# GENDERED VULNERABILITY TO DEPRESSION AMONG WOMEN LIVING WITH DIABETES IN INDIA: A BIO-PSYCHO-SOCIAL REVIEW

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## Abstract

Diabetes mellitus is a big public health problem in India, and it is becoming more and more linked to serious mental health problems, especially depression. Women with diabetes are more likely than men to be depressed. This is because of biological, psychological, and social factors that are shaped by female experiences and structural inequalities. Using a bio-psycho-social approach, this review looks at how women with diabetes in India are more or less likely to become depressed based on their gender. The study is based on an analysis of 25 peer-reviewed research papers from reputable scientific databases published between 2020 and 2025. The results show that biological factors like changes in hormones, the severity of the disease, and complications linked to diabetes make people more likely to become depressed. Poor mental health outcomes are also caused by psychological factors such as stress, emotional burden, and low self-efficacy linked to diabetes. Social factors, especially gender roles, caregiving duties, limited freedom, and limited access to health care, make women much more vulnerable. Depression also makes it harder to control blood sugar levels and makes it less likely that people will follow their treatment plans. The review shows that there are important gaps in combining mental health services with diabetes care, and it stresses the need for bio-psychosocial treatments that take gender into account. To help depressed women with diabetes, we need healthcare methods that are all-encompassing and take into account both medical and socio-cultural factors.

**Keywords**: Diabetes, Depression, Women, Gender, Bio-psycho-social, Mental health, India

## Introduction

Diabetes mellitus has become one of the most important noncommunicable diseases (NCDs) in the world. It is a major threat to public health because it persists for a long time, poses many problems, and is becoming increasingly common (Habib & Saha, 2010; Nilu, 2017; Arokiasamy et al., 2021). New figures from epidemiologists show that India has one of the largest populations of people living with diabetes. This is because more people are moving to cities, becoming less active, and changing their eating habits (Mehmood, 2025). Diabetic people of both sexes have problems, but women's problems are getting more attention because of biological differences, social injustices, and systems that make it harder for them to get medical care. Women with diabetes are affected by both physical and social factors, such as

their caregiving duties and the fact that they don't always put their own health first. Diabetes is not only a medical problem; it is also a social and public health issue that needs to be looked at by people from different fields (Zullaihat et al., 2021).

Diabetes not only causes physical problems like heart disease, neuropathy, nephropathy, and blindness, but it also has a big effect on mental health. Because the disease lasts a person's whole life, they have to be constantly watched, and they are afraid of complications, which adds to their ongoing load. Women in India are often at the bottom of the healthcare decision-making ladder, which can make the effects of diabetes even worse and make people even more vulnerable to health problems.

Depression is one of the most common mental health problems that goes along with diabetes, and it is known to cause a lot of suffering around the world. It causes people to feel sad all the time, lose interest in things they used to enjoy, be tired, have trouble focusing, and have problems with their sleep and appetite. It has a big impact on their quality of life and daily living. Research consistently shows that the link between diabetes and depression goes both ways: having diabetes raises the risk of depression, and depression, in turn, makes it harder to handle and control diabetes. Biological factors such as inflammation, neuroendocrine dysregulation, and insulin resistance are thought to contribute to this link. Moreover, disease burden-related psychosocial stresses make mental health risks even higher (Oni & Unwin, 2015; Upadhyay, 2022).

If a person with diabetes is depressed, it can make it harder for them to stick to their treatment, control their blood sugar, and get better overall. Depression can make people less likely to do self-care activities like taking their medications as prescribed, watching what they eat, and being active. This can raise the risk of problems and death. Even though the number of people with diabetes in India is growing, their mental health problems are still not fully understood or treated, especially when it comes to women. This gap shows how important it is to look at mental comorbidities within the bigger picture of managing chronic illnesses. Gender is a very important factor in how common, how people experience, and how things turn out with both diabetes and sadness. Because of a mix of medical, psychological, and social factors, there is evidence that women with diabetes are more likely than men to be depressed. Women may be more likely to develop mood problems during reproductive changes like menstruation, pregnancy, and menopause, as well as other hormonal changes that happen throughout life. Gendered social roles also make it harder for women to prioritise their own health and well-being, as they do more housework and care for others than men (Zhao et al., 2006; Siddiqui et al., 2013; Demmer et al., 2015).

In the Indian social and cultural setting, patriarchal rules and gender inequality make it even more likely for women to become depressed. Women often have trouble getting medical care, managing their money, and making decisions, which can make it take longer to diagnose and treat diabetes and depression (Gohil et al., 2017). Also, the emotional stress of dealing with a long-term illness and societal standards of caring for others and being emotionally strong can make women's mental health problems worse. As Salve et al. (2024) say, these gendered experiences show how important it is to look at diabetes-related depression with a gender-sensitive view.

