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Impact of Social Role Strain, Depression, Social Support and Age on Diabetes Self-efficacy in Korean Women With Type 2 Diabetes

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Abstract

This study describes levels of role strain, diabetes mellitus (DM)–related self-efficacy, depression, and social support in middle-aged Korean women with type 2 DM. Using a cross-sectional correlational survey design, we examined the relationships among these constructs in a purposive sample of 154 Korean women (40–65 years old) residing in Cheon-An, a mid-sized city in South Korea, who had had a diagnosis of type 2 DM for 6 or more months. Our findings indicated that significant numbers of these women are experiencing significant role strain (52.43 [SD, 8.81]) and are at risk for clinical depression (30%). In bivariate analysis, the level of role strain was negatively associated with diabetes self-efficacy ($r = -0.27, P < .01$), whereas social support was positively associated with diabetes self-efficacy ($r = 0.22, P < .05$). A multivariate analysis confirmed that social role strain ($\beta = -.33, P = .00$), social support ($\beta = 0.19, P = .05$), and age ($\beta = 0.19, P = .03$) were statistically significant predictors of DM-related self-efficacy. These findings highlight the importance of social role strain in managing DM and point to the need for appropriate interventions that incorporate the ways to relieve the role strain experienced by this highly vulnerable population.

Keywords

diabetes mellitus; role; self-efficacy; social support; women

With the societal role of women continually expanding, the increasing strain associated with filling multiple social roles combined with the stress resulting from these role expectations is taking a serious toll on the health of women. Traditionally, middle-aged women assume a critical supporting role in both familial and societal settings in many different cultures.¹ In Korean culture, the societal and familial expectations of married women are extremely demanding, often requiring personal sacrifice and expectations to meet culturally prescribed multirole obligations as wives, mothers, and/or daughters-in-law. For example, a middle-

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aged married woman is likely to assume the role of caregiver for elderly parents; notably, about 40% of elderly parents in Korea live with their grown children.² In addition to these traditional roles, modern Korean women are taking on additional social roles, and many are employed outside the home and are expected to contribute financially to the household; in fact, the employment rate for middle-aged Korean women has increased from 42% in 1985 to 60% in 2009.³

In particular, middle-aged Korean women with personal health problems such as chronic illness are often delaying treatment or considering their health needs to be a low priority, placing them second to the needs of their family members. According to the Korean National Health and Nutrition Survey, more than 50% of the middle-aged population has chronic illnesses.⁴ Women with type 2 diabetes mellitus (T2DM) are considered one of the most vulnerable groups, as they suffer from competing priorities between urgent health needs of the individual and strong social expectations as a “caregiver.”

Studies of social role strain in women have reported a close association between the women’s role strain and mental health, including depression and sense of well-being^{5,6}; however, not much is known about the potential association between social role strain and physical health. One glaring gap in the literature includes a lack of research on the relationship between social role strain and self-care behaviors, particularly in the context of diabetes management. Furthermore, given the potential increased risk of depression among middle-aged Korean women due to increased role expectations, it is important to assess depression among this vulnerable group and evaluate its effect on the relationship between role strain and diabetes self-care management.

With the worldwide prevalence of T2DM increasing sharply,⁷ it is expected that the prevalence of diabetes among middle-aged Korean women will also increase. Diabetes is currently one of the leading causes of death among women in Korea.⁸ Managing a chronic illness such as T2DM is a difficult task for anyone, but the difficulty is particularly magnified in middle-aged Korean women because of their responsibilities to other family members, including members of their extended family or members of the community. This phenomenon of prioritizing the needs of other family members over the personal health needs of women is not unique to Korean society.⁹ However, exploring the complex relationship between an individual woman’s own sick role and her competing obligations in a sample of Korean women who are subjected to longstanding cultural expectations may help illuminate important theoretical and clinical implications of role strain as it relates to the management of chronic illnesses such as T2DM.

To address this critical scientific gap and the urgent need for a culturally appropriate intervention for this growing population, we have conducted a descriptive study exploring the psychological factors related to self-care behaviors in Korean women with T2DM, focusing on the relationship of these factors to the strains associated with their demanding social roles.

