Factors Predicting Transition Readiness in Adolescents with Kidney or Urinary Tract Diseases: A Cross-Sectional Study

Wanida Jaipaeng, Sudaporn Payakkaraung, Pattaranuch Witoonsakul*

Abstract: Adolescents with kidney or urinary tract diseases require long-term management; thus, assessing transition readiness is essential for identifying the skills needed for disease management and ensuring continuity of care. Transition readiness is the process of building the capacity of adolescents to be involved in medical care to prepare for, continue, and complete healthcare transition. This cross-sectional study examined transition readiness and its predictors among 113 adolescents (aged 12-18) with kidney or urinary tract diseases from two hospitals in Bangkok, Thailand. Data were collected using the Sociodemographic Questionnaire, the Screen for Child Anxiety Related Emotional Disorders, the Health Responsibility Questionnaire, the Perceived Social Support from Family and Friends, and the Transition Readiness Assessment Questionnaire. Data were analyzed using descriptive statistics and hierarchical multiple regression analysis.

Results revealed that 50.4% of participants demonstrated suboptimal transition readiness, particularly in appointment keeping and tracking health issues. Age, family and peer support, anxiety, and health responsibility predicted 41% of the variance in transition readiness, with health responsibility being the strongest predictor, followed by anxiety and peer support, respectively. Even though family support does not directly predict transition readiness, it indirectly influences the readiness by reducing anxiety and enhancing health responsibility. Thus, family support is a very important protective factor in transition readiness. These findings suggest that nurses should emphasize transition preparation to enhance family and peer support, encourage health responsibility, and reduce anxiety, thereby strengthening transition preparedness among adolescents with kidney or urinary tract diseases. This intervention should be tested before it can be used in practice.

Keywords: Adolescent, Healthcare transition, Kidney disease, Transition readiness, Urinary tract disease

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Author Contributions

WJ, SP, and PW: Conceptualization, methodology, data analysis, and interpretation

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Introduction

The global prevalence of pediatric kidney or urinary tract diseases (KUTD) ranges from 0.3 to 1 per 10,000 children, with congenital anomalies of the kidney and urinary tract (CAKUT) representing the predominant etiology of chronic kidney disease (CKD) in pediatric populations.[1,2] The burden of KUTD in pediatric populations presents a critical healthcare challenge, with profound implications for mortality, morbidity, and quality of life outcomes.[3] In Thailand, approximately 62 children per 100,000 population died from KUTD in 2021. This number increased to 72 in 2022, demonstrating an increasing mortality rate from KUTD over the years.[4] These progressive conditions require complex, lifelong medical management and affect multiple dimensions of childhood development, including education, social interactions, and emotional well-being.[5] This emphasizes the importance of seamless care transition from pediatric to adult healthcare systems.

Healthcare transition, the planned movement of adolescents between healthcare systems,[6] involves fundamental shifts from family-centered to patient-centered approaches, enhanced confidentiality requirements, and increased expectations for self-advocacy and personal responsibility.[7] Transition readiness assessment emerges as a vital tool, enabling pediatric care teams to identify specific educational needs and competency gaps related to adult-oriented practices,[7] with evidences showing that comprehensive preparation enhances autonomy, perceived competence, treatment adherence, and healthcare engagement.[8]

Although the importance of transition readiness assessment is widely acknowledged, existing studies predominantly reflect Western healthcare contexts. Thailand faces unique challenges, notably the absence of standardized transition guidelines and protocols. The cultural landscape adds another layer of complexity, as traditional Thai caregiving practices strongly emphasize parental responsibility for health management. A cultural norm may inadvertently impede the development of adolescent independence and self-management skills. These cultural patterns underscore the need for comprehensive transition preparation strategies and for investigating factors influencing transition readiness.

Earlier studies have identified several factors influencing transition readiness among adolescents with chronic diseases, such as age,[9,10] family and peer support,[9,11] anxiety,[12] and health responsibility.[13] However, recent studies examining transition readiness in Thailand have only enrolled adolescents with chronic diseases and rheumatic diseases.[14,15] Knowledge gaps persist regarding adolescents with KUTD within theoretical foundations. Thus, this study was grounded in a theoretical model and a comprehensive literature review to identify factors predicting transition readiness.

Conceptual Framework and Literature Review

The conceptual framework of this study uses the lens of Transition Theory.[16] Healthcare transition is viewed as a movement process along the health-illness continuum, through transition conditions, which may affect health-seeking behavior and healthcare utilization.[16] Transition conditions include personal, community, and societal conditions that facilitate or hinder progress toward achieving a successful transition and may influence each other.[16] Personal conditions include meaning given to transition, beliefs and attitudes, socioeconomic status, preparation, and knowledge for transitions.[16] Community conditions encompass available resources within one's environment and support networks such as family, peers, and other trusted connections.[16] Societal factors, such as social norms, policies, and stigmatization, are broader societal elements that may not directly influence individuals.[16]

Transition readiness is an important indicator reflecting adequate knowledge and skills needed for

moving from pediatric to adult healthcare in adolescents with chronic conditions.[16] In adolescents with KUTD's context, transition readiness could be enhanced by community conditions and personal conditions.

Age refers to the time elapsed (in complete years) from the date of birth to the date of data collection. Older age is potentially associated with greater cognitive function and maturity during adolescence.[9] Additionally, advanced age correlates positively with transition readiness as adolescents who have lived longer typically benefit from increased opportunities to practice and strengthen self-management competencies and to advocate for themselves based on accumulated health knowledge over time.[10]

In community conditions, connections with family members and peers represent essential support structures for adolescents with chronic conditions. Family support and peer support refer to adolescents' perception of support from family members and peers or classmates, especially emotional support in terms of trust, sharing, information, and learning from one another.[17] Higher levels of support can enhance transition readiness.[9,11] However, by lacking supportive networks, adolescents often navigate transitions poorly, experiencing feelings of powerlessness, frustration, and conflict.[16] From reviewing the literature, the presence of these supports generally reduces the anxiety levels with better coping strategies in adolescents.[18] When adolescents are empowered to handle their health management by family or peers, they may have more confidence in performing those activities, ultimately increasing health responsibility.

