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RESEARCH ARTICLE

Quality of Life Among Adults with Type 2 Diabetes Mellitus at a Referral Hospital in Tasikmalaya, Indonesia: A Descriptive Cross-Sectional Study

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ABSTRACT

Introduction: Type 2 diabetes mellitus (T2DM) imposes a burden that extends beyond glycaemic control, affecting physical functioning, emotional wellbeing, social participation and the environmental conditions in which people manage their illness. Facility-based descriptions of the full WHOQOL-BREF domain profile, reported on the WHO-recommended transformed metric, remain scarce for Indonesian adults with T2DM, which limits the ability of health promotion services to identify which dimensions of life are most affected locally. This study aimed to describe the quality of life of adults with T2DM attending a referral hospital in Tasikmalaya, West Java, Indonesia, using the World Health Organization Quality of Life-BREF (WHOQOL-BREF).

Methods: A descriptive cross-sectional study was conducted at RSUD dr. Soekardjo Tasikmalaya from 23 July to September 2025. One hundred adults with T2DM were recruited by consecutive sampling; eligibility required an age of at least 18 years, pharmacological treatment for at least six months, and the absence of severe complications or cognitive impairment. Data comprised sociodemographic and clinical characteristics, a medication-history questionnaire, a reproductive-history questionnaire administered to women only, and the WHOQOL-BREF. Items 3, 4 and 26 were reverse-scored before domain scoring, and domain scores were transformed to the WHO 0-100 metric. All four domains departed from normality and are summarised as median with interquartile range. Analysis was descriptive; no inferential or association testing was performed.

Results: Participants had a mean age of 58.95 years (SD 8.88) and a median illness duration of 4.00 years; 60 (60.0%) were women. The WHOQOL-BREF showed excellent internal consistency (Cronbach's alpha 0.961 overall; 0.862-0.914 across domains). On the transformed 0-100 metric, median domain scores were 56.25 (IQR 46.09-68.75) for environment, 57.14 (IQR 42.86-72.32) for physical health, 58.33 (IQR 41.67-75.00) for social relationships and 62.50 (IQR 45.83-76.04) for psychological health. The four domain medians lay within a 6.25-point range, with environment lowest and psychological health highest. Sixty-two participants (62.0%) rated their overall quality of life as good or very good, whereas 46 (46.0%) were satisfied or very satisfied with their health.

Conclusion: Adults with T2DM at this referral hospital had median scores between 56.25 and 62.50 on the 0-100 metric across the four WHOQOL-BREF domains, with the environmental domain scoring lowest and the psychological domain highest. Because the domains scored within a narrow band, health promotion responses should address the domain profile as a whole rather than any single dimension. These descriptive findings identify priorities for testing in appropriately designed analytical studies.

Keywords: Type 2 Diabetes Mellitus; Quality of Life; WHOQOL-BREF; Indonesia; Health Promotion

INTRODUCTION

Diabetes mellitus is among the most prevalent chronic conditions worldwide, and its burden is rising fastest in low- and middle-income countries. The International Diabetes Federation estimates that the Western Pacific and South-East Asia regions together account for a substantial share of the global diabetes population, with Indonesia among the countries carrying the largest absolute number of affected adults (1). Type 2 diabetes mellitus (T2DM), which accounts for the great majority of cases in adults, requires sustained self-management across medication, diet, physical activity and monitoring, and carries a long-term risk of microvascular and macrovascular complications (2).

Contemporary diabetes care recognises that clinical targets alone do not capture the outcomes that matter to patients. Living with T2DM reshapes daily functioning, emotional wellbeing, social participation and the material conditions in which treatment is sustained, and these dimensions are only partially reflected in glycaemic indicators (3). Quality of life has accordingly become an established patient-reported outcome in diabetes research and in the planning of health promotion services, because it identifies where support is most needed rather than only whether treatment targets have been met.

The World Health Organization Quality of Life-BREF (WHOQOL-BREF) is a 26-item generic instrument that yields scores for four domains: physical health, psychological health, social relationships and environment. Its cross-cultural psychometric properties have been established in a 23-country field trial (4), and the WHO scoring manual specifies two steps that must precede any comparison between domains (5). Three negatively phrased items must first be reverse-scored, and raw domain sums must then be transformed onto a common metric, because the domains contain different numbers of items. Neither step is optional: raw sums from a three-item domain and an eight-item domain are not on the same scale, and comparing them directly produces misleading conclusions about which dimension of life is most affected.

