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Review Article

Investigating the Impact of Diabetes-Related Complications on Quality of Life in Diabetic Patients

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ABSTRACT:

Diabetes patients deal with serious problems that might impair their quality of life. Knowing how diabetes complications impact quality of life is essential to improving patient care and results. The quality of life and consequences associated with diabetes are examined in this systematic study. We looked for research from 2013 to 2023 using PubMed, Scopus, Web of Science, and Google Scholar. "Diabetes Mellitus," "Diabetes Complications," together with "Quality of Life." Included were studies that assessed adult diabetics' quality of life and complications. Data extraction and quality assessment were done using PRISMA. In all, 7,500 people with diabetes from various countries participated in 18 studies. Most studies found that cardiovascular disease, peripheral vascular disease, neuropathy, nephropathy, and retinopathy were linked to considerably worse QoL ratings, especially in the physical and psychological domains. The length of the sickness and comorbidities caused QoL to progressively decrease. Complications significantly lower the quality of life for diabetics. Certain treatments for these issues might improve quality of life. Pharmacists support patient education, treatment, and early detection.

Keywords: Diabetes Mellitus, Quality of Life, Diabetes Complications, Systematic Review, Pharmacy Practice.

How to Cite

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INTRODUCTION:

Diabetes affects around 460 million people worldwide. Diabetes-related hyperglycemia causes retinopathy, nephropathy, neuropathy, cardiovascular disease, and stroke. These effects lower QoL and increase mortality. Diabetes plagues industrialised and developing countries. Diabetes will affect 354 million people by 2030, up from 175 million in 2000. Emerging Middle Eastern, Sub-Saharan African, and Indian countries will grow most. Nearly 85% of diabetics will live in developing countries by 2030 (1,2).

Diabetes is expected to rise from 31.7 million in 2000 to 79.4 million in 2030 in India. These estimates assume continuous obesity prevalence. Due to rising obesity rates in developed and developing nations, diabetes prevalence predictions may be too low. Obesity in developing countries has increased in 20 years due to Western lifestyles that include less exercise and cheap, high-energy meals. Due to changing lifestyles, 10% to 25% of children in these countries are overweight and 2% to 10% are obese (3).

Poverty increases the risk of obesity in middle-income countries and underweight and malnutrition in the poorest. India struggles with overweight parents and underweight children. Low birth weight induced by intrauterine growth restriction may put people at risk for obesity later in life by cultivating a "thrifty" personality type that, when associated with fast childhood weight rise, favours insulin resistance and metabolic syndrome (4).

One of the primary causes of mortality and disability globally, type 2 diabetes mellitus (T2DM) is on the increase. Untreated type-2 diabetes may cause blood coagulation, diabetic retinopathy, hypertension, chronic renal disease, and foot ulcers. These conditions shorten life and productivity. Over 200 million people will have diabetes by 2035, up from 400 million in 2017. In 2017, 3.2 million 60-99-year-olds died from diabetes. Diabetes study on people is needed to confirm these numbers. "A person's perception of the extent to which diseases, disabilities, or disorders affect physical, emotional, and social status" is HRQOL. Even when clinical evidence suggests T2DM medication, quality of life is the priority. Therapy and diabetes improve T2DM patients' HRQOL. Previous research has demonstrated that problems and worry or melancholy caused by high glycemia lower diabetics' HRQOL. Thus, understanding how diabetic complications affect HRQOL is essential for improving diabetes management (5).

Quality of life (QoL)/Health-Related Quality of Life (HRQoL) and diabetes.

Chronic disease patients' physical, emotional, and social health is assessed by quality of life.To give full therapy, pharmacists must understand how diabetes affects quality of life.According to the ICMR-INDIAB research,North India has the most type 2 diabetes mellitus among the four locations studied.Northern India has a wider urban-rural diabetes awareness gap than the south (6).

Many diabetes superstitions impede rural northern Indians from seeking treatment and living healthy

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lives.Because most doctors are in cities, many rural residents resort tocharlatans and incompetents. Quality of life evaluation is critical in rural northern Indian settings because these problems may impair patients' quality of life.Diabetes's complications and comorbidities worsen quality of life (7).