In personal conditions, anxiety is more commonly found in adolescents with chronic conditions than in healthy adolescents, leading to greater functional impairments.[19] Without appropriate treatments during childhood, this impairment can continue into adulthood and may lead to worse health outcomes throughout life.[20] Prior studies have highlighted that high anxiety can lead to behavioral changes, worsen self-management skills, and be negatively associated with transition readiness, particularly in terms of knowledge, as it could interrupt cognitive functions and emotional management.[12,21] Thus, anxiety may reduce competencies and motivation in health engagement, leading to lower health responsibility.

Health responsibility encompasses an individual's capacity to manage their healthcare needs and fulfill health-related tasks in both medical and everyday living aspects.[22,23] Health responsibility can be driven by motivation, expressed through involvement in healthcare activities and efforts to improve health.[23] A study indicated that heightened responsibility is a crucial facilitator for improved health behaviors and knowledge acquisition necessary for maintaining wellness.[22] Conversely, insufficient health responsibility is an obstacle to a successful transition.[13] The responsibility typically increases with age through developmental stages that involve increasing autonomy as well as the development of self-control, especially emotion management.[24]

Nevertheless, societal conditions were excluded from this study for several reasons. This study is limited in investigating the influence of societal conditions factors, such as stigma and transition-related policies, on adolescents with KUTD in the Thai context. Additionally, within the Thai cultural context, family-level influences tend to predominate over societal factors in health-related transitions for adolescents. Therefore, our framework prioritized personal and community conditions that have more impact on transition readiness.

From the literature review, it was found that age, family support, peer support, anxiety, and health responsibility were significantly associated with transition readiness in adolescents with chronic conditions. However, the understanding of the predictive effects of these factors on transition readiness remains scarce in the Thai context, particularly among adolescents with KUTD. Understanding these relationships could inform screening protocols and targeted interventions to enhance long-term health outcomes and care delivery quality.

Study Aims

This study aimed to examine 1) transition readiness in the Thai cultural context and 2) the predictability of age, family support, peer support, anxiety, and health responsibility on transition readiness among adolescents with KUTD.

Methods

Design: The design and reporting of this descriptive cross-sectional study adhered to the STROBE Statement—a checklist of items required for reporting an observational study.

Sample and Setting: This study enrolled 113 participants from four specialized clinics within the pediatric outpatient departments (OPD) of two super-tertiary hospitals in Bangkok, Thailand. The participating clinics comprised a nephrology clinic, a chronic kidney disease clinic, a voiding dysfunction clinic, and a lupus nephritis clinic. Convenience sampling was utilized to select eligible participants based on following criteria: 1) aged 12-18 years, 2) diagnosed with kidney or urinary tract diseases (congenital and/or acquired diseases) requiring long-term care into adulthood, 3) having a minimum six-month continuity of care at the OPD, and 4) being able to comprehend and complete study questionnaires. The sample size was determined using G*Power software version 3.1. The effect size calculation utilized the lowest correlation coefficient from previous studies.[14,25] To reduce Type II errors, a significance level of 0.05 was set with a power of analysis of 0.80, and a moderate effect size (f^2) of 0.12 for five independent variables, yielding a required sample size of 113 participants.

Ethical Considerations: This study was approved by the Institutional Review Board, Faculty of Nursing, Mahidol University, as per the memorandum of understanding (MOU) with the participating hospitals on February 9, 2024 (MU-MOU CoA No. IRB-NS 2024/834.0902). Both adolescents and their caregivers were informed of the study's purpose, procedures, and their right to withdraw at any time without consequences. Written informed consent was obtained from both adolescents and their caregivers before study participation. All data were analyzed anonymously. Study data were maintained in strict confidence and were accessible only to authorized personnel.

Instruments: This study employed six self-administered questionnaires, for which permission was granted by the original developers and Thai version translators.

The sociodemographic questionnaire, developed by the researchers, comprises 23 items 1) adolescent information (i.e., age and gender), 2) clinical history (i.e., diagnosis and disease duration), and 3) family information (i.e., primary caregiver and age of caregiver)

The Perceived Social Support from Family and Friends (PSS-Fa, PSS-Fr)[17] are parallel 20-item instruments assessing perceived support from family members and peers, respectively. Each measure uses dichotomous scoring (1 = yes, 0 = no/don't know). An example of PSS-Fa is "Members of my family are good at helping me solve problems." An example item of PSS-Fr is "My friends and I are very open about what we think about things." Total scores on the PSS-Fa and PSS-Fr each range from 0 to 20, with higher scores indicating greater perceived support. This study found high internal consistency in both PSS-Fa and PSS-Fr (KR-20 of 0.87 and 0.84, respectively).

The Screen for Child Anxiety Related Emotional Disorders (SCARED)[26] is a 41-item measure assessing a broad range of anxiety symptoms across five domains of anxiety disorders (i.e., panic disorder, generalized anxiety disorder, separation anxiety disorder, social anxiety disorder, and school avoidance). Items are rated on a 3-point scale (0 = not true/hardly ever true, 1 = sometimes true, 2 = true/often true). An example item is, "I don't like to be away from my family." Total scores range from 0 to 82, with higher scores indicating higher levels of anxiety, with a cutoff score of 25 indicating

potential anxiety disorder. The reliability coefficient (Cronbach's alpha) in this study was 0.91.

