A Cross-Sectional Study of Predictive Factors of Self-Management Among Adolescents with Type 1 Diabetes

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Abstract: Uncontrolled blood glucose in adolescents with type 1 diabetes leads to many complications that are life-threatening and affect their quality of life. Self-management is an approach that allows adolescents to achieve good glycemic control. Therefore, this predictive correlation study aimed to investigate self-management among adolescents with type 1 diabetes and to examine the predictive power of age, parenting styles, and patient-provider relationship satisfaction on self-management. Purposive sampling was employed to recruit 93 adolescents aged 10 to 19 years with type 1 diabetes who were receiving follow-up care at two tertiary hospitals in Bangkok, Thailand. The research instruments used were the Self-Management Behavior of Adolescents with T1DM, the Parenting Style, and the Thai version of the Medical Interview Satisfaction Scale (MISS-21). Descriptive statistics and multiple regression were employed to analyze the data.

The results found that the mean score of self-management behaviors was high. All variables, including age, authoritative, authoritarian, permissive, and uninvolved parenting styles, as well as patient-provider relationship satisfaction, explained 49.4% of the variance in self-management behaviors. However, only authoritative parenting style, uninvolved parenting style, and patient-provider relationship satisfaction were statistically significant predictors of self-management, with patient-provider relationship satisfaction being the strongest. Nurses can use this finding to design and test an intervention program that emphasizes encouraging authoritative parenting while discouraging uninvolved parenting and promoting the patient-provider relationship in the management of diabetes. Future studies should investigate the cultural variations of parenting styles, self-management, and glycemic control in adolescents from more diverse cultural and ethnic backgrounds.

Keywords: Adolescents, Parenting styles, Predicting factors, Self-management, Type 1 diabetes

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Introduction

Type 1 diabetes mellitus (T1DM) is a genetic disorder that damages beta cells in the pancreas, causing them to be unable to produce insulin or to produce it in insufficient amounts.[1] When insulin is deficient, the body is unable to regulate blood glucose. In 2021, there were 1.5 million children under 20 years with T1DM, accounting for 18% of all T1DM cases worldwide, with 0.5 million new cases.[2] In Thailand, 75% of children with T1DM were identified among the total number of patients with diabetes. Uncontrolled blood glucose levels lead to both acute and chronic complications, including diabetic ketoacidosis (DKA), hypoglycemia, diabetic retinopathy, diabetic neuropathy, and peripheral neuropathy.[3] These complications can result in the loss of organs and life, as well as increase treatment costs and reduce quality of life. Therefore, it is crucial to prevent these complications.

To prevent diabetes-related complications in adolescents with T1DM, maintaining normal blood glucose levels through effective self-management is crucial.[4] Regarding self-management among adolescents with T1DM, the steps to be practiced are insulin administration, self-monitoring of blood glucose, diet control, regular and appropriate exercise, and observing abnormal symptoms to cope with and solve problems.[1] Effective diabetes self-management is associated with HbA1C levels within the target range of treatments.[5] Currently, adolescents have poorer glycemic control abilities than any other age group; for example, it was found that the mean HbA1C of Thai adolescents aged 10-14, 14-18, and 18-25 years was 9.54%, 9.89%, and 9.63%, respectively.[6] Due to physiological changes, secretion of sex hormones, growth acceleration process, and the more significant accumulation of fat mass, which are associated with insulin resistance and cognitive development that seem to be highly developed but not fully completed effects on decision-making or problem-solving, leading to an inability to control their blood glucose levels.[7] As adolescence is a diverse developmental period, adolescents at different ages may have other ways of managing themselves. At certain stages, such as early adolescence, teenagers may struggle to manage themselves fully.

Parents play an essential role in supporting them with self-management. Some families may take full responsibility for managing health, offer partial assistance, or choose not to intervene in middle or late adolescence, reflecting the family's parenting style. This can significantly impact the teenager's self-management. In addition, T1DM requires continuous management by healthcare professionals, particularly nurses, who play a crucial role in monitoring and supporting adolescent self-management. This relationship may be another factor affecting self-management in adolescents with T1DM. Previous studies have been conducted on aspects related to self-management in adolescents with T1DM. However, there are still few studies in Thailand. Therefore, this study sought to answer whether age, parenting style, and patient-provider relationship satisfaction could predict self-management among adolescents with T1DM.

Literature Review and Conceptual Framework

The conceptual framework of this study was based on Whittemore's Conceptual Model of Childhood Adaptation to T1DM.[8] This model views adaptation to chronic disease as a complex process involving interactions between internal and external influences, manifesting through both physical and psychological responses to the disease. The key factors in this process include: 1) individual and family characteristics, such as age, duration of illness, gender, socioeconomic status (SES), and developmental stage; 2) psychosocial responses, such as depressive symptoms and anxiety; 3) individual and family responses, such as family functioning, coping, and self-efficacy, and self-management; and 4) adaptation, comprising of glycemic control and

quality of life.[8] Self-management is a factor that acts as a bridge, interacting with other factors in this framework, and also has a direct effect on adaptation.[8] Therefore, this study focused on self-management and its associated factors.