Evidence on quality of life among Indonesian adults with diabetes is growing but remains uneven. Population-based work has shown that even an elevated risk of developing diabetes is associated with impaired health-related quality of life in Indonesia (6), and instrument development studies have adapted diabetes-specific measures for Indonesian use (7). What remains less well documented is the facility-based WHOQOL-BREF domain profile of adults already living with T2DM, reported on the WHO-transformed metric rather than as a dichotomised category. Comparative work from neighbouring settings suggests that domain profiles vary with health system context and with the ethnic and socioeconomic composition of the population served (8,9), which means that a profile obtained in one setting cannot simply be assumed to hold in another. Tasikmalaya, a district-level city in West Java whose referral hospital serves a mixed urban and peri-urban population, has not previously been described in this literature.

This study therefore aimed to describe the quality of life of adults with T2DM attending RSUD dr. Soekardjo Tasikmalaya using the WHOQOL-BREF, and to describe the sociodemographic, treatment-related and reproductive characteristics of this patient group. The objective is descriptive. The study was not designed to identify determinants of quality of life, and no causal or associational claims are made.

METHODS

Study Design

This was a descriptive cross-sectional study conducted at RSUD dr. Soekardjo Tasikmalaya, Indonesia, from 23 July to September 2025. Reporting follows the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement for cross-sectional studies (10). The design is descriptive; the study was not constructed to test associations or to identify determinants of quality of life. The data reported here come from the Indonesian site of a collaborative comparative study of quality of life among patients with diabetes mellitus in Indonesia and Malaysia, conducted under the 2025 International Joint Research scheme of Politeknik Kesehatan Kemenkes Tasikmalaya with UCSI University, Malaysia; data from the Malaysian site are not included in this manuscript.

Population and Sample

The source population comprised adults with a physician-confirmed diagnosis of T2DM attending the outpatient internal medicine clinic of RSUD dr. Soekardjo Tasikmalaya during the study period. One hundred patients were recruited by consecutive sampling: patients attending the clinic on data collection days were screened in order of attendance, and every eligible patient who gave consent was enrolled until the target sample size was reached. Inclusion criteria were: (1) age 18 years or older; (2) continuous pharmacological treatment for T2DM for at least six months, verified at screening against the treatment record; and (3) ability to provide informed consent and to complete the questionnaire independently or with assistance from the data collector. Exclusion criteria were severe diabetes-related complications limiting participation (including stroke, heart failure and end-stage renal disease), documented cognitive impairment, and declining to participate.

The target sample size of 100 was a pragmatic target set by the expected clinic volume across the data collection window. The precision actually achieved is reported as 95% confidence intervals for the domain means in Table 4. No formal power calculation was performed, because no hypothesis test was planned.

Study Setting

The study was conducted at a single site, RSUD dr. Soekardjo Tasikmalaya, a public referral hospital in Tasikmalaya City, West Java, Indonesia. All participants were recruited from this hospital's outpatient internal medicine clinic during routine scheduled visits. No other healthcare facility contributed participants.

Measurement Instruments

Data collection involved four components: (1) sociodemographic and clinical characteristics; (2) a medication-history questionnaire; (3) a reproductive-history questionnaire administered to female participants only; and (4) the WHOQOL-BREF. Duration of illness was self-reported as the time elapsed since the participant was first told they had diabetes, and is reported in Table 1. Eligibility, including continuous pharmacological treatment for at least six months, was verified at screening against the treatment record before enrolment.

Medication history was assessed with a 10-item investigator-developed questionnaire capturing the participant's reported experience of their diabetes pharmacotherapy, including regimen type, regularity of intake, discontinuation without consultation, experience of side effects, perceived importance of regular treatment, exposure to diabetes education, information sources, family support and concurrent use of traditional medicines. Items carry different weights reflecting the number of response options, giving a total score ranging from 0 to 21; observed totals ranged from 9.8 to 21.0 (median 18.40, IQR 15.80-19.85). Totals were classified as good (greater than 15) or fair (15 or below); no participant scored in the poor range. This instrument was developed for the present study and has not undergone formal psychometric validation, and its category thresholds were set pragmatically rather than empirically. Because the instrument was not developed or validated as an adherence measure, results are reported throughout as medication history and treated only as a descriptive participant characteristic; the term medication adherence is not used because the measured construct does not correspond to a validated adherence scale.