The Health Responsibility Questionnaire (HRQ), developed by the researchers through a comprehensive literature review, operationalizes the Sense of Responsibility for Health framework[22] with two subscales: active involvement (motivation in health engagement) and adequate behavior (appropriate actions to maintain health). This 16-item instrument measures adolescents' frequency of self-care behaviors across medical and lifestyle domains on a 4-point scale (1 = never to 4 = always). An example item is, "I avoid behaviors that are harmful for my health." Total scores on health responsibility range from 16 to 64, total scores on active involvement range from 6 to 24, and total scores on adequate behavior range from 10 to 40, with higher scores indicating greater health responsibility. Five expert reviews established content validity, yielding a scale-content validity index (S-CVI) of 0.98. The questionnaire demonstrated good internal consistency in this study (Cronbach's alpha of 0.86).

The Transition Readiness Assessment Questionnaire (TRAQ)[27] assesses self-care management and self-advocacy competencies across five domains: managing medications, appointment keeping, tracking health issues, talking with providers, and managing daily activities. This 20-item instrument uses a 5-point scale (1 = no, I do not know how to 5 = yes, I always do this when I need to). An example item is, "Can you take medicine correctly by yourself?" Total TRAQ score using average score of 20 items ranged from 1 to 5, with scores more than or equal to 4.0 indicating transition skill acquisition and readiness for adult care. The internal consistency was good in this study (Cronbach's alpha of 0.86).

Data Collection: Data were collected from May to July 2024. Study recruitment was facilitated by registered nurses at each hospital who identified eligible adolescents and caregivers based on the inclusion criteria. For those expressing interest, the primary investigator (PI) provided detailed information regarding study purposes, risks and benefits, confidentiality measures, procedures, and the right to withdraw without any consequences, supplemented by participant information sheets. Voluntary participation was emphasized, and written informed consent was obtained from both adolescents and caregivers.

Subsequently, adolescents completed six self-administered questionnaires (lasting 45-90 minutes) during their clinic wait times. Following data collection, the PI addressed participants' questions, particularly those concerning care, prevention, and self-management strategies. Participants received a stationery item as a token of appreciation.

Data Analysis: Data analysis was performed using Statistical Package for the Social Sciences (SPSS) version 18.0. The significance level was set at alpha = 0.05. Descriptive statistics (frequencies, percentages, ranges, means, and standard deviations) were calculated to characterize participants' sociodemographic profiles and study variables. Prior to analysis, data were evaluated for parametric test assumptions. The data were normally distributed, and other assumptions were met. Bivariate associations between variables were examined using Pearson correlation coefficients. A check for multicollinearity among variables showed variance inflation factor (VIF) values ranging from 1.10 to 1.49, confirming the absence of potential multicollinearity in the regression model. Hierarchical multiple regression analysis was conducted to assess the predictive effects of age, family support, peer support, anxiety, and health responsibility on transition readiness, and to understand overall relationships among variables based on theoretical foundations.

Results

The sample comprised 113 adolescents with KUTD, with no missing data and 58.4% of them were female. Most (56.6%) were in middle adolescence

(16 to 18 years), with the mean age of 15.57 years. Non-CAKUT diagnoses affected 90 participants (79.6%), with a mean of disease duration of 6.88 years. The mean age of primary caregivers was 46.59 years, and 82 of them were mothers (72.6%) (see details in **Table 1**).

Table 1 Demographic characteristics of the participants (N = 113)

Characteristics	Subcategory	n (%)
Gender	Male	47 (41.6)
	Female	66 (58.4)
Age (years), mean ± SD (min, max)		15.57 ± 1.77 (12, 18)
	12-15	49 (43.4)
	16-18	64 (56.6)
Diagnosis	CAKUT	23 (20.4)
	Non-CAKUT	90 (79.6)
	Kidney disease	84 (74.3)
	Autoimmune	60 (53.1)
	Sclerotic	15 (13.3)
	Infantile NS	6 (5.3)
	Genetic	3 (2.6)
	Urinary tract disease	6 (5.3)
Disease duration (years), mean ± SD (min, max)		6.88 ± 4.34 (1, 18)
	≤ 5	53 (46.9)
	> 5	60 (53.1)
Primary caregiver	Mother	82 (72.6)
	Father	22 (19.5)
	Relatives	9 (8.0)
Age of caregiver (years), mean ± SD (min, max)		46.59 ± 7.39 (32, 72)

Note. CAKUT = congenital anomalies of kidney and urinary tract, NS = nephrotic syndrome

Table 2 illustrates the descriptive statistics for the study variables. Participants reported comparable mean scores for family support (mean = 13.64, SD = 4.61) and peer support (mean = 13.57, SD = 4.39). The mean anxiety score and its subscales were below the cutoff score, indicating low anxiety levels. Health responsibility assessment revealed moderate overall and active involvement levels, while adequate behavior demonstrated high levels. The aggregate transition readiness score fell below the established readiness threshold of 4.00 (mean = 3.88, SD = 0.63), suggesting unreadiness to transition. Among the transition domains, talking with providers demonstrated the highest competency, followed by daily activity and medication management. The appointment-keeping domain exhibited the lowest performance.

