

The Nursing Management of Type 2 Diabetes Mellitus

Type 2 diabetes mellitus – referred to throughout this paper as ‘Type 2 diabetes’ – is a chronic condition involving the insufficient production of insulin (Robbins, Shaw and Lewis, 2007). It occurs due to the exhaustion of insulin-producing β -cells in the pancreas (Robbins, Shaw and Lewis, 2007). Insulin is a hormone which has the effect of maintaining a stable blood glucose level, within the range of approximately 3.9 to 6.7mMol/L (Robbins, Shaw and Lewis, 2007). Type 2 diabetes causes hyperglycaemia, or excessive blood glucose (Robbins, Shaw and Lewis, 2007; National Institute for Health and Care Excellence [NICE], 2015a). When it is poorly controlled, hyperglycaemia results in a variety of complications, underpinned by micro- and macro-vascular disease (Goldstein and Muller-Wieland, 2007; World Health Organisation [WHO], 2018).

Type 2 diabetes is common in the United Kingdom (UK); indeed, in 2017 there were nearly 3.7 million people diagnosed with Type 2 diabetes in the UK (Diabetes UK, 2017). Diabetes UK (2017), the peak national body for diabetes in the UK, estimates that there are an additional 1 million people in the UK who have undiagnosed Type 2 diabetes. Because of the prevalence of Type 2 diabetes, nurses in every clinical setting are likely to care for patients with this condition; it is therefore essential that nurses understand the correct nursing management of Type 2 diabetes. This paper critically analyses the nursing management of Type 2 diabetes.

The fundamental goal of Type 2 diabetes management is to achieve adequate glycaemic control, measured by blood concentration of glycosylated haemoglobin (HbA1c). Glycosylated haemoglobin is an objective indicator of long-term glycaemic control and, subsequently, of the risk of a person’s Type 2 diabetes progressing, and their development of diabetes-related complications (Zhang et al., 2012). Research suggests that although the

holistic, multidisciplinary management of a person with Type 2 diabetes is important, nurses have a key role in Type 2 diabetes management, and particularly in relation to supporting a person with Type 2 diabetes to achieve long-term glycaemic control (Richardson et al., 2014).

There is a large volume of evidence about the effective nursing management of Type 2 diabetes. Indeed, the Royal College of Nursing (RCN) identify no fewer than eleven discrete roles for nurses in relation to the nursing management of Type 2 diabetes. Ultimately, however, the literature advises nurses to follow the recommendations in the most current NICE guidelines (Nair, 2007). For this reason, the strategies discussed here are based on the NICE (2015a) *Type 2 Diabetes in Adults: Management* guideline, the primary guideline for practice in the UK.

Strategy #1 – Patient education: The NICE (2015a) guideline recommends that all patients with Type 2 diabetes are offered structured, evidence-based and resource-effective education to enable their self-management of the condition. This education must focus on dietary advice (refer to Strategy #2 following), and also related lifestyle changes such as exercise for weight control (Lawrence, Conrad and Moore, 2012). A recent systematic review and meta-analysis concluded that nurse-led education for people with diabetes can improve glycaemic control to a statistically-significant degree, and that this improvement is often sustained over time (Tshiananga et al., 2011). However, currently there is a paucity of conclusive evidence about the most effective design for patient education for Type 2 diabetes – including in terms of frequency and timing, delivery strategies and content (Tshiananga et al., 2011) – and nurses should therefore be guided by local policies and / or those of their healthcare organisation.

Strategy #2 – Dietary advice: Patient education, as outlined in Strategy #1 above, must focus on dietary advice, as dietary intake is the fundamental factor in the development and

management of Type 2 diabetes (Ley et al., 2014). The NICE (2015a) guideline emphasises the importance of providing ongoing, individualised dietary advice to people with Type 2 diabetes, particularly in relation to the intake of high fibre, low glycaemic index (GI) carbohydrates. In addition to the types of foods people with Type 2 diabetes consume, nurses should also provide advice about correct eating patterns to achieve glycaemic control: specifically, consuming three balanced meals plus appropriate between-meal snacks each day (Lawrence, Conrad and Moore, 2012). Although nurses have “expertise and responsibility” in relation to dietary intake (Xu et al., 2017), they are required to refer to a dietician or nutritionist if a patient’s needs are beyond their scope.

