https://doi.org/10.22502/jlmc.v11i1.497

Original Research Article

Burden Imposed by Diabetes Mellitus on Elderly Patients Visiting a Teaching Hospital: A Cross-Sectional Study

Chandra Kumari Garbuja,[a,c] Geeta Rai,[b,c] Binita Ranamagar[b,c]

ABSTRACT :

Introduction: Diabetes Mellitus, a chronic metabolic disorder, has become an alarmingly major health issue worldwide. This study aimed to assess the burden imposed by diabetes mellitus on elderly patients visiting Lumbini Medical College and Teaching Hospital. **Methods**: A descriptive cross-sectional study was conducted purposively among 178 diabetic elderly patients visiting medicine out-patient department of Lumbini Medical College. The Elderly Diabetes Burden Scale was used to assess the burden imposed by diabetes. **Results**: The mean (SD) age of the participants was 67.38 (6.92) years, more than half (52.2%) were male, 46.6% were Janajati and 77.5% were from Palpa district. Most (84.3%) had diabetes for a duration of one to 10 years, 45.6% had normal body mass index, 47.2% had good glycemic control (HbA1C <7%), and 74.2% were on oral hypo-glycemic agents. Dietary restrictions (10.32±2.97) and worry about diabetes (10.30±2.85) had imposed high burden level and burden by tablets/insulin (7.02±2.12) as lower burden amongst the six domains. Age, education and body mass index were found to be statistically significant with the treatment dissatisfaction domain (p=<0.001). Likewise, duration of diabetes (p=<0.001) was statistically significant with burden by tablets/insulin and symptom burden domain. **Conclusion**: Dietary restrictions and worry about diabetes were found to have a dominant burden whereas, burden by tablets or insulin was the least. Duration of diabetes and body mass index were found to have association with the overall burden. Likewise, age, education and body mass index had high influence on the perceived burden due to treatment dissatisfaction.

Keywords: Burden Diabetes; Elderly Diabetes Burden Scale; Elderly patients

INTRODUCTION

Diabetes Mellitus (DM), a chronic metabolic disorder, has become alarmingly a major health issue as more than half billion people are living with it worldwide. The population aging, economic development and increasing urbanization, more sedentary lifestyles and greater consumption of unhealthy foods linked with obesity have caused diabetes on constant rise across all regions globally.[1] Furthermore, it was believed that two-thirds of the diabetics are residing in low- and middle-income countries.[1,2]

The global data had projected that a growth of 16% in the expected prevalence of diabetes is

Submitted: 11 January, 2023.
Accepted: 10 May, 2023.
Published: 11 September, 2023.

a- Assistant Professor, College of Nursing
b- Lecturer, College of Nursing
c- Lumbini Medical College and Teaching Hospital, Palpa, Nepal

Corresponding author:
Chandra Kumari Garbuja.
Email: garbujachandra@gmail.com,
ORCID: https://orcid.org/0000-0002-6540-3391

How to cite this article:
Garbuja CK, Rai G, Ranamagar B. Burden Imposed by Diabetes Mellitus on Elderly Patients Visiting a Teaching Hospital: A Cross-sectional Study . J Lumbini Med Coll. 2023;11(1):9 pages.
DOI: 10.22502/jlmc.v11i1.497
Epub: 11 September, 2023

due to ageing of the population. The estimated prevalence of 24% in 2021 is predicted to rise to 24.7% in 2045 among adults aged 75-79 years.[1] Supporting the data, a nation-wide study conducted in Nepal also revealed that the overall prevalence was 8.5% whereas, for those aged 60 years and above was found to be 13.3%.[3] The other studies also showed increased prevalence with increasing age.[3,4,5] The trend and magnitude of burden imposed by diabetes substantially fluctuates across regions and countries.[6] In a country like Nepal with a resource limited health-care system, DM constitutes a major public health challenges for patients, family members and concerned authorities posing an additional burden.[7,8]

Certain behavioral factors like lack of exercises or sedentary life-styles, unhealthy dietary patterns, and metabolic risks- obesity and overweight along with aging population are found associated with its increased prevalence.[3,6] As elderly undergoes various physiological, psychological, socio-economical, and spiritual changes along with aging process, diabetes mellitus and its consequences could further add a physical, economic and various psycho-social changes in the long run as compared to younger adults.[9] Thus, the present study aims to assess the burden imposed by diabetes mellitus on elderly patients visiting Lumbini Medical College and Teaching Hospital (LMCTH).

