



Usada Bali-Based Self-Management in Type 2 Diabetes

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Article Information	ABSTRACT
Article History Received:29-01-26 Revised: 04-06-26 Accepted:06-06-26 Keywords: Type 2 DM Self-management Usada Bali Traditional medicine	Type 2 diabetes is a growing global health problem, especially in low- and middle-income countries. Poor self-management remains a major barrier to good blood sugar control. In Bali, traditional practices known as <i>Usada Bali</i> may support diabetes self-management. This narrative review aimed to explore the culture, lifestyle, spiritual, and family-based approaches to type 2 diabetes self-management rooted in <i>Usada Bali</i> and their reported metabolic and psychosocial outcomes. Peer-reviewed articles published from 2016 to 2024 were identified through PubMed and Google Scholar, then thematically organized, critically analyzed, and synthesized into a cohesive narrative. The findings showed that <i>Usada Bali</i> practices, including herbal drinks (lolah), traditional diet, yoga, foot massage, spiritual healing, and family involvement, were reported to be associated with improved blood glucose control, reduced anxiety, better insulin sensitivity, and enhanced self-management behavior. Integrating cultural and spiritual elements into diabetes care may increase patient acceptance, adherence, and long-term lifestyle changes. However, more clinical studies are needed to strengthen scientific evidence and standardize interventions.

Introduction

Type 2 diabetes is a chronic disease that occurs when your body is being stopped from using the insulin properly, leading to elevated level of blood sugar and increased risk of complication, such

as blindness, kidney failure, heart attacks, stroke, and lower limb amputation (WHO, 2024). According to World Health Organization (WHO), individuals with type 2 diabetes continue to increase from 200 million in 1990 to 830 million in

2022, causing 1.6 million deaths in 2021. Importantly, two-thirds of this population residing in low-and middle-income countries.

Most type 2 diabetes patients in Asia and Africa often face challenges adapting to healthy lifestyle behaviors and routines that are completely different from their established cultural and traditional norms (Purnamayanti et al., 2020). Non-adherence to lifestyle modification remains a key barrier to achieve optimal blood sugar control in type 2 diabetes self-management, underlying the need for continuous patient engagement and support to cope with their symptoms, the treatment of their disease and the social changes in their daily life, physiology and psychology as the disease progresses (Gozali & Putra, 2024; Sari et al., 2023). A comprehensive 7-pillar self-management of diabetes were recommended by American Diabetes Association : healthy diet, physical activity, blood glucose monitoring, medication adherence, problem-solving, stress coping, and risk reduction. (Fischl et al., 2022; Suputra, 2024; Yasa et al., 2025). Supporting this behaviours through patient education, empowerment, and ongoing engagement may be the key to promote optimal metabolic and psychosocial outcomes.

In Bali, traditional practices known as *Usada Bali* remain an important aspect of health management (Adiputra, 2023). It is a derivative of *Ayurveda*, refers to knowledge concerning human efforts to live in health and balance into old age. Some part of it, such as *Usada Taru Pramana* (natural herb) and *Bayu Pramana* (yoga and relaxation) has been shown to support patients' coping abilities, improve quality of life and even help reduce blood glucose levels (Suatama, 2019).

Despite the potential benefits of *Usada Bali*, these culture-based practices have received little attention in mainstream diabetes research. Care

providers tend to focus on recommending evidence-based, guideline-specific lifestyle modification for diabetes self-management, leading to holistic dimensions of *Usada Bali* remain underexplored. Therefore this narrative review aims to explore the culture, lifestyle, spiritual, and family-based approaches to type 2 diabetes self-management rooted in *Usada Bali* and highlighting its potential influence on both metabolic and psychosocial outcomes.

Method

A narrative review was chosen to synthesis patterns and themes across heterogeneous studies without statistical pooling, which is suitable to explore the potential of *Usada Bali* as type 2 diabetes self-management. *Usada Bali* is also a complex and deeply rooted in spiritual, behavioural, and lifestyle components, making it difficult to evaluate using an experimental design. Therefore, this approach allows comprehensive integration of context-dependent evidence. This narrative review is also beneficial for providing the groundwork of future research in type 2 diabetes self-management, offering an interpretation of the literature, identifying gaps, and appraise the current studies. :

A literature search was performed using Google Scholar and PubMed. The search terms included *type 2 diabetes, self-management, Balinese culture, spiritual healing, Ayurveda diet, yoga, herbal medicine, and Usada Bali* to obtain relevant studies for the review. Studies published in English or Indonesian in peer-reviewed journals between January 2016 and January 2024 were included. Studies were also included if they focused on type 2 diabetes self-management or lifestyle-based interventions and addressed cultural, spiritual, or holistic approaches such as Balinese traditional practices, Ayurveda-based diets, yoga,

herbal medicine (*Usada Bali* and loloh), spiritual healing, mantra-based practices, foot massage, acupressure, or family-based support, with reported outcomes related to metabolic control, psychological well-being, or self-management behavior in Bali. Studies were excluded if they focused non-diabetic populations, did not address Balinese self-management or holistic intervention components. Findings were then synthesized narratively.