Table 2 Descriptive statistics of the study variables (N = 113)

Variables	Possible range	Actual range	Mean	SD	Level
Family support	0-20	1-20	13.64	4.61	Moderate
Peer support	0-20	2-20	13.57	4.39	Moderate
Anxiety	0-82	1-60	22.92	11.62	Low
Panic anxiety	0-26	0-16	4.35	3.49	Low
Generalized anxiety	0-18	0-16	6.29	6.29	Low
Separation anxiety	0-16	0-12	4.31	4.31	Low

Table 2. Descriptive statistics of the study variables (N = 113) (Cont,)

Variables	Possible range	Actual range	Mean	SD	Level
Social anxiety	0-14	0-14	6.68	6.68	Low
School avoidance	0-8	0-5	1.29	1.29	Low
Health responsibility	16-64	25-62	45.42	8.02	Moderate
Active involvement	6-24	6-24	14.55	3.88	Moderate
Adequate behavior	10-40	18-40	30.88	5.23	High
Transition readiness	1-5	2.45-5	3.88	0.63	Unready
Managing medications	1-5	2.5-5	4.15	0.71	Ready
Appointment keeping	1-5	1-5	3.52	0.98	Unready
Tracking health issues	1-5	1-5	3.65	0.86	Unready
Talking with providers	1-5	1.5-5	4.51	0.69	Ready
Managing daily activities	1-5	1.97-5	4.24	0.65	Ready

Table 3 shows the frequency and percentage of adolescents who were ready to transition and had the presence of anxiety disorders. More than half (50.4%) were not ready to transition to adult care, with the highest proportions of unreadiness in the appointment keeping (60.2%) and tracking health issues (54.9%), respectively. Moreover, approximately 42% had anxiety disorders. Separation anxiety was found to be the most prevalent type of anxiety (43.4%), while school avoidance was the lowest (15.9%).

Table 3. Frequency, and percentage of transition readiness and anxiety (N = 113)

Variables	n (%)
Transition readiness (Ready)	56 (49.6)
Managing medications	84 (74.3)
Appointment keeping	45 (39.8)
Tracking health issues	51 (45.1)
Talking with providers	104 (92.0)
Managing daily activities	81 (71.7)
Anxiety disorders (Presence)	47 (41.6)
Panic anxiety	24 (21.2)
Generalized anxiety	32 (28.3)
Separation anxiety	49 (43.4)
Social anxiety	47 (41.6)
School avoidance	18 (15.9)

Analyses of bivariate relationships revealed several significant associations. Transition readiness positively correlated with health responsibility, peer support, family support, and age. Anxiety exhibited a significant negative relationship with transition readiness (**Table 4**). Five models were tested based on theoretical considerations in hierarchical multiple regression analysis (**Table 5**). In Model 1, age alone significantly predicted transition readiness ($\beta = 0.29$, $p < 0.01$), accounting for 8% of the variance. Adding family support (Model 2) significantly increased explained variance to 22% ($\beta = 0.38$, $p < 0.01$). Model 3 added peer support, explaining 30% of total variance, with both family support ($\beta = 0.27$, $p < 0.01$) and peer support ($\beta = 0.32$, $p < 0.01$) as significant predictors. Model 4 incorporated anxiety, which negatively predicted transition readiness ($\beta = -0.23$, $p < 0.01$), thereby increasing R^2 to 35%. The final model added health responsibility, explaining 41% of total variance in health responsibility ($\beta = 0.29$, $p < 0.01$), anxiety ($\beta = -0.26$, $p < 0.01$), and peer support ($\beta = 0.22$, $p < 0.05$) as significant predictors, while age and family support became non-significant.

Table 4. Correlations of transition readiness and studied variables (N = 113)

Variables	1	2	3	4	5	6
1. Age	1.00					
2. Family support	0.227**	1.00				
3. Peer support	0.275**	0.392**	1.00			
4. Anxiety	-0.073	-0.329**	-0.186*	1.00		
5. Health responsibility	0.116	0.431**	0.401**	-0.045	1.00	
6. Transition readiness	0.286**	0.424**	0.463**	-0.358**	0.452**	1.00

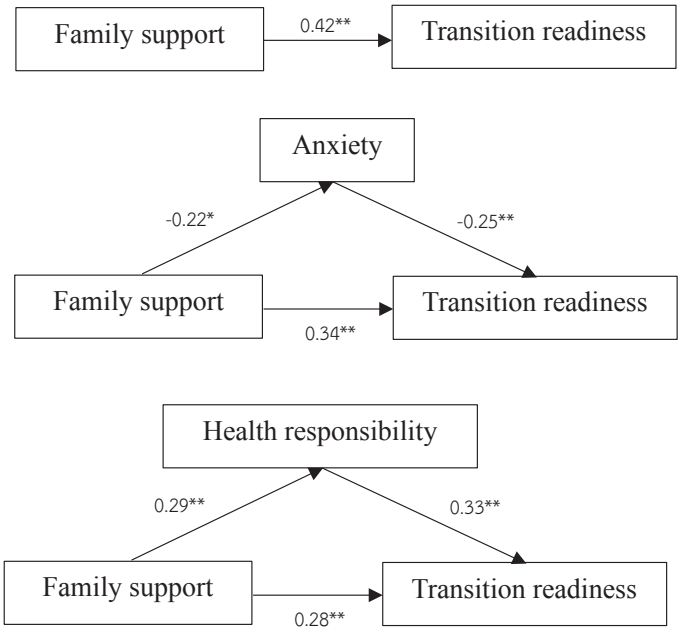
Note. * p < 0.05, ** p < 0.01

Table 5. The hierarchical multiple regression analysis for transition readiness (N = 113)

Predictive variables	R^2	R^2 change	SEE	F change	b	Beta	t
Model 1:	0.08	0.08	0.61	9.92**			
Age					0.10	0.29**	3.15
Model 2:	0.22	0.14	0.57	19.09**			
Age					0.07	0.20*	2.32
Family support					0.05	0.38**	4.37
Model 3:	0.30	0.08	0.54	12.94**			
Age					0.05	0.14	1.64
Family support					0.04	0.27**	3.04
Peer support					0.05	0.32**	3.59
Model 4:	0.35	0.05	0.52	7.48**			
Age					0.05	0.14	1.73
Family support					0.03	0.19*	2.23
Peer support					0.04	0.30**	3.51
Anxiety					-0.01	-0.23**	-2.74
Model 5:	0.41	0.06	0.49	11.69**			
Age					0.06	0.15	1.95
Family support					0.01	0.09	0.99
Peer support					0.03	0.22*	2.52
Anxiety					-0.01	-0.26**	-3.31
Health responsibility					0.02	0.29**	3.42