Reproductive history was assessed with a 13-item investigator-developed questionnaire administered only to the 60 female participants. Items covered gravidity, miscarriage, diagnosis of diabetes during pregnancy, glycaemic control during pregnancy, treatment used in pregnancy, pregnancy complications, mode of delivery, gestational age at birth, infant birth weight, neonatal complications, breastfeeding, receipt of education about pregnancy and diabetes, and family support. Totals ranged from 10 to 21 (median 16.0, IQR 14.0-17.0) and were classified using the same thresholds as above. This instrument has likewise not undergone formal psychometric validation, and although it includes an item on diagnosis of diabetes during pregnancy it was not designed to ascertain gestational diabetes mellitus diagnostically; it is therefore reported as a descriptive characteristic of the female subgroup and is not interpreted as a marker of prior gestational diabetes. All percentages for this variable use n = 60 as the denominator.

Quality of life was measured with the Indonesian version of the WHOQOL-BREF. The instrument comprises 26 items rated on five-point Likert scales. Twenty-four items are allocated to four domains: physical health (7 items: Q3, Q4, Q10, Q15, Q16, Q17, Q18), psychological health (6 items: Q5, Q6, Q7, Q11, Q19, Q26), social relationships (3 items: Q20, Q21, Q22) and environment (8 items: Q8, Q9, Q12, Q13, Q14, Q23, Q24, Q25). Items Q1 and Q2 measure overall quality of life and general health perception respectively and are analysed as single items, not as part of any domain. Internal consistency in the present sample was excellent: Cronbach's alpha was 0.961 across the 24 domain items, and 0.910, 0.914, 0.877 and 0.862 for the physical, psychological, social relationships and environmental domains respectively.

Scoring followed the official WHO manual (5). The three negatively phrased items, Q3 (pain and discomfort), Q4 (need for medical treatment) and Q26 (negative feelings), were reverse-scored as six minus the raw response before any domain score was computed. All domain scores reported here were recalculated from the item-level data with the reversal correctly applied. Domain raw scores were obtained by summing the constituent item scores. Each raw score was then transformed to the 0-100 metric using the WHO formula (transformed score = raw score x 25 / number of items - 25). All domain results in this manuscript are reported on the 0-100 metric so that domains containing different numbers of items are directly comparable. The item-level dataset was complete: no participant had a missing response on any of the 26 items, so no imputation or case exclusion was required.

No a priori threshold was applied to classify quality of life as poor or good. The WHOQOL-BREF is designed to be interpreted as a continuous profile, and neither the WHO manual nor the international field trial establishes a universal cut-off separating poor from good quality of life (4,5). Domain scores are therefore presented as continuous distributions throughout.

Data Collection Procedures

Participants were identified consecutively from the clinic register on each data collection day and approached by trained data collectors after their consultation. A total of 145 patients were assessed for eligibility. Five were excluded because they met an exclusion criterion (severe diabetes-related complications, n = 3; documented cognitive impairment, n = 2), leaving 140 eligible patients, of whom 40 declined to participate. The final sample therefore comprised 100 participants.

Questionnaires were self-administered in a private area of the clinic, or read aloud by a data collector in a private area where a participant requested assistance. Data collectors were trained in the study procedures and in the standardised administration of the WHOQOL-BREF before fieldwork began, and completed forms were checked for completeness on the day of collection.

Statistical Analysis

Data were entered and analysed in IBM SPSS Statistics 27 and all WHOQOL-BREF domain computations were independently reproduced from the item-level data. The distribution of each continuous variable was examined using histograms, skewness and kurtosis, and the Shapiro-Wilk test. All four WHOQOL-BREF domain scores departed significantly from normality (Shapiro-Wilk $p = 0.0005$, 0.020, 0.013 and 0.044 for the physical, psychological, social relationships and environmental domains respectively), as did duration of illness ($p < 0.001$) and both questionnaire totals; these variables are therefore summarised as median with interquartile range and observed range, with means and standard deviations reported

alongside for comparability with the existing literature. Age was approximately normally distributed and is summarised as mean with standard deviation and 95% confidence interval, the latter computed as the mean plus or minus t(99) standard errors. Categorical variables are summarised as counts and percentages, with the denominator stated for each variable. The summary measure reported for each variable therefore reflects its observed distribution rather than a single convention applied uniformly.