METHODS:

A descriptive cross-sectional study was conducted at the medical out-patient department (OPD), LMCTH from 21st August to 30th November 2022. The data was collected after the ethical clearance by the Institutional Review Committee (IRC-LMC-03/J-022). Purposive sampling technique was used to collect data from all the elderly (60 years and above) patients who had been diagnosed with Type 2 Diabetes Mellitus (DM) at least three months prior to data collection period. The patients with severe dementia, acute or severe illness and those who could not understand and comprehend the face-to-face interview were excluded. An informed consent was obtained from each of the participants.

In a cross-sectional population-based study conducted in Nepal, the prevalence of diabetes mellitus among elderly of age group of 60 years and above was found to be 13.3%.[3] Considering it, the sample size calculation was done as:

$n= Z^2pq/L^2$, where, Z= 1.96 at 95% confidence interval, p=0.133, q=1-p=0.862, L=0.05 margin of error at 5% for p. Thus, the calculated sample size was 177.19 ~ 178.

A structured questionnaire was used which consisted of three parts: Part I- Socio-demographic characteristics: Age, Sex, Ethnicity, Place of residence, Education, Marital status, Body Mass Index (BMI) and Who bears the cost of the treatment?; Part II- Clinical characteristics: Duration of diabetes in years, Mode of treatment for diabetes, Latest hemoglobin A1c (HbA1C) record, Dietary patterns and Personal habits before and after diagnosis of DM- the unhealthy diets included in this study is the diets high in sugars, saturated and trans- fats, low fibre foods and high-sugar drinks, whereas, the physical inactive means long periods of inactivity like sitting or lying down; and Part III- A valid and reliable "Elderly Diabetes Burden Scale (EDBS)" which consists of 23 items rated on a four-point multiple choice scale ranged from 1-4. The Cronbach's alpha value of the EDBS was 0.92.[9,10] The EDBS consists of six subscales or domains: Symptom burden (4 items), Social burden (5 items), Dietary restrictions (4 items), Worry about diabetes (4 items), Treatment dis-satisfaction (3 items), and Burden by tablets or insulin therapy (3 items).

The total score of EDBS was calculated by reversing the scores of the treatment

dissatisfaction subscale and summing the six subscale scores. Higher points scored show a higher burden and lower scores, lower the burden.[9] The interview time was approximately 10 to 15 minutes for each participant.

A pretest of the questionnaire among 10% (18) of the calculated sample done in the medical OPD of LMCTH revealed Cronbach's alpha value of 0.874 (0.861-0.879). The participant's weight was measured by the same electronic scale which was set to zero and was asked to remove any items (mobile phone, keys, bags, shoes etc) which could affect their weight. The height was measured with a standard stadio-meter (ROKS+, model MI20) in a still straight position.

Each completed questionnaire with a unique identifier was entered first in the master sheet of Microsoft Excel 2021 and then coded which was later imported and analyzed using Statistical Package for Social Sciences (SPSS^{TM}) version 16. For the descriptive analysis, frequency, percentage, mean and standard deviation (SD) were used. The non-parametric test- Mann Whitney U test and Kruskal Wallis H test were applied for inferential statistics. The confidence interval was taken as 95% with the probability significance at $p<0.05$.

RESULTS:

Among 178 participants, the mean±SD age of the participants was 67.38±6.92 years and 128(71.9%) belonged to the age group of 60-70 years. More than half (52.2%) of them were male, 46.6% were from the Janajati ethnic group, and 32% were illiterate. Most (83.7%) of the participants were married and 16.3% were widowed. More than three-fourth (77.5%) were from Palpa district and the rest were from Gulmi (7.9%), Syanja (6.7%), Rupendehi (5.6%), Argakhachi (1.7%) and Baglung (0.6%) respectively. The result also revealed that less than half (45.6%) of them had normal BMI. The mean±SD for duration of DM was 6.22±6.22 years with a range of 0.30 to 40 years. However, 84.3% belonged to the duration group of 1-10 years. Most (74.2%) of participants were on oral hypoglycemic agents, whereas, 47.8% were on diet control and 25.3% were on insulin therapy respectively. Almost half (47.2%) had good glycemic control (HbA1C <7%) (Table 1). Table 2 shows the habits of participants before and after being diagnosed with DM.