Strategy #3 – Blood pressure management: As noted, people with Type 2 diabetes are at increased risk of vascular disease (Goldstein and Muller-Wieland, 2007; WHO, 2018); this may cause new, or complicate existing, hypertension. Thus, the NICE (2015a) guideline recommends the monitoring of blood pressure at least every 2 months in people with Type 2 diabetes and, where necessary, its management using anti-hypertensive medication/s. The NICE (2015a) guideline sets specific blood pressure targets for people with Type 2 diabetes: <140/80mmHg, and <130/80mmHg for people with vascular disease. However, there is a growing body of literature which challenges the use of universal blood pressure targets in Type 2 diabetes management because of the lack of supporting evidence and, thus, their inconsistent use (Grossman and Grossman, 2017; Kai, 2017). Individualised targets may be more appropriate.

Strategy #4 – Drug treatment: Where the above strategies fail to enable a person with Type 2 diabetes to achieve adequate glycaemic control, the NICE (2015a) guideline recommends that drug therapy is commenced. The first-line anti-hyperglycaemic medication recommended for use in Type 2 diabetes in the UK is metformin, which prevents gluconeogenesis, or the

production of excess glucose by the liver (Downis, 2015). Metformin may be combined with one or more of a variety of second-line medications, including (but not limited to) sulphonylureas or thiazolidinediones, and, if the condition continues to progress, insulin (Downis, 2015). Unless they are independent prescribers competent in relation to medication for the management of Type 2 diabetes (RCN, 2018b), the nurse's role in the use of medications for Type 2 diabetes management may be limited to tasks involving education and monitoring, as described.

As noted earlier, the fundamental goal of Type 2 diabetes management is to achieve adequate glycaemic control. However, perhaps surprisingly, the NICE (2015a) guideline recommends that nurses do *not* encourage people with Type 2 diabetes to routinely self-monitor their blood glucose levels. A meta-analysis undertaken to inform the NICE (2015a) guideline provides the reasons for this recommendation: specifically, although self-monitoring of blood glucose levels improves glycaemic control in people with Type 2 diabetes (when measured by glycosylated haemoglobin, as described earlier), this improvement is insignificant and excessively costly to achieve (NICE, 2015b). Instead of regular self-monitoring, therefore, the NICE (2015a) guideline recommends individualised HbA1c targets and at least bi-annual, formal HbA1c measurements.

Strategy #5 – Managing complications: As noted earlier, people with Type 2 diabetes are at increased risk of a variety of complications, underpinned by vascular disease (Goldstein and Muller-Wieland, 2007; WHO, 2018). The complications of Type 2 diabetes, even if they are acute, often cause no symptoms; however, if they are not rapidly identified and treated, can lead to a hyperosmolar hyperglycaemic state and serious morbidity and / or rapid mortality (Downis, 2015). The NICE (2015a) guideline therefore identifies the management of complications as a key nursing role. Nurses must be aware that patients with Type 2 diabetes-

related complications may present with these as an overt primary complaint, or as an underlying secondary complaint. In conducting their standard clinical assessments, nurses must be adept at recognising and interpreting the often subtle signs of diabetes complications (Alfadda and Abdulrahman, 2006).

In the majority of cases, the development of Type 2 diabetes is underpinned by modifiable lifestyle factors and it is, therefore, an entirely preventable condition (Jermendy, 2005). In addition to managing Type 2 diabetes, nurses have a fundamentally important role in the prevention of Type 2 diabetes in at-risk people (Downis, 2015). Indeed, the RCN (2018a) identifies education for prevention to be the nurse's primary role in relation to Type 2 diabetes, secondary to management. Although nurse-led strategies to prevent Type 2 diabetes are beyond the scope of this paper, they are similar to the simple management strategies, such as education and monitoring (Downis, 2015), described above. By applying these strategies with people at risk of Type 2 diabetes, nurses can contribute to reducing the diabetes burden.

Type 2 diabetes mellitus is a complex condition which is caused by the insufficient production of insulin, and which results in hyperglycaemia and related complications. Because of its prevalence in the UK population, nurses working in every clinical setting are likely to care for patients with Type 2 diabetes and, therefore, it is essential for them to understand the correct nursing management of Type 2 diabetes. This paper has explored this topic, with reference to the NICE (2015a) *Type 2 Diabetes in Adults: Management* guideline. It has outlined key evidence-based strategies – including: (1) education, (2) dietary advice, (3) blood pressure management and (4) drug treatment, underpinned by an overall goal of achieving adequate glycaemic control (measured by HbA1C levels), as well as (5) the management of diabetes-related complications – which nurses in any clinical setting can

apply in practice. In doing so, nurses can make a major contribution to improving outcomes for patients with Type 2 diabetes.

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