Original Article

The Influence of Caregiver, Social Support and Quality of Life in Elderly People with Type 2 Diabetes Mellitus in Thailand

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Abstract

Background: Diabetes mellitus significantly impacts the quality of life (QoL) of older adults, particularly in rural Thailand. Beyond clinical management, caregiver support and social networks are considered to be crucial determinants of well-being. However, research regarding these factors remains limited in this specific context. This study examines the influence of caregiver, perceived social support, and QoL among elderly with type 2 diabetes mellitus.

Methods: A cross-sectional study was conducted among 366 elderly patients with type 2 diabetes mellitus(aged ≥60 years). Data were collected by structured questionnaires. Multiple linear regression analyses were performed to examine associations while controlling sociodemographic and health-related variables.

Results: The mean age of participants was 67.70 years (SD = 4.99), with 69.67% female. Most received care from a spouse (54.37%) or family members (28.69%), while 16.94% had no caregiver. High perceived social support($\beta = 0.507$, $p < 0.001$). was associated withbetter quality of life. Similarly,family caregivers($\beta = 0.229$, $p < 0.001$),spousal care($\beta = 0.114$, $p < 0.05$), secondary/vocational education($\beta = 0.367$, $p < 0.001$)were also associated with better quality of life. Conversely, hypertension($\beta = -0.153$, $p < 0.001$), depression symptoms($\beta = -0.139$, $p < 0.05$) were negative associations.

Conclusion: Caregiver and perceived social support were associated with better quality of life in elderly diabetic patients in rural Thailand. These findings showed the importance of psychological management in diabetes mellitusand underscore the need for holistic, community-based interventions that establish caregiving networks and social support systems to improve well-being

Keywords: Caregiver, Social Support, Quality of Life, Elderly, Diabetes Mellitus Thailand

Introduction

Diabetes mellitus is a major public health concern in elderly populations worldwide, with the majority having type 2 diabetes. The burden of this disease is shifting toward the Low and middle-income countries (LMICs) and aging populations[1,2] which isrisingfrom 200 million cases in 1990 to 830 million in 2022.[3]In Thailand, the prevalence of diabetes mellitus has been increasingfrom 7.5% in 2004 to 10.1% in

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20204, thereby leading to high morbidity, disability, and expenditure on health care.[4] The prevalence of diabetes mellitus among the geriatric population affects their health, thereby resulting in the loss of quality of life (QoL), including the psychological aspect as well.[5–8]

The quality of life experienced by the elderly with diabetes mellitus is poor compared with the general population and progressively worsens with the progression of the disease with older age, loneliness, residence in rural settings, unemployment, and low educational achievement.[9–11] Management of diabetes mellitus in older adults is uniquely complex, involving not only glycemic control but also the navigation of age-related comorbidities, polypharmacy, and the risk of functional decline.[5,6] Consequently, the primary clinical goal is often shifting from disease control to optimization of multidimensional well-being, encompassing physical, psychological, social, and environmental aspects.[9]

A good QoL for elderly diabetic patients is influenced by various factors beyond clinical interventions[12,13] with strong familial bonds and respect toward elders, family caregivers influenced by traditional Thai social structures were central pillars in chronic disease management.[14]These caregivers provide crucial assistance such as reminders to take medications, help in preparing meals, transportation to healthcare facilities for medical appointments, and assistance in the performance of activities of daily living.[15,16] Moreover, the support structures that include friends, social, and religious groups provide the needed emotional support, informational support, and protection against the potential isolation.[17,18]

Thailand is in the middle of a rapid demographic transition, with a resulting strain on traditional support mechanisms from family members due to low fertility rates and rural to urban migration.[15,19]Increased labor force participation and rural to urban migration may decrease both the number and competence of family caregivers.[15] This coincides with the transformation of the country's healthcare systems, thereby increasing the vulnerability of the diabetic aged population to poor self-management, increased levels of psychological distress, and poor quality of life.[10]

Risk factors known to exist within the Thai diabetic population, including old age and being overweight, are recognized to impact the awareness and control of diabetic diseases associated with socioeconomic factors.[4,20] However, there is the essential gap in the relationship and impact of social support and caregivers on the qualityoflife in elderly diabetic patient within the Thai cultural setting. This study aimed to examine the influence of caregiver presence and perceived social support on the quality of life among elderly people with diabetes mellitusin Lomkao district, Phetchabun province which is aged society. These findings will inform the development of culturalinterventions and policies that strengthen support systems, ultimately empowering older adults with diabetes mellitus to achieve not just longer life, but better quality of life.

