Correlations Among Social Support, Depression, and Anxiety in Patients With Type-2 Diabetes

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Introduction
Diabetes is currently ranked as fourth most prevalent cause of death in Taiwan. Other chronic complications can also easily develop in these patients, including heart disease, cerebrovascular disease, chronic lower respiratory tract disease, chronic liver disease and cirrhosis, nephritis and nephrotic syndrome; all of which are also among Taiwan’s top 10 causes of death (Department of Health, Executive Yuan, Taiwan, ROC, 2011). There are currently about 100–140 million patients with diabetes in Taiwan (Chuang et al., 2006). Necessary lifestyle changes can easily have a psychosocial impact on patients with type-2 diabetes. Professional care providers must ensure that their patients are aware of these changes and resolve any obstacles they may face so that they can coexist with their disease, assume responsibility for their own care, and improve poorly controlled conditions (Chuang, Tsai, Huang, & Tai, 2001). A study by Huang and Yang (2004) found emotional upheaval associated with increased blood glucose and that 51% of patients with diabetes experience inability to attend social activities because of their disease. Recently, both diabetes and depression have been associated with premature morbidity and mortality, and when these conditions coexist, risks of developing comorbidities, complications, suffering of patients, and associated costs escalate (Tovilla-Zárate et al., 2012). During the disease process, patients with diabetes often experience psychological issues such as repeated anxiety, depression, and emotional instability while trying to adjust to the disease. In severe cases, crisis in personal and family life may occur (DeCoster, 2001). Depression may also affect metabolic control, obstruct hypoglycemic drugs and

ABSTRACT

Background: Social support is related to patient self-care and health status. Patients’ psychosocial issues play an important role in diabetes care.

Purpose: This study investigates correlations among social support, depression, and anxiety in patients with diabetes.

Methods: A cross-sectional study design and purposive sampling were used. One hundred eleven patients with type-2 diabetes were recruited from three regional teaching hospitals in northern, central, and southern Taiwan, respectively. Questionnaires used included the social support and psychological referral inventory, Beck depression inventory, and Beck anxiety inventory.

Results: Approximately 12.6% of the study population had depression, and 27.0% had anxiety. Depression and anxiety were positively correlated ($r = .65$, $p < .01$), whereas depression was negatively correlated with the sum of disease control types ($r = -0.26$, $p < .01$) and social support ($r = -0.27$, $p < .01$). The sum of disease control types and social support were the most important explanatory factors for depression in patients, explaining 45.5% of variance. Anxiety was correlated positively with age ($r = .26$, $p < .01$), total number of complications ($r = .31$, $p < .01$), and depression ($r = .65$, $p < .01$). Anxiety correlated negatively with weight ($r = -0.20$, $p < .05$) and sum of disease control types ($r = -0.25$, $p < .05$). The above variables were important explanatory factors for anxiety, accounting for 15.2% of variance.

Conclusions/Implications for Practice: Psychological factors, such as depression and anxiety, are common symptoms in patients with diabetes. If social support can be strengthened in these patients, then psychological factors can be improved. Professional care providers should focus on reducing the patient depression and anxiety levels, strengthening social support, and providing referrals to psychology-related professionals.

Key Words: type-2 diabetes, social support, depression, anxiety, referral.

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diet control, reduce patients' quality of life, and increase medical insurance expenses (Lustman & Clouse, 2005). In terms of social adjustment, patient social activities are affected because of physical limitations imposed by dietary restrictions or complications. Therefore, other than treatment for the disease per se, health management should also consider physical, psychological, and social factors. Social support may reduce psychological distress resulting from the disease. Therefore, professional care providers should focus on evaluating depression and anxiety in their patients and, upon confirmation, decide whether to refer them to related professionals and further strengthen their social support system to more effectively control blood glucose and improve quality of life (Whittemore, Melkus, & Grey, 2005). The objective of this study is to understand correlations between social support, psychological referral, depression, and anxiety in patients with type-2 diabetes.

**Literature Review**

**Social support and psychological referral for patients with diabetes**

Many studies have found that psychosocial factors play an important and absolutely necessary role in diabetes management. Psychological factors are stronger and more powerful explanatory factors of mortality in patients with diabetes than many other physiological variables (Delamater et al., 2001). In addition to drugs with good therapeutic effects, family and social support are also an inevitable part of treatment for depression symptoms. If patients can better understand the correlation between disease and psychological factors and have access to social support, then they can more easily improve their attitudes toward their disease (e.g., from pessimistic to optimistic, from passive to active). Consequently, the disease can be controlled naturally (Hao & Chao, 2007).

