Factors Contributing to Integrating Lifestyle in Thai Women with Type 2 Diabetes*

Apinya Siripitayakunkit, Somchit Hanucharurnkul, Gail D' Eramo Melkus, Thavatchai Vorapongsathorn, Chatcharit Rattarasarn, Manee Arpanantikul

Abstract: Type 2 diabetes mellitus has become a major chronic health problem in Thailand. Lifestyle change is necessary to prevent diabetes complications. However, making existing lifestyle changes is difficult, with time and effort required especially in women. To promote integrating lifestyle, knowledge about factors influence integrating lifestyle is needed. Thus, the purpose of this study was to examine the causal relationships among personal, psychological and health care system factors that contribute to integrating lifestyle in Thai women with type 2 diabetes. The Roy Adaptation Model provided the theoretical framework for this study. A total of 490 women with type 2 diabetes from three hospitals in Bangkok participated in this study. Participants were asked to complete 5 questionnaires: the Problems Areas In Diabetes, the Modified Diabetes Family Behavior Checklist-II, the Modified Diabetes Social Support Questionnaire-Friends version, the Modified Patient Reactions Assessment, and the Diabetes Questionnaires. The results showed that 43% of total variance in integrating lifestyle was explained by the proposed model. The relationship among 7 variables were tested and the final model did fit the data well (χ^2 = 46, *df* = 28, *p* = .017, RMSEA = .036, GFI= .99, CFI = .99, χ^2/df = 1.64). Income had the strongest positive direct effect (γ = 1.65, $p < .05$), followed by family support had the second-largest positive direct effect (β = .52, $p < .05$), and quality of patient-provider relationships had the third direct positive effect on perceived integrating lifestyle (β = .46, $p < .001$). Demands of diabetes and education had negative direct effects on perceived integrating lifestyle (β= -.17 and γ = -.09, $p < .01$). These findings indicate that the proposed model can explain and predict integrating lifestyle in Thai women with type 2 diabetes and provide options for better intervention with individuals with diabetes. Health care providers should consider social context factors that influence integrating lifestyle in order to promote sustainable integrating lifestyle.

Thai J Nurs Res 2008; 12 (3) 166 - 178

Keywords: Integrating lifestyle, Type 2 diabetes mellitus, women

Background of the Study

Diabetes mellitus has become a major chronic health problem in Thailand. In 2005, the Ministry of Public Health reported that more than 5,000,000 Thai people over 15 years old had blood glucose levels more than 126 mg%.[1] In addition, there is a higher prevalence of type 2 diabetes in Thai women compared to men.[2] Because of social norms and expectations, Thai women are assumed to be

* *Funding supported by Faculty of Medicine, Ramathibodi Hospital, Mahidol University*

Apinya Siripitayakunkit, *R.N., Ph.D. Candidate, Department of Nursing, Faculty of Medicine Ramthibodi Hospital, Mahidol University, Thailand.*
Somchit Hanucharurnkul, *R.N., Ph.D., Professor, Department of Nursing, Faculty of Medicine Ramthibodi Hospital, Mahidol University, Thailand.*
Gail D' Eramo Melkus, *EdD., C-ANP., Independent Foundation Professor of Nursing, Yale School of Nursing, Yale University, USA.*
Thavatchai Vorapongsathorn, *Ph. D., Associate Professor, Department of Biostatistics, Faculty of Public Health, Mahidol University, Thailand.*
Chatcharit Rattarasarn, *M.D., Professor, Department of Medicine, Faculty of Medicine Ramthibodi Hospital, Mahidol University, Thailand.*
Manee Arpanantikul, *R.N., Ph.D., Assistant Professor, Department of Nursing, Faculty of Medicine Ramthibodi Hospital, Mahidol University, Thailand.*

gatekeepers for the majority of household tasks and healthcare. Much attention has been paid to their family and work responsibilities.[3] Managing with multiple roles by Thai women with diabetes may be related to the difficulties of enduring with the demands of diabetes, and of integrating diabetes into their lives. These findings suggest the notion that a national long-term plan of action should be considered socio-cultural factors that facilitate lifestyle changes in order to prevent complications and promote health in Thai people with diabetes.

Lifestyle changes are hard work for individuals with diabetes.[4-7] Because of the complexity of the disease and the numerous challenges in treating and managing diabetes, the interplay of the role of patient, the health care provider, and the system is important. To be successful in diabetes management, individuals with diabetes must actively learn and engage in their regimens. Much time is spent on analyzing and experimenting with diet, exercise, and medication recommendations as well as managing emotional status that may be suitable and comfortable for individuals with diabetes to do and to continue to practice within the context of their lives. These people also require guidance from significant others and health care providers to support and reassure them during lifestyle changes. Nevertheless, individuals with diabetes can establish their own set of daily activities. As a result, diabetes can be viewed as day-to-day work; individuals with diabetes are able to live with it and maintain their "new normal life patterns." This reflects the notion that they integrate diabetes into their lifestyle.[6-9] Previous studies found that social-cultural factors[10-14] and health care system factor[15-16] influence on health behaviors associated with lifestyle changes; however, previous studies were conducted in western culture, which may not be generalized to the Thai context. Despite, the amount research on diabetes educational programs, those programs were unclear about the dosage of intervention to be given, therefore; the results were inconsistent.[17-18]

Importantly, there is an increasing concern among nurses in promoting the human-environment interaction to help patients meet such complex lifestyle changes. Knowledge about factors influence integrating lifestyle could help nurses in designing appropriate intervention for women with type 2 diabetes. Thus, the purpose of this study was to examine the relationships of personal and contextual factors that contribute to integrating lifestyle in Thai women with type 2 diabetes.

