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REVIEW ON DIABETES DISEASE MANAGEMENT PROGRAMS

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ABSTRACT

To comprehensively review and integrate available data on the impact of diabetes treatment programs on care procedures and outcomes for patients with diabetes mellitus. Review of literature and morph were used in this study. From 1987 to 2001, computerized databases was conducted for English-language controlled trials evaluating the efficacy of diabetic disease management regimens. Using a standardized abstraction form, two independent reviewers collected research data. An empirical Bayes model was used to generate pooling estimates of program impacts on glycosylated hemoglobin. The pooled assessment of program effects on glycosylated hemoglobin was a 0.5-percentage-point decrease (95 percent confidence range, 0.3 to 0.6 percentage points), which is a small but substantial improvement. Research strongly supports the program's advantages in improving retinal and foot lesions screening. Diabetic programs may help to enhance glucose control and boost retinal and foot problems screening. For individuals with diabetes mellitus, greater effort will be needed to develop more successful disease management strategies.

KEYWORDS: *Control, Complications, Diabetes, Databases, Management.*

INTRODUCTION

Diabetes mellitus has a large clinical and financial impact on society. In the United States, the directly and indirectly expenses of diabetes mellitus and its complications were estimated to be $98.2 billion in 1998. Since the 1980, diabetes care guidelines have indeed been widely distributed in the idea that better care procedures may improve health care. Primary care professionals, on the other hand, have been reluctant to adopt patient-care standards and suggestions[1]. Several obstacles to adherence and execution of guidelines have been identified. Such as the belief that type 2 diabetes is not a severe disease and that intensive treatment would not prevent complications, that recommendations are too rigid to be helpful in patient care, and that diabetic individuals are reluctant to undertake necessary lifestyle adjustments. Improved treatment for diabetic patients has been a priority for health plans, payers, and patients due to their sheer numbers and impact on the economy. Diabetes mellitus has been the focus on various effective disease management, as well as targeted efforts including professional education and case management, due to the quantity and intricacy of services needed to treat such individuals in accordance with recognized standards. Other studies have looked at the impact of expert education and care structure, as well as case

management, on patient outcomes. The goal of this research is to assess the available literature on the impact of diabetic disease management programs—defined as organized, comprehensive, systematic approaches to care—on glycemic control and other pertinent outcomes[2].

With the help of an experienced librarian, a comprehensive assessment of the medical literature was conducted utilizing the automated bibliographic databases, and the Cochrane Database of Systematic Reviews to find assessments of illness management programs in various regions. The researchers looked for and evaluated English-language papers published between January 1987 and June 2001, with the 1987 date indicating the approximate start of widespread interest in illness management. The following parameters were used in the search: Medical Patient medical team, patient planning, primary nursing, case management, vital pathways, primary care, consistency of patient care, guidelines, practice guidelines, infection control, detailed health care, ambulatory care, and disease state managerial staff and disease management are among the subject headings. A manual search of bibliography from relevant publications and reviews was also carried out, as well as the views of professional doctors and researchers in the area, in order to find more references[3].We utilized Ellrodt et alpreviously published definition to define illness management. Disease control programs were defined as those that utilized a methodical approach to treatment and contained more than one treatment component (an appendix detailing the categorization of treatments is available first from author upon request). Pharmacological agent trials were not allowed. Guidelines, protocols, algorithms, care plans, and systematic client or provider education programs were all described as elements of a systematic approach to care. Vocational education programs that are not organized and counseling services programs were not included. For evaluating titles, abstracts, and articles, specific inclusion and exclusion criteria were established. A 10% sample of randomly chosen papers was independently evaluated by two reviewers (KK, EB) skilled in health services research and critical evaluation principles, with any differences addressed by agreement. Only after a significant degree of agreement (>0.7) was reached was the remaining papers divided among reviewers[4].

