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The role of medicine and nursing Health management and health informatics in educating and supporting patients in diabetes care

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Abstract

Background: Research indicates that improved health outcomes may result from a more structured approach to enhance diabetes care. We have to create an evidence-based design plan for the Chronic Disease Management like diabetes, which seeks to use clinical care approach and provide education, knowledge and support to patient through collaboration with health administration, health informa tics, physician and nurses to help diabetes patients and provide a good care as effectively as possible. Purpose: The purpose of this review is to illustrate the importance of health team members working together to provide excellent diabetes care management in general practice. This includes health administration, health informatics, physicians, and nurses. Method: Articles retrieved from pertinent databases utilizing search criteria linked to diabetes, diabetic care management, patient education, and support served as the foundation for the literature evaluation. Papers published in English from 2000 to September 2019 that were based on original research assessingform intervention in healthcare settings. Result: 18 articles was selected and reviewed based on inclusion criteria and discussing the various facets of diabetes care, including the accessibility of medications, diagnostic equipment and the role of medical professionals. Conclusion: Reducing the development of diabetes-related health problems can be achieved through the applying of a multidisciplinary team approach involving the diabetic patient their primcuy caregiver, and additional medical specialists by promoting a productive and informative interaction between the patient and the care team. However, there is still a great deal ofwork to be done to address

the deficiencies in diabetes care throughout the health system. Tofigure out how to incorporate diabetes care into the healthcare system, more research is also required.
Keywords: Health informatics, Diabetes care, patient education, Health administration, knowledge, chronic disease management.

Introduction

Diabetes is a condition that is becoming more common worldwide. Based on approximations from the World Health Organization (WHO), 420 million people worldwide suffered from diabetes in 2014 (WHO.,2016). Overwhelming health care issues are brought on by rising diabetes prevalence, morbidity, and death as well as societal expenses worldwide. According to the Institute for Alternative Futures (IAF) Diabetes Model, there will be a 54% increase in the overall number of persons with type 2 and type 1 diabetes between 2015 and 2030 (McLendon et al.,2019).

Diabetes raises the risk of morbidity and mortality because of the increased microvascular and macrovascular complications. Higher costs for the treatment of diabetes are therefore inevitable. Maintaining optimal diabetes care is crucial to containing rising costs. (Presley et al.,2019).

The American Diabetes Association (ADA) has advised all diabetics to try to bring their blood glucose levels back to normal (ADA 1997). The risk of microvascular complications was found to be continuously correlated with hyperglycemia, as demonstrated by an epidemiological analysis of data from the United Kingdom Prospective Diabetes Study Group (UKPDS). Specifically , for every percentage point decrease in glycosylated hemoglobin (HbA1 c), the risk of microvascular complications was reduced by 35% (Kim and Oh.,2003).

Health care providers are crucial in helping patients receive better diabetes care. Diabetes guidelines recommend collaboration and a multidisciplinary approach to provide more holistic care and better outcomes for patients with multiple healthcare providers involved in their care (American Diabetes Association. 2017). Diabetes requires continuous care because of its nature, so it's important to educate the patient about the condition, teach them self-management skills, and inspire them to pursue effective self-care management (Polonsky et al.,2003).

Research on non-adherence in individuals with diabetes shows that the primary causes of nonadherence are inadequate knowledge and management abilities. There are algorithms for treating diabetes, but because of patient volume, variety of patients seen, lack of information systems, and time constraints, they may be complicated and challenging for doctors to use. (Kim and Oh.,2003).

The development of novel approaches for diabetes care management and education should be the primary focus of health care delivery. When creating new programs, it is crucial to include a cooperative team that lowers patient risk factors and comorbidities, enhances healthy lifestyles, and offers continuous access to care (Rowley et al., 2017).

Numerous studies have demonstrated that different telemedicine strategies have improved patients' blood glucose control, and that these strategies will eventually reduce or eliminate the issues related to diabetes mellitus (Whitlock et al. 2000). In particular, phone care programs and self-care management are an effective way to introduce diabetes management.

Method

A systematic literature was conducted to review Enhancing diabetes care: The role of Health administration, Health informatics, Medicine and Nursing in patient education and Support.

following a review of the CINAHIL, PubMed, Medline, and Scopus databases and use of google scholar. The studies were conducted in English. "Healthcare", "Intervention", "Diabetes", "patient support", "patient education", "Health informatics", "Care plan", "Nursing role", and "Health administration" were among the search terms used. And a number of 18 article was included. A manual review of the relevant papers' reference lists was conducted to identify additional studies.