Theoretical Framework and Related Literature

The Roy Adaptation Model (RAM) was derived as the theoretical framework of this study.[19] It was used in combination with diabetes-related literature. The central focus of RAM is that "a person has the capacity to adapt to stimuli consciously, attentively, positively, and creatively". The components of the RAM used for guiding this study included: (1) the stimuli: focal and contextual stimuli, and (2) the adaptive response modes. The demands of diabetes served as focal stimuli, while the contextual stimuli were represented by internal factors (i.e., personal factors), and external factors (i.e., social support and quality of patient-provider relationships). "Integrating lifestyle" was conceptualized as the psychosocial adaptation. Diabetes is an actual health problem that an individual with diabetes focuses on and spends energy dealing with it. Individuals with diabetes have to take responsibility for readjusting their usual life patterns and carrying on diabetes tasks, so that they are faced with several psychological and behavioral challenges. Moreover, demands of diabetes impact on family and social life as well as economics situation.[3-4, 20-22] Therefore, demands of diabetes may have a significant impact and be negatively associated with integrating lifestyle. Personal factors selected for this study were education

and income. These factors serve as basis resources of individuals with diabetes. Education enhances the ability of individuals with diabetes in seeking for information, in accessing to diabetes care service, and more adept at obtaining information.[23-24] For these reasons, individuals with diabetes who have higher education may better integrate diabetes tasks into their own lifestyles, and may perceive less stress from demands of diabetes. Educated persons also tend to have more resources available because they may build a more extensive network than those with less educated,[25] so they tend to have more social support from others.

The RAM also posits that inadequate funding may affect behaviors results.[19] Income inadequacies may relate to less access to diabetes care and/or healthy foods, less time to perform self-care behaviors and inequities in glucose-monitoring devices, and less social relation to others that may result in poor diabetes outcome.[24,26-27] Besides, several studies found the strong linkage among social support and successful diabetes self-management.[28-30] Perceived availability of support by family members and friends who are integral parts of the socio-cultural context in which individuals with diabetes live has been shown to be significantly related to decision about the seeking of care, the choice of care, and the management of care.[6,21, 28-31] Therefore, the availability of support by others may reduce the stress from demands of diabetes.[21,28-31] The collaboration between health care providers and individuals with diabetes are crucial determinants to diabetes outcomes.[32-34] As patient-centered care approach, the patient requires health care providers who provide available time for discussion patient's concerns and help patients make informed decisions that achieve their goals and may reduce stress from demands of diabetes.[35-36] The quality of patient-provider relationships may facilitate lifestyle changes and lead to better integrate diabetes tasks into patients' existing lifestyles.

In summary, the relationships among variables are depicted in **Figure 1.** It was hypothesized that education and income have positive direct effects on perceived family support, perceived friend support, perceived quality of patient-provider relationships, and perceived integrating lifestyle, while education and income have negative direct effect on perceived demands of diabetes. Perceived family support, perceived friend support, perceived quality of patient-provider relationships have positive direct effects on perceived integrating lifestyle; however, these factors have negative direct effect on perceived demands of diabetes. Finally, perceived demands of diabetes have a negative direct effect on perceived integrating lifestyle.

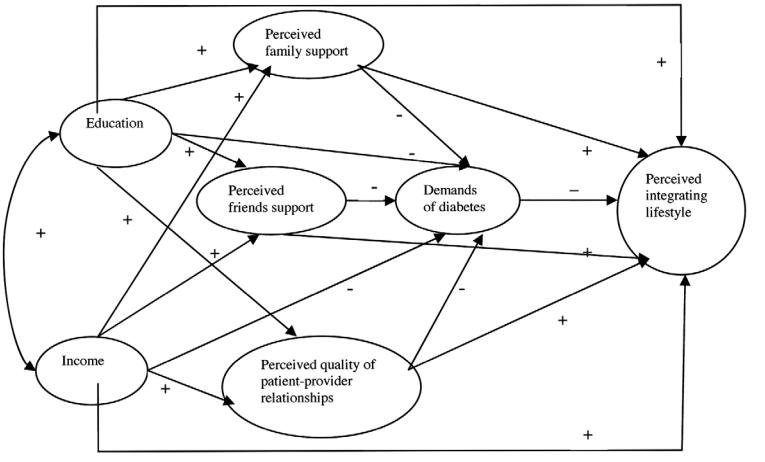

Figure 1 A hypothesized model of factors contributing to integrating lifestyles in Thai women with type 2 diabetes

Methods

A descriptive correlational, cross-sectional research design was employed to examine relationships among personal, psychological and health care system factors in this study. Three hospitals in Bangkok were selected as research settings: one university affiliated hospital, one Bangkok Metropolitan Administration (BMA) affiliated hospital, and one private hospital.

Population and Sampling

The target population of this study was a group of women with type 2 diabetes who aged from 18 to 80 years; having been diagnosed with type 2 diabetes for at least 1 year; having visited to diabetes clinic for at least 3 times before data collection; able to communicate in Thai language. The exclusion criteria were being solely dependent on others for assistance with diabetes management; having had serious diabetes complications (e.g., retinopathy, nephropathy) or an acute or current medical or psychiatric problem; having had gestation diabetes or during lactation period; having a documented medical history of dementia, Alzheimer's disease, and alteration of consciousness. The sample sizes were based on the maximum likelihood estimation (MLE) of model parameters, which performed well with the sample sizes of 500 or greater; [37] therefore, a sample of 500 were targeted in this study. A sample of approximately 75% from the university affiliated hospital and the BMA affiliated hospital was considered as a desirable sample, because these two hospitals were large hospitals than the private hospital. Thus, a total of 190 Thai women with type 2 diabetes were recruited from each of the university affiliated and the BMA affiliated hospitals, and the sample sizes of 120 were recruited from the private hospital. The participants were stratified by age ranges into 2 groups: < 60 years old and ≥ 60-80 years old.