Methods

Research Design

This was an analytical cross-sectional studyto investigate the influence of caregiver, social support levels, and quality of life among elderly patients with type 2 diabetes mellitus.

Population

Older adults aged 60 years and over, confirmed diagnosis of diabetes mellitus, residing in Lomkao District, Phetchabun Province, Thailand. Participants met the following criteria: (1) aged 60 years or over, (2) confirmed diagnosis of type 2 diabetes mellitus, for at least three months prior to study participation, (3) registered residency within Lomkao District, Province of Phetchabun, Thailand, (4) capacity to communicate in Thai, (5) willingness to be part of this study. Exclusion criteria: (1) severe cognitive impairment, difficulty understanding questions or signing consent, (2) having acute medical conditions needing hospital care during data gathering, (3) severecognitive impairmentor communication barriers to questionnaire completion.

Sample Sizeand Sampling Techniques

The sample size was calculated using the standard formula identified for the evaluation of the association between categorical and continuous data. With reference to a pilot study on the issue of quality of life against the background of elderly people suffering from diabetes mellitus, taking an expected effect size of 0.25, a significance level of $\alpha = 0.05$, statistical power of 0.80 or $1-\beta$, the minimum sample size amounted to 150 elderly diabetes mellitus patients. However, in order to reduce the effects of missing data and attrition, the sample size was adjusted by adding 10%, and the result was 165 elderly patients suffering from diabetes mellitus. The actual sample size consisted of 366 persons. This study applied simple random sampling techniques using computer-generated random numbers.

Data Collection

The face-to-face interviews were conducted in a private and comfortable setting in order to ensure confidentiality and minimize the risk of distractions. The process began with a written informed consent before proceeding with interviews. The structured instrument was also implemented. The participants were encouraged to ask questions when in doubt and enough time was taken at the end of each interview to enable the respondents to answer accordingly. The length of each interview was between 20 to 40 minutes in length and included a break when appropriate.

Measurement Tools

The questionnaire consisted of six sections: (1) Sociodemographic characteristics (gender, age, level of education, occupation, monthly income, history of illnesses), (2) Functional status and behavior (physical activity measured by International Physical Activity Questionnaire, IPAQ, Barthel Index with ten activities of daily life, scored 0-20, alcohol consumption within past three months, smoking status), (3) Presence and type of caregiver, (4) Social Support, measured by MSPSS-Thai. It has a total score of 12-84, divided further intolow(12-35), moderate(36-60), or high perceived support(61-84), (5) Quality of Life, using WHOQOL-BREF-Thai, with a total score of 26-130, and (6) DASS-21 Thai, a scale consisting of twenty-one items using a scale measuring depression, anxiety, or stress, referring to past week experiences.

Statistical Analysis

Descriptive statistics were employed in data analysis for describing variables. Frequency and percentage were used in describing categorical variables. Mean, standard deviation (SD), minimum, and maximum were used in describing continuous variables. Multiple linear regression was used to examine the associations between caregiver presence and perceived social support with quality of life as the dependent variable, adjusting for socio demo graphic and health-related factors. In this study, significance was established in tests at a level of significance of $p < 0.05$.

Ethical Considerations

Phetchabun Hospital's Institutional Review Board granted ethical approval (IEC-20-2565, approved November 9, 2022).

