Adherence to antidiabetic therapy: a concept analysis

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Problem

Many diabetic patients do not adhere to their medication regimen. This may be due to patients and healthcare staff having different understanding on what constitutes adherence to antidiabetic therapy. Consequently patients and healthcare staff have not been able to achieve the desired health outcomes.

Objectives

The aim of this concept analysis is to clarify and define the concept of adherence to antidiabetic therapy. This analysis will provide a common basis for those pursuing a better understanding of patient decision making, reduction of complications and improved long-term adherence to antidiabetic therapy.

Methods

A concept analysis, utilizing the eight steps Walker and Avant method was done. Eleven articles were reviewed to produce a definition of adherence to antidiabetic therapy.

Results

Attributes of adherence to antidiabetic therapy includes knowledge of optimal level of blood glucose and home blood glucose monitoring, knowledge of complications from poor glycaemic control, use of daily medication reminders, knowing and agreeing to the medication, active continuous collaboration between patient and health care provider in communicating and negotiating the treatment regimen, and ability to meet outcome targets

Conclusion

Adherence to antidiabetic therapy is defined as knowing and agreeing to antidiabetic therapy (medication, diet and exercises), active continuous patient participation in negotiation and appraisal of therapy, and consistence in performing desired health behaviours to meet outcome targets. The concept analysis will assist health professionals in standardising treatment guidelines which enables them to continually measure and improve adherence to antidiabetic therapy.

Key words: Adherence, antidiabetic therapy, concept analysis

Introduction

Several researchers have defined adherence to antidiabetic therapy as the extent to which individuals follow the instructions they are given for prescribed treatments (Haynes et al, 2002). These instructions range from antidiabetic medication (oral drugs and injectable insulin), diet and exercise (Mukona, 2017). Adherence to treatment is a complex health behaviour. Non-adherence may be the intentional result of a rational decision based on personal beliefs about the illness and treatment as well as the unintentional consequences of lack of ability to manage the medication regimen (Clark, 2004). Individual's failing to initiate therapy, underusing or overusing a treatment, stopping a treatment too soon, and mis-timing or skipping doses are some of the challenges compromising adherence to antidiabetic therapy. Several studies have also identified co-morbidity of hypertension and obesity with diabetes as factors implicated in poor glycemic control, high micro- and macrovascular complications and the increased risk of negative cardiovascular and cerebrovascular events (Sullivan et al, 2002). Presence of comorbid chronic conditions and being new to diabetes therapy was associated with lower adherence (Kirkmann, 2015).

Significance of concept

Patients and healthcare staff may have different understanding on what constitutes adherence to antidiabetic therapy. This has led to patients and healthcare staff not achieving the desired health outcomes. Clarification of the concept will enhance understanding and provide a common basis for health practitioners in giving patient health education and antidiabetic therapy instructions. The concept analysis will provide a guideline for those seeking a better understanding of patient decision-making, reduction of complications and improved long-term adherence to antidiabetic therapy recommendations. Therefore the analysis will help enhance professional knowledge and practice regarding antidiabetic therapy.

Methods

Walker and Avant's eight-step concept analysis method was used. These includes selection of a concept, determining the purposes of analysis, identifying all uses of the concept, determining the defining attributes of the concept, selecting a model case, constructing an additional case, identifying antecedents and consequences, and defining empirical referents (Walker & Avant, 2011). Literature review was done to fully validate the concept. We used the following search words and phrases: adherence, adherence to antidiabetic therapy, antidiabetic therapy, adherence to diabetes therapy, diabetes therapy, and antidiabetic treatment. Literature search was done using Dictionaries, Google Scholar® and papers published and indexed in international databases like PubMed® and Medline.

The searches yielded 457 journal articles and were screened to 20 according to their relevance after going through the abstracts. The other 9 journal articles were then left out because they were either written before 2007 or did not highlight the required components namely: a definition of adherence to antidiabetic therapy and attributes of adherence to antidiabetic therapy. Consideration of older literature yielded one extra relevant journal article, so in total, 11 journal articles were utilized.

