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The Effectiveness of Daily Humanistic Care Reminders in Pharmaceutical Care of Patients with Type 2 Diabetes

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Abstract

Objective: Although the current methods of pharmaceutical care have demonstrably improved pathogenic condition and humanistic health outcomes of patients with type 2 diabetes, lacking humanistic care limits its reach and effectiveness. The purpose of this study was to evaluate the effectiveness of daily humanistic care reminders in pharmaceutical care of patients with type 2 diabetes.

Materials and Methods: A total of 1200 patients with type 2 diabetes were recruited. The control group received only pharmaceutical care, whereas the intervention group received extra humanistic care from clinical pharmacists. Biochemical data, levels of quality of life, satisfaction and self-care behavior and relationships between humanistic care and glycaemic control were collected before and after 12-month intervention.

Results: Humanistic care increased levels of quality of life, satisfaction, self-efficacy and self-care behavior score, decreased BP, HbA1c, FBG, blood lipid, fasting blood glucose (FBG), postprandial 2-h blood glucose (PPG), inflammation and insulin resistance after 12-month follow up. Humanistic care showed a positive correlation with glycaemic control and negative relationship with HbA1c in patients with type 2 diabetes. There was a positive correlation between humanistic care and glycaemic control ($r = 0.641$, $P < 0.01$) and a negative relationship between humanistic care and HbA1c in patients with type 2 diabetes ($r = -0.482$, $P < 0.01$).

Conclusion: Humanistic care could improve the control of overall clinical outcomes and enhanced medication adherences, which play an important role in the management of patients with type 2 diabetes.

Keywords: Humanistic care; type 2 diabetes; glycaemic control; insulin resistance

Introduction

Type 2 diabetes is associated with high morbidity and mortality worldwide [1]. Patients with type 2 diabetes have become a major burden by complex treatment regimens and the health care systems both nationally and internationally [2,3]. Currently, pharmaceutical care interventions play crucial role in controlling of clinical parameters including fasting glycaemia and glycosylated haemoglobin in patients with Type 2 Diabetes [4]. Clinically, humanistic care is regarded as an additional care to improve patients' compliance and enhance pharmaceutical care [5].

Nursing humanistic care is extremely important to promoting palliative care when it is based on Humanistic Nursing Theory [6]. Nursing humanistic care is scientific and practical and can be used as a scientific medical tool for the humanistic care ability of clinical nurses by applying attitude and practice evaluation system [7]. The humanistic partnership model in health care has been developed to improve the efficacy of pharmaceutical care by nursing professionals and partner patients [8]. In line with the evolution nursing care, nursing humanistic care provides a new implementation of the discipline's core concepts, which may integrate a social humanistic perspective into

health care and potential impact on health care [9]. The positive nursing humanistic care highlights the value of multidisciplinary collaborative care for Type 2 diabetes patients, thereby supporting the effectiveness of daily humanistic care reminders in pharmaceutical care of patients with type 2 diabetes [10].

The purpose of this study was to investigate the clinical impact of daily humanistic care reminders on patients with type 2 diabetes. This study also raised awareness of the effect of nursing humanistic care on the control of parameters such as fasting glycaemia and levels of glycosylated haemoglobin (HbA1c) and demonstrated its applicability and impact in nursing research. It appears that daily nursing humanistic care is a promising tool for the renewal and the development of humanistic interventions for patients with type 2 diabetes.

Materials and Methods

Study Design and Setting

This was a control-paralleled study carried out in Jiangnan Community Health Service Center, from May 2019 to June 2020. All participants were selected because they were diagnosed type 2 diabetes. Patients were randomly divided into control and humanistic group. Control group patients (n = 600) received only pharmaceutical care, whereas humanistic care group patients (n = 600) received an extra humanistic care from a clinical pharmacist. This study was approved by the Medical Ethics Committee of Jiangnan Community Health Service Center. All patients provided written informed consent to participate in this study.

Participants

A total of 1200 patients with type 2 diabetes were recruited in this study. The target populations were diagnosed as diabetes with an HbA1c \geq 7% (86 mmol/mol). The inclusion criteria were: more than 3 years type 2 diabetes; patients with normal daily communication. The exclusion criteria were: patients with uremia; patients with cancer.