Literature Review

Purpose of the review: -

The purpose of the current systematic review is to locate studies that examine and evaluate the approaches Enhancing diabetes care: The role of Health administration, Health informatics, Medicine and Nursing in patient education and Support.

Search Design and selection

(Inclusion and Exclusion Standards)

Evaluate original research studies and reviews evaluating the roles of medicine, nursing, health informatics, health administration, and health administration in patient education and support in order to improve diabetes care. Research released between 2000 to January 2024 that were written in English were considered. Publications without peer review, guidelines, webcasts, conference abstracts, and case reports were not included and those examined pediatric and pregnant individuals.

Data Extraction and Quality Assessment

The authors of the review independently analyzed and abstracted the data from the 18 publications that met the inclusion criteria. The extracted data included the main study objectives, the verified patient population, features, inclusion criteria, diabetes type, and outcome. The procedure comprised evaluation of previous studies about patient-centered diabetes education, telemedicine for specialized care, and care management. The evaluation model is lastly represented the outcomes of the patients' improvements in clinical measures in the past studies, the cost savings for the patient, the health care system, and the community, as well as the influence of using a community network to support program infrastructure and sustainability. The authors used methodological, reliable, and health worker interventional criteria to assess and choose the data from the literature search.

The quality of the incorporated research was assessed using standardized tools appropriate for the various study designs. Narratively, the research findings from the studies that were included were merged.

The Result

There were 330 items located from 2000 to September 2019 of them, 206 did not meet the inclusion criteria, consequently 44 full-text publications were examined. After further revision, 18 articles were finally included in the systematic review.

Two of them tested diabetic care on the two types of diabetes (Polonsky et al.,2003; McLendon et al.,2019). while only one on type I diabetic patient (Zoffmann and Lauritzen.,2006). and one study includes examination of diabetic care on patient with diabetes and in hypertension (Shane-McWhorter et al.,2014). The rest of the 18 studies incorporated in the review were include diabetic patient of type 2.

The population intervention incorporated in all of the studies reviewed are clinicians, health informatics and health administrator but the nursing specialist is the most prevalence from healthcare team in most of the reviewed studies.

All of the studies that were reviewed result reveals that the Clinical information systems, delivery system redesign, decision support, healthcare organization, patient self-management support, and community resources are the six interrelated components of primary care for patients with chronic illnesses like diabetes. There is mounting evidence that these improvements can greatly enhance clinical procedures and results at the level of health systems (Wagner, E. and Heisler, M., 2004).

Discussion

The study of William Polonsky that include Patients with type 1 and type 2 diabetes in poor glycemic control (AIC >8.5%) were randomly assigned to DOIT program (Diabetes Outpatient Intensive Treatment program) or EDUPOST, a second condition for which clinicians' standard diabetes care was provided. Compared to EDUPOST, DOIT showed a noticeably higher decrease in Alc at follow-up. In comparison to EDUPOST patients, DOIT patients also reported much more frequent blood glucose monitoring and attention to the carbohydrate and fat contents (ACFC) of food. (Polonsky et al.,2003).

Poor outcomes for individual's with diabetes have been linked to suboptimal care processes, according to numerous studies (Harris, 2000; Saaddine Beckles, Thompson, Engelgau & Narayan, 2002; Saydash, Fradkin, & Cowie, 2004,). Patients with chronic conditions, including diabetes, received less than 60% of the recommended care for their conditions in a study of primary care practices in 12 urban areas (Fuke et al. 2004; McGlynn et al., 2003). A primary care practice-based research network, discovered a high prevalence of inadequate lipid control among diabetes patients, both with and without coronary artery disease. Remarkably, they discovered that a mere 20% of diabetic patients were prescribed any kind of lipid-lowering medication.

With the development of the Internet, people now have access to a global communication network that allows them to exchange information online and communicate at any time or location. In 2007, He-seung Kim discussed the need for improved diabetes patient care through the use of Internet communication tools in new diabetes management system models. This would allow diabetic patients to have online conversations at any time with nurses and doctors. This would involve having the capacity to inquire and obtain appropriate treatment for diabetes.

