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Related Factors with Self-Management Behaviors among Patients with Predialysis Chronic Kidney Disease: A Multicenter Study in Myanmar

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Related Factors with Self-Management Behaviors among Patients with Predialysis Chronic Kidney Disease: A Multicenter Study in Myanmar

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Abstract

Background: Self-management behavior is a key to managing patients with predialysis chronic kidney disease (CKD) and is effective in slowing disease progression in impoverished Burmese patients with CKD. This study aimed to outline the association of personal and environmental factors with the self-management behaviors of people with predialysis CKD.

Methods: Using convenience sampling, this cross-sectional study included 84 individuals with predialysis CKD from two private hospitals in Myanmar. The interviewer-administered questionnaire included demographic information, the Health Literacy Short Form-12, the CKD knowledge questionnaire, the self-efficacy questionnaire, the Multidimensional Scale of Perceived Social Support, and the self-management behavior questionnaire. This study analyzed the data using descriptive statistics, Pearson's correlation coefficients, Spearman's rho correlation, and Chi-square tests.

Results: The results revealed that participants had moderate health literacy (26.12 ± 7.51), CKD knowledge (10.10 ± 3.76), and perceived self-efficacy levels (30.58 ± 10.28), a high social support level (67.33 ± 8.54), and a moderate self-management behavior level (74.20 ± 7.80). Health literacy ($r = 0.40, p < 0.01$), CKD knowledge ($r = 0.62, p < 0.01$), perceived self-efficacy ($r = 0.62, p < 0.01$), and social support ($r = 0.44, p < 0.01$) were related to self-management behaviors.

Conclusions: The results indicated that enhanced health literacy, CKD knowledge, self-efficacy, and social support could support the self-management behaviors of individuals with predialysis CKD.

Keywords: chronic kidney disease, health literacy, Myanmar, self-efficacy, self-management

INTRODUCTION

Chronic kidney disease (CKD) has emerged as a substantial global health challenge. The prevalence of CKD affected approximately 13.4% of the global population in 2015.¹ Regional data indicates a projected increase in CKD prevalence rate at approximately 16.7% of the adult population in the United States by the year 2030.² Meanwhile, the prevalence of CKD was notably high in South Asian countries, which affect 1–4 out of every ten individuals between 2009 and 2016.³ Additionally, the prevalence rate of CKD reached a staggering figure in 2017, affecting over 69 billion people in the South East Asia region.⁴

Furthermore, CKD imposes a significant burden on global mortality and morbidity. Kidney failure alone accounted for 1.2 million deaths globally in 2015,⁵ positioning it as the twelfth leading cause of global death in 2017.⁶ The impact of CKD is not limited to mortality, as it resulted in

approximately 35.8 million disability-adjusted life years globally in 2017.⁴

The 2015 national survey on the population aged ≥ 20 in Myanmar, a country in Southeast Asia, reported that approximately 3.6 million (10.5%) of Myanmar's population had kidney disease problems.⁶ Additionally, the incidence had skyrocketed from 4000 to approximately 7000 individuals in Mandalay, a tertiary hospital, from 2012 to 2016.⁷ Myanmar rated kidney disease as the eleventh leading cause of death, and 3.05% of total deaths belonged to kidney-related problems in 2018.⁸

CKD-related complications financially impact the healthcare system, even in wealthy countries such as the United States of America.⁹ Only one-tenth of patients with end-stage kidney disease (ESKD) can afford appropriate renal replacement therapy (RRT), and most people face financial issues in developing countries, such as Myanmar.¹⁰ The costs of CKD management increase accordingly with its stage progression, and RRT is the most expensive treatment for CKD, which becomes the only option after ESKD progression. Therefore, appropriate management should be considered during the predialysis stages of CKD to reduce the burden of ESKD.

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CKD is a progressive and irreversible chronic disease in which self-management has been crucial to properly managing CKD in the early stages. Bandura defined self-management as the behaviors individuals continuously attempt to regulate and contribute to maintain good health in their daily lives.¹¹ The social cognitive theory states that behavioral outcomes arise from the reciprocal interaction of personal and environmental factors.¹² Personal factors might be any aspects of cognitive, personality, or demographic factors,¹³ in which knowledge of health risks and benefits and perceived self-efficacy are the core determinants of successful change in health behaviors.¹⁴ Health literacy is a remarkable predictor of self-management behaviors.¹⁵ Environmental factors are external influences that affect individuals physically or socially,¹³ and performing health behaviors requires social systems that impact individuals' health.¹⁴ The fundamental concepts of social cognitive theory and literature review indicated that personal factors (age, gender, marital status, education, CKD duration, health literacy, CKD knowledge, and perceived self-efficacy) and environmental factors (social support) need to be considered for self-management behaviors in this study.

