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Original Article

General Health and Quality of Life Among Ethnic Minority Elderly with Type 2 Diabetes: A Cross-Sectional Study

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ABSTRACT

Background: Type 2 diabetes significantly impacts physical health and psychological well-being in older adults, particularly affecting their quality of life. However, limited evidence exists regarding these outcomes among elderly individuals from ethnic minority communities. This study aimed to assess general health status and health-related quality of life, and to identify associated clinical, psychological, and sociodemographic factors in this population. **Materials and Methods:** A cross-sectional study was conducted at a private multispecialty hospital in Ooty, Tamil Nadu, between August 2024 and January 2025. A total of 232 participants aged 65 years and older with type 2 diabetes were included. General health and quality of life were measured using the SF-36 and EQ-5D-5L instruments. Additional measures included diabetes self-efficacy, fear of hypoglycemia, and fear of disease progression. Data were analysed using descriptive statistics, Pearson correlation, and multivariable linear regression. **Results:** General health was the most affected domain in the SF-36, while pain/discomfort was the most impaired dimension in the EQ-5D-5L. Higher education levels and greater diabetes self-efficacy were significantly associated with better general health and quality of life. In contrast, older age, presence of comorbidities, and increased fear of disease progression were associated with poorer outcomes. **Conclusion:** The findings demonstrate that physical, psychological, and social factors collectively influence health-related quality of life in older adults with type 2 diabetes from ethnic minority communities. These results emphasize the importance of culturally sensitive and patient-centred care strategies to improve overall well-being in this population.

Keywords: Chronic disease management, Cultural competence, Health behavior, Patient-centred care, Quality of life, Type 2 diabetes mellitus.

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INTRODUCTION

Type 2 diabetes represents a growing public health issue in India, driven by an aging population, urbanization, and changing lifestyles. In older adults, diabetes often comes with chronic problems like neuropathy and heart disease, which contribute to disease burden (Hills *et al.*, 2018; American Diabetes Association, 2021). People from ethnic minority communities may face extra challenges in managing diabetes due to cultural practices, language barriers, and social structures. These issues complicate diabetes management (Attridge *et al.*, 2014). Even with the heavy impact of diabetes in South Asia, ongoing healthcare inequalities still affect access to care and its quality (Ong *et al.*, 2023).

Aside from medical factors, psychological and behavioral aspects are important in managing diabetes. Emotional stress, fear of low blood sugar or disease progression, and low confidence can disrupt treatment compliance and hurt perceived health status, especially in older people (Perrin *et al.*, 2017). Health-related quality of life tools like the SF-36 and EQ-5D-5L assess physical, emotional, and social health dimensions and are commonly used in diabetes research (Jing *et al.*, 2018; Al-Ibrahimy and Rabea, 2023). The ability to maintain self-care despite chronic illness often reflects a person's coping skills, health knowledge shaped by sociocultural context (Zeng *et al.*, 2023).

However, there is limited information on general health and quality of life among older ethnic minority individuals with type 2 diabetes in India. Their experiences and specific challenges are often overlooked in usual clinical assessments. This study aimed to evaluate general health status and health-related quality of life among older ethnic minority adults with type 2 diabetes in the Nilgiris district of Tamil Nadu. It also examined how clinical, psychological, and social factors influence these outcomes using validated assessment tools.

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MATERIALS AND METHODS

Study design and participants

This cross-sectional study was conducted at a private multispecialty hospital in Ooty, The Nilgiris, Tamil Nadu, between August 2024 and January 2025. A total of 232 elderly individuals from ethnic minority communities were recruited using convenience sampling. Participants aged ≥65 years with a confirmed diagnosis of type 2 diabetes mellitus were included. Individuals diagnosed within the past one year and those unwilling to participate were excluded. Ethical approval was obtained from the Institutional Review Board of JSS College of Pharmacy, Ooty, with approval number JSSCP/IRB/10/2024-25.

Data collection and study instruments

Sociodemographic and clinical information, including age, gender, education, marital status, occupation, lifestyle factors, duration of diabetes, hospitalizations, comorbidities, complications, medications, and participation in health education programs, were collected. General health status and health-related quality of life were assessed using tools like SF-36 and EQ-5D-5L. The SF-36 evaluates eight health domains and includes a single item on perceived health change (Hays *et al.*, 1993). The EQ-5D-5L assesses five health dimensions and includes the EQ visual analogue scale for self-rated health (Herdman *et al.*, 2011).

