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# Quality of life of patients with type 1 diabetes – a systematic review

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**ABSTRACT**
**Introduction**: This systematic review focuses on the analysis of reports addressing the health and psychosocial functioning of young adults (aged 18–35 years) with type 1 diabetes.
The aim of this review is to systematise our knowledge, based on published literature reports, about the health and psychosocial functioning of young adults with type 1 diabetes, taking into account a range of external and internal factors.
**Materials and methods**: The study was conducted using a systematic literature review based on predefined inclusion criteria: publication date within the last 5 years, full-text version available, keywords of the article relevant to the research area, study group of young adults (18–35 years). Twenty-three studies were included in the analysis for further analysis. Three main areas of influence of diabetes on the functioning of young adults with type 1 diabetes were identified: psychosocial functioning, health functioning, and adaptation to chronic disease.
**Results**: The analysis of the literature shows that adaptation to the disease, and in particular effective self-monitoring of blood glucose and self-management of diabetes treatment, plays a significant role in reducing the frequency of depressive and anxiety episodes, as well as hypoglycaemic episodes. Using new and innovative methods of blood glucose monitoring and learning psychological flexibility skills by people with diabetes makes it easier for them to achieve their blood glucose targets and improves the therapeutic process. The literature places particular value on developing healthy attitudes regarding self-monitoring of glycemic status by patients, which significantly contributes to their mental and physical functioning.
**Conclusions**: Looking to the future, it is worth considering new educational and therapeutic options to support the self-medication and self-management processes of for patients in young adulthood with their distinct health and social needs.
**Keywords**: diabetes; health functioning; quality of life; psychosocial functioning.

## INTRODUCTION

The experience of chronic illness is a direct aggravating factor for health and psychosocial functioning. Chronic lifestyle diseases, such as diabetes, and their complications significantly compromise many aspects of a person's quality of life (QoL), including physical and social aspects, emotional well-being, sexual function, pain perception and self-assessment of health [1, 2]. Diabetes, with its many forms and manifestations, has a profound impact on the way individuals function in society in many areas of life. The disease significantly affects the physical condition of the body and is also reflected in the psychosocial condition of the individual – diabetes can be accompanied by depressive symptoms, low life satisfaction and feelings of distress associated with chronic illness [3].

The clinical diagnosis of type 1 diabetes (T1D) results from long-term autoimmune destruction of pancreatic β-cells leading to the appearance of clinical symptoms [4, 5, 6]. Type 1 diabetes also poses significant psychosocial challenges, so mental health professionals and social workers should be an integral part of the treatment team [7]. According to the International Diabetes Federation (IDF), there are 540 mln people with diabetes worldwide [8]. The IDF predicts that by 2045 the number of people living with diabetes could rise to as many as 783 mln. These alarming epidemiological figures underscore the importance of diabetes prevention and screening.

Young adulthood (age 18–35 years) is the point in a person's life when their hierarchy of values takes a firm shape, when they begin to take conscious control of their health and take on new social roles [9]. On the other hand, adolescence and early adulthood is also the peak incidence period for T1D. Young people with diabetes are faced with the challenge of adapting their health and social behaviour to their clinical condition, with the burden of the disease [10]. The experience of T1D, like other chronic diseases, has a dramatic impact on QoL. Quality of life is an integral characteristic of a person's physical, mental, emotional and social existence as determined by their subjective perceptions [11]. Previous research reports have addressed the health and psychosocial functioning of people with T1D, taking into account different age groups, environmental factors and the clinical profile of patients. This systematic literature review focuses on the analysis of reports from studies focusing on young adults with T1D and their health and psychosocial functioning in the face of the disease.

To date, there has been a lack of comprehensive, synthetic data on the impact of T1D on the psychosocial, health, and sexual functioning of young adults. Existing studies have explored these issues fragmentarily, focusing primarily on metabolic aspects and the quality of glycemic control, while the emotional, relational, and psychosexual consequences remain less well documented. This gap has hindered a comprehensive understanding of how T1D shapes young people's daily experiences during the transition to adulthood, when autonomous health decisions, partnerships, and sexual identity are being shaped. Therefore, research integrating biomedical and psychosocial perspectives is essential.

The aim of this review is to systematise our knowledge, based on published literature reports, about the health and psychosocial functioning of young adults with T1D, taking into account a range of external and internal factors.