Social support is a key ingredient in dealing with emotional pain that goes along with chronic unremitting anxiety and depression (Grav, Hellzén, Romild, & Stordal, 2011) and patient self-care abilities (Dimkovic & Oreopoulos, 2000). A study led by Williams and Bond (2002) found a correlation between social support and patient self-care activities and that social support positively affects the patient's personal psychological comfort. Therefore, healthcare management combined with social support represents a rising trend. Patient psychosocial issues play an important role in diabetes care. In particular, the relationship between depression symptoms and blood glucose control is especially close. Interventions on psychological issues are helpful for improving diabetes self-management and quality of life (Skovlund & Peyrot, 2005). Thus, professional care providers should provide psychological support, help resolve psychological issues, and increase motivation and confidence to ensure that patients can more effectively control their blood glucose and improve quality of life (Whittemore et al., 2005). Skovlund (2007) noted that 5%-15% of patients experience psychological illnesses that require professional medical attention. In addition, psychosocial issues affect the quality of life and illness management abilities of 40% of patients. Although most patients (55%-60%) do not require psychological therapy from healthcare professionals, only 10% of patients with diabetes have been referred. In truth, many health professionals are unskilled at effective communication and counseling. There remains a high prevalence of depression and anxiety among patients with type-2 diabetes, and these problems are often overlooked and undertreated (Stoop, Spek, Pop, & Pouwer, 2011).

**Depression and anxiety in patients with diabetes**

Psychological adjustment is an important outcome in diabetes care, and barriers to psychological adjustment will reduce long-term treatment effects and motivation for self-management (Snoek & Skinner, 2006). One study found that, when faced with stress, humans secrete large amounts of adrenaline, growth hormones, and glucagons, which cause glycogen breakdown, gluconeogenesis, and an increase in blood glucose. Compared with patients without diabetes, metabolism may be more likely to become disordered in patients with diabetes because of the physical and psychological changes that result from depression and anxiety. Therefore, other than treatment with metabolic drugs, patients with diabetes should avoid becoming depressed or anxious and should be helped to adapt and cope with life events to prevent dramatic changes in mood (Yang & Wei, 2006).

A study found that most patients with diabetes have psychosocial problems such as self-blame, anger, anxiety, depression, worry, hopelessness, and even suicidal thoughts. In this study, psychosocial problems focused on depression and anxiety.

Depression is an illness that involves the body, mood, and thoughts and affects the way a person eats, sleeps, feels about himself or herself, and thinks about things. Depression is not the same as a passing blue mood. It is not a sign of personal weakness or a condition that can be wished away (Toker, Shiro, & Melamed, 2008). Anxiety (also called angst or worry) is a psychological and physiological state characterized by somatic, emotional, cognitive, and behavioral components (Seligman, Walker, & Rosenhan, 2011). Skovlund (2007) suggested that, clinically, approximately 55% of patients with psychosocial problems that may interfere with their diabetes treatment go undiagnosed. Despite this, 40% of patients had psychosocial disturbances related to diabetes, and 5% had psychological disease attacks that required treatment by psychiatrists.

In summary, the current literature indicates that, in the process of adapting to the disease, patients with diabetes can easily develop symptoms of pessimism, depression, and anxiety. To prevent further complications that worsen a patient’s condition, we must understand the correlation between social
support and referral with these psychological disturbances and symptoms. A better understanding of these issues may improve the therapeutic efficacy of treatment in patients with diabetes. Figure 1 presents the flow chart for this study.