Diabetes-related self-efficacy was measured using DSES, an eight-item instrument scored on a 10-point Likert scale, with higher scores indicating greater self-efficacy (Ritter *et al.*, 2016). Fear of hypoglycemia was assessed using HFS-II, comprising behavior and worry components scored on a 5-point Likert scale (Gonder-Frederick *et al.*, 2011). Fear of disease progression was evaluated using FOP-Q-SF, with higher scores indicating greater fear (Mehnert *et al.*, 2009). Data were collected by trained interviewers using Google Forms.

Statistical analysis

Data were analysed using IBM SPSS v22.0. Continuous variables were summarized as mean±standard deviation, and categorical variables as frequencies and percentages. Pearson correlation analysis was performed to examine associations among general health, health-related quality of life, diabetes self-efficacy, fear of hypoglycemia, and fear of progression. Multivariable linear regression analyses were conducted to identify factors predicting general health and health-related quality of life. Statistical significance was set at $p<0.05$.

RESULTS

Sociodemographic and clinical characteristics

The sociodemographic and clinical characteristics of the participants are presented in Tables 1 and 2. Most participants were aged 65-70 years, with a higher proportion of females than males. Illiteracy was common, and the majority were married. Most participants reported no history of smoking or alcohol consumption, and over half reported no regular exercise. The duration of diabetes was most commonly 1-4 years, and more than half had experienced two or more hospitalizations. Hypertension was the most frequently reported comorbidity, while retinopathy was the most common diabetes-related complication. Oral hypoglycemic agents were the most commonly used treatment, and most participants had received health education programs.

General health status and health-related quality of life

Mean domain/dimension scores for SF-36 and EQ-5D-5L are shown in Figures 1 and 2, respectively. General health had the lowest mean score among SF-36 domains, while social functioning had the highest. In EQ-5D-5L, pain/discomfort showed the highest mean score, whereas self-care showed the lowest. Unlike SF-36, higher scores in EQ-5D-5L indicate greater impairment.

Self-efficacy, fear of hypoglycemia, and fear of progression

The mean DSES score among participants was 44.19±16.67, with a mean item score of 5.52±2.08. The mean FOH behavior and worry scores were 20.84±13.59 and 21.34±17.63, corresponding to mean item scores of 1.38±0.90 and 1.18±0.97, respectively. The mean FOP-Q-SF score was 31.76±12.10, with a mean item score of 2.64±1.00.

Correlation among general health, health-related quality of life, self-efficacy, and fears

Pearson correlation analysis showed significant associations among general health, EQ-index, EQ-VAS, DSES, FOH, and FOP ($p<0.01$), as shown in Table 3. General health and DSES were positively correlated with EQ-index and EQ-VAS, whereas FOH and FOP showed negative correlations with general health and health-related quality of life measures. FOH and FOP were positively correlated with each other.

Factors associated with general health and health-related quality of life

Multivariable linear regression analyses were performed with general health, EQ-index, and EQ-VAS as dependent variables, as shown in Table 4. Education level and DSES were significantly positively associated with general health, EQ-index, and EQ-VAS, while FOP showed significant negative associations ($p<0.05$). Age was significantly negatively associated with general health and EQ-index. Former drinking status and diabetic foot ulcer were significantly negatively associated with EQ-VAS and EQ-index, respectively. Variance inflation factor values for all predictors were within acceptable ranges.

DISCUSSION

This study examined health-related quality of life in elderly individuals with type 2 diabetes from ethnic minority communities in India. Diabetes affected multiple health domains, including physical discomfort, emotional strain, and psychosocial well-being. General health and pain were the most affected SF-36 areas, reflecting common neuropathic and musculoskeletal problems in older adults (Marttinen *et al.*, 2019), which are frequently reported among older individuals

Table 1: Sociodemographic data of the participants.

