The Well-Being and Treatment Satisfaction of Diabetic Patients in an Outpatient Setting at a General Hospital in Korea

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Abstract

Background: The aim of this study was to assess the psychological well-being and treatment satisfaction in patients with type 2 diabetes mellitus in a general hospital in Korea.

Methods: This study included 440 type 2 diabetes patients above 20 years of age. Well-Being Questionnaire-12 (WBQ-12) and Diabetes Treatment Satisfaction Questionnaire were used to survey well-being and treatment satisfaction, respectively. WBQ-12 consists of 4 categories: negative well-being (NWB), energy (ENE), positive well-being (PWB), and general well-being (GWB).

Results: There were significant associations between NWB scores and women, low education, low-income, and number of hospital admissions. Significant associations were also identified between ENE scores and men, higher education, insulin nonusers, high-income, compliance with recommended exercise, number of medications, satisfaction with treatment time, and poor glycemic control. PWB scores were significantly associated with high-income, satisfaction with waiting and treatment times, compliance with recommended diet and exercise, and number of medications. GWB scores were significantly associated with men, higher education, high-income, satisfaction with waiting and treatment times, compliance with recommended exercise, and number of medications. Treatment satisfaction was significantly associated with age, satisfaction with waiting and treatment times, compliance with recommended diet and exercise, and duration of diabetes.

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INTRODUCTION

Diabetes is a chronic disease requiring continuous management. It is often emotionally stressful, leading to both physical and psychological fatigue [1]. Studies have shown that diabetic patients who receive outpatient care for continuous management have a higher medication compliance rate and a lower incidence of complications [2]. Diabetic patients have a reduced quality of life and it has been well demonstrated that emotional coping with the diagnosis, daily treatment needs, and acute and chronic complications has a great impact on physical, psychological, and social well-being [3].

Several recent studies have reported that higher subjective well-being levels are related to proper self-management. Well-Being Questionnaire-12 (WBQ-12) was designed to investigate well-being [4,5], and the reliability and validity of this questionnaire in measuring psychological well-being have been verified [6-8].

Continuous self-management of diabetes requires steady diet and exercise regimens, as well as medication or insulin injections and proper outpatient follow-up care. According to a previous study, individual treatment participation and perceived emotions regarding treatment results had an influence on treatment satisfaction in diabetic patients [9]. Treatment satisfaction is an important factor for compliance with and participation in a treatment plan [10,11]. Therefore, with higher treatment satisfaction, treatment effects and quality of life increase, while treatment costs decrease [8,12-14]. The DTSQ designed by Clare Bradley has been approved and is used worldwide for the investigation of treatment satisfaction in diabetic patients [15-18].

Although there are Western studies on treatment satisfaction and Korean studies on treatment satisfaction for insulin pens, there are no studies on treatment satisfaction for diabetes management by oral medication, combined medications, or diet management alone, and little is known about the correlation with patient well-being. In contrast to the West, general hospitals in Korea have a unique care environment with long waiting times and short treatment times, around 3~5 minutes; these may be important factors for treatment satisfaction and well-being.

Therefore, we investigated the well-being of diabetic patients using the previously used WBQ-12 and treatment satisfaction using the DTSQ. Furthermore, considering the outpatient care situation in Korea, we added two additional categories, waiting and treatment time.
MATERIALS AND METHODS

1. Study subjects

All patients (n = 440) with type 2 diabetes who received outpatient care in the Department of Endocrinology, Gil Medical Center Institute from 2012 to 2014 were enrolled in this study. Inclusion criterion was having been diagnosed with type 2 diabetes for at least six months.

2. Well-being measurement tool

WBQ-12 is an abbreviated version of the questionnaire used by the World Health Organization [16,17]. The reliability and validity were verified in previous studies. WBQ-12 consists of 12 questions with a 3-point scale. This questionnaire consists of 4 questions on negative well-being (NWB), 4 questions on positive well-being (PWB), 4 questions on energy (ENE), and 4 questions on general well-being (GWB). The maximum GWB was 36 points, after reversal where negative questions (questions 1~4 and 6~7), and a higher score indicated a higher quality of life [4,18].