If the title did not deal with adult patients or was a review, case report, editorial, letter, or conference abstract, it was rejected. If a description did not include any objective measures of illness management, related to clinical trials comparing single pharmacological drugs or diagnostic tests, or did not utilize a systematic approach to treatment, it was rejected. Studies were disqualified if they lacked adequate data to assess the effectiveness of an event on at least one desired outcome and its variation. Studies should have employed an experimental or quasi-experimental research design that met the Cochrane Effective Practice and Organization of Care Group's criteria and included an adequate comparison group to assess the impact of a particular intervention. Randomized controlled studies and regulated before-and-after investigations were both acceptable designs (studies with a parallel nonrandomized comparison group, with baseline and follow-up assessments of both groups). Those targeted for the treatment of diabetes mellitus were chosen from a pool of recognized disease management evaluations. The following research details were extracted from the approved publications using a consistent data abstraction form: study design, setting, intervention methods, and study outcomes of interest[5].

All components of the illness management intervention were identified using categories based on criteria for providers, consumers, and organizations obtained from the Cochrane Collaboration. Glycated hemoglobin (GHb) levels, lipid levels (low-density lipoprotein [LDL] cholesterol, elevated lipoprotein [HDL] cholesterol, and total cholesterol), systolic, hospitalizations, mean amount of GHb tests per patient, macular edema screening, nephropathy screening, foot screening, foot self-care, and physician knowledge were all collected. When a research provided outcome data for a single domain at several time periods, the findings from the came out on top were utilized. The serum LDL cholesterol

level was utilized rather than the total cholesterol level if it was provided. Because systolic blood pressure is a better predictor of cardiac disease than diastolic pressure, it was abstracted. For each intervention arm, one observation per outcome was abstracted, thus trials examining multiple interventions may provide more than one view per program[6].

DISCUSSION

1. Meta-analysis:

The mean increases in GHb levels across means were similar to adjust for baseline variations in GHb levels. We developed a set of hypotheses a priori to assist the meta - analysis since some data components may not have been given in the selected papers. The presumption that the treated and comparison groups' base means were identical was applied in the three cases where baseline means were not provided. Variations in change were recorded seldom. In cases and there were no recorded variances, the variation of the increase was estimated to be half of the total of the benchmark and follow-up measurements' variances. In the lack of initial variances, the base variances in the experimental and comparison groups were presumed to be equivalent to the controls group's follow-up variance. The two-test was used to determine homogeneity. To pool the predicted program effects on GHb levels, the much more cautious random-effects approach (the empirical Bayes method described by Hedges and Olkin was employed. The differences in GHb level change in treated vs control individuals are presented as a pooled difference. Even though the different species of GHb vary somewhat, they all relate to and explain the alteration of hemoglobin by a sugar (ie, glucose)[7].

2. Publication Bias:

To evaluate possible publication bias, funnels plots were created as part of a data exploration by graphing each program's estimated impact on change in GHb against the reverse of its variance. We utilized the trim and fill method to see whether publication bias modifications were necessary and, if so, how to modify the estimates.

A total of 16 references were found using the original search technique. A total of 2963 titles were selected for any further review, with 581 abstracts meeting the requirements for inclusion. When the papers were evaluated, 85% (n = 493) of the approved abstract failed to satisfy the eligibility requirements. Additional 53 papers for evaluation were found via bibliographical hand search and professional consultation, with 16 of them being approved. Diabetes mellitus was the subject of 24 research[8].

2.1 Glycemic Control:

In order to assess the impact of illness treatment on GHb level, the meta-analysis comprised twenty studies53 each providing the observations and including 3720 patients. (38%) of the 24 care comparisons showed statistically significant changes favoring the treatment group. The remainder revealed no significant changes; however, in one of those investigations, the therapy arm had a higher GHb level than the control arm. The findings of our homogeneity test (P.001) revealed significant variability in the data.

Overall, illness management methods resulted in a statistically significant decrease in GHb levels, according to the pooled results (using a random-effects model) (mean reduction, 0.5 percentage point; 95 percent confidence interval [CI], 0.3 to 0.6 percentage points). Results were also computed depending on geographic location (US vs non-US studies). The average GHb level decrease for US observations (n = 16) was 0.6 percentage point (95 percent CI, 0.4 to 0.9 percentage points), whereas the average reduction for non-US observations (n = 8) was 0.32 percentage point (95 percent CI, 0.01 to 0.54 percentage points). The limited number of studies conducted outside the United States, however, restricts findings[9].