## MATERIALS AND METHODS

The study conducted a systematic review of the literature. The design of the systematic review was guided by the PRISMA 2020 guidelines and checklist for reporting systematic reviews [12]. The study began with a selection of scientific reports. To this end, the following **inclusion criteria** were adopted: publication date within the last 5 years, full-text version available, keywords of the article relevant to the research area, study group of young adults (18–35 years). **Exclusion criteria** from the review were also developed: study age group other than young adults (18–35 years), no full-text version available, type of diabetes other than T1D, case study methodology.

To identify studies for inclusion in the systematic review, we searched online knowledge bases of scientific publications from the available world literature. The following databases were searched: Web of Science, Scopus, PsycINFO, ScienceGov, PubMed and Embase. A detailed description of the identification process is shown in Figure 1. The last database search was carried out on 11 May 2025.

According to the PRISMA 2020 methodology, the analytical process began with a search of databases for available publications relevant to the study's topic. The search across 5 databases identified 13,100 records. After removing 4,010 duplicates, 8,090 records qualified for title and abstract screening. At this stage, 7,900 records were rejected, leaving 190 articles for full-text review. Of these, 84 articles were rejected for the following reasons (36 – irrelevant to the topic, 27 – no direct reference to psychosocial or health functioning, 14 – studies without standardized instruments, 7 – irrelevant results), and ultimately, 23 publications were included in the review.

When identifying publications, the following search strategies were used: publications for subsequent analysis were retrieved using the following search terms: "health functioning", "psychosocial functioning", "young adults", "type 1 diabetes". The filters used to narrow down the search results only retrieved full-text sources, published between 2019–2024, that examined the young adult age group. The publications found during the identification phase were then screened for final inclusion in the review. All authors were involved in the selection and analysis of publications. The decision to include publications in further stages of analysis was based on reading the full study and its subjective analysis. During the selection process, consideration was given to the subject area, which should address different domains of health and psychosocial functioning and components of QoL in people with T1D. We included studies in which the respondents or participants were in young adulthood (18–35 years).

The selected studies varied in terms of the research methods and instruments used. Inferences about causal relationships regarding the influence of the factors of interest on the health and psychosocial status of young adults with T1D were based on the results of the studies conducted. The conclusions were reached by discussion among all the authors of the review, i.e. through a subjective process, and may therefore be subject to a high degree of systematic error. Some studies may not have accounted for potential confounding factors, and some studies may have accounted for potential intervening variables, which can lead to bias.

The synthesis and presentation of the results of individual studies was based on qualitative inferences from the quantitative and qualitative research, depending on the research instruments used. In each case, we took into account the final results of the measurements made with the research instruments used in the particular study.

Finally, the studies we decided to include in the review were summarised in the form of a table – listing the country in which the study was carried out, the aims of the selected studies, the research method and instruments used in the research process, the subject area studied and the main findings (Table 1).