Results and Discussion

Balinese health beliefs conceptualize illness as an interaction between cultural environmental and spiritual dimensions. From this perspective, diabetes is understood as a condition reflecting imbalance between the individual and their surrounding environment as well. It is align with Leininger's Cultural Care Diversity and Universality Theory, reporting that health behaviours are deeply connected to culture, belief systems, and social structure. Therefore, a culture-based intervention works better to enhance patient's acceptability, trust, and continuity of care rather than the culturally neutral(Leininger, 1991).

A study about Balinese perception of *Usada Bali* or Balinese traditional medicine revealed that majority have used traditional medicine and have access to medicinal plants. More importantly, the younger generation showed a very high level of interest in learning *Usada Bali* (80.85%) (Bestari et al., 2025). This implicate the Leininger's framework that traditional medicine is also a form of cultural identity and knowledge, resulted in patients more likely to integrate them in daily lives than perceive them a burdensome medical demands(Leininger, 1991).

Self-management is an individual's belief in their capacity to organize and execute actions in order to manage a situation. Giri et al. (2021) reported that

culture-based self-management consist of lifestyle modification from traditional dietaries, herbs, yoga, and family involvement. Lifestyle modifications are typically introduced to patients through coaching, counseling to support behavior change and adherence. Combining various lifestyle modification has the potential to improve blood glucose outcomes in type-2 diabetes patients.

Family involvement plays an important role in shaping self-management. The male family members in the Balinese households tend to take part of the decision making, therefore it is important to involve the family member in the educational process that leads to the improvement of patient's self-management (Asril et al., 2020; Purnamayanti et al., 2020). As a result, when family members take part in lifestyle modification, patient may experience increased motivation and confidence in self-management behaviors.

Engel's biopsychosocial model has explained that health and disease as the result of biological, psychological, and social factor's interaction. It is accommodates the multidimensional nature of diabetes management, particularly in culturally rich contexts such as Bali(Engel, 2012). Biologically, balanced macronutrients intake is crucial for the management of diabetes. Based on the study it can be found in some Balinese traditional food, such as *Blayag Be Pasih* (Puryana et al., 2020). The use of herbal preparations and Ayurveda-based dietary patterns is also very common in Bali because of the belief patterns to treat diabetes demonstrated antidiabetic, antioxidant, anti-inflammatory, and anxiolytic effects in experimental and observational studies (Giri et al., 2021). These herbs can be applied in different ways, herbal drinks (loloh), oiled applications (apunin), herbal body scrubs

to improve circulation (borehin), topical smears (oles), nasal drops (pepeh or tutuh), heat-based therapy (ses), herbal sprays (simbuh), topical medicines (urap), and repeated applications (usug). (Bestari et al., 2025; Kumari et al., 2022; Roosita et al., 2025). Yoga, naturopathy, and culturally adapted physical activities has been reported to have impact in managing diabetes biologically and psychologically. Result can be seen as improvements in fasting blood glucose, postprandial glucose, HbA1c levels, insulin sensitivity, and anxiety reduction, suggesting enhanced metabolic regulation through autonomic balance and stress modulation (Bairy et al., 2019; Ghongade, 2019; Nabar et al., 2016). Manual therapies such as foot massage and acupressure in a traditional way were reported to improve peripheral circulation, sensory nerve function, and Ankle Brachial Index scores, indicating potential benefits for preventing diabetic foot complications and enhancing neuromuscular function through physiological stimulation mechanisms (Rousdy, 2017; Susantiani et al., 2025). In terms of psychological and social coping mechanism, all of this culture-based intervention in Bali are often accompanied by spiritual elements including mantra chanting, prayer (sembahyang), ritual offerings (banten), and ceremonial intentions that aim to restore balance between the physical body (sekala) and the unseen spiritual dimension (niskala) (Giri, 2023; Sari et al., 2023), helping individuals make sense of chronic illness, reduce distress, and maintain hope. It also indirectly improve self-management by fostering acceptance, resilience, and perceived meaning in illness management. This interaction between spritual, self-management, and cultural congruence highlights the importance of addressing non-biomedical dimensions in chronic disease management.

Overall, this paper reviews Balinese traditional culture as complementary self-management therapy for patient with type 2 diabetes. Such an approach would not only enhance the effectiveness of type 2 diabetes management strategies but also ensure that interventions are both relevant and impactful across different cultural settings, although further clinical studies are still needed to confirm its long-term effectiveness and standardize intervention models. The results are presented in Table 1.