The analysis was descriptive throughout. No hypothesis tests of association between participant characteristics and quality of life were performed, no effect estimates are reported, and no determinant or causal language is used. This decision reflects the study's descriptive objective and the fact that a single-site cross-sectional design with consecutive (non-probability) sampling cannot support inference about determinants.

Ethical Considerations

Ethical approval was obtained from the Research Ethics Committee of Poltekkes Kemenkes Tasikmalaya (No. DP.04.03/F.XVIII.20/KEPK/895/2025, issued 15 July 2025; valid from 23 June 2025 to 23 June 2026). Institutional permission was also granted by RSUD dr. Soekardjo Tasikmalaya (No. 800.2.4.4./34/SSDM2025). The ethical review was completed and the protocol declared ethically appropriate on 23 June 2025, and the approval certificate was issued on 15 July 2025. Participant recruitment and data collection were conducted from 23 July to September 2025, after the certificate had been issued and within its validity period; data cleaning was completed in October 2025. No study procedure involving participants was performed before ethical approval.

Written informed consent was obtained from every participant before data collection. Prospective participants received a verbal and written explanation of the study purpose, procedures, expected duration, the voluntary nature of participation and their right to withdraw at any point without consequence for their clinical care. Participants who agreed signed a consent form, a copy of which was offered to them.

No direct identifiers were recorded on the questionnaire; each form carried only a study code, and the linking log was held separately in a locked cabinet accessible only to the principal investigator. Completed forms were stored in a locked cabinet and the electronic dataset was password-protected. Data are reported only in aggregate, and no individual participant is identifiable in any output of this study. The de-identified dataset supporting the findings is available from the corresponding author on reasonable request.

RESULTS

Participant Characteristics

One hundred participants were enrolled and all completed the WHOQOL-BREF in full. The mean age was 58.95 years (SD 8.88; 95% CI 57.19-60.71; range 30-78 years), indicating a predominantly middle-aged to older patient group. Duration of illness was strongly right-skewed, with a median of 4.00 years (IQR 1.00-6.25; range 0.50-30.00; mean 4.82, SD 5.09).

Sixty participants (60.0%) were women and 40 (40.0%) were men. Medication history totals ranged from 9.8 to 21.0 out of a possible 21 (median 18.40, IQR 15.80-19.85). Seventy-nine participants (79.0%) were classified in the good category and 21 (21.0%) in the fair category; no participant fell in the poor category.

Reproductive history was assessed only among the 60 female participants, and all percentages for this variable use that denominator. Totals ranged from 10 to 21 (median 16.0, IQR 14.0-17.0). Twenty-two women (36.7%) were classified in the fair category and 38 (63.3%) in the good category; no female participant fell in the poor category.

WHOQOL-BREF Scores

Overall quality of life (Q1) and general health perception (Q2) were analysed as single items on their original 1-5 scales. For Q1 the median was 4 (IQR 3-4; mean 3.55, SD 0.98): 13 participants (13.0%) rated their quality of life very good, 49 (49.0%) good, 20 (20.0%) neither poor nor good, 16 (16.0%) poor and 2 (2.0%) very poor. For Q2 the median was 3 (IQR 3-4; mean 3.25, SD 1.01): 7 participants (7.0%) were very satisfied with their health, 39 (39.0%) satisfied, 32 (32.0%) neither satisfied nor dissatisfied, 16 (16.0%) dissatisfied and 6 (6.0%) very dissatisfied. Taken together, 62 participants (62.0%) rated their overall quality of life positively, whereas 46 (46.0%) expressed satisfaction with their health, a difference of 16 percentage points between the two single-item outcomes.

On the WHO-transformed 0-100 metric, the median environmental domain score was 56.25 (IQR 46.09-68.75; range 18.75-100.00), the median physical domain score was 57.14 (IQR 42.86-72.32; range 7.14-85.71), the median social relationships score was 58.33 (IQR 41.67-75.00; range 8.33-100.00), and the median psychological domain score was 62.50 (IQR 45.83-76.04; range 12.50-100.00).