Dietary restrictions (10.32±2.97) and worry about diabetes (10.30±2.85) were found to have the highest burden level whereas, burden by tablets/insulin (7.02±2.12) as lower burden amongst the six domains (Table 3). The findings also revealed that more than one-fourth (27.5%) of participants often had trouble with edema in extremities and polyuria. While, more than half (55.6% and 57.9%) felt diabetes had not at all disturbed the relationships with their family and friends. But, 38.8% of participants sometimes felt the burden of taking a well-balanced diet and dietary management. However, only 24.7% always worried about living with diabetes and 25.3% about having severe diabetic complications in the future.

It was observed that almost half (48.9%) of the participants were often satisfied with the results of diabetes treatment including glucose control, but 7.3% always felt the burden of taking pills or injecting insulin and 8.4% always worried about changing the dose of tablets or insulin if they had a sick day. Besides, half (50.6%) of them sometimes felt they could live a satisfactory life despite having diabetes. The mean±SD score obtained for adaptive feeling to diabetes was 6.38±1.91 (range=3-12).

Table 1: Distribution of demographic characteristics of participants (n=178)

Variables		Frequency (n)	Percentage (%)
Age, in years	60-70	128	71.9
	>70-80	41	23.0
	>80	9	5.1
	mean±SD=67.38±6.92, Range= 60-90		
Ethnicity	Brahmin	63	35.4
	Chhetri	21	11.8
	Janajati	83	46.6
	Dalit	11	6.2
Education	Illiterate	57	32.0
	Read and write only	28	15.7
	Basic	52	29.3
	Secondary	39	21.9
	More than secondary	2	1.1
Body Mass Index (kg/m^2)	< 18.5 (underweight)	5	2.8
	18.5-24.9 (Normal)	81	45.6
	25-29.9 (Overweight)	67	37.6
	30-39.9 (Obese)	25	14.0
	mean±SD=25.21±3.39, Range= 16.51-35.94		
Latest HbA1C	Good control (<7%)	84	47.2
	Fair control (7.0%-8.4%)	52	29.2
	Poor control (≥8.5%)	17	9.6
	Not available	25	14.0
Treatment cost bore by: *	Self	64	36.0
	Family	108	60.7
	Insurance	62	34.8

* Multiple response

Table 2: Distribution of habits of the participants (n=178)

Characteristics	Before diagnosis		After diagnosis	
	Frequency	Percentage	Frequency	Percentage
Dietary habits				
Non-vegetarian	137	77	115	64.7
Vegetarian	41	23	63	35.3
Personal habits*				
Smoking	53	29.8	22	12.4
Alcohol	70	39.3	25	14.0
Unhealthy diet	99	55.6	29	16.3
Physically inactive	96	53.9	78	43.8

Table 3: Score obtained by the participants in Domains of EDBS (n=178)

Domains	Number of items	Obtained score range	Mean±SD
Symptom burden	4	5-15	9.65±2.23
Social burden	5	5-19	9.01±2.83
Dietary restrictions	4	4-16	10.32±2.97
Worry about diabetes	4	4-16	10.30±2.85
Treatment dis-satisfaction	3	3-11	7.25±1.71
Burden by tablets/insulin	3	3-12	7.02±2.12
Total	**23**	**36-88**	**56.97±10.39**

Age, education and BMI were found to be statistically significant with the treatment dissatisfaction domain (*p=<0.001*). Likewise, duration of diabetes *(p=<0.001*) was statistically significant with burden by tablets/insulin and symptoms burden domain. Similarly, place of residence (*p=0.004*) was found to be statistically significant with treatment dissatisfaction domain. The rest of the variables are depicted in Table 4.

Table 4: Association between domains of EDBS and selected demographic variables (n=178)

Demographic variables		Dietary Restrictions (Mean Rank)	Worry about diabetes (Mean Rank)	Total (Mean Rank)
Education#	Illiterate	105.99	100.65	98.09
	Literate	81.73	84.25	85.45
	p value	0.003	0.046	0.12
Body Mass Index#	Normal	81.72	78.62	82.26
	Abnormal	98.80	102.52	98.17
	p value	0.027	0.002	0.040
Duration of Diabetes (in years)*	<1	74.40	21.6	25.60
	1-10	89.42	90.41	88.60
	>10-20	85.12	94.12	92.88
	>20	112.00	108.00	146.79
	p value	0.593	0.019	0.001

#- Mann-Whitney U test, ⁎- Kruskal Walis H test

DISCUSSION:

Various national and international studies had confirmed that the prevalence of diabetes has increased with the advancing age. Thus, the study had aimed to explore the burden imposed by diabetes on elderly patient visiting LMCTH, a tertiary health center of Palpa.