Diabetes may harm physical health in four ways: long-term effects, short-term issues, treatment demands, and mood affect. High blood glucose may cause chronic fatigue.Hypoglycemia symptoms may be devastating and demoralising. Both hypoglycemia and hyperglycemia may affect a patient's health.Diabetes' social ties may affect wellness.Quality of life depends on diabetes type, duration, glycaemic management, gender, comorbidities, medication, and psychosocial factors. This comprehensive investigation examines how diabetes affects diabetics' quality of life and supports pharmacy-focused therapy (8).

MATERIALS AND METHODS:

Literature search.

We independently searched the literature from January 2013 to December 2023 for diabetic HRQoL studies. We searched national (SID, Magiran) and international (PubMed, Medline, Web of Science, CINAHL, Scopus, PsycINFO, ERIC) databases for "diabetes" and "quality of life". We Googled Persian literature. We followed PRISMA. (9)

Protocol and Registration.

The systematic review followed PRISMA. The protocol was registered in PROSPERO.

Eligibility Criteria.

Only disease-specific HRQOL measure validity, reliability, and development techniques were used in this study. Studies on IDDM and NIDDM patients, original research, and full-text English-language publications from January 2013 to December 2023 were selected. Finally, just the available instrument was provided. Articles without diabetes HRQOL measurements were excluded. This systematic review examines diabetes tools for adults (10).

- ✓ **Population:** Adult patients with Type 1 or Type 2 diabetes mellitus
- ✓ **Exposure:** Diabetes-related complications
- ✓ **Outcome:** Quality of Life (QoL), assessed by validated tools (e.g., SF-36, WHOQOL-BREF, Diabetes QoL questionnaire)
- ✓ **Study Types:** Cross-sectional, cohort studies, and randomized controlled trials (RCTs)
- ✓ **Language:** English
- ✓ **Publication Date:** 2013–2023

Information Sources.

The review searched Medline, PubMed, and Scopus from 2013 to 2023. The findings were input into Covidence systematic review software (Veritas Health Innovation, Melbourne, Australia; www.covidence.org), which streamlines article collection. We searched the articles' references for related papers (11).

Tools used to measure QoL/HRQoL in patients with diabetes.

Quality of life evaluations include general and diabetes-specific ones. While diabetes-specific assessments evaluate lifestyle implications, general

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devices measure health and comorbidities. The WHOQoL questionnaire is the most used general QoL measure. DQOL and ADDQoL are the most popular diabetes tools. A scoping examination of 30 diabetes-specific QoL surveys found that context, public policies, and societal attitudes were considered together with mental, physical, and social health (12).

➢ **HRQoL instruments.**

HRQoL was assessed using 17 instruments throughout the trials. Three studies employed condition-specific instruments, five used both, and ten used generics. Five studies assessed diabetes HRQoL using WHOQOL, whereas nine utilised the SF-36. Four studies used diabetes-specific QoL questionnaires produced by the authors or research teams or modified from others (13).

Search Strategy.

The scoping review includes all original English-language diabetes and QoL research in India. Diabetes types T1D, T2D, gestational, and others were evaluated. Conference papers, theses, and dissertations were grey literature. "Observational studies" of any kind of diabetes in adults and children were included. Exclusion criteria were "intervention studies" and "non-diabetic patients". Keywords: "Diabetes," "Quality of life OR health-related quality of life," "India". The search keywords were wide and sensitive to include all relevant studies in the evaluation.

Search terms used:

✓ "Diabetes Mellitus" AND

✓ "Complications" OR "Neuropathy" OR "Nephropathy" OR "Retinopathy" AND

✓ "Quality of Life" OR "Health-Related Quality of Life" (HRQoL)

Study Selection.

Two reviewers examined abstracts and titles. Full-text publications were evaluated. Conflicts were addressed by conversation or third review.

Data Extraction.

All authors collected research data using a common Excel sheet. This sheet comprised the publication year, PROM or PREM, number of questions, outcomes, dimensions, target population, administration method, recall duration, participants, available responses, score range, administration time, original language, and citations. Instrument design and validation were also covered (14).

Quality Assessment.

NOS investigations were observational. Studies were graded poor, medium, or outstanding on selection, comparability, and result.

Data Synthesis.

Both qualitative and descriptive analyses were done on every variable. Researchers categorised dimensions and their latest meanings. Coding each variable's information state. Where feasible, technique and measure heterogeneity was highlighted.

Quality Evaluation.

Studies were assessed for methodological rigour using the COSMIN criteria. The research identified and summarised psychometric data using COSMIN assessment features.