The four domains scored within a narrow band of 6.25 points on the 0-100 metric. The environmental domain returned the lowest median score and the psychological domain the highest; the same ordering held for the means, which ranged from 55.56 to 60.17. Dispersion was similar across the physical, psychological and social relationships domains (SD 19.19 to 20.23) and somewhat narrower in the environmental domain (SD 16.34). The social relationships domain, which contains only three items, showed the coarsest measurement granularity, and its interquartile range accordingly spans a wide interval.

Table 1. Participant Characteristics

Variable	Summary measure	Value	Range	95% CI
Age (years)	Mean (SD)	58.95 (8.88)	30-78	57.19-60.71
Duration of illness (years)	Median (IQR)	4.00 (1.00-6.25)	0.50-30.00	-
Duration of illness (years)	Mean (SD)	4.82 (5.09)	0.50-30.00	3.81-5.83

Table 1 presents the sociodemographic and clinical characteristics of the study participants with type 2 diabetes mellitus at RSUD dr. Soekardjo Tasikmalaya. Age was approximately normally distributed and is summarised as mean with standard deviation and 95% confidence interval; duration of illness departed significantly from normality (Shapiro-Wilk $p < 0.001$) and is summarised primarily as median with interquartile range, with the mean and standard deviation given for comparability with the existing literature. Duration of illness is the self-reported time since the participant was first told they had diabetes; eligibility, including at least six months of pharmacological treatment, was verified at screening against the treatment record.

Table 2. Distribution of Participants by Sex and Medication History (n = 100)

Characteristic	Category	n	%
Sex	Male	40	40.0
	Female	60	60.0
Medication history	Poor (0-8)	0	0.0
	Fair (>8-15)	21	21.0
	Good (>15-21)	79	79.0

Table 2 displays the distribution of participants by sex and medication history. Percentages use n = 100 as the denominator. Medication history was measured with a 10-item investigator-developed questionnaire with weighted items giving a total score range of 0-21; observed totals ranged from 9.8 to 21.0 (median 18.40, IQR 15.80-19.85). The instrument has not been psychometrically validated, its category thresholds were set pragmatically, and it is not an adherence measure; the categories are descriptive only. Reproductive history, which was collected from female participants only, is reported separately in Table 3 so that the denominator for each variable is unambiguous.

Table 3. Distribution of Female Participants by Reproductive History (n = 60)

Category	n	%
Poor (0-8)	0	0.0
Fair (>8-15)	22	36.7
Good (>15-21)	38	63.3
Total	60	100.0

Table 3 reports reproductive history among the 60 female participants, and all percentages use that denominator. Observed totals ranged from 10 to 21 (median 16.0, IQR 14.0-17.0). This 13-item investigator-developed questionnaire has not been psychometrically validated and was not designed to ascertain gestational diabetes mellitus diagnostically.

Table 4. Distribution of WHOQOL-BREF Scores on the WHO-Transformed 0-100 Metric (n = 100)

Domain	Items	Median (IQR)	Mean (SD)	95% CI	Range	Alpha
Environment	8	56.25 (46.09-68.75)	55.56 (16.34)	52.36-58.77	18.75-100.00	0.862
Physical health	7	57.14 (42.86-72.32)	55.79 (19.19)	52.02-59.55	7.14-85.71	0.910
Social relationships	3	58.33 (41.67-75.00)	59.00 (20.16)	55.05-62.95	8.33-100.00	0.877
Psychological health	6	62.50 (45.83-76.04)	60.17 (20.23)	56.20-64.13	12.50-100.00	0.914

Table 4 summarises the distribution of quality-of-life scores across the four WHOQOL-BREF domains, ordered from lowest to highest median. Scores were computed according to the WHO scoring manual after reverse-scoring items Q3, Q4 and Q26, and transformed using the formula: transformed score = raw domain sum x 25 / number of items - 25. All domains are therefore on a common 0-100 scale and are directly comparable. All four domains departed significantly from normality (Shapiro-Wilk $p = 0.0005$, 0.020, 0.013 and 0.044 for physical, psychological, social relationships and environment respectively), so the median with interquartile range is the primary summary measure. No cut-off separating poor from good quality of life was applied, as none is established for this instrument. Cronbach's alpha across all 24 domain items was 0.961.
Figure 1. Median WHOQOL-BREF Scores across Domains on the WHO-Transformed 0-100 Metric (n = 100)