The current study revealed that most of the participants suffering from DM were male and from the age group of 60-70 years which are consistent with the findings of the study conducted in Nawalpur, Nepal.[11] Four-fifth(84.3%) of the participants had

diabetes for duration of 1 to 10 years, and more than half(51.6%) were overweight and obese which is inconsistent with the study conducted in Vietnam that revealed majorities were female, had diabetes for more than 10 years and only 16.4% were overweight/obese.[12] Various other studies had confirmed that longer the duration of diabetes and increased BMI, the complications associated with diabetes are more frequent.[4,13,14,15] Thus, the strategies like promotion of regular health check-ups, screening for geriatric syndromes (polypharmacy, cognitive impairment, depression, urinary incontinence, falls, persistent pain, and frailty) and health-awareness campaigns etc. should be directed to address those issues.[16]

The study also uncovered the fact that less than three-fourth (74.2%) of the participants were on oral hypo-glycemic agents as a treatment modality for diabetes which is found to be consistent with the studies conducted by Nguyen, et al. and Kaya, et al.[12,17] Similarly, a literature review in Nepal also confirmed that most of the patients were on oral hypo-glycemic agents.[18] But a study conducted in Turkey revealed more than half (53.4%) were on insulin therapy.[19] Furthermore, in Nepal, it has been estimated that out of total expenditure, 31% is covered by out of pocket (OPP) expenditure for disease and health conditions related to non-communicable diseases (NCDs).[8] The current study also disclosed that a majority of participants bore the cost of the treatment by self and/or family members leading to an extra financial burden which is similar with the studies conducted by Gyawali, et al. and Upadhyay, et. al.[18,20]

In term of personal habits, 12.4% and 14% of participants had current habits of smoking, and alcohol despite their medical health problems which is in line with the study conducted in Butwal, Nepal.[21] Similarly, physical inactivity was found more prevalent among the present participants. The findings of other studies also supported advancing age as one of the reasons for physical inactivity.[22,23] Thus, this finding highlights the importance of re-evaluating the various strategies and efforts from governmental- and non-governmental health agencies from the lens of elderly at grass-root levels; set priorities, plan and implement various health programs accordingly. Even the American Diabetes Association (ADA) recommends building positive health behaviors and maintaining psychological well-beings through self-management education and support, medical nutrition therapy, routine physical activity, smoking cessation counseling when needed, and psychosocial care for achieving diabetes treatment goals and maximizing quality of life of older adults.[24]

Almost half (47.2%) of the participants had good glycemic control whereas, the study conducted in Turkey revealed only 17.7% had good control.[17] Assessment of glycemic status at least two times a year for stable glycemic control and at least quarterly for those not meeting glycemic goals are recommended as poor glycemic control was found to be linked with declining cognitive function, acute complications, highest risk of frailty and subsequent mortality of geriatric patients.[16,25]

The burden as measured by EDBS was found highest on dietary restrictions and worry about diabetes domains amongst others which seems congruent with the study conducted in Turkey.[17] But another study of Turkey revealed that social burden was found dominant over other domains.[19] The differences in health care delivery systems, socio-cultural, economic and geographical variations could be the reasons for disparities.

The present study revealed that age is statistically significant with treatment dissatisfaction domain (*p=<0.001*) but found statistically significant with symptom burden (*p=0.030*) in a study conducted in Japan.[10] Furthermore, sex and marital status were statistically insignificant with any of the domains in this study whereas, other studies found sex had statistical significance with treatment dissatisfaction(*p=0.017 & p=0.02*) and dietary restriction (*p=0.001*); marital status with worry about diabetes domain (*p=0.011*).[10,19]

The study has few limitations. The presence of co-morbidities, polypharmacy, support system, and cultural context of the participants were not assessed which could have influenced the perception of burden. There could be presence of recall biases on the responses and the study being conducted only at one setting, the results cannot be generalized.