## Methods

### Study Design and Subjects

This study utilized a cross-sectional survey and recruited participants from diabetes clinics of three regional teaching hospitals in northern, central, and southern Taiwan using a purposive sampling method. Participant inclusion criteria included clinical diagnosis of type-2 diabetes, age of 20 years or older, and ability to comprehend and communicate in Mandarin or Taiwanese. Exclusion criteria included patients with severe diabetes complications (e.g., those currently on dialysis), who were unable to care for themselves (e.g., blindness in both eyes), or who experienced cognitive deficits (based on medical records, such as dementia). Patients who met the inclusion criteria and voluntarily accepted the invitation from researchers to participate in the study received an explanation of the study by the researcher and signed the informed consent form. Afterward, these patients filled out the survey. Survey responses were then compiled and subjected to data analysis. The sample size for this study was calculated using G-Power statistical software (Faul, Erdfelder, Lang, & Buchner, 2007). The α was set to 0.05, power was set to 0.8, and the effect size was set to 0.3. The explanatory factors included variables, such as “demographics and disease characteristics,” “social support,” “anxiety,” and “depression.” Using the software, a sample size of 82 people was determined. To account for an estimated 20% invalid survey rate, a minimum sample size was set at 98 people. One hundred eleven participants were ultimately enrolled in the study.

### Study Instruments

This study utilized questionnaires for data collection. Consent was obtained from the creators of all study tools, and a translator was used to translate them into Chinese. The data collection tools used in this study included five surveys. Five clinical experts in the field of diabetes were used to do validity testing using the content validity index (CVI) on the Medical Outcome Study-Social Support Survey (MOS-SSS) and the psychological problem referral survey between September and October 2009. On the basis of the appropriateness of the content of each inventory and clarity of the wording, each tool was scored on a 4-point or 5-point Likert scale (i.e., 1 indicated strongly disagree and 4 or 5 points indicated strongly agree). Because both the Beck depression and anxiety inventories have been used nationally and internationally for many years, they were predetermined as valid and not tested in this study. With respect to reliability testing, data of subjects were tested using the Cronbach’s alpha value to measure the internal consistency of each inventory.

The descriptions of each inventory are as follows.

### Demographics and disease characteristics

This tool includes self-designated items such as gender, age, level of education, and marital status and disease characteristics such as ER visit during past 3 months (yes/no), hospital visit during past 3 months (yes/no), and complications during past 3 months (yes/no). The sum of disease control types (i.e., diet, exercise, medication) was a self-administered question used to evaluate the number of self-control task types a patient follows.

### MOS-SSS

The MOS-SSS is a social support survey developed by Sherbourne and Stewart (1991). It is a self-administered survey and a multifaceted social support measurement that can be used on chronic patients. There are a total of 19 questions and five subscales. These assess practical support (questions 1, 4, 11, and 14), emotional support (questions 5, 9, and 19), positive social interactions (questions 6, 10, and 17), emotional and information support (questions 2, 3, 7, 8, 12, 15, 16, and 18), and others (question 13). Using the Likert’s 5-point scale, 1 point indicates “never provided support,” whereas 5 points indicates “always provided support.” The final score ranges between 19 and 95 points, where a higher score indicates more support. The reliability of this survey was determined as .92 (Cronbach’s alpha value) in a type-2 diabetic population in Taiwan (Wu et al., 2011b). In terms of reliability and content validity (CVI), Cronbach’s alpha values were .96 and .81, respectively, in this study.

### Beck depression inventory (BDI)

This inventory is frequently used in patients with chronic diseases such as diabetes (Lustman & Clouse, 2005; Steed, Cooke, & Newman, 2003). The BDI used in this study was translated by Chen (1995). The BDI includes 21 questions, and responses were evaluated along a 4-point scale. It primarily measures severity of depression based on a subject’s
cognitive, emotional, motivational, and physical aspects. Subjects rate their level of depression on a 4-point scale between 0 and 3. “0” indicates no depression at all, whereas “3” indicates very depressed. The final score ranges between 0 and 63, where a higher score suggests a higher level of depression. Specifically, a BDI score of 0–13 points indicates “normal” (i.e., no depression), 14–19 points indicates mild depression, 20–28 points indicates moderate depression, and 29–63 points indicates severe depression. BDI possesses good internal consistency (Cronbach’s alpha = .92–.93) and good construct validity (Helm & Boward, 2003). Wu et al. (2011a) studied 312 patients with type-2 diabetes and found that BDI had good reliability nationally. It was determined that the internal consistence reliability was .91 for people with diabetes and reliability (Cronbach’s alpha value) in this study was .92.