Impact of telehealth

The efficacy of nurse phone calls was evaluated using a randomized design study in which the placebo and experimental groups underwent pre- and post-treatment assessments of type 2 diabetes. Random assignments were made to place 20 patients in the intervention group and 16 in the placebo group. and postulated that patients in the intervention group had an average HbA1c level decrease of 1-2% and an average HbA1c level increase of in the placebo group. Compared to the placebo group, the intervention group adhered to a diet and blood glucose testing schedule more closely (Kim and Oh.,2003).

The previous result agrees with the demonstrated result of other studies include diabetic patient (type 2) in which a marked decline in the blood pressure, blood glucose, and glycosylated hemoglobin (HbA1c) levels were occurred after telenursing help patient in diabetic care. (Kawaguchi et al.,2004).

Likewise, in the study in 2005 that examined 115 diabetic patients (type 2) after I year, the outcome measures were significantly different include the body mass index,

blood pressure, hemoglobin A lc, fasting glucose, and total cholesterol levels and matches with nonrandomized prospective observational preintervention-postintervention study conducted in uncontrolled diabetic and/or hypertension patient from care clinics (Shane-McWhorter et al.,2014). and were associated with healthcare interventions such as the number of visits to the healthcare provider overall and the use of diabetes educators, appropriate medications, and home glucose monitoring (Hensley et al.,2005).

Health team intervention and patient self-management education

Diabetes self-management education (DSME) and telehealth for specialty consultations combined with care coordination have been shown to improve glycemic control, lower complications, and save costs (Fitzner et al., 2014; Siminerio et al., 2014; Toledoet al., 2012; Verbosky et al.,2016; Ciemins et al., 2011).

Interventions required all staff members to use their knowledge to reassess their position and take on new responsibilities as the approach strategy developed. In order to support the suggested and ongoing changes, the director provided guidelines, formal training, and weekly staff meetings in addition to facilitating new responsibilities. (Mackey et al.,2005).

Diabetes care management

The idea behind diabetes-related disease management (DM) is to lower the cost of health care and improve the standard of care given to patients with diabetes by either preventing or lessening the effects of the disease. Diabetes disease management programs have become indispensable tools as care has moved from a one-patient-at-a-time, anecdotal, reactionary, and sickness-oriented care model to one that uses a proactive, population- and evidence-based riskmanagement approach.

These programs use quantifiable, evidence-based clinical and process-related outcomes and are closely connected to modern clinical information systems. There are three key areas that a functional diabetes management program needs to address: The patient or population at risk, clinical metrics based on evidence, and the clinical effector arm—the final common pathway to effect change—are the first three factors. (Atlas et al.,2006).

Rules for constructing Informatics Systems to enhance Diabetes Care

The following eight concepts serve as a framework for developing efficient informatics systems that support diabetes management, retaining in mind the component of managing diabetes; Respect the Provider Workflow and make it simple, quick, and quick. Select a Technology That Is Easy to Adopt The innovation ought to possess the following qualities: (i) a comparative advantage; (ii) compatibility with practice needs; (iii) ease of use; (iv) capacity to be tested temporarily; and (v) high visibility among peers. Maintaining Physician Independence, Encouraging the Conversion of Clinical Data into Action, Engage the Patient, Assess the Framework. (Lester et al.,2008.; Chuang et al.,2002).

An efficient informatics system for managing the diabetes population can be chosen or designed by adhering to the previously mentioned guidelines. The real deployment and widespread uptake of the latest developments within the intended health care system, such as provider organizations, academic health centers, and group practices, are, nevertheless, the last stages of success. Physician resistance, insufficient health informatics, an expense structure that fails to reward high quality, a shortage of institutional resources, and physicians' hectic schedules were the top five obstacles

to system adoption, according to a review via Bodenheimer and colleagues. (Bodenheimer et al.,2004).

Conclusion

Reducing the development of diabetes-related health problems can be achieved through the utilization of a multidisciplinary team approach involving the diabetic patient their primary caregiver, and additional medical specialists by promoting a beneficial and educational exchange between the patient and the medical staff. Several of the information systems we reviewed to support Diabetes care were implemented successfully. Research examined how informatics systems affected various aspects of the healthcare process, such as the frequency of visits, documentation, treatment adherence, referTal rate, appropriate screening and testing, and cost. The majority of the results were positive, with a small number showing neutral results. Positive changes in process outcomes have been linked to a number of particular informatics system subcomponents.

However, there is still a great deal of work to be done to address the deficiencies in diabetes care throughout the health system. To figure out how to incorporate diabetes care into the healthcare system, more research is also required.

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