Self-management is a dynamic process of cognitive, emotional, and behavioral self-regulation. For individuals with T1DM, this means constantly balancing insulin doses, blood glucose levels, carbohydrate intake, and physical activity while proactively managing hypo- and hyperglycemia events. The ultimate goal is to maintain stable blood sugar levels and prevent serious complications.[9] Past studies have shown that encouraging patients to have good self-management can help them have better glycemic control.[10] In summary, effective self-management supports optimal glycemic control, reducing complications and improving quality of life.[11]

Individual characteristics: Previous studies have found that age is positively correlated with self-management.[12] Since age is related to problem-solving. Conversely, a negative correlation was found between age and family involvement.[13] These findings align with developmental theories suggesting that older adolescents tend to possess more advanced problem-solving abilities and a greater desire for self-reliance, which may contribute to decreased family involvement.[12,13] Some studies suggest that early adolescents may exhibit higher self-management levels than their middle and late-adolescent counterparts, while some surveys have found that mean HbA1C levels in early adolescents are lower than those in middle and late adolescents.[6] This could be attributed to the increased parental involvement and support during early adolescence, which may foster the development of specific self-management skills.[14]

Individual and family responses: Parenting style in child rearing is an essential dimension of family functioning. Family functioning is a multidimensional concept that encompasses the interactions, collaboration, communication, connections, maintenance of relationships, decision-making, and problem-solving necessary for family members to achieve common goals and outcomes.[15] A family has many functions, and child-rearing is one of them. Parenting styles may vary from family to family and reflect the interaction between parents and children. Some parents may give their children more freedom, while others may be very strict. Some may provide a lot of love and warmth, while others may not. These reflect the functioning of the family. Parenting style can be divided into four main styles: 1) The authoritative parenting style, in which children are encouraged to obey and logically follow the guidelines set by their parents. In the meantime, they receive love, warmth, and attention; 2) The authoritarian parenting style is strict, sets rigid rules without explanation, and lacks parental feedback and responsiveness; 3) Permissive parenting style is a style in which parents consistently respond to their children's needs but fail to set boundaries or rules; 4) A lack of parental interest or responsiveness to children characterizes an uninvolved parenting style. Uninvolved parents do not enforce discipline and have minimal communication with their children. Appropriate parenting styles influence self-regulation, which is the ability to control one's behavior, emotions, and thoughts in an effort to achieve long-term goals, closely aligning with self-management. Studies have found that adolescents growing up with an authoritative parenting style tend to have a high level of self-regulation.[16] Previous studies found that family support positively correlated with self-management among adolescents with T1DM.[17] Family support aligns with an authoritative and permissive parenting style, in which parenting filled with love and warmth gives a better health result than parenting with less warmth or too much behavior control. A study found that authoritative parenting style directly influenced better adherence to diabetes self-management.[18] A consistent study found that low-responsive parenting and low autonomy-supportive parenting were negatively correlated with self-management but positively correlated with HbA1C.[19] Low-responsive parenting and low autonomy-supporting parenting influenced

decreased self-management among adolescents with T1DM over the past six months. They had an indirect effect on increased HbA1C over the past 6 months.[19] Additionally, a negative correlation exists between HbA1C levels and an authoritative parenting style.[19] Conversely, a positive correlation between HbA1C levels and an authoritarian parenting style indicates that overly strict parenting often correlates with poorer glycemic control. However, the researchers did not find a relationship between a permissive parenting style and HbA1C levels.[20]

Patient-provider relationship satisfaction refers to having satisfaction in the relationship and the adolescent's trust in the healthcare provider. This depends on the healthcare provider's care and adolescents' social competence in building relationships with others. Social competence refers to a person's ability to interact effectively with others in various situations. These essential social skills significantly impact relationships, health, happiness, and collaboration with others.[21] As for the context of treating T1DM, adolescents with high social competence tend to possess strong communication skills, enabling them to express their needs, articulate concerns, and ask questions regarding their condition more effectively. This clearer information exchange and mutual understanding leads to a more positive and satisfying relationship with healthcare providers. Trust, in turn, is a crucial determinant of patient-provider relationship satisfaction, as it fosters open dialogue and adherence to medical advice. Adolescents with strong social competence are likelier to develop positive and cooperative relationships with their healthcare team. Their ability to interact respectfully and constructively enhances their perception of provider support and accessibility. As a result, they may experience greater satisfaction with their care and view healthcare providers as partners in managing their condition. Study results from patients with multiple chronic conditions found that the quality of good relationships with healthcare providers was associated with a low treatment burden.[22] Satisfaction with the patient-provider relationship among adolescents with T1DM positively correlates with and influences adherence to medical regimens.[23] This indicates that a good relationship between patients and healthcare providers tends to positively affect behaviors related to managing chronic diseases that require continuous care and self-management.

In summary, Whittemore's Conceptual Model of Childhood Adaptation to T1DM [8] and a literature review provided the background for this study. Age, parenting style, and patient-provider relationship satisfaction were selected to predict self-management among adolescents with T1DM. Understanding predictive factors would benefit designing a support self-management program to minimize complications in adolescents with T1DM.

Study Aim

This study aimed to assess self-management levels among adolescents with T1DM and examine the extent to which age, parenting styles, and patient-provider relationship satisfaction predict self-management in this population.

Methods

Design: This study used a cross-sectional design, and this report follows the STROBE guideline for cross-sectional studies.

Sample and Setting: This study was conducted at two tertiary care hospitals in Bangkok, Thailand, which offer similar services, including a team of pediatricians, nutritionists, and nurses to monitor symptoms and problems, as well as a plan for continuous care. Purposive sampling was used to recruit the participants according to the following criteria: 1) being diagnosed with T1DM for at least 6 months, 2) aged 10-19 years, 3) having full consciousness, 4) being able to speak, read, and communicate in Thai, and 5) not diagnosed with depression, and 5) consenting to participate in the study.