Characteristics		N	%
Age in years	65-70	116	50.0
	71-75	59	25.4
	76-80	29	12.5
	>80	28	12.1
Gender	Male	103	44.4
	Female	129	55.6
Education	Illiterate	94	40.5
	Primary school	59	25.4
	High school	31	13.4
	Above	48	20.7
Marital status	Married	176	75.9
	Unmarried	10	4.3
	Divorced	3	1.3
	Widow/Widower	43	18.5
Occupational status	Non-employed	91	39.2
	Government organization	8	3.4
	Retired	43	18.5
	Private organization	13	5.6
	Self-employed	77	33.2
Smoking status	Former	43	18.5
	Current	18	7.8
	Never	171	73.7
Drinking status	Former	43	18.5
	Current	22	9.5
	Never	167	72.0
Regular exercise	Yes	109	47.0
	No	123	53.0
Duration since diagnosis (in years)	1-4	102	44.0
	5-9	69	29.7
	≥10	61	26.3
No of hospitalization(s)	One time	113	48.7
	2 or more	119	51.3
Ongoing medications	Insulin only	41	17.7
	Oral hypoglycaemics only	148	63.8
	Both	43	18.5
Received HEPs*	Yes	167	72.0
	No	65	28.0

*HEPs-health education programs

with diabetes (American Diabetes Association, 2021). Lower perceived health change scores indicate declining health, while better social functioning may reflect supportive family and community environments.

Findings from the EQ-5D-5L similarly showed a greater impact on pain and discomfort. However, self-care was less affected. This suggests that many participants maintained functional independence despite chronic illness (Abedini *et al.*, 2020). These patterns may reflect coping strategies shaped by sociocultural context within these communities (Zulkifli *et al.*, 2024). Concerns about hypoglycemia and disease progression were evident. This aligns with reports that older adults with type 2 diabetes worry about acute events and long-term complications (Polonsky *et al.*, 2023; Pang *et al.*, 2023).

Diabetes self-efficacy significantly affected health outcomes in this group. Higher self-efficacy related to better general health and quality of life. This is supported by evidence showing that self-efficacy contributes to improved self-management and perceived health outcomes among individuals with type 2 diabetes (Ataya *et al.*, 2024). These results demonstrate how psychological

Table 2: Comorbidities and complications.

	N	%
Comorbidities		
Hypertension	109	47.0
Cardiovascular diseases	11	4.7
Stroke	5	2.2
Chronic kidney diseases	19	8.2
Liver diseases	12	5.2
Osteopathy	49	21.1
Complications		
Retinopathy	68	29.3
Peripheral neuropathy	24	10.3
Nephropathy	14	6.0
Diabetic foot ulcer	58	25.0
Cardiovascular complications	9	3.9
Cerebrovascular complications	3	1.3

Table 3: Correlation among general health, HRQoL, SE, FOH and FOP.

	General health	EQ-index	EQ-VAS	SE	FOH	FOP
General health	1					
EQ-index	.666*	1				
EQ-VAS	.717*	.659*	1			
SE	.506*	.578*	.512*	1		
FOH	-.275*	-.463*	-.266*	-.415*	1	
FOP	-.504*	-.626*	-.529*	-.595*	.554*	1

*Correlation is significant at the 0.01 level (2-tailed)