Table 1. Demographic characteristics of the participants

Demographic characteristics(n=366)	**n**	%
Gender		
Male	111	30.33
Female	255	69.67

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Age (years)		
Mean (SD)	67.70(4.99)	
Min - Max	60-80	
Educational level		
No education	47	12.84
Primary school	205	56.01
Secondary/Vocational	48	13.11
Higher or equal to Vocational Certificate	66	18.03
Occupation		
Unemployed	80	21.86
Farmer	183	50.00
Gov. Officer (Retired)	78	21.31
State Enterprise Officer	13	3.55
Company Employee	3	0.82
Business Owner	9	2.46
Monthly Income		
≤ 10,000 Baht	195	53.28
10,001-20,000 Baht	90	24.59
v>20,001-30,000 Baht	81	22.13
vIllness history		
None	265	72.40
Hypertension	77	21.04
Kidney disease	21	5.74
Hypertension and Kidney disease	3	0.82

Table 2. Functional status and health behaviors

Functional status (n=366)	**n**	%
Moderate physical activities		
No	126	34.43
Yes	240	65.57
Moderate physical activities (Days per week)		
Mean (SD)	1.25(1.98)	
Min - Max	0-7	

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Moderate physical activities (Minutes per day)		
Mean (SD)	18.93(33.07)	
Min - Max	0-150	
The activities of daily living (ADLs)		
Mean (SD)	18.53(2.03)	
Min - Max	10-20	
Alcohol drinking in last 3 month		
Never	324	88.52
Monthly or less	27	7.38
2 to 4 times a month	15	4.10
2 to 3 times a week	0	0.00
4 or more times a week	0	0.00
Smoking		
Never	301	82.24
Former	26	7.10
Current	39	10.66

Table 3. Caregiver, social support and quality of life

Factors (n=366)	**n**	%
Caregiver type		
None	62	16.94
Husband or wife	199	54.37
Family (Lineage or relatives)	105	28.69
Social support level		
Low perceived support	6	1.64
Moderate perceived support	274	74.86
High perceived support	86	23.50
Mean (SD)	54.40(9.42)	
Min - Max	25-84	
Depression		
Mean (SD)	2.18(1.98)	
Min - Max	0-13	

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Anxiety	
Mean (SD)	2.10(2.22)
Min - Max	0-13
Stress	
Mean (SD)	2.72(2.42)
Min - Max	0-10
Quality of life score	
Mean (SD)	93.25(7.22)
Min - Max	77-111

Table 4. The influence ofcaregiver and social support on quality of life

Factors(n=366)	Full model			Final model		
	Unstandardized		β	Unstandardized		β
	B	SE of B		B	SE of B	
Cons.	80.043	5.193				
Gender						
Male	Ref.			Ref.		
Female	1.533	0.630	0.098	1.592	0.603	0.101*
Age (years)	0.015	0.056	0.010			
Educational level						
No education	Ref.			Ref.		
Primary school	2.925	0.955	0.201*	3.377	0.891	0.232**
Secondary/Vocational	6.918	1.525	0.324**	7.854	1.147	0.367**
Higher or equal to Vocational Certificate	6.610	1.743	0.352**	7.276	1.088	0.388**
Occupation						
Unemployed	Ref.					
Farmer	1.071	0.739	0.074			
Gov. Officer (Retired)	0.356	1.079	0.020			
State Enterprise Officer	2.583	1.643	0.066			
Company Employee	5.334	3.138	0.067			
Business Owner	-4.368	1.830	-0.094*			

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Monthly Income						
≤ 10,000 Baht	Ref.					
10,001-20,000 Baht	-0.238	0.828	-0.014			
>20,001-30,000 Baht	0.451	1.369	0.026			
Illness history						
None	Ref.			Ref.		
Hypertension	-2.570	0.705	-0.145	-2.716	0.687	-0.153**
Kidney disease	-0.009	1.219	0.000	-0.401	1.194	-0.013
Hypertension and Kidney disease	-1.209	3.027	-0.015	-1.433	3.025	-0.018
Caregiver type						
None	Ref.			Ref.		
Husband or wife	1.489	0.759	0.103	1.645	0.757	0.114*
Family (Lineage or relatives)	3.406	0.835	0.214**	3.659	0.833	0.229**
Social support level						
Low perceived support	Ref.			Ref.		
Moderate perceived support	4.267	2.212	0.257	3.547	2.199	0.213
High perceived support	9.131	2.299	0.537**	8.636	2.293	0.507**
Moderate physical activities						
No	Ref.			Ref.		
Yes	2.642	0.958	0.174*	1.592	0.612	0.105*
Moderate physical activities (Minutes per day)	-0.019	0.013	-0.086			
Alcohol drinking in last 3 Month						
Never	Ref.					
Monthly or less	1.195	1.075	0.043			
2 to 4 times a month	0.814	1.529	0.022			
Smoking						
Never	Ref.					
Former	-1.357	1.203	-0.048			