2.2 Frequency of Glycemic Monitoring:

The impact of illness treatment on the regularity of glucose monitoring was investigated in four trials including 958 patients. The average number of GHb tests performed per patient, the proportion of patients who received a GHb test, and the average amount of self-monitored blood glucose readings were also calculated. In two studies, the frequency of GHb tests conducted in treatment patients increased significantly. In a third study41, the proportion of patients who got at least one GHb test did not vary. Piette et al. observed that program participants were more likely than comparison patients to undertake home glucose monitoring in a research including 292 individuals.

2.3 Retinopathy Screening:

Three studies with a total of 708 participants looked at the impact of disease treatment on the frequency of retinal exams. Two studies looked at the average number of retinal exams per patient, whereas the third study looked at the proportion of patients who had an ophthalmologic exam. In two studies, the frequency of retinal exams increased little but statistically significantly. According to one study, a slightly greater percentage of patients in the intervention group had their eyes examined.

2.4 Nephropathy Screening:

Three studies including 447 individuals looked at the impact of programs on nephropathy screening. According to one study, the intervention group had somewhat more patients tested for nephropathy. Another study46 found that the intervention and control groups had comparable numbers of nephropathy screening tests. In the most recent study, serum creatinine levels in intervention individuals fell by a statistically significant amount.

2.5 Foot Screening and Podiatrist Referral:

Three studies comprising 1912 individuals looked at the impact of foot screening frequency. Two of these studies looked at the proportion of patients who had their feet examined, while another 45 looked at the average number of foot exams done per patient. All three studies found that programs improved the frequency of foot exams done, with Naji et al. finding a statistically significant improvement in disease management in their research. The percentage of patients referred to a podiatrist was investigated in two studies with a total of 547 individuals. One study found an increase in recommendations to a podiatrist from primary care doctors, while another found fewer referrals in intervention patients[8].

2.6 Foot Self-Care:

Three trials including 817 patients assessed patient foot self-care. Patients in the control group checked their feet much more often than those in the therapy group, according to one study30. Patients in the intervention group checked their feet more often than those in the control group, according to another study. When compared to control patients, intervention patients performed more proper foot care habits, according to the third study47. This was a statistically significant difference[7].

2.7 Systolic Blood Pressure:

Five studies looked at the effects of the program on systolic blood pressure in 1239 individuals. To prevent duplicate counting, participants in the Vinicor study's control group were only tallied once. In the therapy group, 5 of the 7 tests showed a reduction in systolic blood pressure. Only one of them resulted in a statistically meaningful decrease. Two of the studies indicated a modest improvement in the control group when compared to the intervention group, but the differences were not statistically significant[9].

2.8 High-density Lipoprotein Cholesterol Levels:

Five studies involving 822 participants looked at the effects of the program on HDL cholesterol levels. In one study, participants in the program had a statistically significant rise in HDL cholesterol levels. In two studies the therapy groups showed non-significant improvements in HDL cholesterol levels.

2.9 Other Relevant Outcomes:

The effects of management of the disease on quality of life (self-reported health status, physical functioning, and patient satisfaction), health - care use (emergency department visits, hospital admissions, and primary care physician visits), and disorder understanding (provider and patient) were also assessed (data not shown). Despite the fact that the findings differed from study to study, there were some favorable patterns that supported illness treatment[10].

CONCLUSION

The findings of this study indicate that disease control programmes have a small but clinically and statistically meaningful impact on blood sugar control in diabetic patients (pooled estimate, 0.5 percentage point decrease; 95 percent confidence interval, 0.3 to 0.6 percentage points). The Diabetes Control and Complications Trial, an intense glycemic control program for type 1 patients, showed a mean 2% decrease in GHb, whereas the UK Prospective Diabetes Study, an intense program for recently diagnosed type 2 patients, showed a 0.9–percentage point reduction. Despite the fact that diabetes management has the potential to enhance long-term outcomes due to improved glycemic controls and provider adherence to established standards, the overall impact on glycemic control seems to be limited. Although provider adherence with treatment plans increased, no substantial increases were seen in outcomes including such mortality, hospitalization, improved patient, patient knowledge, or patient compliance. We found that programs integrating provider education, provider feedback, provider reminders, health care, patient remembrances, and patient cash incentives were associated with an improvement in provider adhesion to guidelines and patient disease control in our previous review of which initiatives were effective in disease management programs. More study is required to determine which program features (such as kind and intensity) are most beneficial, as well as how disease management science may be improved and programs modified to improve outcomes for diabetic patients.

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