Tabel 1. Literature Study Results

Author	Research Design	Reported Outcome
(Bestari et al., 2025)	Qualitative approach with case study design	In terms of medical aspects, <i>Usada Bali</i> has been proven to have anti-inflammatory, antiseptic, and immunomodulatory effects, which can be used as a complementary therapy for diabetes
(Roosita et al., 2025)	Qualitative approach with document analysis design	Alstonia scholaris, blumea balsamifera, cinnamomum burmanni, and piper betle are some of the most well-known plants to be extracted as loloh or a traditional balinese herbal drink, that has a lot of benefit and one of them is antidiabetic
(Kumari et al., 2022)	Qualitative approach with document analysis design	Ayurvedic drugs, panchakarma procedures (detoxification), and ayurveda diet help relieve the causative factors of disease and prevent the complication. While yoga can activate parasympathetic nerve to improve overall metabolic and psychological through stress reduction, increased insulin sensitivity, and improved glucose tolerance and lipid metabolism. If integrated, it will be a comprising treatment of diabetes
(Bairy et al., 2019)	Quasi-experimental pre-post intervention design	Integration of naturopathy intervention including diet, yoga, hydrotherapeutic treatments, massage, and interactive lectures on lifestyle modification and type 2 diabetes mellitus self-management for 3 months can reduce the level of blood glucose, glycated hemoglobin levels, and even the need for antidiabetic medications
(Ghongade, 2019)	Clinical case study	Improvements of blood pressure, fasting blood glucose, and postprandial glucose levels, energy, digestion, pain, numbness and weight reduction were seen in diabetic patient who did a naturopathy intervention consist of lifestyle modification through daily yoga, pranayama, and walking, along with a structured plant-based diet consisting of vegetable juices alongside the patient's existing antidiabetic medication

(Nabar et al., 2016)	Clinical case study	A resort to multi-system of traditional diabetes treatment concluding chandraprabha and arogyavardhini (ayurvedic antidiabetic formulations), juice of the following ingredients – aloe vera, triticum aestivum, momordica charantia, lagernira siceraria and allium sativum, a weekly whole body massage (abhyangam) and a daily foot massage with narayan tail, practicing pranayama and suryanamaskar achieved good blood sugar control based on the laboratory data and physical health of the patient
(Susantiani et al., 2025)	Pre-test and post-test one group design	A significant effect of foot massage on improving ankle brachial index scales was found in patients with type 2 diabetes mellitus at tabanan regional hospital. According to physiology, foot stimulation could enhance sensory function in the feet by triggering action potentials and depolarization, causing the na^+/k^+ -atpase activity and axonal transport to increase
(Makoni et al., 2024)	Qualitative approach with document analysis design	Based on the study, yoga is known for its benefits to decrease the high level of hba1c, increase the sensitivity of insulin and lower the anxiety rate of its patient
(Setiabudi et al., 2025)	Quantitative approach with quasi- experimental design	Yoga and meditation have been widely recognized as lifestyle-based interventions that support physical and mental health, including improving insulin sensitivity and glycemic control. In bali, dharma hidup singin prana (dhsp) represents a traditional form of yoga that integrates breathing techniques, physical postures, and spiritual elements
(Sugata et al., 2025)	Qualitative approach with document analysis design	Tri Ketuka is a Balinese traditional herbs formulated by dringo/jangu (<i>Acorus calamus L.</i>), masoyi (<i>Cryptocarya massoia.</i>), and garlic (<i>Allium sativum L.</i>). Research showed that <i>A.sativum</i> can reduce anxiety in diabetic rats through its antioxidatixe effects on the brain. It is also symbolize spiritual healing since its including mantras in the process of making.

(Giri, 2023)	Quasi-experimental time series design	Preliminary research found that in lovina's primary healthcare, patient tend to feel anxious related to the risk of complication in type 2 diabetes. Therefore, spiritual therapy was introduce as a complementary treatment and it showed that the patient felt more ease after the session.
(Sari et al., 2023)	Quasi-experimental pre-post test design	Spiritual healing can improve the self-efficacy, self-management of diabetes, and blood sugar control
(Puryana et al., 2020)	Observational study	Complete meals of Balinese traditional food in Buleleng contain balanced amount of carbohydrates, fat, and protein. Also, it is been reported that 100 gram of traditional food can meet 11.63% of the 2.100 kcal energy requirement and 30.77% of the 57 grams of protein requirement
(Asril et al., 2020)	Cross-sectional analytical study	In Bali, self-management of type 2 diabetes is strongly associated by a support from family, social environment, and local wisdom. Therefore, educating the surroundings will also be the main factors of successful treatment of its patient
(Purnamayanti et al., 2018)	Quasi-experimental pre-post test design	Structured education program of type 2 diabetes and yoga practice is influencing the knowledge of its patient significantly. It is been showed from the result that involving their family in the program is a form of support and it gave them a comfort feeling of being taken care enough, so that the anxiety level remained the same.

*Panchakarma = fivestep detoxification and rejuvenation therapy designed

Conclusion

Usada Bali-based self-management shows strong potential as a complementary approach for patients with type 2 diabetes. Combining traditional diet, herbal medicine, physical activity, spiritual practices, and family support can improve metabolic control and patient well-being. This culturally sensitive approach may help increase treatment adherence and quality of life. Future clinical research is needed to confirm long-term effectiveness and develop clear implementation.

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