Beck anxiety inventory (BAI)  
This inventory is frequently used by researchers to subjectively measure participant arousal (Whittemore et al., 2005). BAI contains 21 questions that measure 21 indicators related to anxiety. Each question describes physical discomfort related to anxiety. Subjects rate level of disturbance and discomfort subjectively using a 4-point scale of 0 to 3. “0” indicates no disturbance at all and “3” indicates very disturbed. The final score range is between “0” and “63” points, where 0–9 points indicate a normal score, 10–18 points indicate mild anxiety, 19–29 points indicate moderate anxiety, and 30 or higher indicate severe anxiety. Wu et al. (2011a) tested 312 patients with type-2 diabetes with BAI in a nationwide study. The Cronbach’s alpha value for the survey is .94, which indicates good internal consistency. Good construct validity was found with factor analysis of construct validity testing. BAI can be separated into two factors: “somatic anxiety” and “subjective perception and panic” (Beck, Steer, & Garbin, 1988). Reliability in this study earned a Cronbach’s alpha value of .93.

Psychological referral survey  
This is a self-administered inventory, with a total of two questions, and each question is graded on a scale of 0–100 points, where a higher number indicates a higher ratio for psychological referral. “When I experience psychological (social) disturbances, I believe the medical personnel can immediately refer me to other professionals that provide emotional support (social worker, counselor, psychologist, psychiatrist)” and “when I need a psychosocial expert, I can easily find a support or support system” were the two questions listed. The reliability of the inventory in this study had a Cronbach’s alpha value of .82, and with respect to validity, the average CVI value was .80.

Data Analysis  
Results from this study were based on data analysis of the completed and coded surveys. The SPSS software package version 19.0 was used to conduct statistical analysis. Statistical methods included frequency distribution, percentage, mean, standard deviation, t test, one-way analysis of variance (ANOVA), Pearson’s product–moment correlation, and stepwise regression. In terms of internal reliability, the Cronbach’s alpha index was used.

Ethical Considerations of the Study  
This study was approved by the medical ethics and institutional review board of a medical organization (No: ECKIRB99001 ) to protect the rights of the participants. All study participants voluntarily agreed to participate in the study. Participants were officially invited to join the study after receiving an explanation of the study from the researchers and providing signatures on the informed consent form. Before filling out the surveys, participants were provided with a notice that explained the survey. Participants were also informed that, if they withdrew from the study prematurely, it was acceptable and would not result in any negative impact. To protect subject confidentiality, participant names were not included and an assigned code was used instead for survey completion, editing, and data analysis.

Results  
ANOVA Between Demographics/Disease Characteristics and Depression/Anxiety  
One hundred eleven patients with type-2 diabetes were studied, of which 93 (83.8%) were married. More than half of the subjects (61 subjects, 55%) were women. The mean age of the tested patients was 62.5 years (SD = 11.28 years). All other demographics, disease characteristics, and depression and anxiety inventory scores are presented in Table 1. Table 1 also presents the ANOVA between demographics and disease characteristics, including depression and anxiety in patients with diabetes. With regard to depression, there was a statistically significant difference between marriage status and depression (F = 8.71, p < .001). A Tukey post hoc test found that divorced or widowed subjects were more likely to be depressed. Residence status also reached statistical significance (t = 1.74, p < .001). This finding indicates that subjects who were living alone were more likely to be depressed than those who lived with family members. With regard to anxiety, female patients were more likely to be disturbed by anxiety symptoms than male patients (t = −2.81, p = .006). There was a significant difference in marriage status as well (F = 3.86, p = .024), where those who were divorced or widowed had a higher level of anxiety compared with married participants. Unemployed subjects had a higher anxiety level than employed subjects (t = 3.42, p = .001). Subjects with complications had a higher level of disturbance in terms of anxiety symptoms compared with those without complications (t = −2.76, p = .009). There were
no statistically significant differences in any of the other variables.

**Correlation Between Demographics and Disease Characteristics, Social Support and Psychological Referral, and Depression and Anxiety**

Table 2 shows that depression and anxiety ($r = .65$, $p < .01$) had a significant positive correlation, whereas depression had a significantly negative correlation with the sum of disease control types ($r = -.26$, $p < .01$) and social support ($r = -.27$, $p < .01$). Anxiety had a significantly positive correlation with age ($r = .26$, $p < .01$) and total number of complications (i.e., retinopathy, nephropathy, neuropathy, diabetic pathology, hypertension, heart disease, hyperlipidemia, and others; $r = .31$, $p < .01$). Anxiety had a significantly negative correlation with weight ($r = -.20$, $p < .05$) and sum of disease control types ($r = -.25$, $p < .05$).