Humanistic Care Interventions

Daily humanistic care reminders included diabetic education, interviews, face-to-face and telephone counseling to patients on health education and medication adherence. The clinical pharmacist also provided enquiry of specialized guidance for pharmaceutical care, dosage of drug, blood pressure, blood glucose, amount of exercise, sleep quality, dietary status and comfort of body.

Data Collection

The body mass index (BMI), blood pressure (BP), fasting blood glucose (FBG), glycosylated hemoglobin A1 (HbA1c), blood lipid levels [high-density lipoprotein cholesterol (HDL-c), and low-density lipoprotein cholesterol (LDL-c), triglyceride (TG), total cholesterol (TC)], according to physician's order were collected before and after 12-month follow-up. Medication adherence was assessed by the Morisky Green Levine Scale as described previously [11]. Two sets of questionnaires were used to evaluate the Diabetes Management Self-Efficacy Scale (DMSES) Malay version [12] and the Summary of Diabetes Self-Care Activities Scale (SDSCA) Malay version [13]. Satisfaction of patients was evaluated using five-point system medical treatment process (very satisfied: 5 points; satisfied: 4 points; no comment: 3 points; dissatisfied: 2 points; very dissatisfied: 1 point) [14]. Quality of life was accessed using five domains included energy, memory, diet, sex, and finance as described previously [15]. Insulin resistance was evaluated using the Homeostasis Model Assessment for Insulin Resistance (HOMA-IR), which is derived from fasting insulin and glucose. An inflammatory score (IS) was used to measure the inflammation in patients with type 2 diabetes. Self-efficacy of diabetes was determined basing on the seven domains of diabetes self-management as described previously [16].

Statistical Analysis

The data were expressed as mean \pm standard deviation (SD) or n (%). Data were analyzed using Statistical Package for the Social Sciences (SPSS) version 22.0 (IBM, Armonk, New York, NY, USA). Differences between control and intervention groups were evaluated using independent t-test. The relationships between the humanistic care and glycaemic control were assessed using s Spearman correlation test method. P value considered significant if it is less than 0.05

Results

Patient Characteristics

Characteristics of patient with type 2 diabetes are summarized in (Table 1). There are 1200 recruiters were enrolled in Medical College of Jiaying University. Participant were divided into two groups and received nursing with (n = 600) or without humanistic care (n = 600). The average age for the group of participants was 38.5 ± 12.5 years old. Among the 1200 participants, 728 were male (60.7%) and 472 were female (39.3%). The numbers of male and female were approximately equal in two groups. Flowchart of this study was illustrated in (Figure 1).

Table 1: Baseline demographics and clinical characteristics of patients with type 2 diabetes.

Demographics	Control	Humanistic care	P-value
No	600 (50%)	600 (50%)	> 0.05
Mean age (year)	37.5 ± 12.0	38.0 ± 11.5	> 0.05
Male/female	348/252	360/240	0.75
BMI (kg/m ²)	24.87±3.34	24.87±3.34	0.52
Duration of diabetes (year)	6.5 ± 1.5	7.0 ± 1.5	0.53
Smoking (n, %)	186 (31.0%)	190 (31.7%)	0.38
Alcohol drinking (n, %)	358 (59.7%)	355 (59.2%)	0.68
FBG (mmol/L)	7.43 ± 1.86	7.50 ± 2.06	0.82
HbA1c (%)	7.44 ± 1.85	7.40 ± 1.80	0.86
SBP (mmHg)	132.50 ± 12.50	134.60 ± 13.40	0.72
DBP (mmHg)	84.30 ± 10.60	83.60 ± 11.80	0.77
HDL-c (mmol/L)	1.50 ± 0.28	1.52 ± 0.32	0.65
LDL-c (mmol/L)	3.52 ± 0.70	3.48 ± 0.62	0.66
TG (mmol/L)	1.75 ± 0.60	1.78 ± 0.52	0.68
TC (mmol/L)	5.41 ± 1.06	5.50 ± 1.18	0.48
The urine protein/creatinine (mg/g)	30.40 ± 11.48	31.26 ± 12.30	0.50
Scores of adherences	0.80 ± 0.18	0.78 ± 0.20	0.54