The sample size was calculated using G*power version 3.1.9.4 for multiple regression analysis. The effect size was set at 0.15,[24] the power of the test was 0.95, and the significance level was 0.05. There were six independent variables, i.e., age, authoritative parenting style, authoritarian parenting style, permissive parenting style, uninvolved parenting style, and patient-provider relationship satisfaction. A dependent variable was self-management among adolescents with T1DM. Thus, at least 89 participants were required for the study. To compensate for a possible attrition rate of 10%,[25] we increased the sample size to 98 participants.

Ethical Considerations: The study was approved by the Human Research Ethics Committee, Faculty of Medicine Ramathibodi Hospital, Mahidol University (COA. MURA2022/766) and the King Chulalongkorn Memorial Hospital, Thai Red Cross Society (COA No. 0762/2023). The primary investigator (PI) obtained informed consent from both adolescents and their parents by explaining the study's objectives, benefits, data collection procedures, and participation rights. They had the opportunity to ask questions, were given time to decide, and were assured their choice would not affect service quality. Assent was obtained from participants, with parental consent required for those under 18. Confidentiality and anonymity were upheld throughout the study.

Research Instruments: There were four instruments used for data collection:

A *Demographic Data Form* was developed by the PI, which included gender, age, education level, and duration of diagnosis with T1DM.

The Self-Management Behavior of Adolescents with T1DM Questionnaire, originally developed by Ontrakrai et al.,[17] based on the Self-Management of Type 1 Diabetes in Adolescents (SMOD-A) framework of Schilling et al.,[26] was used to assess self-management behaviors in Thai adolescents with T1DM. The instrument consists of 33 items across five subscales: collaboration with parents (4 items), diabetes care activities (11 items, problem-solving (7 items,), communication (6 items), and goals (5 items). For example, "I told my parents when blood sugar levels are outside the target range." It uses a 4-point scale (0-3), where 0 indicates "never practiced" and 3 indicates "regularly practiced." Total scores range from 0 to 99, with a higher score indicating better self-management. The score cut points were low (0-32), moderate (33-65), and high (66-99). Content validity was assessed by five experts, comprising a physician, two nurses, and two nurse educators (CVI = 0.82), with a Cronbach's alpha of 0.88. The pretest reliability, assessed with 20 adolescents having similar characteristics to the sample, yielded a Cronbach's alpha coefficient of 0.86, which was also observed in the main study.

The Parenting Style Questionnaire was developed by Ponpichai and Uieng,[27] based on Baumrind[28] and Maccoby and Martin's concept of parenting style.[29] It consists of 27 items across four parenting styles: authoritative (6 items), such as "I feel that my parents are attentive to me."; authoritarian (7 items), such as "My parents are strict about my behavior."; permissive (8 items), such as "No matter what I want, my parents will make sure to get it for me."; and uninvolved (6 items), such as "I feel that when I want to consult my parents about something, they are not interested in listening." Responses use a 5-point scale (1-5), with 1 indicating "not true at all" and 5 indicating "completely true." The cut-off points are as follows: very low (1.00-1.80), low (1.81-2.60), moderate (2.61-3.40), high (3.41-4.20), and very high (4.21-5.00). Content validity was validated by the same three experts as the above questionnaire, with the CVI = 0.90. A pilot study with 20 adolescents with T1DM yielded a Cronbach's alpha coefficient of authoritative parenting style 0.91, authoritarian parenting style 0.79, permissive parenting style 0.76, and uninvolved parenting style 0.84, and in the main study, the parenting style questionnaire was 0.71

The Thai version of the Medical Interview Satisfaction Scale (MISS-21) was translated by

Papachristou Nadal et al.[30] from the original developed by Meakin and Weinman[31] to assess patient-provider relationship satisfaction. The 21-item scale comprises four subscales: distress relief (6 items), such as "The health care team has relieved my worries about my illness."; communication comfort (4 items), such as "I felt embarrassed while talking with the health care team."; rapport (8 items), such as "The health care team seemed warm and friendly to me."; and compliance intent (3 items), such as "I expect that it will be easy for me to follow the healthcare team's advice." Responses are measured using a 7-point rating scale, where 1 represents "strongly disagree" and 7 "strongly agree." For negative-worded questions, the scores are reversed accordingly, where higher scores indicate greater satisfaction. Content validity was evaluated by the same three experts as the two previous questionnaires, yielding an I-CVI and S-CVI of 1. The pretest reliability with 20 adolescents having similar characteristics to the sample yielded a Cronbach's alpha coefficient of 0.88, and in the main study, it was 0.89.

Data Collection: After ethical approval, data collection was conducted from January to December 2023. The PI recruited participants based on the established inclusion criteria. If the participants were under 18 years old, we met both participants and their parents while they were waiting to follow up with the physician. The PI collected all data after obtaining informed consent from participants.

During the explanation of the questionnaire, the PI assessed the teenagers' ability to complete the questionnaire. If anyone could not read or understand the questions, they were considered ineligible and excluded from the sample group, as they did not meet the inclusion criteria. Participants were given the opportunity to ask for clarification whilst completing the questionnaire, which was completed in a private room to ensure confidentiality. The time required to complete the questionnaire was approximately 20 to 30 minutes. After completion, the PI reviewed the questionnaire for accuracy and then requested permission to verify HbA1c levels from the respondents' medical records, which were documented in the data collection form.