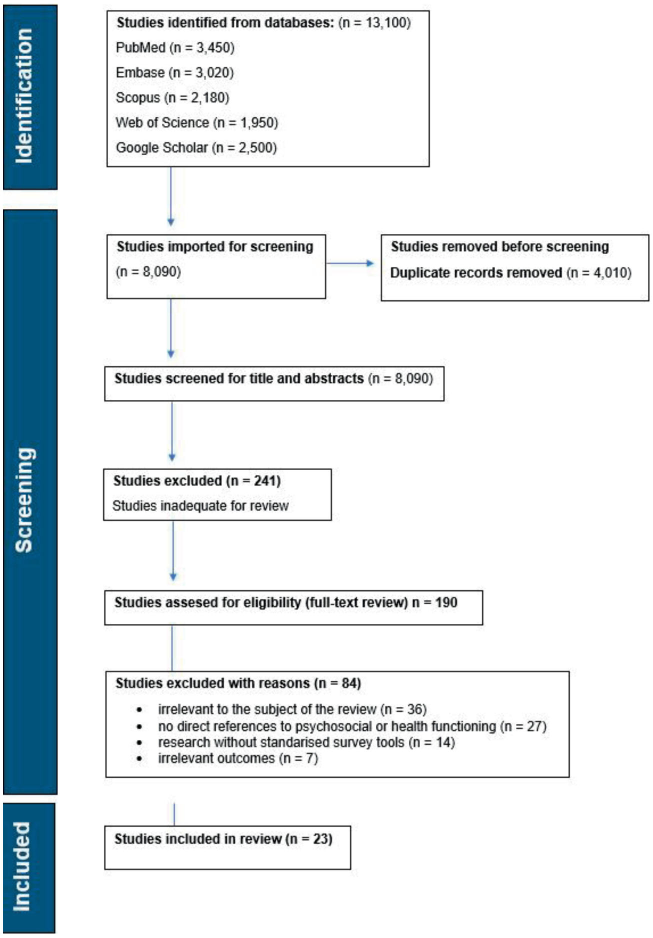

**FIGURE 1.** The PRISMA 2020 flow diagram for the systematic review

**TABLE 1.** Overview of the studies included in the systematic review

| First author and year | Country | Aims | Study design & methods | Individual function area | Significant results |
|---|---|---|---|---|---|
| Charzyńska et al. (2020) | Poland | to explore the relationship between duration of diabetes and levels of self-compassion and life satisfaction | the study used a diagnostic survey method with a questionnaire comprising SCS and SWLS scales and own questions | psychosocial functioning, diabetic well-being, diabetic mental health | longer diabetes duration was associated with lower well-being and lower life satisfaction |
| Sattoe et al. (2021) | Netherlands | to explore different psychological aspects (distress, self-management, health-related QoL) in people with T1Ds at the time of transition from paediatric to adult care | a diagnostic survey based on standardised questionnaires (PAID-5, Partners in Health, HRQoL) | psychosocial functioning, QoL, medical care for young adults with T1D | experience of T1D coincided with poorer self-management skills, lower health-related QoL, more frequent worries about the future and the risk of serious complications |
| Missambou Mandilou et al. (2021) | Congo | to identify factors influencing psychosocial disorders and QoL in young adults with T1D | a diagnostic survey based on standardised questionnaires (Beck Anxiety Scale, Beck Depression Scale, PedsQL scale) | psychosocial functioning, QoL with T1D | all patients showed evidence of anxiety, but the severity varied (from minimal to severe anxiety symptoms); T1D was also associated with increased symptoms of depression and lower QoL; higher socioeconomic status played a significant protective role against symptoms of anxiety; low socioeconomic status was also associated with lower QoL |
| Quintal et al. (2020) | France, Canada | to identify T1D patient expectations for improvement and innovation in a new diabetes care system | the study used semi-structured interviews after providing information on a prospective of a medical intervention – a hybrid closed-loop system | QoL, health functioning in young adults with T1D, self-management of the disease | T1D patients consistently complain about difficulties in self-management and achieving blood glucose targets; implementation of a specific system design to support treatment would help achieve diabetic targets and the overall treatment process |
| Bronner et al. (2020) | Netherlands | QoL survey for young adults with T1D | a diagnostic survey based on a standardised questionnaire (PedsQL-YA) | QoL, health functioning with T1D | the most common QoL issues reported by young adults with T1D are concentration, low energy and short-term memory |
| Shapiro et al. (2021) | USA | to examine cognitive function in young adults with T1D and T2D | the study was carried out using the CES-D scale (depressive symptoms) and individual measurements taken during the patient's visit to the research centre | depressive symptoms in young adults with T1D, health functioning, psychosocial functioning | people with T2D presented worse cognitive outcomes than those with T1D; regardless of the type of diabetes – depressive symptoms accompany people with diabetes, leading to poorer cognitive function and functional limitations |
| Nip et al. (2019) | USA | to investigate disordered eating behaviours in young adults with T1D and their impact on depressive symptoms and QoL | the study was conducted using the DEPS-R survey (disordered eating behaviours) and CES-D scale (depressive symptoms) and individual measurements taken during the patient's visit to the research centre | health functioning, disordered eating | disordered eating behaviours were strongly associated with higher BMI scores; people with T1D presenting with disordered eating behaviours were more likely to require hospital treatment for diabetic ketoacidosis, people T1D had greater problems with meal control and risk of hypoglycaemic episodes |