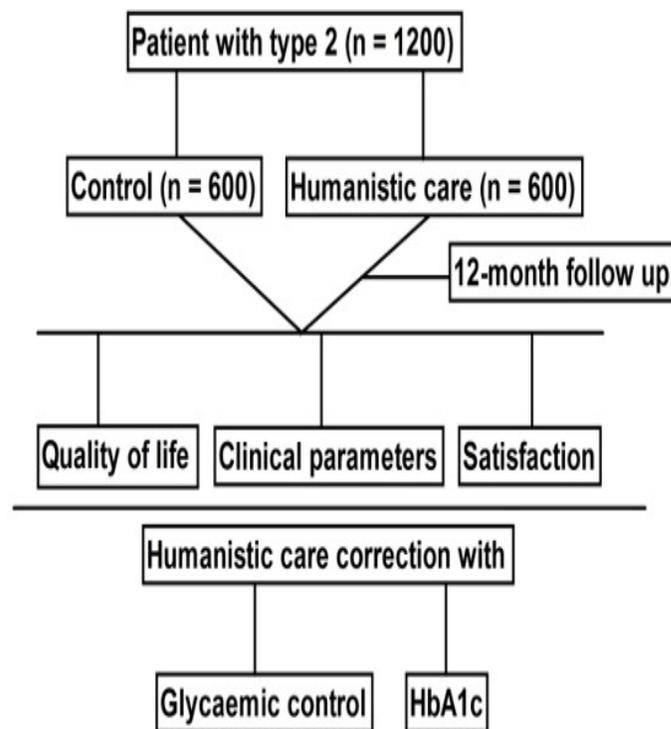


Figure 1

Table 2: Effect of humanistic care on levels of quality of life, satisfaction and self-care behavior.

Demographics	Control	Humanistic care	P-value
Quality of life	75.50 ± 12.00	92.00 ± 10.50	0.017
Degree of satisfaction	6.62 ± 1.63	8.82 ± 1.06	0.0050
Self-efficacy score	3.54 ± 0.69	4.42 ± 0.35	0.020
Self-care behavior score	3.62 ± 0.50	4.34 ± 0.40	0.028

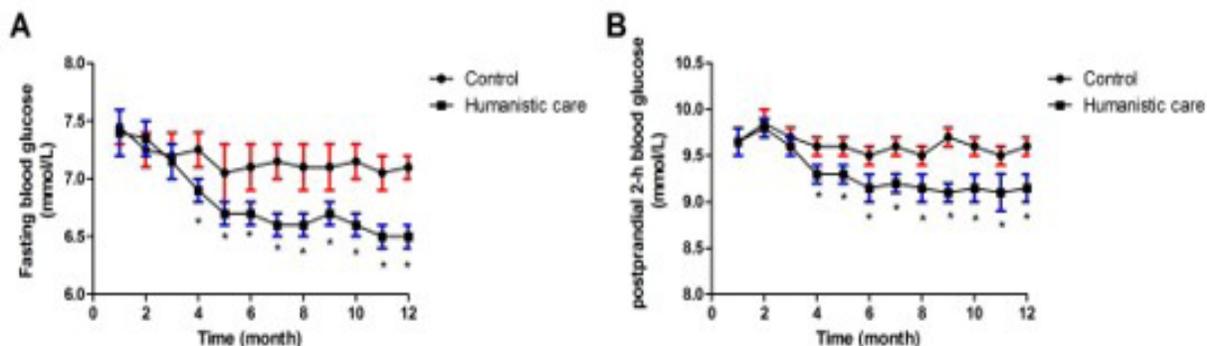


Figure 2

Table 3: Comparison of clinical indices between control and humanistic care group for patients with type 2 diabetes.

Demographics	Control	Humanistic care	P-value
FBG (mmol/L)	7.22 ± 1.62	6.35 ± 1.38	0.025
HbA1c (%)	7.32 ± 1.50	6.34 ± 1.32	0.020
SBP (mm Hg)	130.80 ± 14.60	124.40 ± 12.20	0.042
DBP (mm Hg)	84.20 ± 10.40	78.40 ± 9.50	0.048
HDL-c (mmol/L)	1.45 ± 0.20	1.30 ± 0.21	0.035
LDL-c (mmol/L)	3.20 ± 0.60	2.57 ± 0.36	0.028
TG (mmol/L)	1.62 ± 0.50	1.35 ± 0.28	0.022
TC (mmol/L)	5.32 ± 0.78	4.68 ± 0.65	0.020
The urine protein/creatinine (mg/g)	28.43 ± 10.50	27.62 ± 10.80	0.40
Scores of adherence	0.74 ± 0.25	0.62 ± 0.15	0.044
Patients who achieved HbA1c target of <7%	376 (62.7%)	194 (32.4%)	0.0035
Patients who achieved BP target	411 (68.5%)	210 (35.0%)	0.0028