3. Treatment satisfaction measurement tool

DTSQ was developed to assess overall diabetes treatment satisfaction and can be used in patients with type 1 or type 2 diabetes. It consists of eight items, each rated on a 6-point Likert scale. Six (items 1, 4~8) of them (item 1: satisfaction with current treatment; item 4: treatment convenience; item 5: flexibility of treatment; item 6: understanding of diabetes; item 7: recommending treatment to others with diabetes, and item 8: continuity of treatment), are summed to determine a treatment satisfaction score with a possible range of 0 (very dissatisfied) to 36 (very satisfied). Item 2 evaluates perceived frequency of hyperglycemia and item 3 perceived frequency of hypoglycemia: they are also rated on a 6-point scale (0~6), but for these two items, a score of zero indicates a lack of hyperglycemia or hypoglycemia while a higher score indicates a higher frequency. These two benchmark items were used for criterion validity testing [8].

We used the Korean versions of WBQ-12 and the DTSQ made by Clare Bradley. Cronbach’s alpha coefficient of WBQ-12 was 0.819. To evaluate the validity of the Korean version of WBQ-12, we conducted a pilot study. WBQ-12 was rechecked by the SF-36 (for Fitness and Health Related Quality of Life) in a small group (n = 20) and correlation between the two questionnaires was available (r = 0.410, P < 0.01). Cronbach’s alpha coefficient of DTSQ was 0.829. Item 2 (DTSQ-2) evaluates perceived frequency of hyperglycemia and item 3 (DTSQ-3) perceived frequency of hypoglycemia. The lower the frequency of hypoglycemia or hyperglycemia, the higher the score on the DTSQ. The P-values of the correlations between the total DTSQ and DTSQ-2, and the total DTSQ and DTSQ-3, were 0.042 (r = −0.098) and 0.068 (r = −0.088), respectively. Therefore, they could be used to test the validity of the questionnaire.

4. Data analysis methods

Statistical analysis of the collected data was performed using SPSS ver. 16.0 (SPSS Inc., Chicago, IL, USA). A P-value of less than 0.05 was considered
significant. The demographic and disease-associated characteristics of the subjects were recorded in real numbers and percentages. The mental well-being and satisfaction levels of the subjects were calculated from averages, standard deviation, minimum and maximum values, and grade-point averages. Well-being and satisfaction levels were dependent on the demographic and disease-associated characteristics, and were analyzed using independent t-tests and Mann-Whitney U tests. Correlations between demographic and disease-associated characteristics and the well-being and satisfaction levels were analyzed using Pearson and Spearman correlation coefficients. Multiple regression analysis was used for predictors influencing well-being and satisfaction levels. The study protocol was approved by the Gachon University Gil Medical Center Institute Review Board (GIRBA2745-2012).

**RESULTS**

1. Baseline clinical characteristics

Table 1 shows the demographic and biochemical characteristics of the subjects. 221 (50.2%) men and 219 (49.8%) women were enrolled. The average age of men and women was 56.5 and 58.0 years, respectively. The percentage of subjects using insulin injections was 19.9% and the average diabetes duration was 9.4 ± 6.8 years. Blood test results showed that ENE was higher when postprandial glucose was lower, but there was no correlation between WBQ-12 and the fasting glucose or lipid profile. There was also no correlation between body mass index (BMI) and patient compliance with the recommended exercise or diet.

### Table 1. Baseline subject characteristics

| Characteristic                  | Value |
|--------------------------------|-------|
| Gender                         |       |
| Male                           | 221 (50.2) |
| Female                         | 219 (49.8) |
| Age (y)                        |       |
| Male                           | 57.2 ± 10.5 |
| Female                         | 56.5 ± 10.3 |
| Education                      |       |
| Illiteracy                     | 12 (2.8) |
| Primary school                 | 65 (15.1) |
| Middle school                  | 82 (19.1) |
| High school                    | 167 (38.9) |
| University                     | 103 (24.0) |
| Income (104 KRW)               |       |
| < 100                          | 170 (40.9) |
| 100–200                        | 85 (20.4) |
| 200–300                        | 70 (16.8) |
| 300–400                        | 41 (9.9) |
| > 400                          | 50 (12.0) |
| Marital status                 |       |
| Not married                    | 17 (3.9) |
| Married                        | 342 (78.6) |
| Widowed                        | 49 (11.3) |
| Divorced                       | 24 (5.5) |
| Separated                      | 3 (0.7) |
| Complication                   |       |
| Retinopathy                    | 63 (52.9) |
| Nephropathy                    | 18 (15.1) |
| Neuropathy                     | 26 (21.8) |
| Diabetic foot lesion           | 12 (10.9) |
| Diabetes education             |       |
| Yes                            | 229 (52.4) |
| No                             | 208 (47.6) |
| Hypoglycemia                   |       |
| Once                           | 68 (20.3) |
| 2 times                        | 43 (12.8) |
| 3 times or more                | 113 (33.7) |
| No                             | 111 (33.1) |
| Diabetes duration (y)          |       |
| 0–9                            | 239 (54.7) |
| 10–19                          | 143 (32.7) |
| 20–29                          | 50 (11.4) |
| 30–39                          | 4 (0.9) |
| 40–49                          | 1 (0.2) |