The literature revealed the association of higher performance of self-management behavior with some demographic factors, such as younger people, higher education levels, and longer disease duration.¹⁶ Additionally, gender¹⁷ and marital status^{15,18} were associated with CKD patients' self-management behaviors. Self-management behavior revealed significant associations with various factors in different CKD stages. It was significantly associated with health literacy¹⁹, CKD knowledge,^{20,21} and social support in the predialysis population.²¹ Self-management behavior was correlated with health literacy,^{22,23} CKD knowledge,^{17,24} and social support in patients on hemodialysis.^{17,24-26} Moreover, self-management behavior exhibited correlations with health literacy,¹⁵ CKD knowledge,¹⁹ and social support¹⁵ across all stages of CKD.

However, the study on those significant factors remained under-identified in patients with predialysis CKD. Additionally, patients on hemodialysis in Myanmar reported an inadequate self-management level.²⁷ Therefore, this study aimed to outline the relationships between personal and environmental factors and self-management behaviors in patients with predialysis CKD in Myanmar.

METHODS

The Ethical Review Committee on Human Research, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Thailand, and the Institutional Review Board from Medical and Alliance Universities, Ministry of Education, Myanmar, approved this study. The researcher

explained the study's objectives, expected risks, and benefits. The informed consent form was distributed to participants to sign before beginning the data collection. Moreover, participants had the right to withdraw from the study at any time without any impact on the medical treatment they had received. All data were kept confidential and anonymous.

This cross-sectional descriptive correlational study of patients with predialysis CKD was conducted from December 2021 to February 2022 in outpatient departments of two private hospitals: City Private Hospital in Mandalay, Myanmar, and Bahosi Private Hospital in Yangon, Myanmar.

Participants were individuals diagnosed with CKD for over three months with an estimated glomerular filtration rate (eGFR) of 15–90 ml/min/1.73 m² (predialysis stages 2–4). Other inclusion criteria were that participants should be aged ≥18 years, able to read and write in the Myanmar language, have intact cognitive status, and agree to participate in the study. This study used the G*Power program to calculate the required minimum sample size. A bivariate correlation included a power of 0.85, a significance alpha of 0.05, and an effect size of 0.33 based on the previous study by Chen *et al.*¹⁵ The minimum sample size was 79. Including an attrition rate of 10%,²⁸ this study planned to recruit 87 participants. However, three subjects aged approximately 90 years were considered outliers for needing assistance when answering the questionnaires. Therefore, the total participants were 84.

The Institutional Review Board, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Thailand (ID 2855) and the Institutional Review Board from Medical and Alliance Universities, Ministry of Education, Myanmar approved this study (MOE-IRB, 2021/Research/No.090). Then, the researcher obtained permission from the directors of two private hospitals: City Private Hospital in Mandalay, Myanmar, and Bahosi Private Hospital in Yangon, Myanmar. The researcher asked permission and coordinated with outpatient department nurses in each setting, which met the inclusion criteria. Eligible participants for predialysis CKD stages 2–4 were selected according to the doctor's notes and eGFR on medical record books. Researchers approached all potential participants. Participants who were willing to participate in the study were then explained about the information sheet, signed an informed consent form, and interviewed in the waiting room. Each participant completed the interview for approximately 30 min.

This study used the Health Literacy Short Form-12 (HLS-SF12),²⁹ the CKD knowledge,²⁰ the CKD self-efficacy,³⁰ the Multidimensional Scale of Perceived Social Support (MSPSS),³¹ and the CKD self-management behaviors questionnaires²⁰ in English versions. These instruments

were translated from English into Burmese versions by the recommendation of Maneesriwongul and Dixon to ensure cross-cultural comparisons.³² The process of forward translation, backward translation, and comparison between original and translated English versions included three bilingual experts.