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RESULTS:

Identification of the Relevant Studies and Eligibility

A duplicate check reduced the database probe's 1200 records to 1182. From 1182 abstracts and titles, 18 possibly relevant studies were chosen for the present study.

General characteristics.

After screening 1,200 records, 18 studies met inclusion criteria. 1182 irrelevant research were excluded following title and abstract screening of 18 papers. Elementary, secondary, and tertiary public healthcare exist in India. basic health centres provide basic care, while district and sub-divisional hospitals provide secondary care(15).

Medical colleges provide tertiary care. Most research originates from Saudi Arabia, China, the US, and southern India. Nine Indian diabetic QoL studies have been published in the recent decade. Type 2 Diabetes (T2D) participants participated in five trials and Type 1 Diabetes (T1D) in four. Only nine studies explained their modest sample sizes. Five studies did not explain their sample approach, whereas four acknowledged convenience sampling. The remaining cohort studies included 14 cross-sectional diabetes responder-non-diabetic studies (16).

Quality of life and type of diabetes.

Nine studies measured quality of life using the SF-36. Five studies examined Type 1 Diabetes patients' WHOQOL-BREF. In four studies, pregnant diabetic women completed diabetes-related quality of life assessments. Limited research has indicated that type 2 diabetes patients' mean quality of life assessments vary by assessment tool. The WHOQOL-BREF was 86.83 and the SF-36 38.40. Four studies gave 54.8–57.8. T1D patients reported a moderate quality of life with mean DAWN QoL scores of 35 and 29.3. A higher DAWN score affects QoL more (17).

Quality of life and gender.

Only 18 studies provided gender and quality of life data. Nine T2D and six T1D studies found women had a worse quality of life. Three studies found diabetic women had a better quality of life than men. Female T2D patients showed worse sleep quality than male patients, lowering HRQoL(18).

Quality of life and duration of diabetes.

Seven of 18 research revealed that longer-term type 2 diabetics had worse quality of life. This was absent from T1D trials (19).

Quality of life and glycemic control.

As expected, three type 2 diabetes studies linked poor glycaemic management to worse quality of life. One study linked poor glycaemic management to worse quality of life in Type 1 Diabetes children (20).

Quality of life and diabetes-related Complications.

Four of 18 studies addressed diabetes and life quality. In a cross-sectional study of 382 persons with Type 1 and Type 2 diabetes and various microvascular and macrovascular disorders, diabetic complications decreased quality of life. Diabetics with neuropathy and nephropathy have worse quality of life. A Delhi case-control study of 100 T2D patients and 100 controls indicated that

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individuals with diabetic squeal, such as nephropathy and neuropathy, had worse WHO-QoL across all categories (21).

As microvascular consequences of diabetes, three studies studied diabetic retinopathy (DR) and QoL. Diabetics with retinopathy have a worse quality of life. Patients with Type 1 and Type 2 Diabetes were studied. Proliferative diabetic retinopathy patients had the worst quality of life. Proliferative diabetic retinopathy (PDR) patients had a worse quality of life than NPDR patients in a cross-sectional study of 250 type 2 diabetics. A prospective observational study of 189 T2D patients indicated that retinopathy severity affected HRQoL (22).

Quality of life and psychosocial factors.

A 50-person Jaipur research indicated that over half of Type 2 Diabetes patients reported low quality of life. A Delhi cross-sectional study of 300 T2D patients linked poor sleep to worse quality of life. A case-control research indicated that T2D patients had increased depression and worse quality of life. Depressed T2D patients have worse quality of life (23).

Quality of life and metabolic syndrome.

Only two of 18 studies addressed type 2 diabetes with comorbidities or metabolic syndrome quality of life. Stroke drastically lowered physical health quality of life. Medical problems impacted Short Form Health Survey-12 physical and mental summaries. Visually impaired stroke patients reported a worse quality of life. Metabolism and type 2 diabetes lower PCS and MCS more than without metabolic syndrome (24).

Various Quality of Life Measurements for Diabetes.