**TABLE 1. Overview of the studies included in the systematic review**

| First author and year | Country | Aims | Study design & methods | Individual function area | Significant results |
|---|---|---|---|---|---|
| Rassart et al. (2021) | USA | to investigate the relationships between the level of acceptance of the disease, social functioning in T1D, individually perceived illness identity | the study used a diagnostic survey method with questionnaires on illness identity, treatment adherence and T1D-specific distress | psychosocial functioning, distress functioning in chronic illness | acceptance of the disease increased as the duration of the disease increased; acceptance of the disease and distress increased as the social functioning of the person with T1D improved |
| Cichocka et al. (2020) | Poland | to explore factors influencing diabetes acceptance and sexual functioning in women with T1D | the study used a diagnostic survey method with FSFI and AIS questionnaires | sexual functioning, acceptance of chronic illness | significantly lower sexual function scores were found in people with T1D who also had hypertension; level of diabetes acceptance depended on experience of depressive symptoms; women with longer duration of diabetes had greater body awareness and control over their own health |
| Almeida et al. (2020) | Portugal | to explore differences between young people with T1D and their parents in their perceptions of diabetes and its impact on health functioning in the disease | the study used a diagnostic survey method with the Diabetes QoL, Brief-IPQ questionnaires and own questions | functioning in chronic illness, health functioning | results showed a negative relationship between family functioning and QoL when school support for young patients with T1D was limited; perceptions of T1D differed between patients and their parents; it is worth extending intervention programmes on disease acceptance and management to all stakeholders in patients' lives – family environment, individual functioning and work/learning environment |
| Hoorsan et al. (2022) | Iran | to explore the experiences and perceptions of sexual functioning in women with T1D | the study was carried out using in-depth individual interviews | sexual functioning, health functioning with chronic illness | women with T1D reported problems with reduced sexual desire, feeling less attractive and apprehension about sexual relationships; participants taking diabetes medication reported loss of self-confidence, increased anxiety and depressive symptoms; patients reported that social support, especially from the partner, is essential in the course of T1D |
| Griggs et al. (2022) | USA | to investigate the effect of sleep health and hygiene on glycaemic control and levels in young adults with T1D | the study was performed using the PROMIS (sleep disturbance) scale | health functioning, sleep disturbance, self-management in T1D | better sleep health, particularly sleep satisfaction, was associated with better achievement of glycaemic targets; sleep hygiene is an essential part of preventive healthcare for people with T1D |
| Christensen et al. (2020) | Denmark | to investigate the relationship between modifiable glycaemic risk factors, including glycaemic variability, and long-term diabetic complications (neuropathy and nephropathy) | the study was conducted as a medical experiment with autonomic reflex tests and other clinical indicators | health functioning, chronic effects of T1D in young adults | T1D causes a range of complications that develop over the long term; neuropathy and nephropathy are prime examples of long-term complications; in young adults, early prevention and control can delay the onset of serious diabetes-related complications |
| Shapiro et al. (2023) | USA | to investigate how diabetes with chronic complications can lead to cognitive deficits | the study was conducted using the CES-D questionnaire (depressive symptoms) and the NIHTB-CB questionnaire (cognitive function) | health functioning, cognitive functioning | patients with T1D who scored high on cognitive tests had the most favourable clinical profile: low incidence of complications and hypoglycaemic episodes, low mean depression scores |