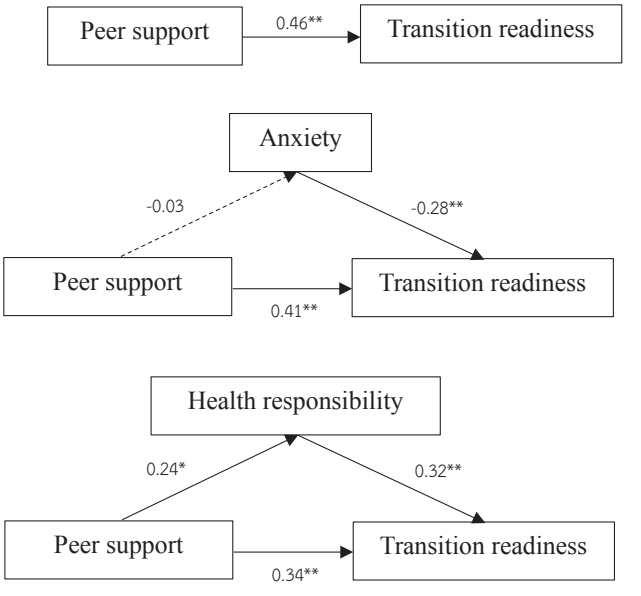
Note. SEE = Standard error of estimate, b = unstandardized coefficient,
*p < 0.05, **p < 0.01

Given that family support lost significance when anxiety and health responsibility were included in our final regression model, we hypothesized that other variables may mediate its effect. Thus, we conducted mediation analyses following Baron and Kenny's approach[28] to examine these potential pathways. The results revealed that the relationship between family support and transition readiness was partially mediated by both anxiety and health responsibility (**Figure 1**). However, the relationship between peer support and transition readiness was partially mediated by health responsibility (**Figure 2**).



* p < 0.05, ** p < 0.01

Figure 1. Standardized regression coefficients for the relationship between family support and transition readiness as mediated by anxiety and health responsibility



* p < 0.05, ** p < 0.01

Figure 2. Standardized regression coefficients for the relationship between peer support and transition readiness as mediated by anxiety and health responsibility

Discussion

This study investigated transition readiness in the Thai cultural context and examined factors influencing transition readiness among adolescents with KUTD. We found that encouraging health responsibility, reducing anxiety, and enhancing peer support are significantly associated with greater transition readiness.

Adolescents with KUTD in this study demonstrated suboptimal transition readiness, particularly in appointment management and tracking health domains. Despite their developmental stage, they still lacked fundamental self-management competencies. This limited competency likely reflects Thai and broader Asian cultural patterns where families remain central and intensive parental involvement continues into young adulthood. While family support is important, excessive parental involvement can impede the development of self-management skills necessary for successful transition.[29] This aligns with South Korean findings where parental overprotection hindered transition readiness.[30] These regional similarities suggest the need for interventions that balance cultural caregiving practices with adolescent autonomy development.

Health responsibility exhibited the strongest predictive effect on transition readiness, aligning with another study.[31] Participants demonstrated high adequate behavior scores, indicating they had appropriate self-care competencies, which may lead to greater confidence in performing healthcare activities and enhanced transition readiness. Furthermore, motivation in healthcare engagement (or active involvement) may foster a sense of empowerment. When adolescents feel in control of their health management, they tend to prioritize health-related activities and adhere to medical regimens.[23] This aligns with a previous finding that motivated adolescents demonstrate improved self-management competencies and health responsibility activation, ultimately strengthening transition readiness.[32]

The findings indicate anxiety as a significant barrier to transition readiness in this study. Prior study reveals that adolescents with chronic conditions often experience heightened anxiety from various sources, such as lack of transfer knowledge, reduced parental involvement, physical limitations, and social acceptance worries.[33] Higher anxiety levels can disrupt cognitive processes with attention, working memory, and adaptive mechanisms.[5] Subsequently, such anxiety shows a potential to diminish self-management behaviors in adolescents.[34] This is consistent with previous studies where elevated anxiety led to insufficient readiness and adverse health outcomes.[35]

Peer support emerged as a crucial element in the transition process, as it was a significant predictor of transition readiness in this study. This pattern, observed in our predominantly middle-to-late adolescent sample, aligns with developmental trajectories characterized by increased peer group affiliation.[36] Previous studies have documented that peer support, especially when provided by peers navigating similar health challenges, contributes to developing confidence and adaptive coping mechanisms, which subsequently enhances capacity for self-management and transition-related competencies.[33,37] However, our study measured peer support explicitly as support from classmates rather than peers with similar health conditions. Thus, it did not significantly reduce anxiety as a pathway to transition readiness, but only health responsibility. This finding is understandable, as classmates without KUTD likely lack the shared experience and disease-specific understanding that peers with similar conditions would provide. While classmates may effectively encourage healthier behaviors through social comparison and positive reinforcement, they typically cannot address the specific knowledge related to disease management and healthcare transitions.[32] Furthermore, it may reflect the low prevalence of school avoidance among our participants, suggesting that they generally maintained comfort in school environments where peer interactions primarily occur.