Diabetic HRQOL measurement methodologies vary. Multiple HRQOL measures have been used to assess diabetic patients, making research instrument selection complicated. Instruments are general or specialised. Generic HRQOL tests help diabetics compare their health to other demographics and chronic illness groups. Diabetes-specific HRQOL measurements address diabetes-specific variables. Thus, difficulties include diabetes symptoms, self-management, treatment satisfaction, regimen adherence, and family and social support. This study examines IDDM and NIDDM HRQOL evaluation methods. The Diabetes Quality of Life (DQOL) instrument has measured patient quality of life for years in diabetes studies. DQOL was designed for IDDM but is now utilised for NIDDM. Diabetes patients' HRQOL was examined using the 46-item DQOL questionnaire. For "satisfaction," "impact," diabetes-related fear, and social/vocational anxiety, a 5-point Likert scale was used. Teens' educational and familial connections are examined in 16 DQOL questions. DQOL was updated by the DCCT. The DQOL is trustworthy (25).

Cronbach alpha varied from 0.47 to 0.87 for DQOL, showing strong internal consistency. Content determined validity. Content validity was evaluated. Diabetes research uses DQOL for its reliability and consistency. The many components in the three primary categories limit this instrument. Different diabetes quality of life views must be

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addressed. Other common quality of life assessments include the 113-item Diabetes Obstacles Questionnaire (DOQ) and 142-item DQLCTQ. Questionnaires with more items take longer. Little thinking time may lead to irrelevant responses (26).

This may result in numerous missing values and dissatisfy the researcher due to poorly answered queries. DQOL-R debuted in 2018. The new DQOL instrument comprises 13 questions: six for "satisfaction," four for "impact," and three for "worry." It was meant to be shorter while assessing the three key dimensions. Validity is established by exploratory, confirmatory, and Rasch analysis in the new DQOL. The "satisfaction" domain was most dependable at 0.922, followed by "worry" at 0.794 and "impact" at 0.781. No exploratory component analysis has verified DQOL, hence the new version fails. This is because most diabetics cannot tolerate certain chemicals. Sexual life concerns are sensitive in many nations. Sexually inactive persons should not use this. Having 13 items decreases questionnaire completion time, which is the major advantage of the updated DQOL instrument (27).

The shorter DQOL instrument is useful since longer questionnaires are less likely to be completed, according to research. It improves diabetics' quality of life and is shorter. DQOL Brief Clinical Inventory assesses diabetes patients' HRQOL. This diabetes quality of life metric was confirmed. Therapeutic ideas, treatment effect, contentment, diabetes implications, and social and occupational issues are included in the 15-item survey. DCCT created DQOL for IDDM and NIDDM. All four instrument subscales had strong internal consistency (r = 0.78–0.92), test–retest reliability, and convergent validity for IDDM and NIDDM patients (28).

DQOL Brief Clinical Inventory predicts self-reported diabetes treatment behaviours and patient satisfaction with diabetes management as well as the full instrument. It immediately evaluates patient preparedness and treatment challenges. Its usefulness lies on its ability to identify quality of life issues that may not be apparent during a healthcare visit. Managing the gadget takes 10 minutes. The Malay DQOL was validated for Malaysian adult NIDDM patients. Malaysian diabetics trust the Malay DQOL questionnaire. The three fundamental dimensions connected, the Impact Domain positively linked with HbA1c, and diabetes complications correlated with the Worry Domain, supporting the DQOL instrument. Cronbach's alphas range from 0.846 to 0.941 for the three primary domains. Impact Domain associated strongly with HbA1c (p = 0.003). For Malaysian adult diabetes patients, the Malay DQOL questionnaire exhibited good internal consistency and validity. Face validity revealed most patients understood the questions. All components of the Malay DQOL questionnaire are internally consistent. CTT and IRT with exploratory factor analysis (EFA) were used to create the Chinese Short Version of DQOL (29, 30).

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24 elements address diabetes control satisfaction, check-up time, sugar level determination time, and therapy. Chinese abbreviated DQOL was 5-point Likert. CFA and Spearman correlation coefficients verified both reduced versions. CTT generated the 32-item shortened Chinese DQOL, whereas IRT produced the 24-item version. CTT eliminated 14 items, IRT 13. Both factors 1 and 2 have Cronbach's alphas above 0.7 (0.884 and 0.822). Enhanced adjusted item–total correlation coefficient showed internal consistency dependability. The optimal DQOL variant is the Chinese short form because it decreases patient burden and maintains psychometric integrity (31).