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Current	-0.862	0.914	-0.037			
ADL Score	0.028	0.152	0.008			
Depression	-0.834	0.227	-0.229*	-0.506	0.151	-0.139*
Anxiety	0.221	0.212	0.068			
Stress	0.183	0.201	0.061			

Note: *<0.05, **<0.001, Ref. = Reference, Cons. = Constant

Full model: R-squared =0.5560, Adj R-squared = 0.4953, F(15, 350) =24.88

Final model: R-squared =0.5090, Adj R-squared = 0.4909, F(12, 353) =28.07

Results

Demographic Characteristics of the Participants

The participants were 366 elderly people with diabetes mellitus. They had a mean age of 67.70 years (SD = 4.99 years). Most participants were female (69.67%), had a primary school education (56.01%), and were farmers (50.00%). Most participants earned $\le$ 10,000 Baht a month (53.28%); additionally, 72.40% of the participants did not have any comorbidity.

Functional Status and Health Behaviors

Most participants (65.57%) engaged in physical activity, with an average of 1.25 days per week (SD = 1.98) and an average duration of 18.93 minutes per day (SD = 33.07 minutes). The activities of daily living scores, which had an average of 18.53 (SD = 2.03). Furthermore, the majority of patients had never been an alcohol user (88.52%) or a smoker (82.24%).

Caregiver, Social Support and Quality of Life

Over half the participants (54.37%) received care from a spouse, followed by other family (28.69%), while 16.94% reported none. The mean social support score was 54.40 (SD = 9.42, while a majority (74.86%) rated their support level as moderate, and 23.50% reported it to be high. The mean score for depression was 2.18 (SD = 1.98), anxiety (2.10, SD = 2.22), and stress (mean = 2.72, SD = 2.42). The mean score of quality of life was 93.25 (SD = 7.22).

The Influence of caregivers and Social Support on Quality of Life

High perceived social support was associated with better quality of life ($\beta = 0.507$, $p < 0.001$); those with high support scored 8.636 points higher than those with low support. Family caregiver was associated with a 3.659-point higher level of quality of life ($\beta = 0.229$, $p < 0.001$), while spousal caregiving was associated with a 1.645-point increment in the enhanced level ($\beta = 0.114$, $p < 0.05$). Higher education levels showed a positive association, particularly for secondary education ($\beta = 0.367$, $p < 0.001$). Hypertension was related to a 2.716 point reduction in the level of quality of life ($\beta = -0.153$, $p < 0.001$), and depressive symptoms demonstrated a negative association ($\beta = -0.139$, $p < 0.05$). The female gender and physical activities demonstrated a higher level of quality of life.

Discussion

This study examined associations between the caregivers, social support, and quality of life in older people with diabetes mellitus in rural Thailand. The findings demonstrate social support was the highest association with quality of life, followed by family caregiving presence, education level, and physical activity engagement. Hypertension and depression were found to negatively associated with quality of life.