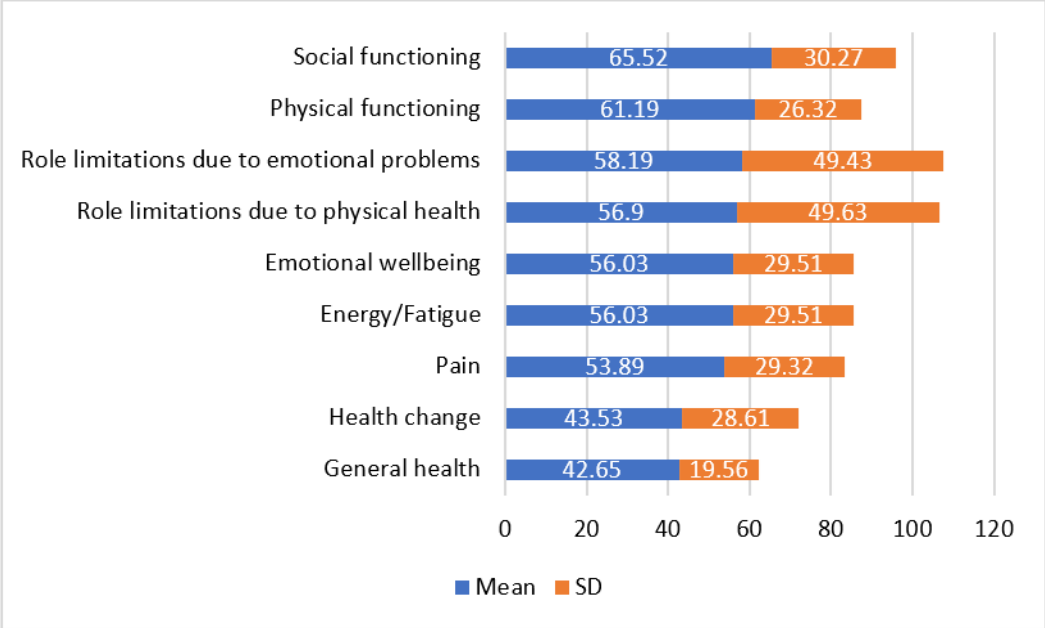

Figure 1: Mean SF-36 domain scores among the study participants.

Table 4: Factors predicting general health and HRQoL in the participants.

Variable	*B*	*SE-B*	*Beta*	*t*	*P*	95% *CI*		VIF
						Low	Up	
General health								
Age in years	-2.506	1.189	-.134	-2.107	.036	-4.852	-.161	1.832
Education level	4.055	1.120	.241	3.620	.000	1.846	6.265	2.007
Osteopathy	-7.781	3.119	-.163	-2.495	.013	-13.932	-1.629	1.926
Self-efficacy for Diabetes	1.626	.665	.173	2.444	.015	.314	2.937	2.273
Fear of Progression	-4.104	1.570	-.212	-2.615	.010	-7.200	-1.009	2.273
EQ-index								
Age in years	-.079	.027	-.159	-2.922	.004	-.132	-.026	1.832
Education level	.096	.025	.214	3.749	.000	.045	.146	2.007
Diabetic foot ulcer	-.238	.058	-.199	-4.119	.000	-.352	-.124	1.439
HFS-II W Worry Subscale	-.105	.044	-.198	-2.375	.019	-.193	-.018	4.318
Self-efficacy for Diabetes	.036	.015	.146	2.404	.017	.007	.066	2.273
Fear of Progression	-.124	.036	-.240	-3.467	.001	-.194	-.053	2.967
EQ-VAS								
Education level	2.591	1.122	.160	2.309	.022	.378	4.804	2.007
Drinking status (Former)	-11.812	4.631	-.244	-2.551	.012	-20.945	-2.679	3.835
Medication (Insulin only)	5.926	2.822	.120	2.100	.037	.361	11.491	1.372
Self-efficacy for Diabetes	1.859	.666	.205	2.791	.006	.545	3.173	2.273
Fear of Progression	-5.078	1.572	-.272	-3.230	.001	-8.179	-1.977	2.967