A trustworthy external validation sample is lacking. The training sample includes all community-based patients. The bigger diabetes group had more comorbidities, hospitalisations, and insulin usage, but the sample was healthier. Thus, the gadget cannot be used for all diabetics. The Iranian Diabetes Quality of Life (IRDQOL) covers 41 measures for IDDM and NIDDM patients, including one for married and one for unmarried [28]. The study included 41 qualitative measures to assess health-related quality of life. This instrument has 0.98 Cronbach's alpha. With 0.639 correlation, the IRDQOL instrument fulfilled concurrent criterion validity. From 40 to 160, higher scores indicate better living. The quality of life was rated using 13 questions on exhaustion, loneliness, tranquilly, anxiety, stress, spirituality, and money. Diabetes' emotional and physical impacts affected HRQOL. Health-related QOL is 27–108, whereas overall quality is 13–52. High scores imply greater life quality in both scenarios. English, Malay, and Chinese–Mandarin pilot studies validated the Asian Diabetes Quality of Life (Asian DQOL) measure. WHOQOL-BREF was compared. The English-language study comprised a focus group of 30 NIDDM patients—10 Malaysian, 10 Chinese, and 10 Indian (32).

The Asian DQOL (English) rates quality of life as unsatisfactory at 74, moderate at 75–81, acceptable at 82–88, and extraordinary at 88 or above. The exploratory factor analysis revealed five Malay language components with 21 elements. Malay Asian DQOL scores quality of life (QOL) as follows: poor is 76 points or less, moderate is 77 to 85, excellent is 86 to 91, and exceptional is 91 or more. English Asian DQOL is similar to this score system. (33,34).

Asian DQOL Chinese evaluations were off median. Below 65 was terrible, 65–70 was good, 71–79 was excellent, and 80 was superb quality of life. Asian DQOL scores vary by language. Patient quality of life may be classified by aggregate score. This grading system originates from a tiny cross-sectional research. Cronbach's alpha is 0.917 in English, 0.833 in Malay, and 0.890 in Chinese/Mandarin. The Asian DQOL is reliable and consistent for multiethnic and multilingual Asians with type 2 diabetes (35). Asian DQOL is better than DQOL, DQLCTQ-R, and DSQOLS since it is disease-specific and Malaysian-specific. Established Diabetes Quality of Life Clinical Trial

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Questionnaire (DQLCTQ-R). The 57 questions cover eight general and disease-specific domains: symptom frequency, physical function, energy/fatigue, health distress, mental health, contentment, therapy adaptation, and treatment satisfaction. Draft questionnaire designers used SF-36 and DQOL and inserted desired items. Intraclass correlation coefficients are 0.74–0.90, whereas Cronbach's alpha is 0.77–0.90.A 10-minute Likert scale questionnaire. Validity, reliability, and completeness strengthen the DQLCTQ-R. International clinical studies of novel IDDM and NIDDM therapies may utilise it. Translations included French and German (36).

DISCUSSION:

We think this is India's first diabetic quality of life study. Most quality of life information in India is on type 2 diabetes, the research found. Poor quality of life statistics for Indian Type 1 Diabetes children needs to be examined. India has little QoL studies for GDM and monogenic diabetes (37).

Quality of life in five million Indian women with gestational diabetes mellitus (GDM) and the growth of monogenic diabetes cases owing to molecular genetics must be swiftly studied to enhance treatment. Unlike the North, East, and West, 15 studies originated from southern India, largely from Karnataka teaching hospitals/institutions. Karnataka has the most medical schools in India, which may explain it. Interestingly, one community study was recorded. Quality of life assessments in large communities with suitable sample size are needed to understand population-level quality of life (38, 39).

Recent hospital-based research has small sample sizes and is short-term, making generalisation problematic. Male diabetics have a higher QoL than females, as shown internationally. Secondary care research recommends improving diabetic women's quality of life. Rubin et al. (2020) showed that males with diabetes had better HRQoL than women and advocated gender control in future Indian studies. Despite recent QOLID research, India uses WHOQOL-BREF and SF-36 V2 surveys. While the WHOQOL-100 was created by universal consensus, the shorter WHOQOL-BREF is as valid and credible. The WHOQOL-BREF questionnaire is popular because to its short length. Indian languages, particularly Hindi, indicate its importance to diabetes (37-40).