Data Analysis: SPSS version 18.0 was used to analyze the collected data. The characteristics of the participants were analyzed using descriptive statistics: HbA1c levels, self-management, parenting styles, and satisfaction with the patient-provider relationship. Multiple regression analysis using the Enter method examined how age, parenting styles, and patient-provider relationship satisfaction predicted self-management among adolescents with T1DM. The assumptions were met, including tests for linearity, normality, homoscedasticity, autocorrelation, and multicollinearity.

Results

The participants consisted of 93 adolescents with T1DM. Most were female (59.1%), were early adolescents (36.6%), with a mean age of 14.69 years, and 33.3% had finished junior secondary education. Their duration of illness from T1DM was 6.45 years on average, and they had HbA1c levels higher than normal, 9.14% on average (**Table 1**). Most participants experienced a high level of authoritative parenting style, with a mean score of 3.99. The overall score for patient-provider relationship satisfaction was also high, at 5.45 (**Table 2**).

The mean self-management score among the adolescents was 67.26, showing a high level. Divided by age range, early and late adolescents had a high level of self-management, while middle adolescents had a moderate level. In each subscale among adolescents with T1DM, the subscales with a high level of self-management were problem-solving and goals, while collaboration with parents, diabetes care activities, and communication had a moderate level of self-management (**Table 2**). Even when considering self-management in each subscale by age group, it was found that the self-management scores on each subscale were at the same level across all age groups.

Table 1. Demographic data and HbA1c levels divided by age range (n = 93)

Demographic data	Frequency (cases)	Percentage	Mean HbA1c (%)	SD
Gender				
Male	38	40.86		
Female	55	59.14		
Age (years)			9.14	2.35
Early adolescence (10-13)	34	36.56	9.14	2.54
Middle adolescence (14-16)	30	32.26	9.08	2.21
Late adolescence (17-19)	29	31.18	9.21	2.34
Min-Max = 10-19, Mean 14.69, Median 15, SD 2.65				
Education level				
Primary education	17	18.28		
Junior secondary education	31	33.33		
Senior secondary education	30	32.26		
Vocational education	4	4.30		
Bachelor's degree	8	8.60		
Uneducated	3	3.23		
Duration of illness (years)				
≤ 1	2	2.15		
1-2	15	16.13		
2-5	25	26.88		
5-10	38	40.86		
> 10	13	13.98		
Min-Max = 0.5-17, Mean 6.45, Median 6, SD 3.73				

Table 2. The mean score and interpretation of each variable (n = 93)

Variable	Min	Max	Mean	SD	Interpretation
Self-management among adolescents with type 1 diabetes (Min-Max = 0-99)					
Overall score	38	94	67.26	12.36	High level
Age range					
Early adolescence	42	89	67.09	11.95	High level
Middle adolescence	38	89	65.00	11.84	Moderate level
Late adolescence	47	94	69.79	13.27	High level
Self-management subscales (possible range)					
Collaboration with parents (0-12)	1	12	7.22	2.75	Moderate level
Diabetes care activities (0-33)	7	29	21.69	3.96	Moderate level
Problem-solving (0-21)	6	21	15.85	3.44	High level
Diabetes communication (0-18)	1	18	9.29	4.20	Moderate level
Goals (0-15)	7	15	13.22	1.80	High level
Parenting styles (possible points, 1-5)					
Authoritative parenting style	1.50	5.00	3.99	0.72	High
Permissive parenting style	1.63	4.75	3.37	0.63	Moderate
Authoritarian parenting style	1.00	4.57	2.27	0.67	Low
Uninvolved parenting style	1.00	4.33	1.91	0.78	Low

Table 2. The mean score and interpretation of each variable (n = 93) (Cont.)

Variable	Min	Max	Mean	SD	Interpretation
Patient-provider relationship satisfaction (possible points, 1-7)*					
Overall patient-provider relationship satisfaction	3.90	7.0	5.45	0.82	-
Distress relief	3.30	7.0	5.67	0.93	-
Communication comfort	2.50	7.0	5.32	1.23	-
Rapport	3.00	7.0	5.79	0.94	-
Compliance intent	3.00	7.0	5.00	1.16	-

Note. *The higher score means higher satisfaction.

The analysis results of the correlation indicated that authoritative parenting style, permissive parenting style, and patient-provider relationship satisfaction were positively related to self-management among adolescents with T1DM, with statistical significance (r = 0.488, 0.248, and 0.651, p < 0.050, respectively), as shown in **Table 3.**

Table 3. Correlation coefficient matrix between the studied variables and self-management among adolescents with type 1 diabetes using Pearson's product-moment correlation (n = 93)

Pearson correlation coefficient	1	2	3	4	5	6	7
1. Age	1.000						
2. Authoritative parenting style	-0.057	1.000					
3. Authoritarian parenting style	-0.234*	-0.120	1.000				
4. Permissive parenting style	0.107	0.552*	0.001	1.000			
5. Uninvolved parenting style	0.097	-0.232*	0.350*	-0.110	1.000		
6. Patient-provider relationship satisfaction	0.073	0.481*	0.066	0.273*	-0.172*	1.000	
7. Self-management	0.017	0.488*	0.003	0.248*	-0.301*	0.651*	1.000

Note. *p value < 0.05

The multiple regression analysis results, using the Enter method, found that satisfaction with the authoritative parenting style, uninvolved parenting style, and the patient-provider relationship explained 49.4% of the variance in self-management (R^2 = 0.459, F(1,86) = 14.017; p < 0.001). Patient-provider relationship satisfaction was the strongest predictor, followed by authoritative and uninvolved parenting styles, respectively. However, age, authoritarian parenting style, and permissive parenting style were not significant predictors, as seen in **Table 4**