In this article, we describe the levels of social role strain experienced by middle-aged Korean women with T2DM and characterize the potential associations between role strain and diabetes self-efficacy, depression, and social support (Figure).

Methods

Setting and Sample

A purposive sample of 150 middle-aged women who were previously diagnosed with T2DM was identified at the outpatient department of a general hospital in a midsized South Korean city. The reported population of this city was approximately 400 000. The number of middle-aged individuals (139 205) and other demographic characteristics of the city residents were comparable to those of other midsized cities in South Korea. Participants who had had T2DM for at least 6 months were invited to participate. The diagnosis was verified by chart review. Inclusion criteria were (a) female, (b) age 40 to 65 years, (c) able to read and write Korean, (d) self-identified with T2DM for 6 or more months, (e) having had at least 1 clinical visit for diabetes management, and (f) ability and willingness to provide informed written consent.

Procedures

After obtaining respective institutional review board approval from pertinent institutions, participants were recruited at an outpatient clinic in a general hospital in South Korea. Following the identification of potential participants (December 2006 to February 2007), a trained researcher met with each potential participant to explain the purpose of the study and obtain informed written consent for participation. Data were collected through surveys using the questionnaires described in the following section. All instruments were read to the participants by trained interviewers, who then recorded participants' verbal responses. Approximately 30 minutes was spent to complete the entire questionnaires.

Instruments

Self-efficacy for Diabetes—This instrument was adapted and modified from the Self-efficacy to Manage Disease in General scale described by Lorig.¹⁰ This modified instrument specifically focused on self-efficacy of diabetes management, including diet, frequency of exercise, and symptom management. The instrument used an 8-item scale, with each item assigned a 10-point rating scale that ranged from 1 = “not at all confident” to 10 = “totally confident.” The score was a mean of the 8 items, with higher scores indicating greater self-efficacy. The internal consistency of the scale from the present study was .70 (Cronbach α).

Measures of Role Strain—The Measure of Role Gratification and Strain instrument¹¹ was used to measure role strain. The instrument consists of 24 items that measure positive and negative feelings women have toward multiple roles. Each item is rated using a 4-point Likert scale, ranging from 1 = “strongly disagree” to 4 = “strongly agree.” Items that measure positive feelings are reverse coded. The items are summed, and higher scores indicate more strain.¹² This instrument has been administered previously to 2 separate groups of Korean women and demonstrated acceptable internal consistency reliability.¹² The internal consistency of the scale from the present study was .71 (Cronbach α).

Multidimensional Scale of Perceived Social Support—The Multidimensional Scale of Perceived Social Support was developed to subjectively assess the adequacy of the participant's social support derived from 3 different sources: family, friends, and spouse.¹³ A 12-item scale was used, with each of the subscales (family, friends, and spouse) consisting of 4 items. Each item is rated using a 7-point scale, ranging from 1 = "very strongly disagree" to 7 = "very strongly agree." The total support score was a mean of the 12 items, and social support from different sources was also a mean of each of the 4 items, with a higher number of points indicating a greater level of perceived social support. The scale is known for sound psychometrics^{13,14} and user-friendliness of the tool. The scale was translated into Korean using the back-translation method and assessed content and conceptual equivalences through a committee consensus approach. The internal consistency of the scale from the present study was .88 (Cronbach α).

The Center for Epidemiologic Studies Depression Scale—The Center for Epidemiologic Studies Depression Scale (CES-D) is a brief, self-reporting depression scale designed to measure depressive symptoms in the general population.¹⁵ This scale consists of 20 items, and each item is rated using a 4-point Likert scale ranging from 0 = "rarely or none of the time" (<1 day) to 3 = "most or all of the time" (5–7 days). Sum scores range from 0 to 60, with a higher score indicating more depressive symptoms. Individuals are considered to have a risk of clinical depression if their score is greater than 16 (probably depressed).¹⁶ The scale has consistently demonstrated high reliability and validity across different ethnic populations, including Koreans.^{17–19} The internal consistency of the scale from the present study was .91 (Cronbach α).