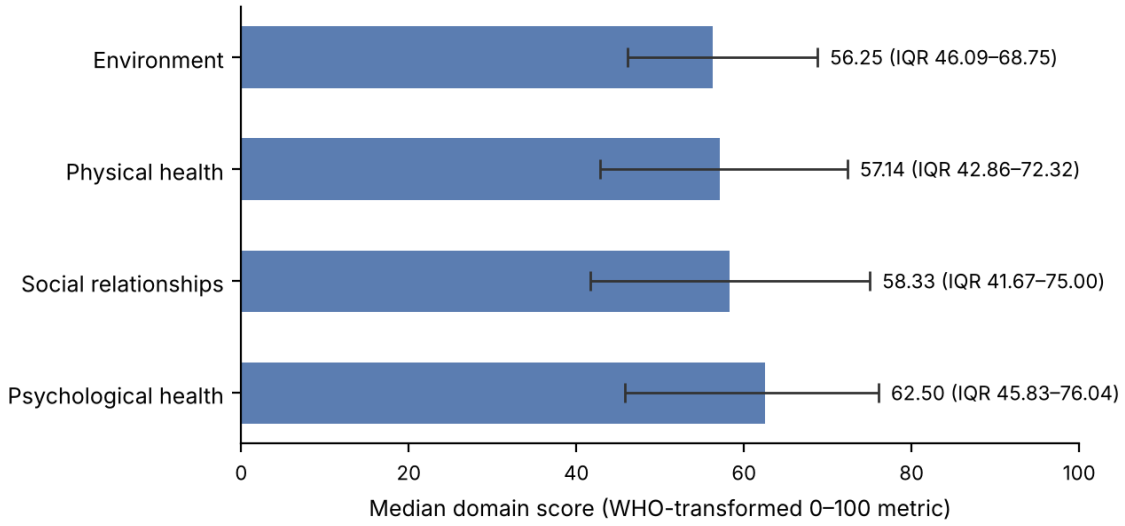


Figure 1. provides a visual representation of the median scores across the four WHOQOL-BREF domains on the WHO-transformed 0-100 metric, with the interquartile range shown beside each bar. The horizontal axis spans the full 0-100 range of the instrument so that the narrow band across domains is not visually exaggerated. Domains are ordered from lowest to highest median. The environmental domain scored lowest and the psychological domain highest, and the four medians span only 6.25 points.

DISCUSSION

Interpretation of Key Findings

This descriptive study characterised the quality of life of 100 adults with T2DM attending a public referral hospital in Tasikmalaya, Indonesia, using the WHOQOL-BREF scored according to the official WHO algorithm. Three features of the domain profile stand out. First, median scores fell between 56.25 and 62.50 on the 0-100 metric across all four domains, a narrow spread in which no single domain scored markedly lower than the others. Second, the environmental domain returned the lowest median score and the psychological domain the highest. Third, internal consistency was high in this population, with a Cronbach's alpha of 0.961 across the 24 domain items.

The narrowness of the band across domains is itself the principal finding. A range of just over six points indicates that, in this patient group, no single dimension of life stood apart from the others, and that a health promotion response targeting one domain alone would address only part of the picture. The two single-item outcomes add a further nuance: participants rated their overall quality of life more positively than their satisfaction with their health, with 62.0% rating quality of life as good or very good against 46.0% expressing satisfaction with their health. This gap suggests that living well and being satisfied with one's health are not experienced as the same thing by these patients, which is consistent with the premise that quality of life measures something the clinical record does not.

Comparison with Previous Studies

The demographic profile of the sample, with a mean age near 59 years and a female majority, is consistent with the age and sex distribution typically reported for outpatient T2DM populations in Indonesia and the wider region (6,8). Direct numerical comparison with the published literature is limited because many studies report raw sums, dichotomised categories or diabetes-specific instruments rather than WHO-transformed WHOQOL-BREF domain scores. This heterogeneity of reporting is itself an obstacle to synthesis in this literature, and it is one reason the present study reports the transformed metric explicitly and states the reverse-scoring step.

The environmental domain returned the lowest median score. This domain covers financial resources, safety, the physical environment, access to health and social care, information, recreation and transport. Literature on access, affordability and service availability among people with diabetes in low- and middle-income settings offers candidate explanations for a score of this magnitude (11–13), and disparities between urban and rural service provision are well documented in this region. The present study measured the domain score only; it did not measure income, transport, distance to services or out-of-pocket cost, so these remain hypotheses about the observed score rather than demonstrated explanations, and testing them would require direct measurement of the specific facets involved.