Table 4. Multiple regression analysis towards self-management among adolescents with type 1 diabetes of the sample (n = 93)

Predictors	B	SE_b	β	t	p-value
Age	0.156	0.389	0.033	0.400	0.690
Authoritative parenting style	3.979	1.804	0.233	2.206	0.030
Authoritarian parenting style	1.342	1.632	0.073	0.822	0.413
Permissive parenting style	-0.894	1.840	-0.046	-0.486	0.628
Uninvolved parenting style	-3.076	1.374	-0.193	-2.238	0.028
Patient-provider relationship satisfaction	0.374	0.066	0.511	5.636	0.001
Constant	11.363	10.097		1.125	0.264
$R = 0.703$, $R^2 = 0.494$, $R_a^2 = 0.459$, $SE_b = 9.088$, $F_{(1,86)} = 14.017$, $p < 0.001$, Constant = 11.363					

Discussion

This study revealed that adolescents with T1DM exhibited high self-management behaviors. The authoritative parenting style, uninvolved parenting style, and patient-provider relationship satisfaction explained 49.4% of the variance in self-management among adolescents with T1DM. Patient-provider relationship satisfaction is the strongest predictor of self-management, and in this study, the providers included nurses, physicians, and dietitians.

The high level of self-management behaviors among adolescents with T1DM in our study is consistent with previous studies by Ontrakrai,[17] conducted among adolescents with T1DM in tertiary hospitals in Thailand's northern and northeastern regions, which also found high levels of self-management behaviors.[17] A possible reason for this is that all adolescents and their caregivers in this study had received diabetes self-management education and support (DSMES) after diagnosis and regularly thereafter, which would enhance their knowledge, skills, and other support for caring for T1DM. In this study, despite a high level of self-management, the average HbA1C level remained high (9.14 ± 2.35). This finding aligns with previous research, which reported that adolescents had the highest average HbA1C levels among all age groups.[6] This may be due to physiological changes, secretion of sex hormones, growth acceleration process, and greater fat mass accumulation, all of which are linked to insulin resistance.[7]

When considering the subscales of self-management, adolescents demonstrated a high level of problem-solving and goal-setting, likely due to their stage of intellectual development. At this age, they engage in more logical thinking, make decisions based on reason, and enhance their problem-solving skill. Their common goal is to live a normal life within society. Clearly defined goals contribute to improved self-management.[12] Other subscales of self-management, including collaboration with parents, diabetes communication, and diabetes care activities, were moderate among adolescents. This may be because, at this stage of social development, adolescents have a greater need for privacy and stronger friendships and are more likely to disregard parental advice. Adolescents may feel embarrassed to check their blood sugar by pricking their fingers or injecting insulin into their abdomen when their friends are present. This discomfort can result in moderate engagement in diabetes care activities.

From the analysis of predictive power regarding self-management, patient-provider relationship satisfaction was the highest positive predictor. A possible reason is that most adolescents perceive emotional support from their healthcare providers, which encourages open communication, problem-sharing, and collaborative planning, ultimately leading to more effective self-management. Systematic review studies have shown that a higher perceived quality of provider-patient communication is linked to improved self-management.[32] This is reflected in the current study's high satisfaction scores for patient-provider communication. These findings align with a previous study indicating that the level of satisfaction with a patient-provider relationship in adolescents with T1DM can predict adherence to T1DM self-management.[23]

The authoritative parenting style is significantly positively correlated with and predicted self-management. This may be because families with this parenting style consistently provide greater love, warmth, and care in response to their children's needs while displaying higher expectations. Adolescents are encouraged to express themselves, engage in reasoning, and actively participate in family decision-making.[33] These parenting style characteristics can effectively facilitate better self-management in adolescents with T1DM. Adolescents have the opportunity to seek advice from their parents about diabetes care, share their thoughts, and work together on self-management plans or goals. This is reflected in the current study's findings, which show high self-management scores in the goals subscale. The current finding aligns with previous research, which found that an authoritative parenting

style directly contributes to better glycemic control by improving adherence to diabetes self-management.[18]

Conversely, uninvolved parenting style is negatively correlated with and could statistically predict self-management in adolescents with T1DM. Families with uninvolved parenting styles are characterized by ignoring adolescents' needs, leaving them unsupervised, and failing to establish behavioral boundaries for adolescents.[33] This suggests that uninvolved parents may lack the time to supervise, support, or encourage adolescents in managing their diabetes, such as administering insulin injections and monitoring blood glucose levels, which can result in poorer glycemic control. Therefore, this parenting style can negatively impact self-management in adolescents with T1DM. The current study finding is in line with previous research indicating that a parenting style that provides low levels of response to children's needs and minimal support for their autonomy was negatively correlated with self-management in adolescents with T1DM.[19]

The permissive parenting style showed a statistically significant positive association with self-management in adolescents with T1DM but did not serve as a predictor. A possible reason for this is that permissive parents always respond to their children's needs while allowing excessive freedom with low demands and expectations.[33] This excessive freedom, without parental guidance on moderation, can lead to the development of harmful habits and a lack of self-regulation in adolescents.[34] This may occur when permissive parents step in to do things for adolescents if they are unwilling to take responsibility, limiting their opportunities to practice and develop self-management skills effectively. Our study's findings align with a previous study by Noser et al.,[20] which found no impact of a permissive parenting style on HbA1C levels.