Values are presented as number (%) or mean ± SD. SD, standard deviation; KRW, Korean Won.

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2. WBQ-12 Results

WBQ-12 consists of 4 categories. NWB, ENE, PWB, and GWB scores were 2.73 ± 2.8 (0~12), 6.30 ± 2.5 (0~12), 6.48 ± 3.1 (0~12), and 21.46 ± 6.4 (4~36), respectively. There was a correlation between gender and WBQ-12 score (Table 2). NWB scores were significantly higher for women, while men scored higher in the ENE and GWB categories. As in Table 3, the ENE scores of insulin users (5.56 ± 2.8) were significantly lower than that of non-users (6.49 ± 2.4). Income showed a strong positive correlation in all 4 categories (NWB, ENE, PWB, and GWB) with P-values of P < 0.001, P = 0.001, P < 0.001, and P < 0.001, respectively. The NWB, ENE, PWB, and GWB scores were 3.50 ± 3.2, 5.89 ± 2.7, 5.76 ± 3.0, and 19.52 ± 6.5, respectively, for the less than 1 million Korean Won (KRW) income level; 2.67 ± 2.8, 6.16 ± 2.6, 6.76 ± 3.2, and 21.81 ± 6.5, respectively, for the above 1 and below 2 million KRW income level; 1.91 ± 1.8, 6.45 ± 2.1, 6.80 ± 3.2, and 22.73 ± 5.4, respectively, for the above 2 and below 3 million KRW income level; 2.11 ± 2.3, 7.35 ± 2.5, 7.49 ± 3.2, and 23.68 ± 6.6, respectively, for the above 3 and below 4 million KRW income level; and 1.80 ± 1.6, 6.96 ± 2.2, 7.80 ± 2.4, and 24.41 ± 5.3, respectively, for the above 4 million KRW income level.

Among the blood test values, glycated hemoglobin (HbA1c) showed a negative correlation with ENE (r = -0.190, P < 0.001) in WBQ-12. Education level had a negative correlation with NWB (r = -0.129, P = 0.008), and a positive correlation with ENE (r = 0.106, P = 0.030) and GWB (r = 0.151, P = 0.015). The number of hospital visits within 6 months had a positive correlation with NWB (r = 0.137, P = 0.005), and compliance with recommended exercise had a positive correlation with ENE (r = 0.185, P < 0.001), PWB (r = 0.181, P < 0.001), and GWB (r = 0.189, P(0.001). There was a positive correlation between the recommended diet and PWB (r = 0.123, P =

Table 2. Subscale scores for Well-Being Questionnaire-12 (WBQ-12) and gender (independent t-test)

| WBQ-12         | Gender               | P-value |
|----------------|----------------------|---------|
|                | Male (n = 213)       | Female (n = 209) |
| Negative well-being | 2.06 ± 2.2          | 3.42 ± 3.2 | < 0.001 |
| Energy         | 6.63 ± 2.5           | 5.98 ± 2.6 | 0.008   |
| Positive well-being | 6.68 ± 3.1          | 6.27 ± 3.1 | 0.172   |
| General well-being | 22.65 ± 6.2         | 20.22 ± 6.3 | < 0.001 |

Values are presented as mean ± standard deviation.

Table 3. Subscale scores for Well-Being Questionnaire-12 (WBQ-12) and insulin users (independent t-test)

| WBQ-12         | Insulin user          | P-value |
|----------------|-----------------------|---------|
|                | Yes (n = 84)          | No (n = 339) |
| Negative well-being | 3.11 ± 3.1           | 2.64 ± 2.7 | 0.170   |
| Energy         | 5.56 ± 2.8            | 6.49 ± 2.4 | 0.003   |
| Positive well-being | 6.37 ± 3.2           | 6.51 ± 3.1 | 0.704   |
| General well-being | 20.44 ± 7.0          | 21.71 ± 6.2 | 0.134   |

Values are presented as mean±standard deviation.
0.011). The total number of medications had a negative correlation with ENE \((r = -0.177, P < 0.001)\), PWB \((r = -0.109, P = 0.026)\), and GWB \((r = -0.149, P = 0.002)\).