The physical health domain returned the second-lowest median score. This is consistent with a literature documenting reduced energy, mobility and daily functioning among people living with long-standing diabetes, where fatigue, neuropathic symptoms and complication burden constrain physical activity (14). As with the environmental domain, the present study measured domain-level scores only and cannot identify which facets within the domain drove the observed value.

The psychological domain returned the highest median score, which warrants cautious interpretation in light of substantial literature on psychological distress in diabetes populations (15). The domain score reflects a composite of positive feelings, meaning, concentration, self-image, self-satisfaction and, after reversal, the relative infrequency of negative feelings; a

comparatively high composite does not exclude clinically meaningful distress in a subgroup, and the wide interquartile range (45.83-76.04) indicates that scores were far from uniform. A study using a diabetes-specific distress measure would be better placed to address this question than a generic instrument.

The social relationships score sat in the middle of the profile. Studies of social support in diabetes populations consistently report that perceived support is protective for self-management and psychological wellbeing (16–18), and that social isolation is associated with poorer outcomes and with incident T2DM (19,20). The comparatively preserved social relationships score may reflect contextual social support; however, the present data cannot establish this explanation, and the hypothesis requires direct measurement of perceived social support in a future study.

Medication history was classified as good for 79.0% of participants and fair for the remainder, with no participant in the poor category. Studies linking treatment adherence to better glycaemic control and quality of life in diabetes, including work in Indonesian populations (21,22), and trials of pharmacist-led adherence support (23), suggest that this would be a favourable feature of the sample if it reflected adherence. However, the instrument used here was not a validated adherence measure, its thresholds were set pragmatically, and no glycaemic biomarker was available, so this study can neither confirm the quality of the participants' adherence nor relate it to their quality of life.

Limitations and Cautions

Several limitations bear directly on how these findings should be interpreted.

First, the study is descriptive and cross-sectional. It measures quality of life at one point in time and cannot identify determinants of quality of life, establish temporal ordering or support any causal inference. All explanatory statements in this discussion are framed as hypotheses drawn from the literature, not as findings of this study.

Second, recruitment used consecutive, non-probability sampling and was confined to a single referral hospital. Participants were people well enough to attend an outpatient clinic and willing to complete a questionnaire, and those with severe complications were excluded by design. The sample therefore does not represent all adults with T2DM in Tasikmalaya, still less in Indonesia, and probably under-represents the most severely affected. Estimates should not be extrapolated beyond comparable outpatient populations.

Third, all outcome data are self-reported at a single interview conducted in the clinic. Self-reported quality of life is subject to social desirability and to transient influences such as the outcome of that day's consultation, and self-reported medication and reproductive histories are additionally subject to recall error. Duration of illness, in particular, depends on the participant recalling when they were first told they had diabetes.

Fourth, duration of illness relied on self-report. During final data checks, data-entry errors were identified in this variable for 12 participants whose recorded duration was shorter than six months; these entries were verified with the data collectors and against the original paper questionnaires, were found to exceed six months, and were corrected before the analysis reported here. Duration of treatment, against which eligibility was assessed at screening, was not retained as a separate analysis variable, and future studies should retain both variables.

Fifth, two of the three instruments were investigator-developed and lack established psychometric properties. The medication-history and reproductive-history questionnaires have no published validity or reliability evidence in this or any population, their weighting schemes and category thresholds were set pragmatically rather than empirically, and neither has an established interpretation. Findings from these two instruments should be regarded as preliminary descriptive information about the sample rather than as measurements of adherence or of reproductive risk.

Sixth, the reproductive-history questionnaire was not designed to ascertain gestational diabetes mellitus diagnostically. A general history of adverse pregnancy outcome is not equivalent to a history of gestational diabetes, and the two should not be conflated. Although the literature indicates that gestational diabetes and adverse reproductive outcomes are associated with reduced quality of life in women (24–26), the present study cannot contribute evidence on that question.

Seventh, no glycaemic biomarker such as HbA1c or fasting plasma glucose was available, so the domain profile cannot be positioned against the participants' metabolic control.

Finally, the WHOQOL-BREF is a generic instrument. It captures quality of life across life domains but does not measure diabetes-specific concerns such as hypoglycaemia worry, dietary restriction burden or injection-related distress, which a condition-specific instrument would capture. The comparatively high psychological domain score should be read with this limitation in mind.