Results

Definitions

Adherence in diabetes is a complex and multifactorial process. An international group of behavioral scientists was unable neither to agree on a single definition of adherence nor to identify a gold standard measure for assessing adherence (Mcnabb, 1997). Online Etymology Dictionary described adherence as a steady attachment or commitment of the mind or feelings to a person, cause or belief. So this means committing oneself to the activities or actions that stabilize blood sugar. Cohen 2009 defined adherence as persistence in the practice and maintenance of desired health behaviors and is the result of active participation and agreement. The word therapy originated in the mid-19th century, from modern Latin therapia, and from Greek therapeia meaning curing, healing, or service done to the sick. Definition of therapy according to English Oxford dictionary is the treatment intended to relieve or heal a disorder. So this means antidiabetic therapy is the treatment taken or the actions done with the intention of controlling blood sugar. Antidiabetic therapy referred to diet, physical activity, and medications (Mukona et al, 2017).

Twelve articles were chosen for concept analysis. The papers, summarized in table 1 below, were for the period between 2004 and 2017.

Number	Author	Year	Sample size	Population
1.	Clark	2004	34 articles	
2.	Yusuff et al	2007	200 patients	Patients with type 2 DM
3.	Bailey	2010	407 patients	Patients with type 2 DM
4.	Colombo et al	2012	12 clinics	Patients on hypoglycemics
5.	Frois et al	2012	46789 patients	Patients on second line anti-diabetic treatment.
6.	Manjusha et al	2013	105 patients	Patients with type 2 DM
7.	McClintock	2014	715 patients	Patients with type 2DM
8.	Emmanuel et al	2015	350 patients	Patients with type 2 DM from a secondary public health care facility2004
9.	Kirkman et al 2015	2015	218384 patients	Patients on non-insulin medication
10.	Mukonka et al	2016	119 patients	Patients with type 2 DM at Harare central hospital

11.	Mukona et al	2017	4 FGDs	Patients with pre-gestational and gestational diabetes

Antecedents

According to the Oxford English dictionary an antecedent is a thing that existed before or logically precedes another. Antecedents are defined as, events or incidents that must occur or be in place prior to the occurrence of the concept, which can help clarify social contexts in which the concept occurs in (Walker and Avant, 2011).

According to McNabb 1997, there is need for a clearly defined set of self-care behaviours and reliable measures of adherence for effective adherence to antidiabetic therapy to occur. All instructions must be specific, including exercise and diet. Appropriate drug prescribing is of critical importance in order to achieve therapeutic objectives and to optimize the use of resources in modern health care systems (Colombo et al. 653-61). Drug tolerability, perception of need/usefulness of a treatment by the patient, willingness to take medication, and patient age and gender are the major determinants of adherence (Borghi et al, 2008). Single and fixed combination drugs and no other comorbidities enhance adherence to antidiabetic therapy (Kirkman et al, 2015). The simplest and single most important action that healthcare providers can take to improve adherence is to select medications that permit the lowest daily dose frequency possible (Clark, 2004). Patients' awareness and practice of diabetes self-management may be critical to improving adherence to drug therapy, ensuring achievement of adequate glycemic control and minimizing likelihood of diabetic complications (Yusuff, et al, 2008). Mukona et al, 2017 noted that getting social support, provision of financial support and hospital service improvement as possible solutions in promoting adherence to antidiabetic therapy. From Manjusha et al (2014) findings it was suggested that adherence to antidiabetic medication(s) as prescribed is enhanced by adequate knowledge about therapy and financial security.

Attributes

Walker and Avant, (2011) defined attributes as those characteristics that appear in a concept repeatedly and help researchers differentiate the occurrence of a specific phenomenon from a similar one. Yusuff et al 2008 stated the following antidiabetic activities: home blood glucose monitoring, knowledge of optimal level of blood glucose, knowledge of complications from poor glycemic control, knowledge of features of hypoglycemia and use of daily medication reminders. Knowing and agreeing to the medication; communicating and negotiating the regimen; and active, continuous involvement in and appraisal of the treatment effect are the defining attributes of medication adherence (Huang & Chen, 2014). Attributes of successful adherence include alignment of patient behavior and health recommendations, mastery of new health knowledge

and behavior, continued collaborative relationships between the patient and healthcare provider, and ability to meet outcome targets (Cohen, 2009).