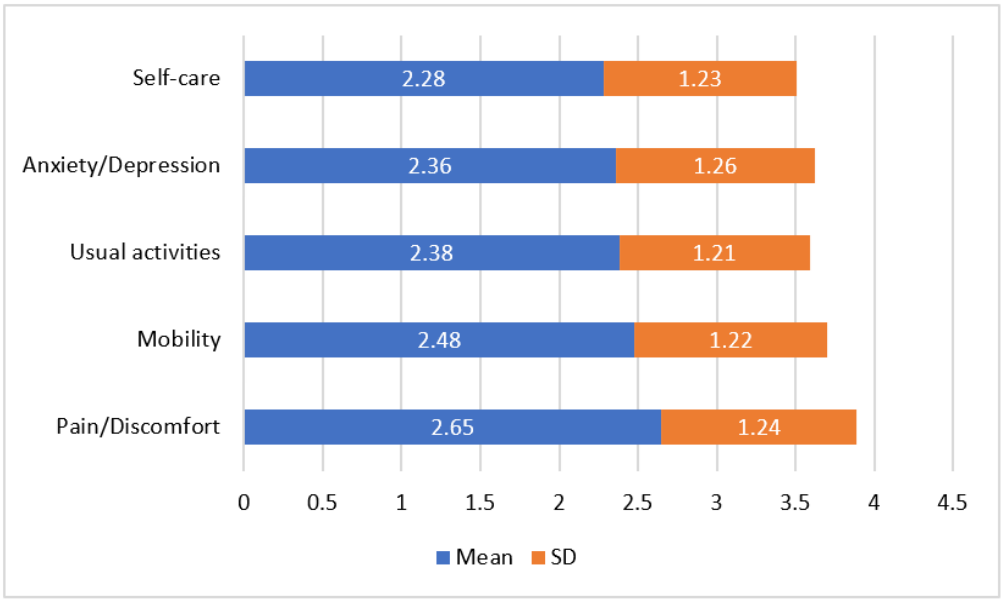

Figure 2: Mean EQ-5D-5L dimension scores among the study participants.

resources impact quality of life for older adults with diabetes. On the other hand, lower self-efficacy along greater psychological burden was linked to worse self-reported health (Jankowska *et al.*, 2021).

Sociodemographic and clinical factors influenced health perceptions. Older age was linked to lower health-related quality of life, likely due to comorbidities and functional decline. In contrast, higher education levels were tied to better outcomes, suggesting a connection to health literacy and involvement in care (Kim *et al.*, 2024). Osteopathy and diabetic foot ulcers were connected to lower health scores, reflecting their effect on pain and mobility (Al-Rub *et al.*, 2019). Behavioral and treatment-related

factors were important. Past alcohol use was associated with poorer perceived health, while insulin-only therapy was linked to higher EQ-VAS scores (Engler *et al.*, 2013; Negash *et al.*, 2023). This reflects the potential role of past alcohol use on overall health status, and how differences in treatment maybe associated with variations in quality of life among these people.

Overall, the findings show that health-related quality of life for older ethnic minority individuals with type 2 diabetes is influenced by a combination of sociodemographic characteristics, clinical conditions, and psychological factors (Yildirim *et al.*, 2023; Zan *et al.*, 2024). The results highlight the need for culturally sensitive, patient-focused approaches addressing both physical and emotional health. Interventions that build self-confidence, lessen fear-related stress, and encourage self-care practices may improve the quality of life for this group (Rawal *et al.*, 2021).

This study has limitations. The cross-sectional design restricts causal inference. Excluding individuals with type 1 diabetes limits broader comparisons, and convenience sampling may introduce selection bias. Interviewer-administered questionnaires may be affected by recall or social desirability bias. Future studies should adopt longitudinal designs, include objective measures such as HbA_{1c}, and involve more diverse populations.

CONCLUSION

This study shows how type 2 diabetes affects health-related quality of life in elderly people from ethnic minority communities in India. Physical discomfort, especially pain, along with emotional factors like fear and self-belief, significantly influence perceived health. Sociodemographic factors such as age, education, and other health conditions also impact HRQoL results. These findings highlight the need for culturally aware, patient-focused programs that consider both the physical and emotional aspects of diabetes care for older adults. As a future implication, tailored digital health solutions that include teleconsultation services or mobile health applications may help improve diabetes management and quality of life in such populations.

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ABBREVIATIONS

DSES: Diabetes Self-Efficacy Scale; **EQ-5D-5L:** EuroQol Five-Dimension Five-Level Questionnaire; **EQ-VAS:** EuroQol Visual Analogue Scale; **FOH:** Fear of Hypoglycemia; **FOP:** Fear of Progression; **FOP-Q-SF:** Fear of Progression Questionnaire-Short Form; **HFS-II:** Hypoglycemia Fear Survey-II; **HRQoL:** Health-Related Quality of Life; **SF-36:** 36-item Short Form Health Survey.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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The authors acknowledge the use of ChatGPT, an artificial intelligence language model developed by OpenAI, solely for language editing during manuscript revision. The authors take full responsibility for the study design, data analysis, interpretation of results, and conclusions presented in this manuscript.