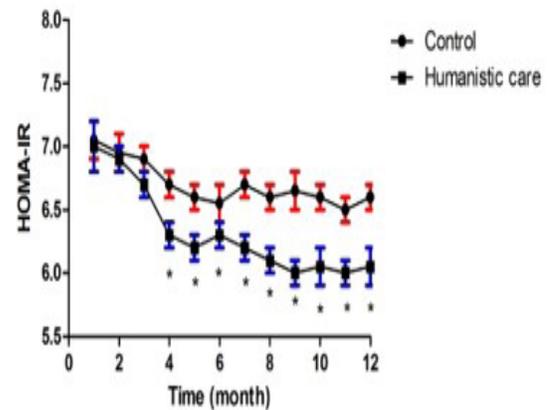


Figure 3

Table 4 : Correlation between humanistic care and glycaemic control in patients with type 2 diabetes.

	r	P value
Glycaemic control	0.641	0.0028
HbA1c	-0.482	0.0042

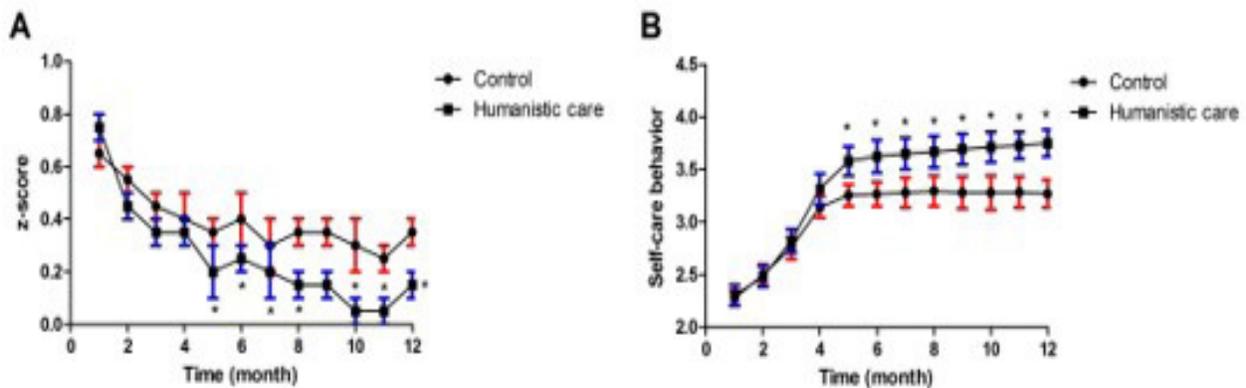


Figure 4

Effect of Humanistic Care on Levels Of Quality of Life, Satisfaction and Self-Care Behavior

The significance of daily humanistic care reminders in pharmaceutical care of the participants was investigated in 12-month follow up. As shown in (Table 2), patients in the humanistic care group had higher score of quality of life than those in control group. Degree of satisfaction in the humanistic care group was better than control group. Analysis of self-care behavior demonstrated humanistic care

increased confident and decreased complain compared to patients in the control group. Data showed the total mean scores for self-efficacy and self-care behavior were higher in the humanistic care group than patients in the control group.

Effect of Humanistic Care on the Control of Parameters of Patients With Type 2 Diabetes

As shown in (Table 3), BP, HbA1c, FBG and blood

lipid decreased significantly after 12-month humanistic care intervention compared to control group. After the humanistic care intervention, TC, TG, LDL, HDL and scores of adherence were improved significantly in patients with type 2 diabetes compared to control group. However, there were no significances of the urine protein/creatinine between humanistic care and control group. The ratio of patients who reached the target HbA1c level in the humanistic care increased to 62.7%, which was significantly higher than that of control group. The ratio of patients who reached standard levels ($\leq 130/80$ mm Hg) increased to 68.5% after humanistic care intervention.

Effect Of Humanistic Care on Glucose Metabolism

The changing trends of fasting blood glucose (FBG) and postprandial 2-h blood glucose (PPG) between humanistic care intervention and control groups are investigated by the fold line diagram (Figure 2). As shown in (Figure 2A), the levels of FBG were decreased by humanistic care intervention compared to control group for patients with type 2 diabetes. Humanistic care intervention significantly decreased the amplitude of the fluctuation compared to that of the control group (Figure 2B).