Authoritarian parenting was not significantly related to self-management and did not serve as a predictor. This finding contradicts a previous prospective study[19] conducted in Taiwan, which found a positive correlation between this parenting style and HbA1C levels. The study also found that this parenting style influenced higher HbA1C levels at six months, suggesting that it is strongly linked to poorer self-management among adolescents. Authoritarian parents may impose strict rules and be over-involved in diabetes care activities, such as diet control, injection schedules, and problem-solving. This level of involvement can prevent adolescents from developing proper self-management.[20] However, the adolescents in this study reported low levels of authoritarian parenting, which may have little impact on the self-management of adolescents with T1DM.

Lastly, age was not significantly associated with self-management and did not serve as a predictor. Results from the current study contradict previous research that found a correlation between age and self-management subscales, which are collaboration with parents and problem-solving.[12] This discrepancy may be because most adolescents in this study were raised with a high level of authoritative parenting and a moderate level of permissive parenting. Both parenting styles are responsive to adolescents' needs, allowing middle and late adolescents, who strive for self-reliance but occasionally seek guidance, to comfortably ask their parents for advice when needed. As a result, self-management levels remained consistent across different stages of adolescence, indicating that age had no impact on self-management. This is reflected in self-management scores in each subscale, which remained stable across various age groups.

Limitations

There were limitations in this study. Firstly, generalizability is limited since the participants were purposively selected from two super tertiary care hospitals in Bangkok, where specialists provided care, and self-management among this group was high. Secondly, the questionnaire used to assess parenting styles was general and not specifically designed to measure its effect on self-management in adolescents with T1DM. This limitation may potentially impact

the analysis results. Future research may consider developing a parenting styles questionnaire tailored to self-management in adolescents with T1DM to obtain more precise and relevant insights.

Conclusions and Implications for Nursing Practice and Future Research

This study demonstrated a high level of self-management behaviors in adolescents with T1DM. The predictive model was explained by 49.4%, and only three variables, including authoritative parenting style, uninvolved parenting style, and patient-provider relationship satisfaction, were statistically significant. Predicted self-management with patient-provider relationship satisfaction was the strongest. An uninvolved parenting style leads to poor self-management, whereas increased parental care and attentiveness in an authoritative parenting style enhance adolescents' ability to manage their condition effectively. Therefore, nurses and healthcare providers can enhance self-management in adolescents with type 1 diabetes by fostering therapeutic relationships between adolescents and healthcare providers and encouraging parents to authoritative parenting with a more involved parenting style. Self-management support intervention for adolescents with T1DM should always involve parents in the program. Future research may consider developing a parenting styles questionnaire tailored to self-management in adolescents with T1DM to obtain more precise and relevant insights. Furthermore, additional studies could investigate this factor across various regions and cultural contexts to enhance the applicability of the findings.

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References

1. American Diabetes Association Professional Practice Committee. 2. Diagnosis and classification of diabetes: standards of care in diabetes—2024. Diabetes Care. 2024;47(Suppl 1):S20-42. doi:10.2337/dc24-S002.
2. Gregory GA, Robinson TIG, Linklater SE, Wang F, Colagiuri S, de Beaufort C, et al. Global incidence, prevalence, and mortality of type 1 diabetes in 2021 with projection to 2040: a modelling study. Lancet Diabetes Endocrinol. 2022;10(10):741-60. doi: 10.1016/S2213-8587(22)00218-2. Erratum in: Lancet Diabetes Endocrinol. 2022;10(11):e11. doi: 10.1016/S2213-8587(22)00280-7.
3. American Diabetes Association. 11. Microvascular complications and foot care: standards of medical care in diabetes-2020. Diabetes Care. 2020;43(Suppl 1): S135-51. doi: 10.2337/dc20-S011.
4. Oluchina S. The effectiveness of an education intervention based on self-care model on diabetes self-management behaviors and glycemic control. Int J Afr Nurs Sci. 2022;17:100505. doi: 10.1016/j.ijans.2022.100505.
5. Deng C, Xie Y, Liu F, Tang X, Fan L, Chen Y, et al. Simplified integration of optimal self-management behaviors is associated with improved HbA1c in patients with type 1 diabetes. J Endocrin Invest. 2024;47(11):2691-9. doi: 10.1007/s40618-024-02357-8.
6. Dejkhamron P, Santiprabhob J, Likitmaskul S, Deerochanawong C, Rawdaree P, Tharavanij T, et al. Type 1 diabetes management and outcomes: a multicenter study in Thailand. J Diabetes Investig. 2021;12(4):516-26. doi: 10.1111/jdi.13390. Erratum in: J Diabetes Investig. 2022;13(4):749. doi: 10.1111/jdi.13794.
7. Kelsey MM, Zeitler PS. Insulin resistance of puberty. Curr Diab Rep. 2016;16(7):64. doi: 10.1007/s11892-016-0751-5.
8. Whittemore R, Jaser S, Guo J, Grey M. A conceptual model of childhood adaptation to type 1 diabetes. Nurs Outlook. 2010;58(5):242-51. doi: 10.1016/j.outlook.2010.05.001.