Data Analysis

Data analysis began with descriptive statistics for the sample, including participant characteristics as well as the major variables of interest: social role strain, diabetes self-efficacy, depression, and social support. The Pearson product-moment correlation coefficient was calculated to determine the strength of the association between diabetes self-efficacy and social role strain, and Spearman correlation was used to analyze the correlation between individual characteristics and social role strain. The criterion for statistical significance was $P < .05$. Stepwise multiple regression procedures were then used to identify the direction and magnitude of the associations between diabetes self-efficacy and role strain, social support, depression, and age in this sample of middle-aged Korean women. The independent variables analyzed were: social support, depression, age, and social role strain. The dependent variable was the level of diabetes self-efficacy. Predictors and the order of entry were determined based on the correlation coefficient results of this study and previous studies.

Results

Participant Characteristics

The final sample consisted of 150 women 40 to 65 years old (mean, 54.1 years; mode, 56 years). Most of the participants (82.0%, $n = 23$) were married, with only 3.3% ($n = 7$) of the participants being separated or divorced and 13.3% ($n = 20$) being widowed; most lived with

their families. Approximately 8.0% ($n = 12$) of the participants lived with their parents-in-law. More than half of the participants (50.7%, $n = 76$) had not completed more than elementary school, and the percentage of participants with at least a high school diploma was 27.4% ($n = 41$). Approximately 58% ($n = 90$) of the participants had a monthly household income of less than \$1700, and more than 40% ($n = 65$) stated that it was difficult to cover their living expenses on their current income. In other words, only 14.7% ($n = 22$) of the participants felt comfortable with their income. Participants had had diabetes for an average of 8 years (range, 1–25 years), based on self-report (Table 1).

Social Role Strain

In this study, the sum scores for role strain ranged from 27 to 70. The mean value for the role-strain items was 52.43 (SD, 8.81), indicating that the sample expressed heavy role strain as a group. The items such as “I am more aware of my shortcomings now,” “I am tired a lot of the time,” and “I have conflicting demands placed on me” received the highest endorsements from the participants. After analyzing levels of role strain, participants were grouped into 2 role-strain groups, higher and lower role strain. Using the cutoff score of the role-strain mean, participants with a role-strain score of less than 52.43 were considered as the lower role-strain group, and those with greater or equal to 52.43 as the higher role-strain group. To observe the difference of diabetes self-efficacy by role-strain group, the means for diabetes self-efficacy were compared between the lower and higher role-strain groups. The lower role-strain group showed a significantly higher level of diabetes self-efficacy compared with the higher role-strain group ($t = 2.50$, $P < .05$) (Table 2).

Self-efficacy for Diabetes

The mean score for diabetes self-efficacy was 7.23 (of a maximum of 10). The participants showed lower self-efficacy in diet and exercise when compared with other self-care components, including foot care, medication, and self-monitoring of blood sugar. The highest mean score was 8.39 for “How confident do you feel that you can do something to prevent your blood sugar level from dropping when you exercise?” The lowest mean score was 6.33 for “How confident do you feel that you can follow your diet when you have to prepare or share food with other people who do not have diabetes?” Most participants had difficulty with adhering to a diabetic diet both when socializing with others and when they were hungry. In addition, the participants who failed to follow the recommended exercise regimen showed lower diabetes self-efficacy levels. There was a statistically significant negative association between diabetes self-efficacy and role strain ($P < .01$).

Social Support

As measured by the Multidimensional Scale of Perceived Social Support scale, our sample of middle-aged Korean women with diabetes obtained more support from their family members (mean score, 5.43 of 7) followed by spouses. Friends were perceived as providing the least support. The score for multidimensional perceived social support was 4.78 of 7. Some participants did not complete the spousal support section for various reasons, including being widowed or separated; therefore, their data were omitted from the spousal support analysis.

Depression

The level of depression, as measured by the CES-D, ranged from 0 to 47 (mean, 12.45 [SD, 12.01]). A CES-D cutoff value of 16 or greater is commonly used to identify individuals at risk for clinical depression. Using this value for a cutoff, more than 30% ($n = 46$) of the participants in this study were at risk for clinical depression. For a more detailed analysis, participants were divided into 2 groups: those deemed to be at risk for clinical depression and those with no risk of clinical depression. When comparing the 2 groups, a significant difference was found only in their levels of comfort with their income ($t = 4.18$, $P < .01$).