Instrumentations

Five of these instruments—(1) the Problem Areas in Diabetes Questionnaire, (2) the Modified Diabetes Family Behavioral Checklist-II, (3) the Modified Diabetes Social Support Questionnaire-Friends version, (4) the Modified Patient Reactions Assessment, and (5) the Diabetes Questionnaire—had never been used in Thailand. The translation procedures from English into Thai version and back translation from Thai to English were carried out for this study. To ensure if these instruments were consistent with Thai culture, they were content reviewed by experts and pilot tested prior use for internal reliability, clarity, and comprehensiveness with 30 Thai women whose characteristics were similar to the study sample.

The Demographic data form was used to collect information regarding personal and social backgrounds (e.g., age, year of formal education, family monthly income, duration of diabetes, medication used, and glycosylated hemoglobin [HbA_1C]).

The Problem Areas In Diabetes Questionnaire (PAID) was a measure of demands of diabetes in terms of difficult feelings about diabetes, interpersonal problems, and frustration with aspects of the regimen.[38] The total scores ranged from 0-100. Higher scores indicated a greater level of emotional distress and may indicate a greater level of demands of diabetes. The Cronbach's alpha of the PAID scale was .95. In this study, the Thai PAID version had a very good alpha coefficient of .82.

The Modified Diabetes Family Behavioral Checklist-II (DFBC-II) was a measure of social support that individuals with diabetes receive from family members for the performance of self-care activities.[28] The DFBC-II consisted of two parts: 17 items with nine supportive items, seven non-supportive items, and one open-ended item. In this study, some supportive items of DFBC-II were

revised and the nine supportive items were used to assess perceived family support in Thai women with type 2 diabetes. This was because there was the evidence provided that the supportive scale of DFBC-II had consistent ability to predict diabetes related activities.[39] The total scores of supportive subscale of DFBC-II ranged from 9-45. The DFBC-II had an internal consistency of .71 for supportive scale. In this study, the Cronbach's alpha of the supportive scale was .72, respectable for alpha.

The Modified Diabetes Social Support Questionnaire- Friends version (DSSQ-Friends) was a measure for assessing perceived friend support.[40] There were five components with 28 items of the original DSSQ-Friends. In this study, some items in the DSSQ-Friends were revised and one item was deleted in order to suit Thai culture and the resources available in Thailand. Therefore, 27 items of the Thai DSSQ-Friends were used and the total scores ranged from 0 to 135. The DSSQ-Friends had an internal consistency of .70 and 2 week test-retest reliability correlations were high (r = .74-.94). The Coefficient alpha of Thai DSSQ-Friends was .95. For 5 subscales of diabetes supportive behaviors: medication administration, blood testing, meal, exercise, and emotional management— the reliability coefficients were .72, .80, .94, .86, and .87, respectively.

The Modified Patient Reactions Assessment (PRA) was a measure for assessing perceived quality of patient-provider relationships.[41] The PRA had 15 items on a 7-point Likert and the total scores ranged from 15 to 105. Some items in the PRA were adjusted to enable the target participants in this study to better understand the meaning of the items and to make some terms relevant to wording in Thai language. The Cronbach's alpha with overall items of PRA was .91, and .85 for the Patient Information Index (PII), .90 for the Patient Affective Index (PAI) and .91 for the Patient Communication Index (PCI) subscales. The Coefficient alpha of the Thai PRA was .79, respectable for alpha and the Coefficient alphas for 3 subscales were .61 for PII, .61 for PAI, and .79 for PCI.

The Diabetes Questionnaire (TDQ) was a measure for assessing how well individuals with diabetes integrate diabetes regimens into individuals' own lifestyle.[42] The total scores of TDQ ranged from 15 to 90, with higher scores of the TDQ reflecting the higher levels of integrating lifestyle in this study. TDQ had an internal consistency of .84 and test-retest reliability (r =.75). In the present study, the Thai TDQ had a very good Coefficient alpha of .84.

Data Collection

Protection of Human Rights was conducted following the Helsinki's Declaration to protect the human subjects.[43] The research proposal was approved from the Committee on Human Rights of each the three hospitals. Data were collected during August 2006 to June 2007. The potential participants were adequately informed of their rights and their consent for participation was requested. Each participant took 30 to 50 minutes to complete the questionnaires by herself. When the potential participants were illiterate and/or had a problem related to visual acuity, the face-to-face interview method was used for data collection.

Data Analysis

Univariate and bivariate data analyses were carried out by using Statistical Package for Social Science (SPSS) for Windows version 9.05. Multivariate data analysis was carried out by using Linear Structural Relationship (LISREL) statistical package version 8.52. The level of significant was set with an alpha at level .05.

Results

A total of 521 potential participants were approached to participate in the study. Of 521 Thai women with type 2 diabetes, ten refused to participate, five agreed to take part but did not complete the interview because they did not have enough time to answer the questionnaires, and six preferred to take the questionnaires home but did not sent them back. Therefore, a total of 500 Thai women with type 2 diabetes participated in this study. Of these, ten cases were found as multivariate outliers, so 490 were included in the final analysis. The total participant ages ranged from 26 to 80 years (M = 58.42, SD = 10.09). The participants had a range of 0 to 25 years of school (M = 9.37, SD = 5.84). Approximately 40% of participants had completed 4 or fewer years of school. Family monthly income widely ranged from 800 baht (U$ 20) to 1,500,000 baht (U$ 37,500) for the total sample. Sixty percent of participants could get reimbursements from offices and/or company that they were working for. Thirty-six percent of participants identified themselves as housewives. It is noted that 79 participants lived in extended families and they were responsible for their grandchildren and/or mother, father, spouse or both who had medical or psychological problems. Overall, 68% of participants reported they were less likely to engage in physical activities. Achievement of glycemic control (HbA1C levels ≤7%) was 36.7%.