REFERENCES

Abedini, M. R., Bijari, B., Miri, Z., Shakhs-Emampour, F., and Rakhshani, F. (2020). Quality of life of patients with type 2 diabetes using EQ-5D-5L in Birjand. Health and Quality of Life Outcomes, 18, 18. https://doi.org/10.1186/s12955-020-1277-8

Al-Ibrahimy, A. S., and Rabea, I. S. (2023). Evaluation of general health status in diabetic patients using Short Form Health Survey (SF-36). Current Diabetes Reviews, 19(9), e081420184858. https://doi.org/10.2174/1573399816666200814133535

Al-Rub, A., Hyassat, D., Khader, Y. S., Bani-Mustafa, R., Younes, N., and Ajlouni, K. (2019). Factors associated with health-related quality of life among Jordanian patients with diabetic foot ulcer. Journal of Diabetes Research, 2019, 4706720. https://doi.org/10.1155/2019/4706720

American Diabetes Association. (2021). 12. Older adults: Standards of medical care in diabetes-2021. *Diabetes Care*, 44(Suppl. 1), S168-S179. https://doi.org/10.2337/dc21-S012

Ataya, J., Soqia, J., Albani, N., Alzoubi, K. H., and Bader, R. K. (2024). The role of self-efficacy in managing type 2 diabetes and emotional well-being: A cross-sectional study. BMC Public Health, 24, 3471. https://doi.org/10.1186/s12889-024-21050-2

Attridge, M., Creamer, J., Ramsden, M., Cannings-John, R., and Hawthorne, K. (2014). Culturally appropriate health education for people in ethnic minority groups with type 2 diabetes mellitus. Cochrane Database of Systematic Reviews, (9), CD006424. https://doi.org/10.1002/14651858.CD006424.pub3

Engler, P. A., Ramsey, S. E., and Smith, R. J. (2013). Alcohol use of diabetes patients: The need for assessment and intervention. Acta Diabetologica, 50, 93-99. https://doi.org/10.1007/s00592-010-0200-x

Gonder-Frederick, L. A., Schmidt, K. M., Vajda, K. A., Greear, M. L., Singh, H., Shepard, J. A., and Cox, D. J. (2011). Psychometric properties of the Hypoglycemia Fear Survey-II for adults with type 1 diabetes. Diabetes Care, 34(4), 801-806. https://doi.org/10.2337/dc10-1343

Hays, R. D., Sherbourne, C. D., and Mazel, R. M. (1993). The RAND 36-Item Health Survey 1.0. Health Economics, 2(3), 217–227. https://doi.org/10.1002/hec.4730020305

Herdman, M., Gudex, C., Lloyd, A., Janssen, M. F., Kind, P., Parkin, D., Bonsel, G., and Badia, X. (2011). Development and preliminary testing of the new five-level version of EQ-5D (EQ-5D-5L). Quality of Life Research,*20*(10), 1727-1736. https://doi.org/10.1007/s11136-011-9903-x

Hills, A. P., Arena, R., Khunti, K., Yajnik, C. S., Jayawardena, R., Henry, C. J., and Misra, A. (2018). Epidemiology and determinants of type 2 diabetes in South Asia. The Lancet Diabetes and Endocrinology, 6(12), 966-978. https://doi.org/10.1016/S2213-8587(18)30204-3

Jankowska, A., Młyńczak, K., and Golicki, D. (2021). Validity of EQ-5D-5L in self-reported diabetes: General population survey. Health and Quality of Life Outcomes, 19, 138. https://doi.org/10.1186/s12955-021-01780-2

Jing, X., Chen, J., Dong, Y., Han, D., Zhao, H., Wang, X., Gao, F., and Li, C. (2018). Related factors of quality of life of type 2 diabetes patients: A systematic review and meta-analysis. Health and Quality of Life Outcomes, 16, 189. https://doi.org/10.1186/s12955-018-1021-9

Kim, C. Y., Choi, B. Y., Ryoo, S. W., Son, S. Y., Min, J. Y., and Min, K. B. (2024). Health literacy and health-related quality of life in older adults with mild cognitive impairment. Journal of the American Medical Directors Association, 25(11), 105253. https://doi.org/10.1016/j.jamda.2024.105253