In bivariate analysis, depression was significantly associated with diabetes self-efficacy ($\beta = -.19$, $P < .05$). Additional analysis also revealed that social role strain was significantly associated with depression ($\beta = 0.60$, $P < .01$).

Factors Related to Diabetes Self-efficacy

Prior to stepwise multiple regression analysis, Pearson correlation was performed to identify significant associations among selected variables (Table 3). Correlation coefficient analysis revealed that diabetes self efficacy was significantly correlated with age ($r = 0.20$, $P < .05$), having a full-time job ($r = -0.16$, $P < .05$), depression ($r = -0.19$, $P < .05$), and role strain ($r = -0.27$, $P < .01$) in middle-aged Korean women with T2DM. Role strain was significantly associated with depression ($r = 0.60$, $P < .01$), social support ($r = -0.40$, $P < .01$), age ($r = -0.16$, $P < .05$), and comfort with income ($r = -0.19$, $P < .05$).

To conduct a stepwise multiple regression, depression and social support, which are well-known predictors for self-efficacy, were entered as step 1, and then age, comfort with income, and role strain were entered as step 2. The dependent variable was self-efficacy. A stepwise multiple regressions revealed a significant negative relationship between diabetes self-efficacy and role strain, and positive relationships with social support and age; however, the relationship between diabetes self-efficacy and depression was not statistically significant in this analysis. The Variance Inflation Factors (VIFs) of predictors in the regression model are less than 10, which indicate no significant linear relationship with the other predictor. The final model explained 19% ($P < .01$) of the diabetes self-efficacy variance (Table 4).

Discussion

The findings of this study demonstrated that a substantial portion of this study sample experienced significant role strain. Furthermore, this study characterized the important associations between a social role strain and an individual's diabetes self-efficacy and diabetes self-care experiences of middle-aged Korean women with type 2 diabetes. Consistent with previous studies, we found that comfort with income had a significant negative association with role strain. It is likely that middle-aged Korean women with lower incomes had high physical role demand as a result of limited financial resources.

Other findings that were consistent with previous studies included low levels of self-efficacy in both diet and exercise.^{20,21} Given that the study participants were less educated and reported lower incomes compared with people from a larger metropolitan city, it was

possible that they might have had low health literacy and limited access to systematic education on self-management of T2DM.

The findings of this study indicated that middle-aged Korean women with diabetes were found to significantly obtain more social support from their family members than their friends. The finding that families provided the most support for the Korean women has also been reported in previous studies (H. J. Park, et al. "Experience and Role of Social Support in Middle-aged Korean Americans Managing Chronic Illness: A Qualitative Inquiry," 2007, unpublished manuscript). Identifying sources of social support and estimating the size of social networks and their heterogeneity have been considered important areas of behavioral science. Many argue that the heterogeneity of a social support network is an essential factor because it is highly associated with many important health behaviors²² in studies involving individuals from Western cultures. In our population, the lack of heterogeneity of the social networks and complete dependency on family in terms of social support may reflect the close family solidarity of Korean culture. Although this can be a tremendous asset, based on the literature, expanding the heterogeneity of Korean women's social support network can also be of great value and is an important area for future research.

Our study identified a significant positive association between social support and diabetes self-efficacy as well as the level of social support received by our participants; this result is consistent with an earlier study by Nakahara et al,²³ which found that social support significantly increased self-efficacy, whereas a heavier daily burden decreased self-efficacy. Our regression analysis showed that decreased role strain, more social support, and older age accounted for 19% of diabetes self-efficacy.

Another major finding of this study was that approximately 46 of the study participants (30.7%) were identified as being at risk for clinical depression. These findings are similar to those of a prevalence study previously conducted in middle-aged Korean women with chronic illnesses (33.1%)¹⁶ and to those in studies of diabetes patients who had comorbid depression.^{24,25} Thus, the present results extended the work of others who previously identified a high level of comorbid depression and diabetes. However, depression was not a significant predictor of diabetes self-efficacy in this study. It is possible that the relatively small sample size of this study may not have had the adequate power to capture a potential relationship.