With regards to characteristics of the participants, the findings showed that most participants perceived that they had less demands of diabetes and had moderate support from their family members and friends. It is noteworthy that most participants were satisfied with their providers and perceived that they are able to integrate diabetes into their daily life patterns.

Pearson's correlation coefficients were performed to evaluate multicollinearity among variables. The results showed that the hypothesized relationships among perceived integrating lifestyle and all study variables were supported **(Table 1)**. Linearity and multicollinearity were checked and found to be satisfactory. Two measurement models of perceived friend support and perceived quality of patient-provider relationships were assessed before testing structure paths. Fit indices were within recommended guidelines.

Table 1 Pearson's Correlation coefficients of Studied Variables (n=490)

Variables	1	2	3	4	5	6	7
1. ILS	1						
2. QPP	.438***	1					
3. PFaS	.162***	.098*	1				
4. Demand	-.107*	-.049	.129**	1			
5. PFrS	.227***	.132**	.325***	.187***	1		
6. Edu	.221***	.358***	-.066	.126**	.157***	1	
7. Income	.219***	.314***	.069	-.044	.018	.380***	1

** p < .05, ** p < .01, *** p <.001*

Note: ILS= Integrating Lifestyle, QPP= Quality of Patient-Provider relationship
PFaS= Perceived Family Support, PFrS=Perceived Friends Support,
Demand=Demands of Diabetes, Edu= educational level

The Theoretical Model Assessment

In the final modified model (**Figure 2**) showed that most path coefficients were statistically significant at the .05 level and some path coefficients had the directions according to the theory. The path from perceived friend support to perceived demands of diabetes, and the path from education and perceived demands of diabetes had statistically significant; however, there were not supported the hypothesized relationships. The path from perceived friend support to perceived integrating lifestyle, from perceived quality of patient-provider relationships to perceived demands of diabetes, from education to perceived friend support were supported the hypothesized relationships; unfortunately, there were no significant relationships. The path from education to perceived integrating lifestyle, and from income to perceived demands of diabetes were not supported the hypothesized relationships and non-statistically significant. The final modified model was proved to have a good fit with the data (χ^2 = 46.00, *df* = 28, p-value = .017, GFI = .99, CFI = .99, RMSEA = .036). As found in the present study, income had the strongest positive direct effect (γ= 1.65, p < .05), followed by family support as the second positive direct effect (β= .52, p < .05), and perceived quality of patient-provider relationships as the third positive direct effect (β = .46, p < .001) on perceived integrating lifestyle. Demands of diabetes and education had negative direct effect on perceived integrating lifestyle (β= -.17, and γ = -.09, p < .01). However, perceived friend support had a non-significant positive direct effect on perceived integrating lifestyle (β = .07, p > .05).

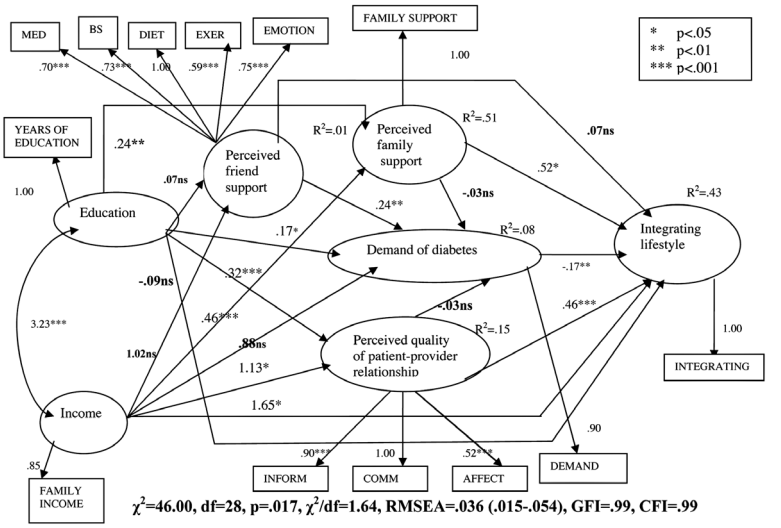

Figure 2 The modified model of factors contributing to integrating lifestyles in thai women with type 2 daibetes

Fifty-one percent of the variance in perceived family support was accounted for by education and income; 1% of the variance in perceived friend support was accounted for by education and income; 15 % of the variance in perceived quality of patient-provider relationships was accounted for by education and income, 8% of the variance in perceived demands of diabetes was accounted for by education and income, and 43% of the variance in perceived integrating lifestyle was accounted for by all study predictors: education, income, perceived friend support, perceived family support, perceived quality

of patient-provider relationships and perceived demands of diabetes. The effects of causal variables on the endogenous latent variables were carried out (Table 2).

Table 2 Summary Total Effects, Indirect Effects, and Direct Effects of Causal variables on Endogenous Latent variables

Affected variables															
Causal variables	Friend support			Family support			Quality of patient-provider relationship			Demands of diabetes			Integrating lifestyle		
	TE	IE	DE	TE	IE	DE	TE	IE	DE	TE	IE	DE	TE	IE	DE
Education	.07	.00	.07	.24	.00	.24	.32	.00	.32	.17	.00	.17	.16	.25	-.09
Income	1.02	.00	1.02	.46	.00	.46	1.13	.00	1.13	.90	1.02	-.12	1.19	.72	.47
Structural Equation Fit	R^2=.01			R^2=.51			R^2=.15			R^2=.08			R^2=.43		

Note: Standardized values are presented. TE=Total effect, IE=Indirect effect, DE=Direct effect