Subsequently, five experts validated the Burmese questionnaires' content validity index (CVI). Twenty participants (20% of the main study) participated in the pilot study of the targeted population to assess the appropriateness or comprehension of participants with similar characteristics to the targeted population at the Royal Private Hospital, Yangon, Myanmar, for the questionnaire reliability.³³ The results revealed the acceptability of all questionnaires' validity and Cronbach's alpha.

The researcher developed this tool, which consisted of age, gender, religion, marital status, education level, monthly income, comorbidities, and CKD duration.

Duong *et al.* developed HLS-SF12 in 2017 to screen three health domains of health literacy (health care, disease prevention, and health promotion).²⁹ The Cronbach's alpha of the original instrument was 0.85. The tool comprises 12 questions, scored from 1 (very difficult) to 4 (very easy). The possible scores range from 12 to 48 points, with 12–24, 25–36, and 37–48 points indicating low, moderate, and high scores, respectively. The original English version was translated to the Myanmar version with the validation of the content validity of 1.0 and Cronbach's alpha of 0.937.

Moktan *et al.*²⁰ developed a CKD knowledge questionnaire for the predialysis CKD population, which was then translated and adapted under the developer's permission. The content validity of the original version was 0.99, with Kuder-Richardson of 0.866. The instrument of this study includes 18 items with the responses "yes," "no," "unsure," and "unknown." The correct response was one point, and the incorrect answer was zero. The score ranges from 0 to 18, with 0–9, 10–13, and 14–18 points indicating low, moderate, and high scores, respectively. The CVI of this questionnaire was 0.98, with Cronbach's alpha of 0.807.

Curtin *et al.* developed a Self-Efficacy questionnaire in 2008 to measure participants' beliefs and confidence in early CKD stages with Cronbach's alpha of 0.92.³⁰ Moktan *et al.* modified this instrument in 2019, containing 12 items with a 5-point Likert scale with Cronbach's alpha of 0.887.²⁰ This study obtained permission from the original developers to modify the scale by deleting one item. Thus, this study only used 11 items. The possible scores range from 11 to 55, with 11–27, 28–41, and 42–55 points indicating low, moderate, and high scores, respectively. The CVI was 1.0, with Cronbach's alpha of 0.937.

Zimet *et al.* developed MSPSS in 1988 to evaluate three dimensions of social support: significant others, family, and friends.³¹ Cronbach's alpha of the original version was 0.88. The tool is composed of 12 questions with a 7-point Likert scale. The possible responses range from 12 to 84, with 12–42, 43–63, and 64–84 points indicating low, moderate, and high scores, respectively. The CVI was 1.0, with Cronbach's alpha of 0.902.

Moktan *et al.* developed a Self-management behaviors questionnaire in 2019 to assess three dimensions of self-management behaviors: engagement in activities/treatment guidelines, symptom management, and the use of recommended medical therapies.²⁰ The CVI was 0.96, with Cronbach's alpha of the original version of 0.719. The questionnaire is composed of 28 items with a 4-point rating scale. The possible responses range from 28 to 112, with 28–56, 57–84, and 85–112 points indicating low, moderate, and high scores, respectively. The CVI of this instrument was 1.0, with Cronbach's alpha of 0.746.

A statistical software package was used to enter the data. The data were checked for accuracy, consistency, completeness, and outliers. The test of normality excluded three outliers. Descriptive statistics, including percentage, mean (M), and standard deviation (SD), were calculated for demographic characteristics (age, gender, education, marital status, and CKD duration) and levels of health literacy, CKD knowledge, perceived self-efficacy, social support, and self-management behaviors.

The Shapiro–Wilk test, skewness, and kurtosis were run before the inferential analysis. Pearson's correlation coefficient was used for continuous data that met normality (age, health literacy, CKD knowledge, self-efficacy, and social support) on self-management behavior. Nonnormality data, such as CKD duration, was analyzed by the Spearman correlation, while the Chi-square analysis was applied to examine the relationship between categorical variables (gender, marital status, and education) and self-management behavior. This study categorized the education level of participants as high education for a bachelor's degree and low education for at least high school.¹⁶ *P*-values of <0.05 were considered statistically significant.