Interestingly, despite significantly correlating with transition readiness, family support lost statistical significance in the final regression model, contradicting previous studies.[9] Family support enhances transition readiness through dual pathways: reducing anxiety and promoting health responsibility. The mechanism may be relevant given that separation anxiety showed the highest prevalence among our participants, suggesting that adolescents with KUTD experience significant distress when separated from primary caregivers. Thus, family support is likely a protective factor, creating a secure psychological foundation that mitigates anxiety and provides guidance for exploring new responsibilities. A recent study has confirmed that perceived social support could enhance self-management behaviors through the negative mediating role of anxiety.[34]

Additionally, most participants were middle to late adolescents, a developmental stage during which family bonds often temporarily decrease due to increased independence.[36] Consequently, they might not perceive that family support could directly facilitate their readiness. This aligns with a previous study that found that family support, while crucial for transition in early adolescence, becomes less influential in later years.[38] Nevertheless, late adolescents and young adults report that family support enhances their autonomy and self-management skills through teaching, reminders, and praise, facilitating healthcare transition.[39] This emphasizes the importance of family support with an appropriate balance in health engagement.

Age could not predict transition readiness significantly in this study, contradicting a study in Brazil that found older age correlated with higher readiness.[40] This discrepancy likely stems from our sample's narrow age distribution (over 50% aged 16 to 18 years), potentially limiting detection of age effects. Furthermore, the changing role of age was initially significant but lost significance in the final model, suggesting its influence may be mediated through other variables such as health responsibility and peer support.

Limitations

Our study has several limitations that may affect the generalizability of findings. First, participants were recruited from tertiary hospitals with specialized clinics and staff. As such, the adolescents and caregivers may represent a more well-educated population. Second, data collection was conducted in pediatric outpatient departments, suggesting that participants may better represent adolescents who demonstrate adherence to outpatient care. Transition readiness levels may differ among those who do not regularly attend outpatient appointments, especially concerning appointment keeping and provider interactions. Last, the family support questionnaire may not have fully captured the nuances of family dynamics within Thai culture. These limitations warrant careful consideration when interpreting the study findings.

Conclusion and Implications for Nursing Practice

Adolescents with KUTD demonstrated insufficient transition readiness, particularly in appointment management and health tracking domains. Health responsibility, anxiety, and peer support emerged as significant predictors of transition readiness. These findings suggest the need for strengthening self-management skills, implementing routine anxiety screening, and enhancing family support and peer support networks, especially in school environments. Healthcare providers should integrate cultural considerations into transition planning, particularly regarding family dynamics between caregivers and adolescents, and promote early active participation in healthcare in adolescents with KUTD.

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References

1. Harambat J, Madden I. What is the true burden of chronic kidney disease in children worldwide? Pediatr Nephrol. 2023;38(5):1389-93. doi: 10.1007/s00467-022-05816-7.
2. Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work Group. KDIGO 2024 Clinical practice guideline for the evaluation and management of chronic kidney disease. Kidney Int. 2024;105(4S):S117-314. doi: 10.1016/j.kint.2023.10.018.
3. Dotis J, Pavlaki A, Printza N, Stabouli S, Antoniou S, Gkogka C, et al. Quality of life in children with chronic kidney disease. Pediatr Nephrol. 2016;31(12):2309-16. doi: 10.1007/s00467-016-3457-7.
4. Ministry of Public Health. Public health statistics A.D. 2021 [Internet]. 2022 Oct [cited 2025 Apr 1]. Available from: https://spd.moph.go.th/wpcontent/uploads/2022/11/Hstatistic64.pdf (in Thai).
5. Aier A, Pais P, Raman V. Psychological aspects in children and parents of children with chronic kidney disease and their families. Clin Exp Pediatr. 2022;65(5):222-9. doi: 10.3345/cep.2021.01004.
6. Blum RW, Garell D, Hodgman CH, Jorissen TW, Okinow NA, Orr DP, et al. Transition from child-centered to adult health-care systems for adolescents with chronic conditions. A position paper of the Society for Adolescent Medicine. J Adolesc Health. 1993;14(7):570-6. doi: 10.1016/1054-139x(93)90143-d.
7. White PH, Cooley WC; Transitions Clinical Report Authoring Group; American Academy of Pediatrics; American Academy of Family Physicians; American College of Physicians. Supporting the health care transition from adolescence to adulthood in the medical home. Pediatrics. 2018;142(5):e20182587. doi: 10.1542/peds.2018-2587. Erratum in: Pediatrics. 2019;143(2):e20183610. doi: 10.1542/peds.2018-3610.
8. Vainman S, Heller False Speiser MM, Posadas Martinez ML, Pérez L, Aguirre MA, Cortines Lapalma MC, et al. Experience with the transition process of adolescents with chronic diseases from pediatric to adult care in a general hospital. Arch Argent Pediatr. 2022;120(6):398-404. doi: 10.5546/aap.2022.eng.398.
9. Fenton N, Ferris M, Ko Z, Javalkar K, Hooper SR. The relationship of health care transition readiness to disease-related characteristics, psychosocial factors, and health care outcomes: preliminary findings in adolescents with chronic kidney disease. J Pediatr Rehabil Med. 2015;8(1):13-22. doi: 10.3233/PRM-150314.
10. Allemang B, Dimitropoulos G, Patten SB, Sitter KC, Brobbey A, Mackie AS, et al. Association between transition readiness and mental health comorbidity in youth with chronic health conditions. J Pediatr Nurs. 2022;67:161-7. doi: 10.1016/j.pedn.2022.09.012.
11. Kelly CS, Berg CA, Ramsey MA, Baker AC, Donaldson DL, Swinyard MT, et al. Relationships and the development of transition readiness skills into early emerging adulthood for individuals with type 1 diabetes. Child Health Care. 2018;47(3):308-25.doi:10.1080/02739615.2017.1354294.
12. Howsley H, Dunkley L, Calvert R, Hawley SJ, Edgerton J, Forsythe M, et al. Psychosocial factors associated with transition readiness in adolescents and young adults with juvenile idiopathic arthritis. Rheumatology. 2018;57(Suppl 8). doi: 10.1093/rheumatology/key273.003.
13. Wright EK, Williams J, Andrews JM, Day AS, Gearry RB, Bampton P, et al. Perspectives of paediatric and adult gastroenterologists on transfer and transition care of adolescents with inflammatory bowel disease. Intern Med J. 2014;44(5):490-6. doi: 10.1111/imj.12402.
14. Pakdeeprom B, In-Iw S, Chintanadilok N, Wichiencharoen K, Manaboriboon B. Promoting factors for transition readiness of adolescent chronic illnesses: experiences in Thailand. J Med Assoc Thai. 2012;95(8):1028-34. PMID: 23061306.
15. Kittivisuit S, Lerkvaleekul B, Soponkanaporn S, Ngamjanyaporn P, Vilaiyuk S. Assessment of transition readiness in adolescents in Thailand with rheumatic diseases: a cross-sectional study. Pediatr Rheumatol Online J. 2021;19(1):101. doi: 10.1186/s12969-021-00602-5.