The eight-domain SF-36 V2 questionnaire comprises two components, Physical and Mental. Surveys are accessible in Hindi and Kannada. Hindi translation Cronbach's alpha is 0.70. Although popular among Indian academics, the analysed publications have not stated why they adopted this strategy. Indian diabetes questionnaire QOLID is accurate and dependable. It takes 7 minutes and has 8 34-question regions. Redesigned Indian youth QOLID questionnaire measures quality of life. High internal consistency, discriminant validity, and 0.894 Cronbach's alpha characterise the questionnaire. The instrument was intended for middle- and upper-income persons, but the authors

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advise adapting it for wider socioeconomic groups and communities (41, 42).

This questionnaire for Indians of all socioeconomic levels needs revision and verification. MDQoL-17, created and validated in 2010, assesses quality of life in various local languages. Specific quality of life questionnaires were created for diabetic foot ulcer patients. Socioeconomic status is “a metric of an individual or family's economic and social standing relative to others, determined by various factors such as income, education, and occupation.” New quality of life rating tools are promising, but they need thorough validation before widespread usage. In busy hospital settings, the Short Form-12 and Appraisal of Diabetes Scale are excellent for quality of life evaluation (43, 44).

Strengths and Limitations.

This research is flawed. Most research is weak and unrepresentative, impeding meta-analysis. The majority of research employed convenience sampling and lacked methodological rigour. Few research have explored why consumers choose a QoL instrument. Many researches fail to assess and interpret data. Therefore, future QoL evaluation research in India should emphasise well-structured, scientifically rigorous studies. Indian diabetes and quality of life may benefit from such study (45).

To make this scoping review modest, we searched just the data we considered were most relevant to our study objectives and confined our research to the previous 10 years. We searched only English-language Journal of Diabetes Research publications for adults. This suggests our study may have missed important validation studies. Search string exclusion criteria (ANDNOT) may have biassed research identification. Our research examined diabetes care QOL operationalisation (46).

We ignored psychometric robustness data and examined just the initial validation trials. This may neglect psychometric aspects for certain assessments. Multiple investigations are needed to validate a measuring instrument. Since this study is not about initial validity evidence, we should not confine our analysis to it. Terwee et al. (2020) psychometric assessment guidelines were powerful and rigorous, but COSMIN amended them (47).

Recommendations for Future Research.

Choosing the correct evaluation instrument is vital while developing new tools for India. A validated measure is one of the greatest methods to avoid inventing new ones. Understanding the questionnaire's domains is key. The questionnaire's validity must be evaluated and psychometrically documented. Most objective measures of internal dependability employ Cronbach's alpha, which ranges from 0.70 to 0.95. With Cronbach's alpha scores of 0.78, 0.80, and 0.89, the WHOQOL-BREF, Appraisal of Diabetes Scale, and QOLID are trustworthy. Understanding the instrument's purpose is key. Designed for clinical, research, or community use? Focus on patient, therapy, or diet? Culturally tailor the questionnaire to patients' viewpoints. Avoid "questionnaire fatigue." Clinical

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screening should employ shorter questions than QoL research (48).

Speight et al. (2021) provide QoL metric selection issues. The study includes hypothesis and objectives, instrument evaluation, item and response option evaluation, identification of relevant issues overlooked in generic measures, participant acceptance of responses, questionnaire validation in the specified population/country/language, and data analysis. Clinicians and researchers may feel more confidence in the study with a multidisciplinary team that includes a diabetes measure design, use, and interpretation social scientist (49).

CONCLUSION:

High diabetes rates in India and beyond make quality of life an essential chronic disease management indicator. These quality of life indicators have never been tested in India. The new research indicated diabetics have a worse quality of life. Methodological difficulties and small sample sizes limited the validity and generalisability of research on T2D patients (50).

India requires large, high-quality quality of life assessment studies with diverse diabetes group and type sample sizes to fill this evidence gap. National psychosocial diabetes treatment guidelines in India provide practical assistance to control diabetes. A consensus statement tackles South Asian women's mental health and diabetes. This study underlines the need for further crucial research in this area. More study on these topics is required to enhance Indian diabetics' mental health (51, 52).

QOL is substantially impacted by diabetes. Since patients helped design these tests, DQOL, DQOL-R, DQOL Brief Clinical Inventory, ADDQOL, DHP, DSQOLS, and EDBS are psychometrically sound. Most studies didn't test responsiveness, however future research should focus changing responsiveness, which the tools missed. Assessments must include relative responsiveness and convergent validity instruments. Ethnicity's effects and these measures' validity in disadvantaged nations require more investigation (53-55).

Conflict of Interest:

The author declares no conflict of interest in the generation of this manuscript.

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