RESULTS

The survey included 84 participants after cleaning the data and checking the completeness and outliers. The age of participants ranged from 20 to 87 years, with an average of 57.98 ± 13.61 years. Additionally, 90.5% of the participants were Buddhists, 76.2% were married, 79.8% had education not higher than high school education, 75% had an average income of <300,000 MMK per month (approximately 150 USD; 1 USD = 1900 MMK), 91.7% had been suffering comorbidities, including hypertension

(85.7%) and diabetes (54.8%), and approximately 90.5% did not believe in the unconventional therapy (Table 1).

The scores of the participants were calculated for percentages, and the scores were divided into low (<50%), moderate (51–75%), and high levels (>75%) to describe the levels of health literacy, CKD knowledge, self-efficacy, perceiving social support, and self-management behaviors.²⁰

Moreover, the participants' overall health literacy and CKD knowledge levels were moderate (54.41%, 26.12 ± 7.51 ; 56.08%, 10.10 ± 3.76 , respectively). In this study, most Burmese people with predialysis CKD had a moderate self-efficacy level (55.61%, 30.58 ± 10.28). In contrast, the participants reported a high perceived social support level (80.16%, 67.33 ± 8.54). Finally, the participants' mean score of self-management behaviors was moderate (66.25%, 74.20 ± 7.80), as shown in Table 2.

Gender, marital status, education status, and self-management behaviors (Table 3) among people with predialysis CKD demonstrated no association in this study. The correlational analysis revealed that age and CKD duration demonstrated no association with self-management behaviors (Table 4). However, health literacy ($r = 0.396$), CKD knowledge ($r = 0.621$), perceived self-efficacy ($r = 0.620$), and perceived social support ($r = 0.435$) demonstrated significant relationships with self-management behaviors at the level of 0.01 (Table 4).

TABLE 1. Sociodemographic characteristics of patients with predialysis CKD (N = 84)

Characteristics	N (%)
Age in years	
< 41	10 (11.9)
41 – 60	34 (40.5)
> 60	40 (47.6)
(Mean = 57.98, SD = 13.61, Min = 20, Max = 87)	
Gender	
Male	39 (46.4)
Female	45 (53.6)
Religion	
Buddhist	76 (90.5)
Islam	6 (7.1)
Hindu	2 (2.4)
Marital Status	
Single	12 (14.3)
Married	64 (76.2)
Widow/widower/separated	8 (9.5)

TABLE 1. Continued

Characteristics	N (%)
Education	
No education	6 (7.1)
Primary school	20 (23.8)
Middle school	20 (23.8)
High school	21 (25.0)
Bachelor degree	17 (20.2)
Monthly income	
<300000 MMK	63 (75.0)
300000–500000 MMK	14 (16.7)
>500000 MMK	7 (8.3)
Comorbidities	
No	7 (8.3)
Yes (can answer more than one)	77 (91.7)
Hypertension	72 (85.7)
Diabetes	46 (54.8)
Heart disease	12 (14.3)
Dyslipidemia	7 (8.3)
Stroke	3 (3.6)
Others (asthma, bilateral renal stones, urinary tract infection, etc.)	10 (11.9)
CKD stage	
Stage 2	11 (13.1)
Stage 3A	10 (11.9)
Stage 3B	19 (22.6)
Stage 4	44 (52.4)
Duration of CKD diagnosed	
< 6 months	33 (39.3)
6 months to 1 year	20 (23.8)
1–3 years	16 (19.0)
3–5 years	12 (14.3)
>7 years	3 (3.6)
(Mean = 21.42, SD = 26.33, Min = 3.5 months, Max = 120 months)	
Self-management experience of CKD	
Least	43 (51.2)
Less	26 (31.0)
More	12 (14.3)
Most	3 (3.6)
Belief in treatment with unconventional therapy	
Least	55 (65.5)
Less	21 (25.0)
More	7 (8.3)
Most	1 (1.2)
Treatment was taken at	
Private hospital only	71 (84.5)
Both private and government hospitals	13 (15.5)

TABLE 2. Descriptive statistics of health literacy, CKD knowledge, self-efficacy, social support, and self-management behaviors in patients with predialysis CKD (N = 84)

Variables	Mean	SD	%	Interpretation
Health literacy	26.12	7.51	54.41%	Moderate
CKD knowledge	10.10	3.76	56.08%	Moderate
Self-efficacy	30.58	10.28	55.61%	Moderate
Social support	67.33	8.54	80.16%	High
Self-management behaviors	74.20	7.80	66.25%	Moderate