Consequences

Walker and Avant, (2011) defined consequences as 'those events or incidents that occur as a result of the occurrence of the concept. Huang & Chen, 2014 identified consequences of medication adherence which include: improving symptom control, decreasing re-hospitalizations and mortality, reducing medical care costs, restoring self-esteem, and diminishing depression. The same sentiments have been echoed by Kirkmann et al (2015) that medication adherence is associated with improved outcomes, including reduced health care costs, hospitalization and mortality. Yusuff et al postulated that adherence to antidiabetic therapy reduces the occurrences of comorbidities such as hypertension and obesity which lead to macro- and microvascular complications.

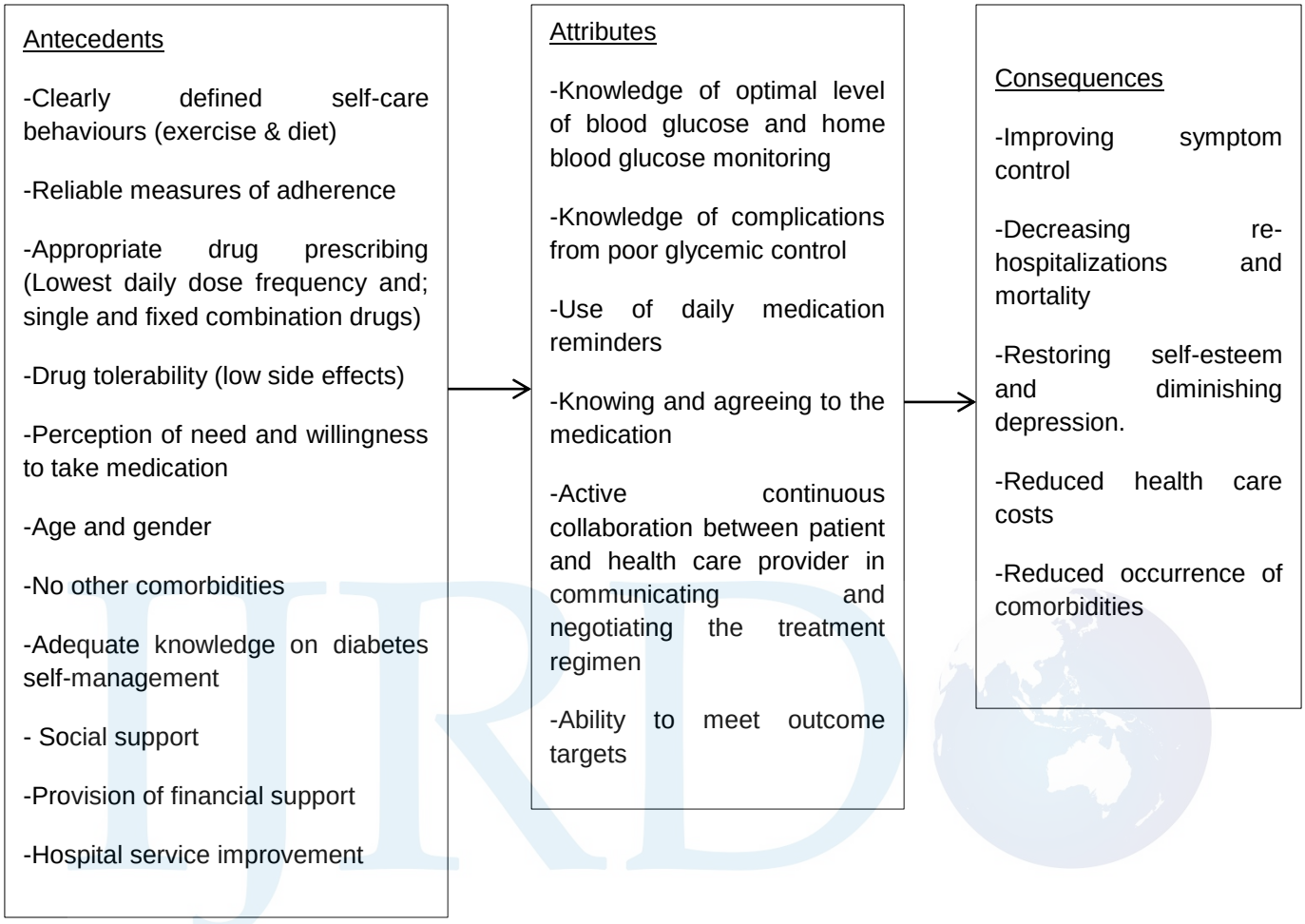

Figure 1: Relationship between antecedents, attributes and consequences of adherence to antidiabetic theory