Our current findings follow the general direction of the associations that they have previously reported. Age showed positive association with self-efficacy in the previous studies. In studies with breast cancer patients and postpartum women, age was significantly associated with self-efficacy.²⁶⁻²⁹ This study also showed concordance result that age was a significant predictor of self-efficacy. It is considered that people at older age have experienced diverse situations that expanded the scope of their understanding, and it caused positive effect on self-efficacy.

Gauging the level of social role strain in our sample in relation to the general population is difficult because of a lack of related population data. However, this study suggests that the role strain experienced by our participants was high enough to affect their diabetes

management. In particular, bivariate analysis supported a significant negative association between social role strain and diabetes self-efficacy, suggesting that younger women experienced greater role strain. This finding suggests that effective interventions to increase diabetes self-efficacy for middle-aged Korean women should focus on fostering skills required to cope with and/or delegate some of their particular roles, as a way of reducing social role strain, especially among women entering into middle age.

Although previous studies have not examined the exact same variables that we have analyzed here, and many of these earlier studies have focused on the association between social roles and general well-being, our current findings nevertheless follow the general direction of the associations that have been previously reported.

This study adds important information about role strain in middle-aged Korean women with diabetes. However, it has several limitations. For example, our participants were recruited from 1 midsized South Korean city and had relatively low education and income levels. In addition, it is possible that many women who experience high role strain were not included in this study because they could not afford the time to participate because they had to go back home as soon as they were seen at the clinic to take care of their elderly parents-in-law. Therefore, self-selection bias as well as potential limitation in sample size may limit the extent to which our findings can be generalized. Also, we did not evaluate the relative magnitude of the stress or strain related to each role. Such an analysis, which was beyond the scope of the current study, could provide valuable information for developing and conducting an intervention program aimed at managing social role strain. Lastly, although the findings of our study have clearly demonstrated a strong relationship between the level of role strain and depression, we could not establish a causal relationship with a clear temporal order. In other words, we cannot conclude whether social strains cause depression in these women, or whether, conversely, depression exacerbates strain.

Clinical Implications

Despite these potential limitations, this study has several important theoretical and clinical implications. First, the findings of this study confirm the vital role of self-efficacy in the lives of women who have diverse social roles and continuously perform multiple tasks in their daily lives, such as managing chronic illness. Taken together with recent research that has reported diabetes self-efficacy to be associated with improvement in glycemic control³⁰ and individuals' relationship with healthcare providers,³¹ the findings of our study call for an intervention that focuses on improving diabetes self-efficacy in these middle-aged women with high social role strain.

Another notable finding is the high prevalence of depression risk (30%) in our sample and its strong association with role strain in Korean women with T2DM. Although the CES-D scale was not intended as a clinical diagnostic tool,¹⁵ this finding clearly warrants further investigation. Depression has been shown to be negatively associated with diabetes management^{32,33} and to be a significant predictor of serious complications, including heart disease and stroke,³⁴ and with poor adherence to medical regimens³² and increased levels of cholesterol and triglycerides.³⁵

In a previous study involving Korean women, the levels of glucose, cholesterol, and cardiovascular risk factors were significantly higher in depressed Korean women with T2DM than in those without depression.³⁶ Moreover, diabetes patients with depression incur a higher number of admissions, physician office visits, and prescriptions than those without depression.^{32,37} As a consequence, the overall healthcare costs for diabetes patients with depression are much higher, suggesting that effective prevention or treatment of depression has the potential to improve diabetes control and related outcomes.

Conclusions

Our findings demonstrate that the level of role strain in middle-aged, diabetic Korean women is related to diabetes self-efficacy and further suggest that exacerbation of such strain can have important effects on diabetes self-efficacy. This study highlights the need for an appropriate intervention for these overburdened women. A family-level intervention that would relieve some of their high role strain represents an area worth further investigation. Participating in intervention programs as a family may foster understanding and help the family find ways to support the patient while accepting the fact that her other roles in the family may have to be changed for her to manage her diabetes. Future studies are needed to explicate the precise causal relationship between social role strains and depression and their implications for the care of middle-aged women with T2DM.