TABLE 3. Association of gender, marital status, and educational status with self-management behaviors in patients with predialysis CKD (N = 84) using a Chi-square table

Variables	Self-Management Behaviors				p
	Low and Moderate (28 – 84)		High (85 – 112)		
	N	%	N	%	
Gender					
Male	37	92.5	3	7.5	0.183
Female	39	83.0	8	17.0	
Marital status					
Married	56	84.8	10	15.2	0.212
Unmarried (single/widow/widower/separated)	20	95.2	1	4.8	
Education level					
Low education	63	90.0	7	10.0	0.132
High education	13	76.5	4	23.5	

TABLE 4. Association of age, CKD duration, health literacy, CKD knowledge, self-efficacy, and social support with self-management behaviors in patients with predialysis CKD using Pearson’s or Spearman correlation (N = 84)

Variables	1	2	3	4	5	6	7
1. Age	1						
2. CKD Duration	0.057	1					
3. Health literacy	-0.287**	-0.007	1				
4. CKD knowledge	-0.155	0.206	0.565**	1			
5. Self-efficacy	-0.247*	0.139	0.720**	0.698**	1		
6. Social support	-0.072	0.133	0.206	0.426**	0.366**	1	
7. Self-management behaviors	-0.062	0.195	0.396**	0.621**	0.620**	0.435**	1

**p < 0.01, *p < 0.05

DISCUSSION

This study aimed to analyze factors associated with self-management behaviors in the predialysis CKD population. The study results revealed that the respondents had moderate self-management behavior levels, and CKD self-management was correlated with health literacy, CKD knowledge, self-efficacy, and social support, but not demographic factors.

The study revealed that age was not related to self-management behaviors during the predialysis stages of CKD, contrary to expectations. Other studies that explored this intricate relationship revealed a complex picture, and some found a negative relation across patients with all CKD stages¹⁵ and on hemodialysis,¹⁷ while others demonstrated a positive association in early CKD stages between age and self-management.³⁰ Interestingly, older patients on hemodialysis demonstrated a notably positive correlation with the fluid management aspect of

self-care,²⁷ possibly indicating that older people pay greater attention to health and healthier behaviors than younger ones.³⁴

Our results revealed that gender was not related to self-management behaviors in the predialysis CKD population, unlike the former study.³⁴ Gender showed an association with self-care behaviors in the Burmese hypertensive community, and women spent less time on healthy lifestyle activities.³⁴ In contrast, women on hemodialysis tended to be more likely to adhere to self-care activities.¹⁷ The predialysis population examined in the study could be considered to differ from the population of two previous studies on hypertension and hemodialysis. Patients on hemodialysis may have more symptoms and complications that they need to take care of themselves daily, such as diet, lifestyle, and medication, unlike patients with hypertension.

Marital status was not related to the self-management behavior of patients with predialysis CKD. On the contrary, some studies revealed that single or married participants performed CKD self-management more than CKD people who were widowed or separated.¹⁸ In contrast, single participants engaged more in self-management than participants in other marital conditions.¹⁵ Most participants in the study were married, similar to previous studies, but the statistical analysis used differed, causing potentially different findings.

Education level showed no association with patients with predialysis CKD self-management behaviors in this study, which was inconsistent with previous studies. Patients with CKD performed better self-management behaviors accordingly with the higher educational level on various CKD stages.^{17,23,24,30} This might be due to the participants' different categories of educational levels and the use of different instruments in the study.

This study revealed no significant association between CKD duration and self-management behaviors. A previous study reported that patients on predialysis with longer disease duration performed better self-management activities, unlike ours.¹⁶ Additionally, a study on chronic heart failure revealed similar results in which most participants had more than one year of disease duration.³⁵ However, more than half of the participants in this study had been diagnosed with CKD for ≤ 1 year. The short duration of having CKD may be insufficient to view the relationship with self-management behaviors.

