be selected. Nurses who do not have sufficient experience or are not directly involved in taking care of patients with hypoglycemia in type II diabetes will not be made part of the sample. The participants will be selected from a nursing home or homes of NHS Trust to be chosen. All the experienced nurses will be given invitation letters for participation in the study. Positive responses and willingness of the nurses to participate in the study will be acknowledged and appreciated. Selected nurses will be given time for interviews, and their consent papers will be signed on the day of the interviews.

Proposed Data Analysis

The interview tapes will be documented in interview transcripts. Notes will be constructed out of these transcripts to observe common details and new aspects in the subject area. Transcribed reports of the recorded interviews will be sent to the respondents for a final check to see if they have provided all the relevant information. If any changes are required, these changes will be made after confirmation from the interviewees. A holistic and selective approach will be used to make sure that important meanings are captured from all the collected data by highlighting the important statements and phrases from the interviews. The purpose of this study will be to record all the important discussions and ideas from the nurses' experience of caring for hypoglycaemic older diabetic patients. The impregnated terms will be used as "in vitro codes." The data will be interpreted using an interpretive approach. The first part of the analysis will be based on the description of all the important details, and the second part of the analysis will be an interpretation of the important details in a holistic manner to gather key themes and present them in a meaningful manner.

Ethical Considerations

This research study will keep in mind all the improvements in ethical principles to maintain the validity and quality of this research study. No participants will be coerced or forced into taking part in interviews. The accuracy of the data will be maintained by not changing the wording or meaning of the interviewee's answers. To maintain confidentiality and anonymity, the names and designations of the nurses will be kept confidential and will not be used in the research report. Without the consent of any participant, their personal data will not be used as part of the research.

References

Biessels, G.J., 2009. Diabetes: Hypoglycemia and dementia in type 2 diabetes: chick or egg?. *Nature Reviews Endocrinology*, *5*(9), p. 532.

Feil, D.G., Rajan, M., Soroka, O., Tseng, C.L., Miller, D.R. and Pogach, L.M., 2011. Risk of hypoglycemia in older veterans with dementia and cognitive impairment: implications for practice and policy. Journal of the American Geriatrics Society, 59(12), pp. 2263-2272.

Fisher, M., 2010. Hypoglycaemia in patients with Type 2 diabetes: minimising the risk. The Journal of Diabetes and Vascular Disease, 10(1), pp. 34 40.

Holt, T., and Kumar, S. 2010. ABC of diabetes. 6th ed. London: Wiley. Blackwell.

Kosiborod, M., Inzunchi, SE., Goyal, A., et al., 2009. Relationship between spontaneous and iatrogenic hypoglycemia and mortality in patients hospitalized with acute Myocardial infarction. JAMA, 310 (15). PP. 1556-1564.

McAulay, V, Deary, IJ., Frier, BD., 2002. Symptoms of hypoglycemia in people with diabetes. Diabetes Med. 20. Pp. 638-651.

Meneilly, G.S. and Tessier, D.M., 2016. Diabetes, dementia and hypoglycemia. *Canadian Journal of Diabetes*, *40*(1), pp. 73-76.

Morrison, J., 2004. Developing Research questions in medical education. The Science and the Art". Medical education. 38. Pp. 596- 599.

Mielke, JG., Taghibiglou, C., Lui, LA., 2006. Biochemical and functional characterisation of diet induced brain insulin resistance. Journal of Neurochemistry, 95. Pp1568-1578.

Nhs Diabetes 2010. The hospital management of Hypoglycaemia in adults with diabetes Mellitus. www.diabetes.nhs.uk accessed 4th February 2017.

Ojo, O. and Brooke, J., 2015. Evaluating the association between diabetes, cognitive decline and dementia. International journal of environmental research and public health, 12(7), pp. 8281-8294.

Robin, W., Gail, DM. and Grey, M. 2005. Applying the social ecology theory to type 2 diabetes prevention and management. Journal of Community Health Nursing; 21(3) pp. 87-89.

Rhee, S.Y., 2017. Hypoglycemia and Dementia. *Endocrinology and Metabolism*, *32*(2), pp. 195-199.

Skylar, JS., Bergenstal, R., Bonow, Ro., et al., 2009. Intensive Glycaemic Control and the prevention of cardiovascular events: implication of ACCORD, Advance and VADT diabetes trials. Diabetic care, 33(2)pp187-93.

Whitmer, R.A., Karter, A.J., Yaffe, K., Quesenberry, C.P. and Selby, J.V., 2009. Hypoglycemic episodes and risk of dementia in older patients with type 2 diabetes mellitus. *Jama*, *301*(15), pp. 1565-1572.

Yaffe, K., Falvey, C.M., Hamilton, N., Harris, T.B., Simonsick, E.M., Strotmeyer, E.S., Shorr, R.I., Metti, A. and Schwartz, A.V., 2013. Association between hypoglycemia and dementia in a biracial cohort of older adults with diabetes mellitus. *JAMA Internal Medicine*, *173*(14), pp. 1300-1306.