16. Meleis AI. Transitions theory: middle range and situation specific theories in research and practice. New York: Springer Publishing; 2010.
17. Procidano ME, Heller K. Measures of perceived social support from friends and from family: three validation studies. Am J Community Psychol. 1983;11(1):1-24. doi:10.1007/BF00898416.
18. Fitzpatrick MM, Anderson AM, Browning C, Ford JL. Relationship between family and friend support and psychological distress in adolescents. J Pediatr Health Care. 2024;38(6):804-11.doi:10.1016/j.pedhc.2024.06.016.
19. Gandhi B, Cheek S, Campo JV. Anxiety in the pediatric medical setting. Child Adolesc Psychiatr Clin N Am. 2012;21(3):643-53. doi: 10.1016/j.chc.2012.05.013.
20. Cervin M, Norris LA, Ginsburg G, Gosch EA, Compton SN, Piacentini J, et al. The p factor consistently predicts long-term psychiatric and functional outcomes in anxiety -disordered youth. J Am Acad Child Adolesc Psychiatry. 2021;60(7):902-12.e5. doi: 10.1016/j.jaac.2020.08.440.
21. Cao X, Feng M, Ge R, Wen Y, Yang J, Li X. Relationship between self-management of patients with anxiety disorders and their anxiety level and quality of life: a cross-sectional study. PLoS One. 2023;18(5):e0284121. doi: 10.1371/journal.pone.0284121.
22. Jaworski M, Adamus MM, Bojar J. The sense of responsibility for the health as an important element of health education. 2016 International Academic Conference on Human Society and Culture; 2016. doi: 10.12783/dtssehs/hsc2016/3511.
23. Björk J, Stenfors T, Juth N, Gunnarsson AB. Personal responsibility for health? A phenomenographic analysis of general practitioners' conceptions. Scand J Prim Health Care. 2021;39(3):322-31. doi: 10.1080/02813432.2021.1935048.
24. Barnett S. Foster care youth and the development of autonomy. Int Rev Psychiatry. 2020;32(3):265-71. doi: 10.1080/09540261.2020.1720622.
25. Wongmuan K. Factors predicting transition readiness from pediatric to adult medical care in adolescents with chronic illness [master's dissertation]. [Bangkok]: Mahidol University; 2012.
26. Birmaher B, Khetarpal S, Brent D, Cully M, Balach L, Kaufman J, et al. The screen for child anxiety related emotional disorders (SCARED): scale construction and psychometric characteristics. J Am Acad Child Adolesc Psychiatry. 1997;36(4):545-53. doi: 10.1097/00004583-199704000-00018.
27. Wood DL, Sawicki GS, Miller MD, Smotherman C, Lukens-Bull K, Livingood WC, et al. The Transition Readiness Assessment Questionnaire (TRAQ): its factor structure, reliability, and validity. Acad Pediatr. 2014;14(4):415-22. doi: 10.1016/j.acap.2014.03.008.
28. Baron RM, Kenny DA. The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. J Pers Soc Psychol. 1986;51(6):1173-82. doi: 10.1037//0022-3514.51.6.1173.
29. Badour B, Bull A, Gupta AA, Mirza RM, Klinger CA. Parental involvement in the transition from paediatric to adult care for youth with chronic illness: a scoping review of the North American literature. Int J Pediatr. 2023;2023:9392040. doi: 10.1155/2023/9392040.
30. Hong HS, Im Y. Factors associated with healthcare transition readiness for adolescents with chronic conditions: a cross-sectional study. J Child Health Care. 2024:13674935241248859.doi:10.1177/13674935241248859.
31. Gumidala AP, Greenley RN, Plevinsky JM, Poulopoulos N, Cabrera J, Lerner D, et al. Moving on: transition readiness in adolescents and young adults with IBD. Inflamm Bowel Dis. 2018;24(3):482-9. doi: 10.1093/ibd/izx051.
32. Ma J, Zhou S, Bai X, Lei J, Wang H. Transition readiness of adolescents with cancer: a cross-sectional study based on self-determination theory. Eur J Oncol Nurs. 2024;69:102521. doi: 10.1016/j.ejon.2024.102521.
33. Kinch M, Kroll T, Buckle N, Somanadhan S. Interventions to support young adults and families with the healthcare transition between paediatric and adult nephrology health services: a systematic scoping review. J Pediatr Nurs. 2024;78:e346-63. doi: 10.1016/j.pedn.2024.07.026.
34. Zhu Y, Chen Y, Tang Y, Zhang X, Shen Q, Li F, et al. The association between perceived social support and self-management behaviors in adolescents and young adults with inflammatory bowel disease: the chain mediating role of basic psychological needs and anxiety/depression. Front Psychol. 2025;16:1483021. doi: 10.3389/fpsyg.2025.1483021.
35. Tornivuori A, Kallio M, Culnane E, Pasanen M, Salanterä S, Sawyer S, et al. Transition readiness and anxiety among adolescents with a chronic condition and their parents: a cross-sectional international study. J Adv Nurs. 2024;80(2):756-64. doi: 10.1111/jan.15860.
36. Boland RJ, Verduin ML, Ruiz P. Kaplan & Sadock's synopsis of psychiatry. 12th ed. Philadelphia: Lippincott Williams & Wilkins; 2021.