Satisfaction with waiting time had a positive correlation with PWB \((r = 0.134, P = 0.006)\) and GWB \((r = 0.111, P = 0.020)\), and there was a correlation between treatment satisfaction and ENE \((r = 0.125, P = 0.010)\), PWB \((r = 0.278, P < 0.001)\), and GWB \((r = 0.182, P < 0.001)\). WBQ-12 (NWB, ENE, PWB, GWB) had no correlation with BMI, diabetes duration, diabetes education, hypoglycemic symptoms, or diabetes complication status. Table 4 shows the results of multiple regression analysis of factors influencing WBQ-12. NWB, ENE, PWB, and GWB were dependent variables, and the independent variables were age, gender, education level, diabetes education, diabetes duration, insulin use, number of visits, waiting time satisfaction, treatment satisfaction, compliance with recommended exercise, and compliance with recommended diet. Multiple regression analysis showed that the significant variables with \(P < 0.05\) were as follows: age \((P = 0.016)\), gender \((P = 0.005)\), income \((P = 0.006)\), and number of visits within 6 months \((P = 0.003)\) for NWB; income \((P = 0.003)\), number of visits within 6 months \((P = 0.032)\), treatment satisfaction \((P = 0.026)\), compliance with recommended exercise \((P = 0.001)\), and HbA1c \((P = 0.001)\) for ENE; income \((P < 0.001)\), treatment satisfaction \((P < 0.001)\), and compliance with recommended exercise \((P = 0.005)\) for PWB; and income \((P < 0.001)\), treatment satisfaction \((P = 0.001)\), and compliance with recommended exercise \((P < 0.001)\) for GWB.

### 3. DTSQ results

The total DTSQ, DTSQ-2 (frequency of hypoglycemia), and DTSQ-3 (frequency of hyperglycemia) scores were 29.02 ± 5.9 (8~36), 1.70 ± 1.7 (0~6), and 1.27 ± 1.6 (0~6), respectively. The total DTSQ correlated with age \((r = 0.181, P < 0.001)\), waiting time satisfaction \((r = 0.306, P < 0.001)\), diabetes duration \((r = 0.123, P = 0.011)\), treatment satisfaction \((r = 0.535, P < 0.001)\), recommended diet compliance \((r = 0.331, P < 0.001)\), and recommended exercise compliance \((r = 0.320, P < 0.001)\). However, the total DTSQ had no correlation with gender, education, BMI, income, diabetes education, hypoglycemia, number of medications taken.

### Table 4. Linear multiple regression for Well-Being Questionnaire-12 and multiple variables

| Variable                  | Negative well-being | Energy | Positive well-being | General well-being |
|---------------------------|---------------------|--------|---------------------|--------------------|
|                           | B       | SE    | P-value | B     | SE    | P-value | B     | SE    | P-value | B     | SE    | P-value |
| Constant                  | 3.57    | 1.06  | 0.001   | 6.39  | 0.99  | <0.001  | 1.35  | 0.71  | 0.053   | 12.08 | 1.46  | <0.001  |
| Age                       | -0.03   | 0.01  | 0.016   |        |        |         | 0.23  | 0.10  | 0.026   |        |        |         |
| Sex                       | 0.86    | 0.31  | 0.005   | 0.27  | 0.09  | 0.003   | 0.57  | 0.11  | <0.001  | 1.29  | 0.22  | <0.001  |
| Income                    | -0.32   | 0.11  | 0.006   | 0.27  | 0.09  | 0.003   | 0.57  | 0.11  | <0.001  | 1.29  | 0.22  | <0.001  |
| Visit number              | 0.09    | 0.03  | 0.003   | -0.06 | 0.03  | 0.032   | 0.59  | 0.12  | 0.000   | 0.85  | 0.26  | <0.001  |
| Satisfaction (treatment time) | 0.23   | 0.10  | 0.026   |        |        |         | 0.24  | 0.08  | 0.005   | 0.62  | 0.17  | <0.001  |
| Compliance (exercise)     | 0.24    | 0.07  | 0.001   | 0.24  | 0.08  | 0.005   |        |        |         |
| HbA1c                     | -0.31   | 0.10  | 0.001   |        |        |         | 0.24  | 0.08  | 0.005   | 0.62  | 0.17  | <0.001  |

B, coefficient; SE, standard error; HbA1c, glycated hemoglobin.