Discussion

According to the study findings, personal (education, income), psychological (family and friend social support), and health system factors (quality of patient-provider relationships) supported the relationships proposed by Roy's conceptual model of nursing. Education had a non significant negative and direct effect on perceived integrating lifestyle and had a slightly moderate positive direct effect on perceived demands of diabetes. The findings were not supported the hypothesized relationships. However, one possible explanation is that this study was conducted in Bangkok where women with type 2 diabetes who had high education increased employment outside of the home; thus, these women may have greater demands on physical and psychological problems, making them ill-equipped to deal with diabetes. Besides, income has the strongest positive direct effect on perceived integrating lifestyle. This finding was congruent with several studies, which revealed that income showed the strongest relationship to integrating lifestyle.[44-48] It was reasonable that those who had more financial resources could adequately make timely use of health services and less stress from financial constrained. Additionally, both education and income had significantly positive direct effects on perceived quality of patient-provider relationships and on perceived family support. These findings were congruent with the previous studies which reported that people with higher income tend to have more education so that they are able to understand the interrelationships among diabetes self-care tasks[44,49] and are more able to utilize available networks as well as resources[30-31] to achieve the best possible outcomes, which in turn those women with type 2 diabetes may perceive less stress from demands of diabetes. However, the variability of demands of diabetes in the study sample was small; thus, the strength of the relationship between income and demands of diabetes is modest.

Perceived family support and perceived quality of patient-provider relationships had large positive direct effects on perceived integrating lifestyle. These finding were congruent with a number of previous studies. The results revealed that perceived family support and perceived quality of patient-provider relationships were found to have importantly positive relationships on day-to-day basis diabetes tasks,[5-6,30,34,41,50-52] active coping style,[53] and quality of life.[53-54] It is noteworthy that these findings provide strong support for health service system, education, and practice to re-conceptualize from medical perspective to collaboration perspective. Furthermore, the result supports the Thailand's National Health Plan that stresses the need for humanized care, which emphasis on open communication, respect patients' right and dignity. However, there were trend in the directions, which demonstrated that perceived family support and perceived quality of patient-provider relationships had negative direct effects, but not significant on perceived demands of diabetes. One possible explanation is that the scores on demands of diabetes were homogenous in the study sample, so the strength of relationships was limited.

There is very little research on the relationship between adults with diabetes and their friends.[55] As found in the present study, there was a trend in the direction of a positive relationship between income and perceived friend support, but not significant. This finding may be attributed to the fact that most participants either who had high or low income perceived the same level of friend support. Even though, education had a significant zero-order correlation with perceived friend support. In the final modified model education was not effectively showed its effect on perceived friend support. One possible reason is that the variability of friend support was small in the study sample; thereby, the magnitude of relationship between education and perceived friend support is modest. Besides, perceived friend support had a non-significant direct effect on perceived integrating lifestyle and had a moderate positive direct effect on perceived demands of diabetes. The level of friend support may not high enough to affect integrating lifestyle, but the result indicated that friend support tend to make more diabetes demands on participants in the present study; therefore, further research is needed to identify supportive behaviors of close peers that could potentially bolster individuals with diabetes to integrate diabetes tasks into their daily lifestyles.

Perceived demands of diabetes had a moderate negative direct effect on perceived integrating lifestyle. This finding indicated the fact that the more women with type 2 diabetes can set goal and establish their own set of daily activities in the way that is best suited to the context and culture of their lives, the less demands of diabetes place stresses on them. Therefore, these findings led to a conclusion that integrating lifestyle has emerged in Thai women with type 2 diabetes. Living with diabetes is not as the same "normal" as before having diabetes, but it was "normal" in a new aspect of life.

Conclusions and Recommendations

This study do provide a better understanding of the interrelationship among personal, psychological, and health care system factors in Thai women with type 2 diabetse. Besides, the findings also provide the empirical adequacy of RAM. Perceived family support and perceived quality of patient-provider relationships were two significant predictors and worked directly to influence integrating lifestyle in this study. These findings support the role of family members and health care providers in promoting adaptive abilities—integrating lifestyle. The effective support systems should be emphasized on the

patient's individual needs; empowered patient and family members with a continuum of diabetes care and support services with sustained quality of the relationships between health care team and patient as well as family members.

Advanced Practice Nurse (APNs) are in the central position as nurse case managers. APNs have to prepare the informed activated patients and family, empower them to take active roles in dealing with diabetes activities. In addition, health care team has more potential to improve the quality of care for individuals with diabetes. However, the health care team has to undergo training so as to be equipped with effective communication skills and self-management support skills. Furthermore, team work and collaborative partnerships are important if desirable changes in the health care system are to be made.

For further research, longitudinal study is needed to demonstrate causal relationships. Measure adaptation in the RAM should employ both physiological (e.g., glycosylated hemoglobin, lipid profiles, body mass index) and psychological outcomes (e.g., quality of life). Continued research is needed to test the studied framework in rural area or with heterogeneous group of samples. Both family support and quality of patient provider relationships have strong influences on integrating lifestyle, thereby; diabetes supportive educative programs should be paid more attention on these two factors. Qualitative study should be also conducted to explore support and non-supportive behaviors and/or the role of supports for Thai persons with diabetes in order to capitalize on the positive aspects of support while minimizing the negative aspects that promote optimal management of diabetes. More specifically, a measurement of family and friend support in Thai culture should be developed.