With regard to psychological referral, the statements “when I experience psychological disturbances, I believe the medical personnel can immediately refer me to other professionals in psychology” and “when I need psychological experts, I can easily find support” were not significantly correlated with depression or anxiety.

A stepwise regression analysis was performed with marriage status, residence status, sum of disease control types,
social support, and level of anxiety as independent variables and level of depression as the dependent variable. Results from the analysis revealed that some independent variables, such as marriage and residence status, did not have a significant difference in regression analysis. Therefore, the above independent variables were removed. The remaining independent variables were found to be significantly explanatory variables for depression in patients with diabetes. Anxiety is an especially important explanatory factor, as it alone could explain 32% of the variance in depression and accounted for 45.5% of total explained variance (see Table 3).

### TABLE 2.
**Correlations between Demographics and Disease Characteristics, Social Support, and Psychological Referral with Depression and Anxiety in the Study Population (N = 111)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Depression</th>
<th>Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics and disease characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.07</td>
<td>.26**</td>
</tr>
<tr>
<td>Weight</td>
<td>-.18</td>
<td>-.20*</td>
</tr>
<tr>
<td>Total number of complications</td>
<td>.18</td>
<td>.31**</td>
</tr>
<tr>
<td>Sum of disease control types</td>
<td>-.26**</td>
<td>-.25*</td>
</tr>
<tr>
<td>Social support</td>
<td>-.27**</td>
<td>-.17</td>
</tr>
<tr>
<td>Psychological referral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I experience psychological</td>
<td>-.16</td>
<td>-.15</td>
</tr>
<tr>
<td>disturbances, I believe the medical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>personnel can immediately refer me to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>other professionals in psychology.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I need psychological</td>
<td>-.12</td>
<td>-.11</td>
</tr>
<tr>
<td>experts, I can easily find support.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>1.00</td>
<td>.65**</td>
</tr>
<tr>
<td>Anxiety</td>
<td>.65**</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* p < .05. ** p < .01.

A stepwise regression analysis was performed with gender, marital status, employment status, presence of complications, age, weight, total number of complications, sum of disease control types, and level of depression as independent variables and level of anxiety as the dependent variable. Results from the analysis indicated that significant differences were not reached with certain independent variables, including marriage status, presence of complications, age, and weight. Therefore, the above independent variables were removed. The other independent variables, however, were significant explanatory factors of anxiety in patients. Total number of complications was an especially important explanatory factor, as it could explain 6.0% of variance per se and accounted for 15.2% of total explained variance (see Table 3).

### Discussion

#### Demographics, Disease Characteristics, Depression, and Anxiety in Patients With Diabetes

One hundred eleven patients with type-2 diabetes were tested in this study. Their mean age was 62.5 years. Single and divorced (or widowed) subjects and subjects living alone had higher levels of depression. Similar results were found for anxiety. For example, participants who were women, divorced (or widowed), unemployed, or had complications had relatively more anxiety. Anxiety and depression had significantly negative correlations with sum of disease control types (i.e., diet, exercise, medication). This is similar to the findings of the studies conducted by Elizabeth, Katon, Korff, Rutter, and Simon (2004) and Gonzalez et al. (2007). They found depression mainly associated with patient-initiated behaviors that are difficult to maintain (i.e., diet, exercise, and medication adherence). Correlational analyses revealed that, when the level of anxiety was higher, level of depression was higher as well. This is similar to the findings of studies conducted by Anderson, Freedland, Clouse, and Lustman (2001) and Fisher, Chesla, Mullan, Skaff, and Kanter (2001). deGoot, Anderson,

### TABLE 3.
**Stepwise Regression Analysis of the Depression and Anxiety Inventory in the Diabetic Study Population (N = 111)**