References

1. Kostiainen E, Martelin T, Kestila L, Martikainen P, Koskinen S. Employee, partner, and mother: woman's three roles and their implications for health. *J Fam Issues*. 2009; 30(8):1122–1150.
2. [Accessed June 5, 2009] Parental living, whether parents live together or not and their lodge. 2007. http://www.kosis.kr/planstic/stat_theme/use_index.jsp
3. [Accessed June 5, 2009] Annual report on the economically active population. 2009. <http://www.kosis.kr>
4. 2001 National Health and Nutrition Survey. Seoul, Korea: Ministry of Health & Welfare; 2002. 2002-61-4
5. Rao K, Apte M, Subbakrishna DK. Coping and subjective wellbeing in women with multiple roles. *Int J Soc Psychiatry*. 2003; 49(3):175–184. [PubMed: 14626360]
6. Takahashi M, Tanaka K, Miyaoka H. Depression and associated factors of informal caregivers versus professional caregivers of demented patients. *Psychiatry Clin Neurosci*. 2005; 59(4):473–480. [PubMed: 16048454]
7. Kim SM, Lee JS, Lee J, et al. Prevalence of diabetes and impaired fasting glucose in Korea: Korean National Health and Nutrition Survey 2001. *Diabetes Care*. 2006; 29(2):226–231. [PubMed: 16443864]
8. Choi YJ, Kim HC, Kim HM, Park SW, Kim J, Kim DJ. Prevalence and management of diabetes in Korean adults: Korea National Health and Nutrition Examination Surveys 1998–2005. *Diabetes Care*. 2009; 32(11):2016–2020. [PubMed: 19675201]
9. Jasper AE, Garrard J, Graco M. Participation in physical activity: perceptions of women with a previous history of gestational diabetes mellitus. *Health Promot J Aust*. 2009; 20(1):20–25.
10. Lorig, K. Outcome Measures for Health Education and Other Health Care Interventions. Thousand Oaks, CA: Sage Publications, Inc; 1996.
11. Gerson JM. Women returning to school: the consequences of multiple roles. *Sex Roles*. 1985; 13(1–2):77–92.