References

1. Bureau of health policy and planning. **Public Health statistics A. D. 1998.** Nonthaburi: Office of the permanent secretary, Ministry of Public Health, 1998.
2. Bureau of health policy and planning. **Public Health statistics A. D. 2004.** [2005, October 1]. Available from: URL: http://www.ousva@health.moph.go.th.
3. Puavilai A, Stuifbergen AK. Life experiences relevant to life quality of Thai women with diabetes. **Thai Journal of Nursing Research,** 2000; 4(3): 248-64.
4. Keeratiyutawong P. **Self-care promotion program for diabetes at a level of provincial hospital.** Unpublished master's thesis, Mahidol University: Bangkok, Thailand, 1994.
5. Keeratiyutawong P. Self-care experiences of Thai patients with type 2 diabetes. **Thai Journal of Nursing Research,** 2003; 7(4): 254-65.
6. Sritanyarat W. **A grounded theory study of self-care process among Thai adults with diabetes.** Unpublished doctoral dissertation, The University of Texas at Austin: United States of America, 1996.
7. Whittemore R, Chase SK, Mandle CL, Roy SC. Lifestyle change in type 2 diabetes. **Nurs Res,** 2002; 51: 18-25.
8. Hernandez CA. Integration: The experience of living with insulin dependent (type 1) diabetes mellitus. **Can J Nurs Res,** 1996; 28: 37-56.
9. Rayman KM, Ellison GC. When management works: An organizational culture that facilitate learning to self-management type 2 diabetes. **Diabetes Educ,** 1998; 24: 612-17.
10. Gillibrand W, Flynn M. Forced externalization of control in people with diabetes: A qualitative exploratory study. **J Adv Nurs,** 2001; 34: 501-10.
11. Brown SA, Hedges LV. Predicting metabolic control in diabetes: A pilot study using meta-analysis to estimate a linear model. **Nurs Res,** 1994; 43: 362-68.
12. Glasgow RE, Osteen VL. Evaluating diabetes education: Are we measuring the most important outcomes. **Diabetes Care,** 1992; 18: 1423-32.
13. Zgibor JC, Simmons D. Barriers to blood glucose monitoring in a multiethnic community. **Diabetes care,** 2002; 25: 1772 -77.

14. Melkus GD, Hagen JA. Weight reduction interventions for persons with chronic illness: Findings and factors for consideration. **J Am Diet Assoc,** 1991; 91: 1093-99.
15. Simmons D. Personal barriers to diabetes care: Is it me, them, or us? **Diabetes Spectrum,** 2001; 14: 10-2.
16. Ziemer DC, Gallina DI. Diabetes in urban African-Americans. XV. Identification of barriers to provider adherence to management protocols. **Diabetes Care,** 1999; 22: 1617-20.
17. Likitratcharoen S. **Meta-analysis of educative-supportive intervention research for diabetes patients in Thailand.** Unpublished master's thesis, Mahidol University: Bangkok, Thailand, 2000.
18. Siripitayakunkit A, Hanucharurnkul S, Melkus GD. Diabetes education intervention in Thailand: An integrative review. **Thai Journal of Nursing Research,** 2005; 9(1): 13-27.
19. Roy RC, Andrews HA. **The Roy Adaptation Model.** 2nd ed. Stamford (CT): Appleton & Lange, 1999.
20. Cox DJ, Gonder-Frederick L. Major development in behavioral diabetes research. **J Consult Clin Psychol,** 1992; 60: 628-38.
21. Rubin RR, Peyrot M. Psychological issues and treatments for people with diabetes. **J Clin Psychol,** 2001; 57: 457-78.
22. Balukonis, J., Chyun, D., Jefferson, V., Langerman, S, & Melkus, G.D. Granparenting status and health outcomes in Black women with type 2 diabetes. **Diabetes,** 2005; 54, (Suppl.1), A2823.
23. Green LW, Simon-Morton DG. Education and lifestyle determinants of health and disease. In Holland WW, Detels R, Know G, editors. **Oxford textbook of public health vol. 1: Influences of public health.** 2nd ed. New York: Oxford University Press; 1991. p. 190-2.
24. Brown AF, Ettner SL, Plette J, Weinberger M, Gregg E, Shapiro MF. Socioeconomic position and health among persons with diabetes mellitus: A conceptual framework and review of literature. **Epidemiol Rev,** 2004; 26: 63-77.
25. Cutrona CE. Objective determinants of perceived social support. **J Pers Soc Psychol,** 1986; 50: 349-55.
26. Chipkin SR, de Groot M. Contextual variables influencing outcomes measures in minority populations with diabetes mellitus. **Diabetes Spectrum,** 1998; 11: 149-59.
27. Vitaliano PP, Scanlan JM, Zhang J, Savage MV, Brummett B, Barefoot J, et al. Are the salutogenic effects of social support modified by income? **Health Psychol,** 2001; 20: 155-65.
28. Glasgow RE, Toobert DJ. Social environment and regimen adherence among type 2 diabetic patients. **Diabetes Care,** 1988; 11: 377-86.
29. Kaplan RM, Hartwell SL. Differential effects of social support and social network on physiological and social outcomes in men and women with type 2 diabetes mellitus. **Health Psychol,** 1987; 6: 387-98.
30. Samuel -Hodge CD, Headen SW, Skelly AH, Ingram AE, Keyserling TC, Jackson EJ, et al. Influences on day to day self-management of type 2 diabetes among African-American women: Spirituality, the multi-caregiver role, and other social context factors. **Diabetes Care,** 2000; 23: 928-33.
31. Callaghan D, Williams A. Living with diabetes: Issues for nursing practice. **J Adv Nurs,** 1994; 20:132-39.
32. DiMatteo, MR. Health behaviors and care decisions an overview of professional- patient communication. In Gochman DS, editor. **Handbook of Health Behavior Research II: Providers Determinants.** New York: Plenum Press, 1997. p. 5-22.
33. Glasgow, RE, Anderson, RM. In diabetes care, moving from compliance to adherence is not enough: Something entirely different is needed. **Diabetes Care,** 1999; 22: 2090-92.
34. Pattanasuwan S. **Effects of doctor-patient relationships on diabetes mellitus care study at Sampran District hospital, Nakhonpathom province.** Unpublished doctoral dissertation, Mahidol University: Bangkok, Thailand, 2004.
35. Hall JA, Roter DL, Katz NR. Meta-analysis of correlates of provider behavior in medical encounters. **Med Care,** 1988; 26: 657-75.
36. Kaplan SH, Greenfield S, Ware JE. Assessing the effects of physician-patient interactions on the outcomes of chronic disease. **Med Care,** 1989; 275: 5110-27.
37. Hu L, Bentler PM. Evaluating model fit. In Hoyle RH, editor. **Structural equation modeling: Concepts, issues, and applications.** Thousand Oaks (CA): Sage Publications, 1995. p. 76-99.