**TABLE 1. Overview of the studies included in the systematic review**

| First author and year | Country | Aims | Study design & methods | Individual function area | Significant results |
|---|---|---|---|---|---|
| Igudesman et al. (2023) | USA | to investigate the association between the quality of gut microbiota and the clinical status of young adults with T1D | the study was conducted as a medical experiment using health indicators determined under laboratory conditions (biotechnological indicators of microbiota quality) | health functioning, disordered eating | the study found that gut microbiota is depleted in T1D, which can be attributed to chronic inflammation; people with T1D may benefit from probiotic supplementation and personalised nutrition |
| Moss et al. (2021) | USA | to explore different psychological aspects (anxiety, depression, distress) in people with T1D at the time of transition from paediatric to adult care | the study used a diagnostic survey method with questionnaires assessing the patient's health, anxiety, eating behaviours and diabetes-related distress | psychosocial functioning, coping with the adverse effects of chronic illness | worse (higher) HbA1c levels were associated with elevated symptoms of depression and anxiety, and with disordered eating; patients with T1D who experienced frequent hypoglycaemic episodes had more depressive symptoms and experienced episodes of suicidal thoughts |
| Gutierrez--Colina et al. (2020) | USA | to explore different psychological aspects in people with T1D at the time of transition from paediatric to adult care | the study was conducted using the SCI-R (self-care) and PedsQL (QoL) questionnaires | psychosocial functioning, QoL | male young adults reported less T1D-related distress than younger patients; female young adults experienced similar levels of diabetes-related distress to female adolescents with T1D; with age, patients take more responsibility for self-management of their disease, preparing for the transition from paediatric to adult care |
| Laffel et al. (2020) | USA | to investigate the effect of a continuous glucose monitoring system on glycaemic control in young adults with T1D | the study was conducted as a medical experiment using a therapeutic intervention (implementation of a continuous glucose monitoring system) | health functioning, coping with chronic illness | continuous glucose monitoring produced a reduction in HbA1c levels – young adults with T1D responded positively to the introduction of a self-management support system to help them function better with their chronic condition |
| Eitel et al. (2022) | Netherlands | to investigate levels of diabetes stigma among young adults with T1D | the study used a diagnostic survey method using a questionnaire on diabetes-related stigma as part of the SEARCH for Diabetes in Youth study | psychosocial functioning, disease acceptance, functioning in chronic illness | higher levels of stigma were experienced by people with T1D from lower socioeconomic backgrounds; action should be taken to raise awareness of living with chronic diseases, such as diabetes, to reduce the level of stigma surrounding people with the condition |
| Mobasseri et al. (2020) | Iran | to determine the prevalence and incidence of T1D in the world | a systematic literature review – the aim of the review was to determine the global prevalence and incidence of T1D | health functioning, T1D prevalence | T1D incidence is highest in the Americas and Asia; the prevalence of T1D was on the rise 1987–2018 |
| Girma et al. (2021) | Ethiopia | to investigate health-related QoL in T1D | the study used a diagnostic survey method using the PedsQL4.0 GCS questionnaire with additional sociodemographic questions | health functioning, health-related QoL | more positive outcomes in terms of emotional and physical functioning were observed in young people with well-controlled glycaemia; health education about diabetes was higher in those with well-controlled glycaemia; social functioning in the school environment was lower among the participants, due to the children's increased worry about the long-term complications of diabetes and their impact on their health condition |

**TABLE 1. Overview of the studies included in the systematic review**

| First author and year | Country | Aims | Study design & methods | Individual function area | Significant results |
|---|---|---|---|---|---|
| Ogle et al. (2022) | Australia | to estimate the global incidence of T1D among children and adolescents based on IDF guidelines | a systematic literature review – the aim of the review was to determine the global prevalence and incidence of T1 | health functioning, T1D incidence | there has been a marked increase in the incidence of T1D in recent years; the increase has been most pronounced in the Africa, Middle East and North Africa regions; given the global increase in incidence over the past few decades, incidence figures are likely to be significantly underestimated – for example, a 3% annual increase over 20 years will increase the incidence by 81% |
| Wijk et al. (2023) | Sweden | to examine the effects of participating in acceptance and commitment therapy on HbA1c levels, self-monitoring of glycaemia and psychosocial factors in young adults with T1D | the study was a randomised controlled trial in patients with T1D, where the intervention was an ACT programme; the effectiveness of the programme was assessed at the 2 year follow-up; the study used the AAQ questionnaire, which measures acceptance and readiness to act | psychosocial functioning, QoL with T1D | a sustained positive effect on psychological flexibility was observed in the intervention group; HbA1c levels decreased to optimal levels over the course of the study; the study confirms that the experience of T1D has a significant impact on psychological flexibility and that young people with diabetes can benefit from support programmes |

AIS – Acceptance of Illness Scale; CES-D scale – Center for Epidemiologic Studies Depression Scale; DEPS-R – Diabetes Eating Problem Survey – Revised; FSFI – Female Sexual Function Index; HRQoL – Health-Related Quality of Life; IDF – International Diabetes Federation; NIHTB-CB questionnaire – NIH Toolbox Cognition Battery Questionnaire; PAID-5 – Problem Areas In Diabetes – 5 elements short version; PROMIS scale – Patient-Reported Outcomes Measurement Information System; QoL – quality of life; SCI-R – Self-Care Inventory – Revised; SCS – Self-Compassion Scale; SWLS – Satisfaction With Life Scale; T1D – type 1 diabetes

The authors acknowledge that the reports we selected and included in this review may not be exhaustive given the broad topic of living with T1D, but by narrowing the scope of this systematic review we were able to list a limited number of publications that directly address the topic.