Effect Of Humanistic Care On Insulin Resistance

The effects of humanistic care intervention on insulin resistance were recorded in patients with type 2 diabetes. As shown in (Figure 3), humanistic care intervention markedly improved the insulin resistance for patients with type 2 diabetes compared to the control group.

Effect Of Humanistic Care On Inflammation And Self-Efficacy Behavior

The changing trends of inflammation and self-efficacy behavior between humanistic care intervention and control groups were compared in patients with type 2 diabetes (Figure 4). After 3-month intervention, humanistic care intervention significantly decreased inflammation compared to the control group (Figure 4A). The results in (Figure 4B) demonstrated that self-efficacy increased more in the humanistic care intervention group than in the control group.

Relationships Between Humanistic Care And Glycaemic Control

(Table 4) showed the correlation between humanistic care and glycaemic control in patients with type 2 diabetes (Table 4). There was a positive correlation between humanistic care and glycaemic control in patients with type 2 diabetes ($r = 0.641$, $P < 0.01$). A negative relationship was

found between humanistic care and HbA1c in patients with type 2 diabetes ($r = -0.482$, $P < 0.01$).

Discussion

The nurse's humanistic care ability should develop target strategies to improve the anticipated effect, quality of life, confidence and patients' emotion [17]. In this clinical trial, we found that nursing humanistic care increased quality of life, degree of satisfaction confident and decreased complain compared to patients in the control group. Data of 12-month follow up demonstrated that humanistic care had benefits in improving the control of parameters of patients with type 2 diabetes.

Pharmaceutical care provided by a pharmacist to patients with type 2 diabetes increases compliance to treatment and improves glycaemic control [18]. Evidences have showed that had measurable improvement in clinical indicators of diabetes management, higher rates of self-management goal setting, and increased satisfaction with diabetes care [19]. This study found that humanistic care increased the total mean scores for self-efficacy and self-care behavior compared to patients in the control group. The positive humanistic care highlighted the value of multidisciplinary collaborative care for patients with type 2 diabetes, thereby supporting the effectiveness of humanistic care in managing chronic diseases [10]. Findings in this study observed that increased confident and decreased complain compared to patients in the control group, which contributed to improvement of BP, HbA1c, FBG and blood lipid. This study supported that through the active application of humanistic care, the self-efficacy and self-care behavior could be significantly improved and thereafter the clinical outcomes for patients with type 2 diabetes.

Clinically, it has a close relationship among good nursing management, good glycaemic control, and well-improved clinical outcomes in patients with type 2 diabetes [20]. In this study, data found that humanistic care significantly improved the levels of FBG, HbA1c, BP, HDL, TG, TC, BMI, and the target HbA1c level for patients with type 2 diabetes, while the urine protein/creatinine had no improvement. Daily humanistic care reminders also generated benefits, both in medical aspects and nonmedical aspects for patients with type 2 diabetes. Notably, this study firstly found a positive correlation between humanistic care and glycaemic control and A negative relationship was found between humanistic care and HbA1c in patients with type 2 diabetes in patients with type 2 diabetes. Importantly, by analyzing the condition of the patient, the proposed framework of integrating humanistic care into health care may further emphasize and strengthen the interrelatedness of medical

perspectives.

There were several limitations in this study. First, this study only performed 6-month follow-up, and biochemical parameters were collected only at the end of investigation. A longer follow-up should perform and more data should conduct in different time points. Second, kinds of pharmaceutical care of patients with type 2 diabetes did not classify in this study. It would have been better to collect data in various pharmaceutical care groups for patients with type 2 diabetes. Lastly, the current study only analyzed the effect of humanistic care on physiological parameters of diabetic patients. Other factors including administration of medications and clinical monitoring, and dietary and lifestyle changes need further investigate.

Conclusion

Data in the current study provided the information that humanistic care significantly improved the control of parameters of patients with type 2 diabetes. Humanistic care not only improved the overall clinical outcomes, but also enhanced medication adherences, which contribute greatly to therapeutic effect of pharmaceutical care for patients with type 2 diabetes. These results provide clinical evidences that humanistic care has a positive role in type 2 diabetes therapy, which suggest that daily humanistic care reminders may become an important clinical value in the management of type 2 diabetes.

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