9. Hamilton K, Stanton-Fay SH, Chadwick PM, Lorencatto F, de Zoysa N, Gianfrancesco C, et al. Sustained type 1 diabetes self-management: specifying the behaviours involved and their influences. Diabet Med. 2021;38(5):e14430. doi: 10.1111/dme.14430.
10. Chaladlon P, Anansirikasem P, klinjampa V. The effect of self-management support on glycemic control behaviors in type II diabetes patients. NJPH. 2023;33(1):90-101. Available from: https://he02.tci-thaijo.org/index.php/tnaph/article/view/262720 (in Thai).
11. Shiel EV, Hemingway S, Burton K, King N. Self-management of type 1 diabetes in young adults: is it impeded by aspects of everyday life? A scoping review. Diabetes Metab Syndr. 2023;17(12):102918. doi: 10.1016/j.dsx.2023.102918.
12. Verchota G, Sawin KJ. Testing components of a self-management theory in adolescents with type 1 diabetes mellitus. Nurs Res. 2016;65(6):487-95. doi: 10.1097/NNR.0000000000000180.
13. Keough L, Sullivan-Bolyai S, Crawford S, Schilling L, Dixon J. Self-management of type 1 diabetes across adolescence. Diabetes Educ. 2011;37(4):486-500. doi: 10.1177/0145721711406140.
14. Geneti Y, Wondwossen K, Adimasu M, Deressa D, Aga F, Lami M, et al. Adherence to diabetes self-management and its associated factors among adolescents living with type 1 diabetes at public hospitals in Addis Ababa, Ethiopia: a cross-sectional study. Diabetes Metab Syndr Obes. 2022;15:659-70. doi: 10.2147/DMSO.S350168.
15. Putdivarnichapong W, Phahuwatanakorn W, Soonthornchaiya R. Development of Thai Family Functioning Model (TFFM): grounded theory method. J MCU Peace Studies. 2020;8(5):1639-52. Available from: https://so03.tci-thaijo.org/index.php/journal-peace/article/view/246185/166926 (in Thai).
16. Liu S. The influences of parenting style on child self-regulation. Lect Notes Educ Psychol Public Media. 2023;24(1):77-82. doi: 10.54254/2753-7048/24/20230597.
17. Ontrakrai N, Jintrawet U, Chotibang J. Factors related to self-management behaviors in adolescent with type 1 diabetes. Nurs J CMU. 2021;48(2):246-58. Available from: https://he02.tci-thaijo.org/index.php/cmunursing/article/view/251812 (in Thai).
18. Radcliff Z, Weaver P, Chen R, Streisand R, Holmes C. The role of authoritative parenting in adolescent type 1 diabetes management. J Pediatr Psychol. 2018;43(2):185-94. doi: 10.1093/jpepsy/jsx107.
19. Lee SL, Tsai MC, Chang SC, Chen JL, Wang RH. Modelling individual, parental and peer factors to glycaemic control in adolescents with type 1 diabetes: a prospective study. J Adv Nurs. 2020;76(5):1162-71. doi: 10.1111/jan.14317.
20. Noser AE, Majidi S, Finch J, Clements MA, Youngkin EM, Patton SR. Authoritarian parenting style predicts poorer glycemic control in children with new-onset type 1 diabetes. Pediatr Diabetes. 2018;19(7):1315-21. doi: 10.1111/pedi.12726.
21. Junge C, Valkenburg PM, Deković M, Branje S. The building blocks of social competence: contributions of the Consortium of Individual Development. Dev Cogn Neurosci. 2020;45:100861. doi: 10.1016/j.dcn.2020.100861.
22. Eton DT, Ridgeway JL, Linzer M, Boehm DH, Rogers EA, Yost KJ, et al. Healthcare provider relational quality is associated with better self-management and less treatment burden in people with multiple chronic conditions. Patient Prefer Adherence. 2017;11:1635-46. doi: 10.2147/PPA.S145942.
23. Taylor CJ, La Greca A, Valenzuela JM, Hsin O, Delamater AM. Satisfaction with the health care provider and regimen adherence in minority youth with type 1 diabetes. J Clin Psychol Med Settings. 2016;23(3):257-68. doi: 10.1007/s10880-016-9460-0.
24. Cohen J. Statistical power analysis for the behavioral sciences. 2nd ed. Hillsdale: Lawrence Erlbaum Associates; 1988.
25. Gray JR, Grove SK, Sutherland S. Burns and Grove's the practice of nursing research: appraisal, synthesis, and generation of evidence. 8th ed. St. Louis: Elsevier; 2017.
26. Schilling LS, Dixon JK, Knafl KA, Lynn MR, Murphy K, Dumser S, et al. A new self-report measure of self-management of type 1 diabetes for adolescents. Nurs Res. 2009;58(4):228-36. doi: 10.1097/NNR.0b013e3181ac142a.
27. Ponpichai W, Uieng J. Factors predicting to violent behavior of youth in Muang District, Trang Province. Asia Soc Issues. 2023;16(6):e259262. doi: 10.48048/asi.2023.259262.
28. Baumrind D. Current patterns of parental authority. Dev Psychol. 1971;4(1,Pt.2):1-103. doi: 10.1037/h0030372.