## RESULTS

The publication search for this systematic review identified 389 articles retrieved from online scientific databases. All identified records were included in the initial screening. Duplicate entries (n = 41) were removed, leaving 348 publications for title and abstract screening. During this first screening stage, 241 publications were excluded. Full-text analysis was conducted for the remaining 107 articles. Of these, 84 publications did not meet the inclusion criteria and were excluded for reasons detailed in the PRISMA flow diagram (Fig. 1). Ultimately, 23 studies were included in the systematic review. Based on thematic content, the included studies were categorised into 3 analytical domains: psychosocial functioning (n = 7), health functioning (n = 10), and QoL and adaptation to T1D (n = 6).

Detailed characteristics of the included studies are provided in Table 1.

### Psychosocial functioning

The category of "psychosocial functioning" collected studies that were thematically related to this research area. Seven studies were included in this category [13, 14, 15, 16, 17, 18, 19]. In this review, "psychosocial functioning" is conceptualised as the combined emotional, cognitive, and social dimensions of adaptation to T1D, including well-being, mood, perceived life satisfaction, self-perception, and social integration. This unified definition was adopted to address the heterogeneous use of the term across the literature.

Across studies, young adults with T1D reported reduced well-being and life satisfaction, often associated with the duration of illness and difficulties in diabetes self-management. Frequent disease-related concerns were linked to decreased life satisfaction and increased emotional burden [13, 14]. Self-management challenges – including poor glycaemic control – were associated with elevated depressive and anxiety symptoms, as well as increased hypoglycaemic episodes. In more severe cases, recurrent hypoglycaemia was linked to suicidal ideation [15, 17]. Studies also highlighted the role of social and structural factors. Economic hardship increased vulnerability to social stigma, while transition from paediatric to adult care was associated with anxiety, instability, and the need for coordinated support [16, 18, 19].

Across the evidence base, psychosocial functioning appears strongly moderated by both disease-related (HbA1c, hypoglycaemia frequency, self-management skills) and contextual factors (socioeconomic conditions, quality of healthcare transition). Comparatively, studies with longer disease duration suggest better adaptation and social functioning, indicating a possible cumulative learning effect. Conversely, studies emphasising psychosocial distress underscore gaps in systemic support mechanisms. Taken together, the findings demonstrate that psychosocial functioning is not solely an individual attribute but emerges from a dynamic interplay between self-management capacities, emotional regulation, and the social environment. This highlights the need for system-level interventions integrating psychological support, coordinated transitional care, and broader social awareness campaigns.

### Health functioning

The category of "health functioning" collected studies that were thematically related to this research area. Ten studies were included in this category [20, 21, 22, 23, 24, 25, 26, 27, 28, 29]. In this review, *health functioning* refers to physiological, metabolic, and behavioural aspects of managing T1D, including glycaemic regulation, diet, complications, and disease-related cognitive changes.

Recent global estimates indicate increasing incidence rates of T1D, particularly in the Americas and Asia [28, 29]. Studies reported that chronic inflammation associated with T1D contributes to altered gut microbiota, which may further affect metabolic stability. Young adults frequently described difficulties in maintaining stable glucose levels due to diet-related challenges, especially in preventing hypoglycaemic episodes [22, 27]. Health functioning was also strongly linked to early preventive measures, which can reduce long-term complications such as retinopathy, neuropathy, and nephropathy. Some evidence pointed to the beneficial impact of improved cognitive functioning – especially executive functions – on reducing hypoglycaemia and long-term complications [25, 26]. Symptoms such as concentration problems, reduced energy levels, and short-term memory difficulties were reported as barriers to optimal disease management. Self-monitoring behaviours were often insufficient, despite clear evidence of their importance. Studies emphasised the potential benefit of improved sleep hygiene and the use of modern glucose monitoring technologies [20, 21, 23, 24].

Health functioning is shaped jointly by biological mechanisms (e.g., inflammation, microbiota disruption), behavioural capacities (self-monitoring, dietary regulation), and cognitive resources. Across studies, younger adults appear particularly vulnerable to behavioural and cognitive barriers in disease management. Technological support – especially continuous glucose monitoring – emerges as a consistent facilitator of improved outcomes, but disparities in access and adherence may limit its effectiveness. Overall, health functioning in T1D reflects a complex system of interdependent factors, suggesting that interventions must target both physiological regulation and everyday behavioural strategies.