38. Polonsky WH, Anderson BJ, Lohrer PA, Welch G, Jacobson AM, Aponte JE, et al. Assessment of diabetes-related distress. **Diabetes Care,** 1995; 18: 754-60.
39. Hanna KM. Existing measures of diabetes specific support for use with adolescents with diabetes. **Diabetes Educ,** 2006; 32:741-50.
40. Bearman KJ, La Greca AM. Asessing friend support of aldolescents' diabetes care: The Diabetes Social Support questionnaire-friend version. **J Ped Psychol,** 2002; 27: 417-28.
41. Galassi JP, Schanberg R, Ware WB. The Patient Reaction assessment: A brief measure of the quality of the patient-provider medical relationship. **Psycholo Assess,** 1992; 4: 346-51.
42. Hernandez CA. The development and testing of an instrument to measure integration in adults with diabetes mellitus. **Canadian Journal of Diabetes Care,** 1995; 19: 18-26.
43. World Medical Association Declaration of Helsinki (October). **Ethical principle for medical research involving human subjects.** Edinburgh, Scotland, World Medical Association General Assembly, 2000.
44. Beckles GLA, Ffrench KA, Hill D, McNair LD. A profile of women in the United States. In Beckels GLA, Thompson-Reid PE, editors. **Diabetes & women's health across the life stages: A public health perspective,** 2001. Silver Spring (MD): Center for Disease Control and Prevention, 2003. p. 9-40.
45. Bachmann MO, Eachus J, Hopper CD, Davey Smith G, Propper C, Pearson NJ, et al. Socio-economic inequalities in diabetes complications, control, attitudes and health service use: A cross-sectional study. **Diabet Med,** 2003; 20: 921-29.
46. Brown AF, Gross AG, Gutierrez PR, Jiang L, Shapiro MF, Mangione CM. Income-related differences in the use of evidence-based therapies in older persons with diabetes mellitus in for-profit managed care. **J Am Geriatr Soc,** 2003; 51: 665-70.
47. Karter AJ, Ackerson LM, Ferrra A, Selby JV, Darbinian JA. Self-monitoring of blood glucose: Language and financial barriers in a managed care population with diabetes. **Diabetes Care,** 2000; 23: 477-83.
48. von Goeler DS, Rosal MC, Ockene JK, Scavron J, De Torrijos F. Self-management of type 2 diabetes: A survey of low-income urban Puerto Ricans. **Diabetes Educ,** 2003; 29: 663-72.
49. van der Meer JBW, Mackenbach JP. The care and course of diabetes: Differences according to level of education. **Health Policy,** 1999; 46: 127-44.
50. Montague MC. Psychosocial and functional outcomes in African Americans with diabetes mellitus. **Journal of the Association of Black Nursing Faculty in Higher Education,** 2002; 13:103-9
51. Whittemore R, Melkus GD, Grey M. Metabolic control, self management and psychological adjustment in women with type 2 diabetes. **J Clin Nurs,** 2005:14 195-203.
52. Wen LK, Parchman ML, Shepherd MD. Family support and diet barriers among older Hispanic adults with type 2 diabetes. **Fam Med,** 2004; 36: 423-30.
53. Maddigan SL, Majamdar SR, Johnson JA. Understanding the complex associations between patient-provider relationships, self-care behaviors, and health-related quality of life in type 2 diabetes: A structural equation modeling approach. **Qual Life Res,** 2005; 14: 1489-1500.
54. Rose M, Fliege H, Hilldebrandt M, Schirop T, Klapp BF. The network of psychological variables in patients with diabetes and their importance for quality of life and metabolic control. **Diabetes Care,** 2002; 25: 35-42.
55. Anderson BJ. Diabetes self-care: Lessons from research on the family and broader contexts. **Curr Diab Rep,** 2003; 3: 134-40.

ปัจจัยที่มีผลต่อการปรับแบบแผนการดำเนินชีวิตของหญิงไทยที่เป็นเบาหวานชนิดที่ 2*

อภิญญา ศิริพิทยาคุณกิจ, สมจิต หนุเจริญกุล, Gail D' Eramo Melkus, ธวัชชัย วรพงศธร, ชัชลิต รัตรสาร, มณี อาภานันทิกุล