12. Park J, Liao TF. The effect of multiple roles of south korean married women professors: role changes and the factors which influence potential role gratification and strain. *Sex Roles*. 2000; 43(7–8):571–591.
13. Zimet GD, Dahlem NW, Zimet SG, Farley GK. The multidimensional scale of perceived social support. *J Pers Assess*. 1988; 52(1):30–41.
14. Dahlem NW, Zimet GD, Walker RR. The Multidimensional Scale of Perceived Social Support: a confirmation study. *J Clin Psychol*. 1991; 47(6):756–761. [PubMed: 1757578]
15. Radloff LS. The CES-D Scale: a self-report depression scale for research in the general population. *Appl Psychol Meas*. 1977; 1(3):385–401.
16. Cho MJ, Nam JJ, Suh GH. Prevalence of symptoms of depression in a nationwide sample of Korean adults. *Psychiatry Res*. 1998; 81(3):341–352. [PubMed: 9925185]
17. Abe K. Reconsidering the Caregiving Stress Appraisal scale: validation and examination of its association with items used for assessing long-term care insurance in Japan. *Arch Gerontol Geriatr*. 2007; 44(3):287–297. [PubMed: 16890304]
18. Bromberger JT, Harlow S, Avis N, Kravitz HM, Cordal A. Racial/ethnic differences in the prevalence of depressive symptoms among middle-aged women: the Study of Women's Health Across the Nation (SWAN). *Am J Public Health*. 2004; 94(8):1378–1385. [PubMed: 15284047]
19. Park H, Hong Y, Lee H, Ha E, Sung Y. Individuals with type 2 diabetes and depressive symptoms exhibited lower adherence with self-care. *J Clin Epidemiol*. 2004; 57(9):978–984. [PubMed: 15504641]
20. Chlebowsky DO, Garvin BJ. Social support, self-efficacy, and outcome expectations: impact on self-care behaviors and glycemic control in Caucasian and African American adults with type 2 diabetes. *Diabetes Educ*. 2006; 32(5):777–786. [PubMed: 16971711]
21. Sarkar U, Fisher L, Schillinger D. Is self-efficacy associated with diabetes self-management across race/ethnicity and health literacy? *Diabetes Care*. 2006; 29(4):823–829. [PubMed: 16567822]
22. Vninen A, Kouvonen A, Kivimäki M, Pentti J, Vahtera J. Social support, network heterogeneity, and smoking behavior in women: the 10-town study. *Am J Health Promot*. 2008; 22(4):246–255. [PubMed: 18421889]
23. Nakahara R, Yoshiuchi K, Kumano H, Hara Y, Suematsu H, Kuboki T. Prospective study on influence of psychosocial factors on glycemic control in Japanese patients with type 2 diabetes. *Psychosomatics*. 2006; 47(3):240–246. [PubMed: 16684941]
24. Katon WJ. The comorbidity of diabetes mellitus and depression. *Am J Med*. 2008; 121(11, supplement 2):S8–S15. [PubMed: 18954592]
25. Shah ZC, Huffman FG. Depression among Hispanic women with type 2 diabetes. *Ethnicity*. 2005; 15(4):685–690.
26. Mystakidou K, Tsilika E, Parpa E, Gogou P, Theodorakis P, Vlahos L. Self-efficacy beliefs and levels of anxiety in advanced cancer patients. *Eur J Cancer Care*. 2010; 19(2):205–211.
27. Mosher CE, Duhamel KN, Egert J, Smith MY. Self-efficacy for coping with cancer in a multiethnic sample of breast cancer patients: associations with barriers to pain management and distress. *Clin J Pain*. 2010; 26(3):227–234. [PubMed: 20173437]
28. Tavares MC, Aires JS, Dodt RCM, Joventino ES, Oriá MOB, Ximenes LB. Application of Breastfeeding Self-efficacy Scale–Short Form to post-partum women in rooming-in care: a descriptive study [in Portuguese]. *Online Braz J Nurs*. 2010; 9(1):5.
29. Bryanton J, Gagnon AJ, Hatem M, Johnston C. Predictors of early parenting self-efficacy: results of a prospective cohort study. *Nurs Res*. 2008; 57(4):252–259. [PubMed: 18641494]
30. Trief PM, Teresi JA, Eimicke JP, Shea S, Weinstock RS. Improvement in diabetes self-efficacy and glycemic control using telemedicine in a sample of older, ethnically diverse individuals who have diabetes: the IDEATel project. *Age Ageing*. 2009; 38(2):219–225. [PubMed: 19171951]
31. Lee Y, Lin JL. The effects of trust in physician on self-efficacy, adherence and diabetes outcomes. *Soc Sci*. 2009; 68(6):1060–1068.
32. Kalsekar ID, Madhavan SM, Amonkar MM, Scott V, Douglas SM, Makela E. The effect of depression on health care utilization and costs in patients with type 2 diabetes. *Manag Care Interface*. 2006; 19(3):39–46. [PubMed: 16583789]

33. Ludman EJ, Katon W, Russo J, et al. Depression and diabetes symptom burden. *Gen Hosp Psychiatry*. 2004; 26(6):430–436. [PubMed: 15567208]
34. Clouse RE, Lustman PJ, Freedland KE, Griffith LS, McGill JB, Carney RM. Depression and coronary heart disease in women with diabetes. *Psychosom Med*. 2003; 65(3):376–383. [PubMed: 12764210]
35. Gary TL, Crum RM, Cooper-Patrick L, Ford D, Brancati FL. Depressive symptoms and metabolic control in African-Americans with type 2 diabetes. *Diabetes Care*. 2000; 23(1):23–29. [PubMed: 10857963]
36. Lee HJ, Park KY, Park HS. Self care activity, metabolic control, and cardiovascular risk factors in accordance with the levels of depression of clients with type 2 diabetes mellitus. *Taehan Kanho Hakhoe Chi*. 2005; 35(2):283–291. In Korean. [PubMed: 15860942]
37. Gilmer TP, O'Connor PJ, Rush WA, et al. Predictors of health care costs in adults with diabetes. *Diabetes Care*. 2005; 28(1):59–64. [PubMed: 15616234]

What's New and Important

- This study is 1 of the first studies that empirically validate the negative relationship of increased social strains in managing chronic illness such as type 2 diabetes mellitus (T2DM) in middle-aged women.
- The study found that increased social role strains increased the risk of depression and decreased diabetes-related self-efficacy in middle-aged women with T2DM.
- In this sample of middle-aged Korean women, the major source of social support came from family members, which highlights the need to enhance family support as a potential component of future interventions for this group.