Marttinen, M. K., Kautiainen, H., Haanpää, M., Pohjankoski, H., Vuorimaa, H., Hintikka, J., and Kauppi, M. J. (2019). Pain-related factors in older adults. Scandinavian Journal of Pain, 19(4), 797-803. https://doi.org/10.1515/sjpain-2019-0039

Mehnert, V. A., Herschbach, P., Berg, P., Henrich, G., and Koch, U. (2009). Fear of Progression Questionnaire--Short Form (FoP-Q-SF) [Database record]. APA PsycTests. https://doi.org/10.1037/t70192-000

Negash, Z., Tadiwos, A., Urgessa, E. M., Kassa, G. M., and Gebre, M. (2023). Insulin injection practice and HRQoL among individuals with diabetes in Ethiopia: A cross-sectional study. Health and Quality of Life Outcomes, 21, 38. https://doi.org/10.1186/s12955-023-02123-z

Ong, K. L., Stafford, L. K., McLaughlin, S. A., Boyko, E. J., Vollset, S. E., Smith, A. E., Vos, T. (2023). Global, regional, and national burden of diabetes from 1990 to 2021, with projections of prevalence to 2050: A systematic analysis for the Global Burden of Disease Study 2021. The Lancet, 402(10397), 203-234. https://doi.org/10.1016/S0140-6736(23)01301-6

Pang, J., Zhang, L., Li, X., Chen, Y., Wang, Y., and Liu, Y. (2023). Identification of factors associated with fear of hypoglycemia using the capability, opportunity, motivation and behavior model in people with type 2 diabetes mellitus. *Acta Diabetologica*, 60(11), 1405-1415. https://doi.org/10.1007/s00592-023-02132-w

Perrin, N. E., Davies, M. J., Robertson, N., Snoek, F. J., and Khunti, K. (2017). The prevalence of diabetes-specific emotional distress in people with type 2 diabetes: A systematic review and meta-analysis. Diabetic Medicine, 34(11), 1508-1520. https://doi.org/10.1111/dme.13448

Polonsky, W. H., Guzman, S. J., and Fisher, L. (2023). The hypoglycemic fear syndrome: Understanding and addressing this common clinical problem in adults with diabetes. Clinical Diabetes, 41(4), 502-509. https://doi.org/10.2337/cd22-0131

Rawal, L., Sahle, B. W., Smith, B. J., Kanda, K., Owusu-Addo, E., and Renzaho, A. M. N. (2021). Lifestyle interventions for T2DM management among migrants and ethnic minorities in industrialized countries: A systematic review and meta-analyses. BMJ Open Diabetes Research and Care, 9(1), e001924. https://doi.org/10.1136/bmjdrc-2020-001924

Ritter, P. L., Lorig, K., and Laurent, D. D. (2016). Characteristics of the Spanish- and English-language self-efficacy to manage diabetes scales. The Diabetes Educator, 42(2), 167-177. https://doi.org/10.1177/0145721716628648

Yildirim, G., Rashidi, M., Karaman, F., Genç, A., Jafarov, G. Ü., and Kiskaç, N. (2023). The relationship between diabetes burden and HRQoL in elderly people with diabetes. Primary Care Diabetes, 17(6), 595-599. https://doi.org/10.1016/j.pcd.2023.08.007

Zan, H., Meng, Z., Li, J., Liu, Y., and Zhang, Q. (2024). Factors associated with quality of life among elderly type 2 diabetes patients: Role of family caregivers. BMC Public Health, 24, 539. https://doi.org/10.1186/s12889-024-17917-z

Zeng, Z., Wang, X., Chen, Y., Zhou, H., Zhu, W., Xiong, X., and Zhang, Y. (2023). Health-related quality of life in Chinese individuals with type 2 diabetes mellitus: A multicenter cross-sectional study. Health and Quality of Life Outcomes, 21(1), 183. https://doi.org/10.1186/s12955-023-02183-1

Zulkifli, M. M., Abdul Rahman, R., Muhamad, R., and Rahman, S. A. (2024). The lived experience of resilience in chronic disease among adults in Asian countries: A scoping review. BMC Psychology, 12, 773. https://doi.org/10.1186/s40359-024-02296-2

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