### Quality of life with type 1 diabetes and adaptation to the disease

The category of "quality of life with T1D and adaptation to the disease" collected studies that were thematically related to this research area. Six studies were included in this category [30, 31, 32, 33, 34, 35].

Adaptation to T1D is described as a gradual process shaped by the individual's emotional, behavioural, and social responses to living with a chronic condition. Studies consistently reported lower QoL indicators among young adults with T1D, with socioeconomic status emerging as a significant determinant [30]. Type 1 diabetes also influenced sexual functioning. Vascular and neuropathic complications, fear of hypoglycaemia, and effects of medication were associated with reduced sexual satisfaction, altered desire, and diminished self-confidence [31, 32]. Participants reported that partner support played an important role in emotional stability and treatment adherence. Modern glucose monitoring technologies and psychological flexibility training were associated with better HbA1c control and improved QoL [33, 34, 35].

Quality of life and adaptation appear strongly interrelated: higher levels of self-management competence and psychological flexibility correspond to better adaptation and more stable emotional functioning. Sexual functioning emerges as an underexplored yet clinically important domain, highlighting the need to integrate sexual health into multidisciplinary diabetes care. Studies suggest that adaptation improves over time but remains sensitive to psychosocial and socioeconomic resources, indicating that QoL is not a static trait but a dynamic, context-dependent outcome.

## DISCUSSION

This systematic review synthesised evidence on psychosocial, health-related, and QoL outcomes in young adults with T1D. The aggregated findings indicate that T1D exerts a multifaceted adverse effect on young persons' emotional well-being, everyday health functioning, and adaptation processes. Below I emphasise the key interpretative points, practical implications for clinical and public-health practice, theoretical implications for research, and concrete priorities for future studies.

The review confirms consistent associations between suboptimal glycaemic control, frequent hypoglycaemia and higher levels of depressive and anxiety symptoms, lower life satisfaction, and greater psychological distress [13, 14, 15, 16, 17, 18, 19, 41]. Rather than attributing psychosocial deterioration solely to the biomedical presence of T1D, the evidence points to interacting mechanisms:

1. disease-related burdens (self-management demands, hypoglycaemia risk),
2. cognitive and behavioural constraints (attention, executive function deficits that impair regimen adherence) [25, 26],
3. contextual stressors (socioeconomic hardship, disrupted healthcare transitions) [16, 18, 58]. This interactional view shifts the focus from individual pathology to a biopsychosocial system that produces vulnerability or resilience.

Methodologically, the studies are largely observational and heterogeneous in measures and populations, limiting causal inference. Many relied on cross-sectional designs and non-standardised psychosocial measures (a source of measurement heterogeneity previously noted), which complicates meta-analytic pooling and weakens inferences about directionality (e.g., whether depression leads to worse glycaemia or *vice versa*). These limitations underline the need for longitudinal and interventional research using harmonised measures.

The findings of this review highlight the need for a more integrated and psychosocially oriented approach to diabetes care in young adults. Routine psychosocial screening in clinical settings – covering depression, anxiety, and diabetes-specific distress – should become a standard component of diabetes management, supported by clear referral pathways to ensure that screening leads to meaningful interventions rather than remaining a diagnostic formality. Given the complexity of psychosocial challenges identified in the reviewed studies, care models should be anchored in multidisciplinary teams that include psychologists, psychiatrists, and social workers with specific expertise in diabetes. These teams are particularly important during transition from paediatric to adult care, a period repeatedly associated with heightened distress, uncertainty, and decreased adherence; structured transition programmes that incorporate coaching, mental-health monitoring, and stable points of contact can mitigate these risks.

Improving self-management outcomes also requires expanding access to modern glucose-monitoring technologies, such as continuous glucose monitoring systems, which have been associated with better glycaemic control and reduced fear of hypoglycaemia, provided that young adults receive adequate training and support. Socioeconomic disparities in access to these technologies constitute a significant barrier, highlighting the importance of policy-level interventions aimed at reducing financial obstacles to effective self-monitoring. Behavioural interventions – such as cognitive-behavioural therapy addressing adherence, motivational interviewing, and structured sleep-hygiene programmes – can help young adults overcome cognitive and lifestyle-related barriers that undermine consistent regimen adherence.