FIGURE.
Conceptual model.

TABLE 1

Participant Characteristics (n = 150)

Characteristics	n (%)
Age	
Mean	54.1
Marital status	
Married	123 (82.0)
Single	26 (18.0)
Living arrangement	
Living alone	10 (6.7)
2–3 persons in the household	90 (60.0)
4 persons in the household	50 (33.3)
Level of education	
<Elementary school	17 (11.4)
Elementary school	59 (39.3)
Middle school	33 (22.0)
High school	41 (27.4)
Comfort with income	
Comfortable	22 (14.7)
Manageable	63 (42.0)
Difficult to manage	64 (43.4)
Occupation	
Housewife	70 (46.7)
Office work	24 (16.0)
Own business	18 (12.0)
Farm laborer	30 (20.0)
Fulltime permanent job	
Yes	42 (28.0)
No	108 (72.0)

TABLE 2

Self-efficacy for Diabetes by Role-Strain Group

Role-Strain Group	n	Mean	SD	SE Mean	t
L group ^a	76	7.55	1.51	0.17	2.50 ^b
H group ^c	77	6.94	1.55	0.18	

^aLower role-strain group.

^bt is significant at <.05 level.

^cHigher role-strain group.

TABLE 3

Correlation Between Role-Strain and Individual Characteristics

	Duration of Diabetes	Age	Marital Status	Education Level	Living Arrangement	Full-time Job	Comfort With Income	Role-Strain	Diabetes Self-efficacy	Depression
Age	−0.21 ^a									
Marital status	−0.03	0.27 ^a								
Education level	0.15	0.42 ^a	0.23 ^a							
Living arrangement	0.13	0.27 ^a	0.32 ^a	0.17 ^b						
Full-time job	0.21 ^a	−0.13	0.03	0.24 ^a	−0.01					
Comfort with income group	0.09	−0.07	0.29 ^a	0.26 ^a	0.12	0.11				
Role strain	0.02	−0.16 ^b	0.09	0.01	0.08	0.08	−0.19 ^b			
Diabetes self-efficacy	−0.02	0.20 ^b	0.01	−0.03	−0.10	−0.16 ^b	−0.04	−0.27 ^a		
Depression	0.02	−0.10	−0.03	0.02	−0.04	0.02	−0.28 ^a	0.60 ^a	−0.19 ^b	
Social support	0.07	−0.16	V	0.03	0.10	0.04	0.13	−0.40 ^a	0.22 ^b	−0.41 ^a

^aCorrelation is significant at the .01 level (2-tailed).

^bCorrelation is significant at the .05 level (2-tailed).

TABLE 4

Factors Associated With Diabetes Self-efficacy

Model	R	R ²	Adjusted R ²	SE of the Estimate	P	
A	0.24	0.06	0.04	1.43	.03	
B	0.44	0.19	0.15	1.35	.00	
Model	B	SE	β	t	P	VIF
A						
(Constant)	6.28	0.63		9.98	.00	
Depression	−0.01	0.01	−.072	−0.72	.47	1.236
Social support	0.23	0.11	.201	2.02	.05	1.236
B						
(Constant)	7.03	1.86		3.77	.00	
Age	0.05	0.02	.191	2.18	.03	1.091
Comfort with income	−0.33	0.18	−.164	−1.85	.07	1.115
Role strain	−0.05	0.02	−.331	−3.10	.00	1.620
Depression	0.01	0.01	.091	0.82	.41	1.730
Social support	0.21	0.11	.189	10.92	.05	1.378

Abbreviation: VIF, variance inflation factor.

A = Predictors: (constant), depression, social support. B = Predictors: (constant), age, comfort with income, role strain, depression, social support. C = Dependent variable: diabetes self-efficacy.