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per day, number of visits within 6 months, total number of medications taken, and HbA1c.

DTSQ-2, which also included the frequency of hypoglycemia, had a correlation with gender \((r = 0.096, P = 0.046)\), diabetes duration \((r = 0.103, P = 0.034)\), income \((r = -0.136, P = 0.006)\), number of medications taken per day \((r = 0.160, P = 0.001)\), number of visits within 6 months \((r = 0.114, P = 0.019)\), and HbA1c \((r = 0.133, P = 0.007)\). DTSQ-3, which also included the frequency of hyperglycemia, had a correlation with diabetes duration \((r = 0.147, P = 0.002)\), income \((r = -0.128, P = 0.010)\), number of medications taken per day \((r = 0.153, P = 0.002)\), number of visits within 6 months \((r = 0.176, P < 0.001)\), total number of medications taken \((r = 0.128, P = 0.008)\), and HbA1c \((r = 0.114, P = 0.021)\). The \(P\)-values of the correlations between the total DTSQ and DTSQ-2, and the total DTSQ and DTSQ-3, were 0.042 \((r = -0.098)\) and 0.068 \((r = -0.088)\), respectively, and could be used to test the validity of the questionnaire. Table 5 shows the results of a multiple regression analysis performed to analyze the influence of various factors on the total DTSQ score. The sum of the DTSQ score was a dependent variable, and the independent variables were age, gender, income, education, diabetes education, diabetes duration, insulin use, number of visits, waiting time satisfaction, treatment satisfaction, compliance with recommended exercise, and compliance with recommended diet. On multiple regression analysis, diabetes duration \((P = 0.002)\), insulin use \((P = 0.029)\), treatment satisfaction \((P < 0.001)\), and compliance with recommended exercise \((P < 0.001)\) were shown to be significant variables for the total DTSQ.

**Table 5.** Linear multiple regression for the total Diabetes Treatment Satisfaction Questionnaire (DTSQ) scores and multiple variables

| Variable                  | Total DTSQ scores |          |          |
|---------------------------|-------------------|----------|----------|
|                           | B                 | SE       | \(P\)-value |
| Constant                  | 9.38              | 1.55     | \(< 0.001) |
| Diabetes duration         | 0.11              | 0.04     | 0.002    |
| Insulin                   | 1.34              | 0.61     | 0.029    |
| Satisfaction (treatment time) | 2.73              | 0.19     | \(< 0.001) |
| Compliance (exercise)     | 0.59              | 0.13     | \(< 0.001) |

B, coefficient; SE, standard error.

**Table 6.** Correlations between Well-Being Questionnaire-12 (WBQ-12) and total Diabetes Treatment Satisfaction Questionnaire (DTSQ), DTSQ-2, and DTSQ-3 scores

| WBQ-12                  | Total DTSQ score | DTSQ-2 | DTSQ-3 |
|-------------------------|------------------|--------|--------|
|                         | Correlation coefficient | \(P\)-value | Correlation coefficient | \(P\)-value | Correlation coefficient | \(P\)-value |
| Negative well-being     | -0.034           | 0.489  | 0.282  | \(< 0.001) | 0.222 | \(< 0.001) |
| Energy                  | 0.186            | \(< 0.001) | -0.21 | \(< 0.001) | -0.213 | \(< 0.001) |
| Positive well-being     | 0.326            | \(< 0.001) | -0.08 | 0.103 | -0.109 | 0.025 |
| General well-being      | 0.238            | \(< 0.001) | -0.221 | \(< 0.001) | -0.208 | \(< 0.001) |

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4. Relationship between WBQ-12 and DTSQ

As shown in Table 6, the total DTSQ score had a strong correlation with ENE, PWB, and GWB in WBQ-12 ($P < 0.001$ for each subscale). DTSQ-2 had a correlation with NWB, ENE, and GWB ($P < 0.001$ for each subscale), while DTSQ-3 had a correlation with NWB, ENE, GWB ($P < 0.001$ for each subscale) and PWB ($P = 0.025$).