CONCLUSION:

This study revealed that dietary restrictions and worry about diabetes were found to have highest burden whereas, burden by tablets or insulin was the least. Furthermore, duration of diabetes and BMI were found to have association with the overall burden. Likewise, age, education and BMI seemed to have high impact on the perceived burden due to treatment dissatisfaction for DM. Though the results do not represent the whole elderly population of Nepal, it could still aid on planning and implementing various strategies and/or approaches to overcome the burden on different aspects imposed by diabetes.

Conflict of interest: None

Source of funding: None

REFERENCES:

1. Magliano DJ, Boyko EJ; IDF Diabetes Atlas 10th edition scientific committee. IDF DIABETES ATLAS [Internet]. 10th edition. Brussels: International Diabetes Federation; 2021. Available from: https://www.ncbi.nlm.nih.gov/books/NBK581940/.

2. Shrestha N, Mishra SR, Ghimire S, Gyawali B, Mehata S. Burden of Diabetes and Prediabetes in Nepal: A Systematic Review and Meta-Analysis. Diabetes Ther. 2020;11(9):1935-1946. PMID: 32712902 DOI: https://doi.org/10.1007/s13300-020-00884-0

3. Dhimal M, Karki KB, Sharma SK, Aryal KK, Shrestha N, Poudyal A, et al. Prevalence of Selected Chronic Non-Communicable Diseases in Nepal. J Nepal Health Res Counc. 2019;17(3):394-401. PMID: 31735938 DOI: https://doi.org/10.33314/jnhrc.v17i3.2327

4. Shrestha N, Karki K, Poudyal A, Aryal KK, Mahato NK, Gautam N, et al. Prevalence of diabetes mellitus and associated risk factors in Nepal: findings from a nationwide population-based survey. BMJ Open. 2022;12(2):e060750. PMID: 35193925 DOI:

https://doi.org/10.1136/bmjopen-2022-060750

5. Rajbhandari B, Hyoju SP, Poudel L, Adhikari A, Rijal B, Joshi P. Prevalence of Type 2 Diabetes among Patients Visiting Nepal Police Hospital in Kathmandu: A Descriptive Cross-sectional Study. JNMA J Nepal Med Assoc. 2021;59(233):42-45. PMID: 34508446 DOI: https://pubmed.ncbi.nlm.nih.gov/34508446/

6. Lin X, Xu Y, Pan X, Xu J, Ding Y, Sun X, et al. Global, regional, and national burden and trend of diabetes in 195 countries and territories: an analysis from 1990 to 2025. Sci Rep. 2020;10(1):14790. PMID: 32901098 DOI: https://doi.org/10.1038/s41598-020-71908-9

7. de Lagasnerie G, Aguadé AS, Denis P, Fagot-Campagna A, Gastaldi-Menager C. The economic burden of diabetes to French national health insurance: a new cost-of-illness method based on a combined medicalized and incremental approach. Eur J Health Econ. 2018;19(2):189-201. PMID: 28190188 DOI: https://doi.org/10.1007/s10198-017-0873-y

8. Department of Health Services, Ministry of Health and Population. Annual Report 2077/78 (2020/21) [Internet]. Kathmandu, Nepal: Department of Health Services; 2022. Available from: http://dohs.gov.np/annual-report-fy-2077-78-2019-20/

9. Usta YY, Esen A. A study of the validity and reliability of the "Elderly Diabetes Burden Scale" for the Turkish society. Turkish Journal of Geriatrics. 2012;15(1):61-67. Available from: https://geriatri.dergisi.org/uploads/pdf/pdf_TJG_627.pdf

10. Araki A, Ito H. Development of elderly diabetes burden scale for elderly patients with diabetes mellitus. Geriatrics & Gerontology International. 2003;3(4):212-24. DOI: https://doi.org/10.1111/j.1444-1586.2003.00084.x

11. Sapkota S, Poudyal JK, Shah R, Thapa K. Health Related Quality of life of Diabetic and Non-Diabetic Elderly in a Municipality of Central Nepal. Journal of College of Medical Sciences-Nepal. 2021;17(2):170-9. DOI: https://doi.org/10.3126/jcmsn.v17i2.30499

12. Nguyen HTT, Moir MP, Nguyen TX, Vu AP, Luong LH, Nguyen

TN, et al. Health-related quality of life in elderly diabetic outpatients in Vietnam. Patient Prefer Adherence. 2018;12:1347-54. PMID: 30100711 DOI: https://doi.org/10.2147/ppa.s162892