High perceived social support was associated with a better quality of life, which is consistent with the

notion that social support protects health and well-being. This emphasizes the importance of establishing and promoting strong social networks and support systems among elderly diabetic patients.[21] Especially, perceived social support has been found to encompass material assistance and spiritual encouragement from family and friends, which effectively integrates interventions for care and enhances the quality of life for the elderly.[22]

Family caregivers are associated with a better quality of life for elderly diabetes mellitus patients in Thailand. Specifically, family members play a critical role in the practical managementof the disease.[15] The performance of family caregivers has been found to have a greater effect on the quality of life than that of spousal caregivers. There is support for previous research that points to the daughter caregiver being related to experiencing happiness in old age in Thailand.[14] Moreover, the synergistic effect between perceived support and caregiving.[23]The capacity for the caregivers to offer comprehensive support on the levels of emotional support, moral support, and appraisal support, along with the instrumental support, would provide an essential function in optimizing the quality of life for those with type 2 diabetes mellitus.[24]This is more important in the context of Thai society, which emphasizes the familial bonding in the community.[16]

The higher education with improved quality of life in elderly patients with diabetes mellitus is consistent with the general trend in which outcomes of health-related quality of life in elderly diabetics were often worse in the less educated groups.[9,13] This was influenced by several pathways, such as more educated people having improved health literacy, easier access to information and healthcare facilities, improved ability to manage their health on their own, and usually improved socioeconomic status associated with education levels.[21]Furthermore, the studies conducted in low as well as middle-income nations have found that an individual's education often impacted on incidence and diabetes mellitus management.[2]

The engagement in physical exercises was associated with a high level of life quality for the elderly patients with diabetes mellitus. Notably, physical exercise as a lifestyle behavior is modifiable and contributes to the higher quality of life for the elderly population.[22] Specifically, the regular engagement in physical exercise was proven to improve the quality of life, and the attitudes towards the exercise bythe persistent engagement.[25] Additionally, the physical exercise has a direct impact on the level of diabetes mellitus control, being an essential aspect for the management of the type 2 diabetes mellitus and for the minimization of the potential life-quality-reducing complications.[26]

In contrast, the hypertension and the depression were associated with a lower quality of life. This aligned with comorbidities that contributed to the burden on the elderly with diabetes mellitus.[10]The effect of depression on the quality of life are consistently with the studies indicates the crucial role of mental health in determining the level of the quality of life, and the negative effect of depression on the quality of life has been thoroughly established in the relevant sources.[13] Moreover, the mental health comorbidities decreased the level of life satisfaction and the functional health of seniors with chronic diseases.[26]This underscored the necessity to consider the importance of holistic care models in addressing the challenges of elderly patients with diabetes mellitus.[27]

The Strengths and Limitations

This study has various strengths, with the sample size and the use of valid instruments for the assessment of quality of life and the perception of social support in an appropriate rural context in Thailand. However, the issue of generalization could be limited due to the cross-sectional study approach. Another limitation could be the use of measures with the potential for recall bias.

Implications for Community Nurses

Community nurses need to begin concentrating on their evaluation processes for geriatric diabetic patients on clinical data as well as the availability of caregivers and social support systems. The nursing practice can involve organizing family sessions

for the implementation of caregiving, referring diabetic patients to social support groups within the community, and screening for depression as part of comprehensive diabetic care. The implementation of nursing initiatives for improving social networking and conducting caregiver teaching can help improve patients' quality of life in resource-poor and rural areas.

Recommendations

Healthcare settings should consider integrating psychosocial support services along with diabetic care, especially in rural areas, where changes are occurring in the social structure of family life. Community-based trials should target strengthening support networks through support group programs, together with caregiver training programs. Longitudinal studies should be conducted to determine causality, along with the level of care provided, and evaluate the outcome of interventions aimed at improving social support networks of elderly diabetic patients.

Conclusion

This study revealed the critical importance of support provided to caregivers, especially in the support provided by family members, and the level of perceived social support to the overall quality of life of the older diabetic population in the rural areas of Thailand. The study emphasizes the critical need to consider the psychosocial dimensions of the condition, in addition to the treatment of the condition, to bring improvements in the well-being of the patients.

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Declarations

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Conflict of Interest: The authors declare that there is no conflict of interest.

Ethical Clearance: The study was approved by the Institutional Review Board at Phetchabun Hospital (IEC-20-2565, approved November 9, 2022)

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