Discussion

Model case

Mr Moyo is a 50 year old diabetic patient attending diabetic clinic regularly at Parirenyatwa outpatient department for the past ten years. He has successfully adhered to antidiabetic therapy.

He has never missed his review dates and continuously communicates and negotiates the treatment with healthcare staff. He is a member of Zimbabwe Diabetic Association where he is a peer educator. Through health education, he has gained knowledge on diet, exercise, foot care,

signs and symptoms of diabetic complications. He has demonstrated knowledge of optimal level of blood glucose and home blood glucose monitoring skills. He understands his medications, doses, frequency and timing. He uses phone diary reminders for consistency in taking medication. In addition to that, his family is fully supportive on his adherence to antidiabetic therapy.

Mr Moyo is aware of possible complications from poor glycaemic control and the benefits of optimal glycaemic control. He understands the benefits of lifestyle modifications through diet, exercise, foot care, safe sex practices and has since stopped smoking cigarettes and taking alcohol.

Analysis

Mr Moyo's case has all the attributes of adherence to antidiabetic therapy. These include knowledge of home blood glucose monitoring, optimal blood glucose levels, complications from poor glycaemic control and medications. He makes use of daily medication reminders, adheres to diabetic diet and engages in regular exercise. He received support from family and health care staff. Mr Moyo actively participates in planning for his care in meeting outcome targets.

Contrary case

Mr Mike is a 20 year adolescent recently diagnosed with type 1 diabetes mellitus. He stays with father and stepmother with whom he has strained relations. Mr Mike frequently attended to at emergency rooms with either hypo- or hyperglycaemic attacks. He loves to go clubbing with friends, is a chain smoker, drinks alcohol heavily and indulges in unprotected sex with different partners. Rarely exercises and has no scheduled meal plan. He is not interested in joining support groups and usually misses appointments at diabetic clinic to learn more on antidiabetic therapy. He is in denial and is not interested in taking his medications. Mr Mike has no knowledge about dosages, frequency and timing of his medications.

Analysis

Mr Mike lacks all the attributes of adherence to antidiabetic therapy. He is not interested in learning about lifestyle modifications (diet, exercise, foot care and home blood sugar monitoring) and medications. He lacks self-drive and family support in meeting treatment outcomes. Effects of non-adherence to antidiabetic therapy are clearly shown by experiencing frequent hypoglycaemic and hyperglycaemic attacks.

Empirical referents

'Empirical referents are classes or categories of actual phenomena that by their existence or presence demonstrate the occurrence of the concept itself (Walker & Avant, 2005). The defining attributes of adherence to antidiabetic therapy concept are abstract, so we need empirical referents to make the concept measurable. Here, empirical referents for adherence to antidiabetic therapy will be described from the attributes of adherence to antidiabetic therapy in terms of knowledge of optimal level of blood glucose and home blood glucose monitoring, knowledge of complications from poor glycemic control, use of daily medication reminders, knowing and agreeing to the medication, active continuous collaboration between patient and health care provider in communicating and negotiating the treatment regimen and ability to meet outcome targets.

Suggested definition

We therefore define adherence to antidiabetic therapy as knowing and agreeing to antidiabetic therapy (medication, diet and exercises), active continuous patient participation in negotiation and appraisal of therapy, and consistence in performing desired health behaviours to meet outcome targets.

Conclusion

The definition of antidiabetic therapy from this concept analysis will assist health professionals caring for diabetic patients, as it equips them with knowledge to continually measure and improve adherence to antidiabetic therapy. The definition may help in ensuring patients receive comprehensive care by developing standardised treatment guidelines.

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