<table>
<thead>
<tr>
<th>Explanatory Variable</th>
<th>Regression Coefficient (β)</th>
<th>Coefficient of Determination (R²)</th>
<th>R² Change</th>
<th>F Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum of disease control types</td>
<td>-.262</td>
<td>.069</td>
<td>.069</td>
<td>8.060**</td>
</tr>
<tr>
<td>Social support</td>
<td>-.256</td>
<td>.134</td>
<td>.066</td>
<td>8.389***</td>
</tr>
<tr>
<td>Anxiety</td>
<td>.591</td>
<td>.455</td>
<td>.320</td>
<td>29.721***</td>
</tr>
<tr>
<td>Anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender (female vs. male)</td>
<td>.192</td>
<td>.037</td>
<td>.037</td>
<td>11.814**</td>
</tr>
<tr>
<td>Employment status (yes vs. no)</td>
<td>-.216</td>
<td>.081</td>
<td>.044</td>
<td>13.621***</td>
</tr>
<tr>
<td>Total number of complications</td>
<td>.253</td>
<td>.141</td>
<td>.060</td>
<td>16.788***</td>
</tr>
<tr>
<td>Sum of disease control types</td>
<td>-.106</td>
<td>.152</td>
<td>.011</td>
<td>13.725***</td>
</tr>
</tbody>
</table>

* p < .05. ** p < .01. *** p < .001.
Freedland, Clouse, and Lustman (2001) conducted a meta-analysis of 27 studies and found that, in 89% of the studies, depression symptoms increased the severity or types of diabetic complications, and diabetic complications were the result of poor blood glucose monitoring, exercise, diet, and pharmaceutical self-care. Wu et al. (2011a) conducted a study and found that patients with diabetes who are women, single, unemployed, living alone, and with complications are more susceptible to anxiety. Correlation analysis also found older age, multiple complications, and depression to be related to anxiety risk. One study even found that depression increased the health expenses of patients with diabetes (DeRekenieker et al., 2003). Depression may cause functional defects and increase medical costs. Therefore, emphasis on depression-related factors in patients with diabetes is a very important subject.

Social Support, Depression, and Anxiety in Patients With Diabetes

On the basis of the BDI results, it was revealed that 87.4% of patients had “no depression” in our study. This suggests that approximately 12.6% of the patients with diabetes had depression. Depression is a psychological disorder commonly found in patients with type-2 diabetes. International scholars have pointed out that the incidence rate of depression in patients with diabetes is twice the rate of depression in normal population (Egede, Zheng, & Simpson, 2002; Li, Ford, Strine, & Mokdad, 2008). Some researchers even found that depression affects at least 25% of the diabetic population (Anderson et al., 2001; Egede et al., 2002). In our study population, about 12.6% of patients with diabetes were depressed, which is lower than the rate of studies conducted in other countries. When discussing potential causes, several factors should be considered. First, Chinese individuals tend to be conservative and find it difficult to express depression. Thus, a Chinese person usually does not seek help from psychological professionals (Wu et al., 2011a). Second, compared with other races, Asians are less likely to experience major depression (Li et al., 2008). Also, results from this study revealed social support as negatively correlated with depression and an important predictor of depression. These observations corroborate the findings of previous studies by Bai (2005) and Egede and Osborn (2010). Taken together, these findings suggest that increased social support is helpful in improving psychological depression in patients with type-2 diabetes.

On the basis of the results from the BAI, 73% of the subjects had “no anxiety,” indicating that about 27% of the patients with diabetes were anxious. Results of recent studies show that patients with DM2 experience generalized anxiety disorder, with up to 40% experiencing elevated levels of anxiety symptom (Stoop et al., 2011). In this present study, about 27% of patients with diabetes had anxiety, which is similar to the rate showed in other international patients with type-2 diabetes studies. Previously, we mentioned that significant differences in anxiety were found in certain demographics and disease characteristics. For example, being women, single, and unemployed; living alone; and having complications were each associated with a higher level of anxiety. Correlation analysis revealed a positive correlation between number of complications and anxiety. What is interesting is that the demographics/disease characteristics that showed significant differences in anxiety were similar to those that showed significant differences in depression. Clinically, researchers have found that patients with general anxiety disorder have comorbid depressive disorders (Noyes, 2001; Nutt, Ballenger, Sheehan, & Wittchen, 2002). Researchers have pointed out that the lifetime comorbidity of general anxiety disorder and major depression disorder is as high as 66.3%–80.0% (Teng & Chang, 2006). This may explain the similar predictors of anxiety and depression, why both anxiety and depression were often positively correlated and why these variables are important explanatory factors of each other. Social support was negatively correlated with depression, and social support was an important explanatory factor for depression. These observations are consistent with the findings of a previous study (Grav et al., 2011). Finally, it is unfortunate that we did not find a significant correlation between depression, anxiety, and psychological referral.