Implications for Practice and Future Research

The implications of a descriptive study are necessarily modest, and are framed here as priorities for service planning and for further research rather than as interventions this study has shown to be effective.

For health promotion practice in this setting, the similar scores across domains suggest that patient education framed narrowly around glycaemic targets may not address the full range of reported burden. A profile in which the environmental domain scores lowest points towards the material and access conditions in which patients manage their illness, including cost, transport, information and service availability, as a priority worth assessing directly in this catchment, since these are matters that service planning can act on and that clinical consultation alone does not reach. The second-lowest physical domain score points towards attention to fatigue, mobility and daily functioning within routine diabetes consultations, an area addressable within existing outpatient services. The gap between how participants rated their overall quality of life and their satisfaction with their health suggests that consultations enquiring only about clinical status may miss the dimension patients rate more favourably.

For research, three priorities follow directly from the present findings. The domain profile reported here should be replicated in multi-site samples that include primary care and community settings, so that the profile is not conditioned on referral-hospital attendance. Analytical studies with prespecified exposures, validated instruments and adequate control of confounding are needed before any characteristic can be described as a determinant of quality of life in this population; the environmental domain, as the lowest-scoring dimension, is the natural place to begin, with direct measurement of cost, distance and service availability. And the investigator-developed medication-history and reproductive-history instruments used here require formal psychometric evaluation, or replacement with validated alternatives, before results obtained with them can be interpreted.

CONCLUSION

Adults with type 2 diabetes mellitus attending a public referral hospital in Tasikmalaya had median WHOQOL-BREF domain scores on the WHO-transformed 0-100 metric ranging from 56.25 in the environmental domain to 62.50 in the psychological domain. The environmental domain was the lowest-scoring dimension and the psychological domain the highest, and the four domains fell within a band of 6.25 points, indicating a broadly similar profile rather than one domain standing apart from the others. The instrument showed excellent internal consistency in this population.

These findings are descriptive. This study did not test associations and does not identify determinants of quality of life; the medication-history and reproductive-history characteristics reported here are participant characteristics and nothing further. For health promotion services in comparable settings, the profile suggests that support addressing the full range of life domains, with particular attention to the material and access conditions captured by the environmental domain, may better reflect patient-reported need than an approach organised around any single dimension. Confirmation in multi-site samples and evaluation of targeted support strategies using validated instruments and appropriate analytical designs are appropriate next steps.

DECLARATIONS

Author contributions: Asep Kuswandi (AK): Conceptualization, Methodology, Funding acquisition, Supervision, Project administration, Writing – review & editing. Dini Mariani (DM): Investigation, Resources, Writing – review & editing. Yanti Cahyati (YC): Project administration, Supervision, Writing – review & editing. Dewi Aryanti (DA): Methodology, Investigation, Writing – review & editing. Dita Eka Mardiani (DEM): Methodology, Writing – review & editing. Rani Rubiyanti (RR): Data curation, Formal analysis, Writing – review & editing. Lina Khasanah (LK): Data curation, Formal analysis, Writing – original draft, Writing – review & editing. Diana Barsasella (DB): Validation, Writing – review & editing. LK is the corresponding author. All authors read and approved the final manuscript and accept responsibility for its content.

Conflicts of interest: Dini Mariani (DM) is the Director of Politeknik Kesehatan Kemenkes Tasikmalaya, the institution that funded this study, and signed the institutional decree establishing the funding scheme in that administrative capacity. The authors declare no other conflicts of interest. No financial support, commercial involvement, personal relationship or other affiliation influenced the design, conduct, analysis, interpretation or reporting of this study.

Declaration of Generative AI And AI-Assisted Technologies in the Writing Process: During the preparation of this manuscript the authors used Gemini (Gemini 3.1 Pro; Google), Claude (Claude Opus 5.5; Anthropic) and Grammarly (Grammarly Premium; Grammarly Inc.; cloud-based service, version not applicable) to assist with language editing, specifically to improve grammar, readability and coherence. Claude was additionally used to assist in recomputing descriptive statistics from the item-level data; all computations were checked against SPSS output by the authors. These tools were not used to generate scientific content or to draw conclusions. The authors reviewed and edited all output and take full responsibility for the accuracy, integrity and originality of the published article.

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