Education should be tailored to the developmental tasks and psychosocial needs of young adults, explicitly incorporating topics such as intimacy, sexual functioning, and relationship management, which are frequently underrepresented in diabetes education but demonstrably relevant to well-being in this age group. Family and partner engagement, where appropriate, can reinforce healthy practices and buffer psychological distress, while community-based peer support may help combat stigma and promote social inclusion. Addressing structural and socioeconomic barriers – particularly the cost of essential supplies such as test strips and the limited availability of psychological services – remains critical in ensuring equitable access to high-quality diabetes care. Policies aimed at reducing these barriers and recognising psychosocial well-being as a key indicator of quality in diabetes care would significantly improve outcomes for young adults with T1D.

The findings favour adoption of a biopsychosocial and self--management theoretical lens: psychosocial outcomes emerge from reciprocal interactions among biological disease processes (inflammation, glycaemic variability), cognitive capacities, and social/environmental contexts. Behaviour-change theories (self-determination, social-cognitive models) and implementation science frameworks should be used to design and evaluate interventions that target capability, opportunity and motivation for sustained self-management.

The reviewed literature reveals substantial gaps that need to be addressed in order to improve care and understanding of young adults with T1D. First, there is a lack of standardisation in the measurement of psychosocial constructs, which makes comparisons across studies difficult and limits the feasibility of quantitative synthesis. Future research should employ validated, harmonised tools for assessing psychosocial functioning, including sexual well-being, which remains an understudied domain despite its relevance to QoL. Longitudinal studies are required to clarify the causal pathways linking psychological distress, glycaemic variability, systemic inflammation, and the development of microvascular and macrovascular complications. Such designs would enable researchers to disentangle the bidirectional influences between emotional health and metabolic outcomes. Intervention research is also notably limited. There is a pressing need for adequately powered randomised controlled trials testing integrated models of diabetes care that combine medical treatment with psychological and social support. Dietary interventions likewise warrant rigorous evaluation; while preliminary findings indicate potential benefits of ketogenic or individually tailored nutrition plans, the current evidence base is insufficient to support their widespread clinical use, and safety concerns require systematic investigation through long-term personalised trials. Moreover, socioeconomic inequities in access to diabetes technologies, psychological services, and educational resources represent a persistent barrier, yet few studies have examined the structural determinants of self-management capacity. Future research should prioritise equity-focused designs that identify and address these disparities, testing interventions that improve access for low-resource populations. By addressing these gaps, future work can contribute to a more comprehensive understanding of the needs of young adults with T1D and facilitate the development of interventions that are both effective and contextually sensitive.

## LIMITATIONS OF THE STUDY

Although the present study is novel in that it focuses on a specific age group of young adults, it has several limitations. Firstly, the vast majority of the studies included in the review were based on survey methods and instruments that rely on the subjective feelings of respondents, which carry a high risk of inaccuracy. Another limitation is the uneven quality of the selected publications. Some studies may not have accounted for potential confounders, while other studies may have accounted for potential intervening variables, which may lead to bias.

## CONCLUSIONS

In conclusion, the results of the systematic review and reports from the scientific literature on the functioning of young adults with T1D indicate that the young adult age group requires a specific, multidimensional therapeutic approach to the management of T1D due to their distinct health needs. Our analysis of the scientific literature supports the finding that the psychosocial and health status of young people with diabetes is closely related to their ability to self-monitor and self-manage their diabetes, with particular emphasis on effective glycaemic monitoring. This ability is common to both the occurrence of depressive and anxiety symptoms in young people with diabetes and the ability to adapt to the disease and function in a variety of environments. Reports on the effectiveness of therapeutic interventions aimed at improving the glycaemic control process in young people with diabetes are key to the implementation of modern technologies and innovative therapeutic methods for the management of T1D in young adults, including the incorporation of modern continuous glucose monitoring systems and the provision of comprehensive support for psychosocial health and adaptation to living with a chronic disease. The involvement of professionals qualified to provide psychosocial support, such as health educators or diabetes educators supporting young diabetics, will benefit the therapeutic process.

An analysis of the relevant literature and the results of our own study indicate a number of significant aspects in which T1D impacts the lives of young adults, which can be structured into the following theses:

1. Type 1 diabetes significantly impacts the QoL of young adults in physical, emotional, and social dimensions.
2. Effective treatment requires an interdisciplinary approach, including psychological support.
3. Further research should consider cultural differences and the perspective of patients' qualitative experiences.

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