29. Maccoby EE, Martin J. Socialization in the context of family: parent-child interaction. In: Mussen PH, Hetherington M, editors. Handbook of child psychology: socialization, personality, and social development. New York: Wiley. pp. 1-101.
30. Papachristou Nadal I, Aramrat C, Jiraporncharoen W, Pinyopornpanish K, Wiwatkunupakarn N, Quansri O, et al. Process evaluation protocol of a cluster randomised trial for a scalable solution for delivery of Diabetes Self-Management Education in Thailand (DSME-T). BMJ Open. 2021; 11(12):e056141. doi: 10.1136/bmjopen-2021-056141.
31. Meakin R, Weinman J. The 'Medical Interview Satisfaction Scale' (MISS-21) adapted for British general practice. Fam Pract. 2002;19(3):257-63. doi: 10.1093/fampra/19.3.257.
32. Peimani M, Nasli-Esfahani E, Sadeghi R. Patients' perceptions of patient-provider communication and diabetes care: a systematic review of quantitative and qualitative studies. Chronic Illn. 2020;16(1):3-22. doi: 10.1177/1742395318782378.
33. Chittayasothorn D. Diana Baumrind's parenting styles. UTCC J Humanit Soc Sci. 2009;29(4):173-87.
34. Sanvictores T, Mendez MD. Types of parenting styles and effects on children. Treasure Island (FL): StatPearls Publishing; 2022. Available from: https://www.ncbi.nlm.nih.gov/books/NBK568743/

การศึกษาแบบตัดขวางของปัจจัยทำนายการจัดการตนเองในวัยรุ่นโรคเบาหวานชนิดที่ 1

ศุภชัย ขจรวิบูลย์ผล อัจฉรียา ปทุมวัน จิราภรณ์ ปั้นอยู่*

บทคัดย่อ : การที่ไม่สามารถควบคุมระดับน้ำตาลในผู้ป่วยโรคเบาหวานได้นั้นนำไปสู่ภาวะแทรกซ้อนที่หลากหลายซึ่งอันตรายต่อชีวิตและส่งผลกระทบต่อคุณภาพชีวิต การจัดการตนเองเป็นวิธีการที่จะทำให้ผู้ป่วยสามารถควบคุมระดับน้ำตาลได้เป็นอย่างดี การวิจัยเชิงพยากรณ์ครั้งนี้มีวัตถุประสงค์เพื่อศึกษาการจัดการตนเองในวัยรุ่นโรคเบาหวานชนิดที่ 1 และศึกษาความสามารถในการทำนายของปัจจัยที่เกี่ยวข้องต่อการจัดการตนเองในวัยรุ่นโรคเบาหวานชนิดที่ 1 ซึ่งประกอบด้วย อายุ รูปแบบการอบรมเลี้ยงดู และความพึงพอใจในความสัมพันธ์ระหว่างผู้ป่วยกับผู้ให้บริการ ผู้วิจัยใช้การคัดเลือกแบบเฉพาะเจาะจงในการคัดเลือกวัยรุ่นจำนวน 93 คน อายุระหว่าง 10 ถึง 19 ปี ที่เป็นเบาหวานชนิดที่ 1 ที่มาติดตามอาการ ณ โรงพยาบาลระดับตติยภูมิ 2 แห่งในกรุงเทพมหานคร ประเทศไทย เครื่องมือที่ใช้ในการเก็บรวบรวมข้อมูลประกอบด้วย แบบสอบถามข้อมูลส่วนบุคคล แบบสอบถามเกี่ยวกับพฤติกรรมการจัดการตนเองในวัยรุ่นโรคเบาหวานชนิดที่ 1 รูปแบบการอบรมเลี้ยงดู และแบบวัดความพึงพอใจในการสัมภาษณ์ทางการแพทย์ การวิเคราะห์ข้อมูลใช้สถิติพรรณนา และการวิเคราะห์สมการถดถอยพหุคูณ

ผลการศึกษาพบว่าค่าคะแนนพฤติกรรมการจัดการตนเองของวัยรุ่นที่เป็นโรคเบาหวานชนิดที่ 1 เฉลี่ยอยู่ในระดับสูง และตัวแปร ประกอบด้วย อายุ รูปแบบการอบรมเลี้ยงดูแบบเอาใจใส่ แบบควบคุมแบบตามใจ แบบทอดทิ้ง และความพึงพอใจในความสัมพันธ์ระหว่างผู้ป่วยและผู้ให้บริการ สามารถร่วมกันทำนายการจัดการตนเองของวัยรุ่นที่เป็นโรคเบาหวานชนิดที่ 1 ได้ คิดเป็นร้อยละ 49.4 โดยมีปัจจัยที่มีอิทธิพลอย่างมีนัยสำคัญทางสถิติ ได้แก่ รูปแบบการอบรมเลี้ยงดูแบบเอาใจใส่ รูปแบบการอบรมเลี้ยงดูแบบทอดทิ้ง และความพึงพอใจในความสัมพันธ์ระหว่างผู้ป่วยและผู้ให้บริการ ซึ่งเป็นปัจจัยที่มีอำนาจทำนายสูงสุด พยาบาลสามารถนำผลการศึกษาไปใช้ออกแบบและทดสอบโปรแกรมการจัดการโรคเบาหวานโดยส่งเสริมการอบรมเลี้ยงดูแบบเอาใจใส่ ในขณะที่ไม่สนับสนุนการอบรมเลี้ยงดูแบบทอดทิ้ง ตลอดจนส่งเสริมความสัมพันธ์ระหว่างผู้รับบริการและผู้ให้บริการ การวิจัยในอนาคตควรศึกษาเพิ่มเติมเกี่ยวกับความแตกต่างทางวัฒนธรรมของรูปแบบการเลี้ยงดูบุตร การจัดการตนเอง และการควบคุมระดับน้ำตาลในเลือดในกลุ่มวัยรุ่นที่มีวัฒนธรรมและภูมิหลังที่หลากหลายมากขึ้น

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