Based on social cognitive theory, health literacy as an individual's cognitive factor has a reciprocal relationship with the physical or social environment and behavioral outcomes.³⁶ Health literacy is essential to information processing, such as finding, understanding, judging, and applying health information for people. Patients having CKD tended to perform their self-management to control the disease. The participants had a moderate overall health literacy level. Additionally, a positive relationship between health literacy and CKD self-management behaviors was noted in the predialysis stages of this study, which is congruent with other studies.^{15,37} However, health literacy and all self-care behaviors demonstrated no relationship in the low-income CKD population,^{19,38} in which different questionnaires, such as 3-item questions, are used to test health literacy, and further research is needed to better understand the relationship between health literacy and self-management behavior.

As a conceptual framework of this study, knowledge is significant to improve the level of understanding for performing a behavior by cognitive process.³⁹ Patients with CKD must have disease-specific knowledge to perform such complicated CKD management better.⁴⁰ This study showed that participants demonstrated moderate CKD knowledge, and CKD knowledge had a

strong relationship with self-management behaviors in patients with predialysis CKD. The higher the CKD knowledge that patients have, the better self-management behaviors they perform. This finding was strengthened by former studies.^{22-24,41,42} Moreover, objective and perceived kidney disease knowledge had a positive trend related to CKD self-care.¹⁹

According to Bandura's theory, one's belief in ability or efficacy is a key construct in performing challenging activities, whether the person initiates coping behavior, how much effort the person expends, or how persistent the person is in facing obstacles.¹¹ Self-efficacy is an exclusively important factor in practicing complicated self-management behaviors, such as treatment-related activities, symptom management, and proper use of recommended pharmacological management, in their daily life.²² The participants demonstrated a moderate overall self-efficacy level, and self-efficacy is also known to be a factor associated with CKD self-management behaviors in the predialysis population. The result was supported by previous evidence among patients on predialysis,^{22,23,30,42} all CKD stages,²⁶ and hemodialysis.^{17,20,24}

Maintaining health behaviors is not solely an individual matter in terms of conceptual framework. Furthermore, social facilitators, or supporters, are core elements to achieving behavioral changes.¹⁴ The helpful social environment could deeply influence the sophisticated self-management behaviors to modify the patients' daily activities.¹⁵ Besides, having support from three sources (significant ones, family, and friends) was beneficial for patients psychologically in the way of coping mechanisms and positive appraisal of the condition and reducing emotional stress.⁴³ The study analysis revealed that the participants had a high level of social support, and patients with predialysis CKD showed a positive correlation between social support and self-management behaviors. It is similar to previous studies, in which social support is a predictable factor for improving self-management at all CKD stages¹⁵ in patients on hemodialysis.⁴⁴

In summary, Bandura indicated that behavior came from the reciprocal interaction of personal factors and environmental factors. A person with good health literacy and knowledge level would engage more in healthy behaviors. Similarly, they will perform healthy behaviors if they have high self-efficacy. Social support as an environmental factor is also important to strengthen healthy behaviors.⁴⁵

Some demographic findings of the study did not show a correlation with self-management behaviors. Therefore, further studies are indicated to confirm the study results. Future projects for improving self-management behaviors among the predialysis CKD population in Myanmar should consider any age group, gender, marital status, and

educational levels. The strength of the study is that the findings emphasized the level of self-management behaviors and related factors in the targeted population. This could provide healthcare professionals with some ideas that should be considered significant factors to help improve the self-management behaviors of the predialysis CKD population for future projects in Myanmar.

However, this study had some limitations. First, recruitment by convenience sampling method in private sectors (private hospitals in the upper and lower part of Myanmar) might not represent the CKD population in Myanmar, and the findings might have limitations to conclude generalizations of all Burmese patients with CKD. Second, the long questionnaire response period might cause boring and biased responses. The participants might not recognize symptom management and recommended self-management behaviors due to rare symptoms in the early CKD stages. However, more than half of the participants in this study were predominantly in stage-4 CKD. They might experience many symptoms and high engagement in symptom management/self-management behaviors compared to the rest of the participants. Finally, the social cognitive theory excluded biological and hormonal predispositions that may impact the self-management behaviors of the participants.

CONCLUSIONS

This cross-sectional study, guided by social cognitive theory, recommended initiating health education programs or workshops to boost CKD knowledge, self-efficacy, and social support levels. In contrast, a comprehensive self-management program considered its related factors indicated for patients with predialysis CKD. Future predictive or interventional studies should be conducted on other geographical areas for general governmental hospitals and evaluated for the outcomes of the predialysis population in Myanmar.

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CONFLICT OF INTEREST

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