37. Kwok G, Levonyan-Radloff K, Masterson M, Ohman-Strickland P, Pawlish KS, Burger SS, et al. A randomized feasibility trial of managing your health: a self-management and peer mentoring intervention for young adult survivors of childhood cancer. J Pediatr Psychol. 2025:jsaf004. doi: 10.1093/jpepsy/jsaf004.
38. Zimmerman C, Garland BH, Enzler CJ, Hergenroeder AC, Wiemann CM. The roles of quality of life and family and peer support in feelings about transition to adult care in adolescents with gastroenterology, renal, and rheumatology diseases. J Pediatr Nurs. 2022;62:193-9. doi: 10.1016/j.pedn.2021.04.032.
39. Lee CC, Enzler CJ, Garland BH, Zimmerman CJ, Raphael JL, Hergenroeder AC, et al. The development of health self-management among adolescents with chronic conditions: an application of self-determination theory. J Adolesc Health. 2021;68(2):394-402. doi: 10.1016/j.jadohealth.2020.05.053.
40. Carrara FSA, Piotto DGP, Silva II, Len CA, Russo GCS, Chiba SM, et al. Factors related to the readiness of Brazilian chronic pediatric patients to transition to care in adult clinics. J Pediatr (Rio J). 2023;99(3):254-62. doi: 10.1016/j.jped.2022.10.006.

ปัจจัยทำนายความพร้อมการเปลี่ยนผ่านในวัยรุ่นที่มีโรคไตหรือทางเดินปัสสาวะ : การศึกษาภาคตัดขวาง

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บทคัดย่อ: วัยรุ่นที่มีโรคไตหรือทางเดินปัสสาวะต้องได้รับการดูแลรักษาในระยะยาว ดังนั้น การประเมินความพร้อมการเปลี่ยนผ่านจึงถือเป็นสิ่งสำคัญเพื่อระบุทักษะที่จำเป็นต่อการจัดการโรคและเพื่อให้เกิดการรักษาที่ต่อเนื่อง ความพร้อมการเปลี่ยนผ่าน คือ กระบวนการสร้างศักยภาพของวัยรุ่นให้มีส่วนร่วมในการดูแลสุขภาพเพื่อเตรียมพร้อม ดำเนินการต่อ และเปลี่ยนผ่านการดูแลสุขภาพให้เสร็จสมบูรณ์ การศึกษาภาคตัดขวางนี้เป็นการศึกษาความพร้อมการเปลี่ยนผ่านและปัจจัยทำนายในวัยรุ่นโรคที่มีไตหรือทางเดินปัสสาวะ จำนวน 113 ราย (อายุ 12 ถึง 18 ปี) จากโรงพยาบาลสองแห่งในกรุงเทพมหานคร ประเทศไทย โดยใช้เครื่องมือวิจัย ได้แก่ แบบสอบถามข้อมูลส่วนบุคคล แบบคัดกรองโรควิตกกังวลสำหรับเด็ก แบบสอบถามความรับผิดชอบต่อสุขภาพ แบบสอบถามการสนับสนุนทางสังคมจากครอบครัวและเพื่อน และแบบประเมินความพร้อมการเปลี่ยนผ่าน วิเคราะห์ข้อมูลด้วยสถิติเชิงพรรณนาและสถิติวิเคราะห์การถดถอยเชิงเส้นพหุคูณแบบเชิงชั้น

ผลการศึกษาพบว่า ร้อยละ 50.4 ของวัยรุ่นยังไม่พร้อมสำหรับการเปลี่ยนผ่าน โดยเฉพาะในด้านการนัดพบแพทย์และการติดตามด้านสุขภาพ ทั้งนี้ อายุ การสนับสนุนจากครอบครัวและเพื่อน ความวิตกกังวล และความรับผิดชอบต่อสุขภาพ สามารถทำนายความแปรปรวนของความพร้อมการเปลี่ยนผ่านได้ร้อยละ 41 โดยความรับผิดชอบต่อสุขภาพมีอำนาจในการทำนายสูงสุด รองลงมา คือ ความวิตกกังวล และการสนับสนุนจากเพื่อนตามลำดับ แม้ว่าการสนับสนุนจากครอบครัวไม่สามารถทำนายความพร้อมการเปลี่ยนผ่านได้โดยตรง แต่สามารถทำนายผ่านการลดความวิตกกังวลและช่วยเสริมสร้างความรับผิดชอบต่อสุขภาพ ดังนั้น การสนับสนุนจากครอบครัวจึงเป็นปัจจัยปกป้องที่สำคัญในการเตรียมพร้อมสำหรับการเปลี่ยนผ่าน จากผลการศึกษานี้ แนะนำว่าพยาบาลควรให้ความสำคัญในการเตรียมพร้อมสำหรับการเปลี่ยนผ่าน มุ่งเน้นการสนับสนุนจากครอบครัวและเพื่อน ควรกระตุ้นให้เกิดความรับผิดชอบต่อสุขภาพ และลดความวิตกกังวล เพื่อเพิ่มความพร้อมการเปลี่ยนผ่านในกลุ่มวัยรุ่นที่มีโรคไตหรือทางเดินปัสสาวะ โดยการปฏิบัติดังกล่าวควรได้รับการทดสอบก่อนนำไปใช้ในการปฏิบัติจริง

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