**DISCUSSION**

The present study showed that diabetes care needs not only medical care and controlled diet, but also psychosocial support to increase satisfaction with waiting and treatment times.

Well-being varied significantly depending on gender: the most sensitive indicator was NWB [7,19,20]. In addition, depression rather than anxiety had a closer relationship among the NWB-related items [21]. In this study, men scored lower than women for NWB, which consisted of negative questions, and higher for ENE and GWB. When complications and education levels were compared between men and women, women had more diabetes-related complications and less educated women were more depressed and anxious [8].

In this study, only the ENE score was lower for well-controlled glycemic state. Interestingly, similar results were seen in several other studies [6,20,22,23]. The poor association between glycemic control and well-being may be due to the fact that HbA1c represents the last three months whereas WBQ-12 represents the last 1~2 weeks.

It is well known that regular exercise is beneficial to diabetic patients [24], and dietary limitations were thought to negatively influence quality of life [25]. In this study, there was a strong correlation between the well-being categories (except NWB) and compliance with recommended exercise. We also found a correlation between PWB and compliance with recommended diet. Patient ability to achieve the recommended lifestyle changes may contribute to well-being [3].

Although a few studies have reported no correlation between insulin use and well-being [20,26], several studies have shown a positive correlation [12,27,28]. Only ENE showed a correlation in this study. Although it cannot be concluded that insulin users have better well-being, this suggests that other factors are more important in Korean general hospitals. In this study, care environment factors, such as outpatient care time and waiting time, seemed to play a more important role than diabetes management methods. Income was the only factor that had a strong correlation with all 4 categories of well-being and was also the only variable that had a significant probability on multiple regression analysis. This indicates that income is an important factor for the well-being of Korean diabetic patients. Previous studies have suggested that this is because diabetes is a chronic disease with high individual expenses [14,27,29].

Complications affect the quality of a diabetic patient’s life and can lead to development of mental diseases [30]. No correlation was found between well-being and complications in this study. However, many studies have found a correlation between well-being and complications, and patients with complications had a lower PWB score, worse health status, and lower quality of life [8,31–33]. Since patients have complications over a long period, a single cross-sectional study has limitations in obtaining subjective information.
about well-being.

Although a previous study reported that a higher level of education correlated with higher treatment satisfaction [3], no correlation was found in this study. This difference may have resulted from the notion that highly educated people have a higher level of information and higher expectations. Although men had higher treatment satisfaction than women in the Diabetic and Territory Survey Project [34], there was no correlation between gender and treatment satisfaction in this study. Treatment satisfaction increased with age, which might be due to patients becoming more proficient in the management of a chronic disease.

Two subjective questions were about satisfaction with waiting and treatment times. With higher satisfaction, the total DTSQ score for these 2 items was higher. As for well-being, satisfaction with these 2 items had a strong correlation with the total DTSQ score, indicating that improvement of the care environment, rather than other factors, is necessary to increase satisfaction in Korean general hospitals, which have a short care time and a long waiting time.

A previous study independently identified each variable by investigating the DTSQ and the relationship among glucose regulation indicators including fasting glucose, postprandial glucose, and HbA1c by performing multiple regression analysis [8]. However, there was no correlation between treatment satisfaction and HbA1c in this study. This may be due to the fact that questionnaire results were obtained once rather than through repeated follow-up investigations as in the previous study [8], and treatment satisfaction may be affected by other factors such as treatment environment.

According to previous studies, treatment satisfaction correlated with well-being [4,20]. In this study, correlation of DTSQ with ENE, PWB, and GWB was verified. This indicates that well-being and treatment satisfaction are complementary and proper management of factors that influence each of these can have a positive effect. In this study, DTSQ-2 was correlated with NWE, ENE, and GWB, while DTSQ-3 had a correlation with NWE, ENE, PWB, and GWB. The higher the perceived frequency of hypoglycemia and hyperglycemia, the lower the score for well-being and the higher the score for negative emotion.

In conclusion, improvement of the care environment is necessary to increase psychological well-being and treatment satisfaction in Korean general hospitals, which have a short care time and a long waiting time.

This study has a limitation, as it had too few subjects to evaluate the validity of the Korean version of WBQ-12. However, Clare Bradley verified that the Korean version of WBQ-12 is similar to other versions [4,8].

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CONFLICTS OF INTEREST

No potential conflicts of interest relevant to this article were reported.

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