บทคัดย่อ: โรคเบาหวานเป็นปัญหาสุขภาพเรื้อรังที่สำคัญของประเทศไทย การปรับเปลี่ยนแบบแผนการดำเนินชีวิตในผู้ป่วยเบาหวานมีความสำคัญในการช่วยลดการเกิดภาวะแทรกซ้อน อย่างไรก็ตามการปรับเปลี่ยนแบบแผนการดำเนินชีวิตโดยเฉพาะในผู้หญิงต้องใช้เวลาและใช้ความพยายามเป็นอย่างมาก เนื่องจากผู้หญิงมีหน้าที่ดูแลความเป็นอยู่ของบุคคลในครอบครัวและบางคนต้องทำงานนอกบ้าน การทำบทบาทหน้าที่หลายอย่างย่อมทำให้มีความยากลำบากเพิ่มมากขึ้นในการปรับแบบแผนการดำเนินชีวิต ดังนั้นความรู้เกี่ยวกับปัจจัยต่างๆ ที่จะช่วยส่งเสริมให้ผู้ที่เป็นเบาหวานสามารถปรับแบบแผนการดำเนินชีวิตจึงมีความจำเป็น การศึกษานี้จึงมีวัตถุประสงค์เพื่อศึกษาความสัมพันธ์เชิงสาเหตุระหว่างปัจจัยด้านบุคคล ด้านการสนับสนุนทางสังคมจากครอบครัวและเพื่อน ตลอดจนปัจจัยทางด้านระบบสุขภาพกับการปรับแบบแผนในการดำเนินชีวิตของหญิงไทยที่เป็นเบาหวาน โดยใช้ทฤษฎีการปรับตัวของรอยเป็นกรอบแนวคิดในการศึกษา ผู้หญิงที่เป็นเบาหวานชนิดที่ 2 จำนวน 490 คน ที่มารับการรักษาในโรงพยาบาล 3 แห่งในกรุงเทพมหานครและมีคุณสมบัติตามเกณฑ์ที่กำหนดตอบแบบสอบถาม 5 ชุด ได้แก่ แบบสอบถามปัญหาที่เกิดจากการดูแลเบาหวาน แบบวัดการรับรู้พฤติกรรมสนับสนุนการดูแลเบาหวานจากครอบครัวและเพื่อน แบบวัดคุณภาพความสัมพันธ์ระหว่างผู้ป่วยและบุคลากรในทีมสุขภาพ และแบบวัดการรับรู้การปรับแบบแผนการดำเนินชีวิตกับเบาหวาน ผลการศึกษาพบว่าปัจจัยด้านบุคคล การสนับสนุนการดูแลเบาหวานจากครอบครัวและเพื่อน คุณภาพความสัมพันธ์ระหว่างผู้ป่วยและบุคลากรในทีมสุขภาพ ปัญหาที่เกิดจากการดูแลเบาหวาน สามารถทำนายความแปรปรวนของการรับรู้การปรับแบบแผนการดำเนินชีวิตกับเบาหวานได้ร้อยละ 43 รูปแบบจำลองสุดท้ายที่ได้รับการปรับแก้ มีความสอดคล้องกับข้อมูลเชิงประจักษ์ (χ^2= 46, *df* = 28, *p* = .017, RMSEA = .036, GFI = .99, CFI = .99, χ^2/df = 1.64) รายได้ครอบครัว การสนับสนุนการดูแลเบาหวานจากครอบครัว คุณภาพความสัมพันธ์ระหว่างผู้ป่วยและบุคลากรในทีมสุขภาพ มีอิทธิพลโดยตรงทางบวกต่อการปรับแบบแผนการดำเนินชีวิตกับเบาหวาน (γ = 1.65, *p* < .05), (β = .52, *p* < .05) และ (β = .46, *p* < .001) ตามลำดับ ปัญหาในการดูแลเบาหวานและระดับการศึกษามีอิทธิพลโดยตรงทางลบต่อการปรับแบบแผนการดำเนินชีวิตกับเบาหวาน (β = -.17, *p* < .01) และ (γ= -.09, *p* < .01) ผลการศึกษาชี้ให้เห็นว่ารูปแบบจำลองที่เสนอสามารถทำนายการปรับแบบแผนการดำเนินชีวิตได้ บุคลากรในทีมสุขภาพควรตระหนักถึงปัจจัยที่มีผลต่อต่อการปรับแบบแผนการดำเนินชีวิต เพื่อเป็นแนวทางในการส่งเสริมให้ผู้ที่เป็นเบาหวานสามารถอยู่กับโรคเบาหวานได้ดีที่สุด

วารสารวิจัยทางการพยาบาล 2008; 12(3) 166 – 178

คำสำคัญ: การปรับแบบแผนการดำเนินชีวิต เบาหวานชนิดที่ 2 ผู้หญิง

* *ได้รับทุนอุดหนุนการวิจัยจากคณะแพทยศาสตร์ โรงพยาบาลรามาธิบดี มหาวิทยาลัยมหิดล*

อภิญญา ศิริพิทยาคุณกิจ, *R.N., Ph.D. Candidate, ภาควิชาพยาบาลศาสตร์ คณะแพทยศาสตร์ โรงพยาบาลรามาธิบดี มหาวิทยาลัยมหิดล ประเทศไทย*

สมจิต หนุเจริญกุล, *R.N., Ph.D., ศาสตราจารย์ ภาควิชาพยาบาลศาสตร์ คณะแพทยศาสตร์ โรงพยาบาลรามาธิบดี มหาวิทยาลัยมหิดล ประเทศไทย*

Gail D' Eramo Melkus, *EdD., C-ANP., ศาสตราจารย์ Yale School of Nursing, ประเทศสหรัฐอเมริกา*

ธวัชชัย วรพงศธร, Ph.D., *รองศาสตราจารย์ ภาควิชาชีวสถิติ คณะสาธารณสุขศาสตร์ มหาวิทยาลัยมหิดล ประเทศไทย*

ชัชลิต รัตรสาร, M.D., *ศาสตราจารย์ ภาควิชาอายุรศาสตร์ คณะแพทยศาสตร์ โรงพยาบาลรามาธิบดี มหาวิทยาลัยมหิดล ประเทศไทย*

มณี อาภานันทิกุล, R.N., Ph.D., *ผู้ช่วยศาสตราจารย์ ภาควิชาพยาบาลศาสตร์ คณะแพทยศาสตร์ โรงพยาบาลรามาธิบดี มหาวิทยาลัยมหิดล ประเทศไทย*