13. Rimal A, Panza A. Prevalence of, and Factors Associated With, Type 2 Diabetes and Its Microvascular Complications Among the Elderly in Kathmandu, Nepal. Journal of Health Research. 2013;27(1):45-9. Available from: https://he01.tci-thaijo.org/index.php/jhealthres/article/view/85756

14. Khanal MK, Bhandari P, Dhungana RR, Gurung Y, Rawal LB, Pandey G, et al. Poor glycemic control, cardiovascular disease risk factors and their clustering among patients with type 2 diabetes mellitus: A cross-sectional study from Nepal. PLoS One. 2022;17(7):e0271888. PMID: 35877664 DOI: https://doi.org/10.1371/journal.pone.0271888

15. Izzo A, Massimino E, Riccardi G, Della Pepa G. A Narrative Review on Sarcopenia in Type 2 Diabetes Mellitus: Prevalence and Associated Factors. Nutrients. 2021;13(1):183. PMID: 33435310 DOI: https://doi.org/10.3390/nu13010183

16. American Diabetes Association Professional Practice Committee. 13. Older Adults: Standards of Medical Care in Diabetes-2022. Diabetes Care. 2022;45(Suppl 1):S195–S207. PMID: 34964847 DOI: https://doi.org/10.2337/dc22-s013

17. Kaya UP, Caydam OD. Association between Social Support and Diabetes Burden among Elderly Patients with Diabetes: A Cross-Sectional Study from Turkey. Saudi J Med Med Sci. 2019;7(2):86-92. PMID: 31080388 DOI: https://doi.org/10.4103/sjmms.sjmms_44_18

18. Gyawali B, Ferrario A, van Teijlingen E, Kallestrup P. Challenges in diabetes mellitus type 2 management in Nepal: a literature review. Glob Health Action. 2016;9(0):31704. PMID: 27760677 DOI: https://doi.org/10.3402/gha.v9.31704

19. Ovayolu Ö, Ovayolu N, Doğru A, Özkaya M. The Challenge of Diabetes in the Elderly and Affecting Factors: A Turkish Study. Holist Nurs Pract. 2015;29(5):272-9. PMID: 26263288 DOI: https://doi.org/10.1097/hnp.0000000000000102

20. Upadhyay DK, Ibrahim MIM, Mishra P, Alurkar VM, Ansari M. Does pharmacist-supervised intervention through pharmaceutical care program influence direct healthcare cost burden of newly diagnosed diabetics in a tertiary care teaching hospital in Nepal: a non-clinical randomised controlled trial approach. Daru. 2016;24(0):6. PMID: 26926657 DOI: https://doi.org/10.1186/s40199-016-0145-x

21. Gurung LB, Paudel G, Yadav UN. Health Service Utilization by Elderly Population in Urban Nepal: A Cross-Sectional Study. Journal of Manmohan Memorial Institute of Health Science. 2016;2(0):27-36. Available from: https://nepjol.info/index.php/JMMIHS/article/view/15794

22. Parajuli J, Saleh F, Thapa N, Ali L. Factors associated with nonadherence to diet and physical activity among Nepalese type 2 diabetes patients; a cross sectional study. BMC Res Notes. 2014;7(0):758. PMID: 25344089 DOI: https://doi.org/10.1186/1756-0500-7-758

23. Bista B, Dhimal M, Bhattarai S, Neupane T, Xu YY, Pandey AR, et al. Prevalence of non-communicable diseases risk factors and their determinants: Results from STEPS survey 2019, Nepal. PLoS ONE. 2021;16(7):e0253605. DOI: https://doi.org/10.1371/journal.pone.0253605

24. American Diabetes Association Professional Practice Committee. 5. Facilitating Behavior Change and Well-being to Improve Health Outcomes: Standards of Medical Care in Diabetes-2022. Diabetes Care 1. 2022;45(Supple 1):S60–S82. PMID: 34964866 DOI: https://doi.org/10.2337/dc22-s005

25. American Diabetes Association Professional Practice Committee. 6. Glycemic Targets: Standards of Medical Care in Diabetes-2022. Diabetes Care. 2022;45(Suppl 1):S83-S96. PMID: 34964868 DOI: https://doi.org/10.2337/dc22-s006