Conclusions

To achieve long-term control of blood glucose within the normal limits in patients with diabetes, self-care activities such as dietary restrictions, regular physical exercise, and taking patients with type-2 diabetes pharmaceuticals are necessary. Medical professionals should help patients adapt to their disease, as this plays a very important role in improving disease management. Thus, to achieve breakthroughs in the condition of patients with type-2 diabetes, obstacles in disease control must be understood. Psychologically disturbing symptoms derived in the process of adapting to diabetes such as depression and anxiety can create more problems and complications that worsen a patient’s condition, especially if he or she is not managed in a timely manner. In this study, we found that depression and anxiety in patients with diabetes were less prevalent in Taiwan than Western nations. In our survey population, being women, single, and unemployed; living alone; and having complications were important explanatory factors for anxiety and depression. Moreover, the sum of disease control types and social support were the most important explanatory factors for depression in patients with diabetes. A significant correlation was not found between anxiety, depression, and psychological referral. Clinically, evaluation of the psychological well-being in patients with these characteristics and proper referral should be improved. The psychological adjustment process in patients with diabetes can increase medical costs. Thus, we recommend further investigation in this matter in the future. The practical recommendations for the clinical, academic, and policy-making arenas are as follows: (a) Increase group health education by using cognitive psychology—theories that can be applied in
diabetes care have been developed in recent years such as the concepts of self-efficacy and empowerment; (b) improve the psychological care and referral of patients and implement a referral system for patients with severe psychological problems to a professional psychology organization; (c) provide training courses for diabetes care providers that improve their abilities and techniques related to psychological consultation; and (d) develop psychological studies in patients with diabetes using a quasi-experimental design, so that subsequent researchers can validate the efficacy of their interventions through psychological and cognitive concepts. In addition, a qualitative study design can be used to develop a psychology-related study in patients with diabetes.

This study enrolled patients with diabetes from three hospitals in northern, central, and southern Taiwan. The small number of patients enrolled may be a study limitation, as it may result in demographic variations in study subjects that make results not generalizable to a larger population. Furthermore, findings regarding the social support, depression, and anxiety of patients with diabetes from our cross-sectional, descriptive study may only be applicable to a certain time. In the future, a longitudinal study could be performed to assess cause–effect or efficacy of an intervention.

Acknowledgments
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第二型糖尿病患者社會支持與憂鬱、焦慮之相關

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背 景

社會支持與病人自我照顧和健康狀態有關，病人的心理社會問題在糖尿病照護扮演一個非常重要的角色。

目的

探討第二型糖尿病患者社會支持與憂鬱、焦慮的相關性。

方法

採横斷式調查法，以立意取樣於北、中、南之三所區域教學醫院糖尿病門診共收案111位第二型糖尿病患者。問卷包括社會支持、心理轉介量表、貝克憂鬱量表及貝克焦慮量表。

結果

本研究結果顯示：(1)族群中約有12.6%有憂鬱及27.0%有焦慮情形。⑵憂鬱與焦慮呈顯著正相關 
\( r = .65, p < .01 \)；憂鬱與疾病控制方法總和 
\( r = .26, p < .01 \) 及社會支持 
\( r = .27, p < .01 \) 呈顯著負相關，這些變項同時為患者憂鬱的最重要解釋因子，可解釋45.5%之變異量。⑶焦慮與年齡 
\( r = .26, p < .01 \) 、罹患合併症種類總和 
\( r = .31, p < .01 \) 呈顯著正相關；焦慮與體重 
\( r = .20, p < .05 \) 及疾病控制方法總和 
\( r = .25, p < .05 \) 達顯著負相關；以上變項亦為焦慮的最重要解釋因子，可解釋15.2%之變異量。

結論／實務應用

憂鬱及焦慮等心理因素皆是糖尿病患者顯著共通性的疾病症狀，對於這些病患如果加強社會支持，則心理因素亦會改善。專業護理人員應重視評估患者憂鬱及焦慮程度，加強社會支持及提供轉介至心理相關之專業機構。

關鍵詞：第二型糖尿病、社會支持、憂鬱、焦慮、轉介。

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