A simple biomedical view is not enough to fully understand how diabetes and depression affect each other. The biopsychosocial model, first proposed by George Engel (Gritti, 2017), provides

a comprehensive framework for understanding how health and disease are caused by changing interactions among biological, psychological, and social factors. Biological factors include disease pathology, hormonal changes, and physical complications; psychological factors include emotional distress, coping strategies, and how the mind responds to illness; and social factors include gender roles, access to healthcare, and socioeconomic status. For Indian women with diabetes, these aspects are strongly linked and affected by unfair treatment based on gender and underlying factors. A bio-psycho-social method helps us see how women's gender affects their mental health as a whole. It also shows how important it is to have healthcare interventions that cover both medical and psychosocial needs. In India, where social determinants of health significantly impact disease experiences and outcomes, this method is especially useful.

## Aims of the Study

Since diabetes is becoming more common and women are more likely to be depressed, it is very important to look into the gender-specific factors that cause these two conditions to happen together. The purpose of this review article is to look into the medical, psychological, and social factors that make women with diabetes in India more likely to become depressed than men with diabetes. Using a bio-psycho-social lens, the review aims to give a full picture of the many factors that lead to sadness and to stress how important it is to treat diabetes and mental illness in a way that takes gender into account.

## Materials and Methods

This review uses a narrative review method to look at how women with diabetes in India are more likely to become depressed than men with the same condition, using a bio-psycho-social framework. The study reviewed 25 research papers, selected by experts in the field and published in well-known national and international journals between 2020 and 2025. The time frame chosen makes sure that the review includes new data and the latest scientific knowledge about the link between women with diabetes and depression.

Electronic sources such as PubMed, Scopus, Web of Science, PsycINFO, and Google Scholar were used to conduct a comprehensive literature search. Key search terms such as "diabetes," "depression," "women," "mental health," "gender," and "India," along with the appropriate Boolean operators, were used to find relevant results. The criteria for inclusion were peer-reviewed research articles released between 2020 and 2025 that looked at depression or psychological distress in people with diabetes, with a focus on women or gender-based analysis. Both quantitative and qualitative studies were included to ensure the full picture of the problem was captured.

Twenty-five articles were selected for review because they met the inclusion criteria and were relevant to the study's objectives. These articles were carefully looked over to find out what biological, psychological, and social factors, as well as gender-specific risks and health system factors, affect sadness in women with diabetes. The results were organised using the biopsychosocial model to provide a comprehensive, gender-sensitive picture of the literature reviewed.

## Results

Using a bio-psycho-social framework, this review brings together the data that shows how women with diabetes in India are more likely to become depressed than men with the same condition. The results show that biological, psychological, and social factors all play a part in

how depressed women with diabetes are. These factors are further affected by structural and gender-specific inequalities. Biological factors like changes in hormones, the severity of the disease, and complications linked to diabetes make people more likely to become depressed. Higher mental health risks are caused by psychological factors such as stress, emotional burden, and low self-efficacy linked to diabetes. Socioeconomic disadvantage, a lack of social support, gendered parenting roles, and limited access to healthcare are some of the other social factors that have a big effect on women's mental health.

The results of the reviews are mentioned thematically below.

### *Biological Determinants of Depression among Women with Diabetes*

Because of complicated relationships between metabolic dysfunction, hormonal regulation, and neurochemical processes (Rames et al., 2021), biological factors make women with diabetes more likely to become depressed. Chronic hyperglycemia is a sign of diabetes mellitus. It can happen because insulin isn't working properly or because the body is insulin-resistant. These metabolic problems not only affect organs on the outside, but they also change how the brain works, which makes people more likely to develop mood illnesses. Long-term high blood sugar has been linked to changes in the brain's structure and function, especially in areas that help regulate emotions, such as the hippocampus and prefrontal cortex. These changes may make it harder for people with diabetes to think clearly, control their emotions, and feel less depressed (van Duinkerken, 2020; Deischinger et al., 2020).

Insulin resistance is a key biological link between diabetes and sadness. It alters neurotransmitter activity and the brain's metabolism. Neurotransmitters such as serotonin, dopamine, and norepinephrine play important roles in mood regulation. Insulin plays a big part in this process. These neurochemical routes can be messed up by insulin signalling problems, which raises the risk of depressive symptoms. Chronic inflammation, which is common in people with diabetes, has also been found to be a shared biological process that contributes to both diabetes and depression. High amounts of inflammatory markers, like cytokines and C-reactive protein, can harm brain function and make depression more likely to happen (Wang & Quan, 2021).

Because of hormones, women are even more biologically vulnerable than men. Mood and stress responses are affected by changes in reproductive hormones, especially oestrogen and progesterone. Researchers have found that oestrogen can protect neurones and help maintain serotonin levels. During menopause, oestrogen levels drop, which can make metabolic problems and sadness more likely. Because of this, women with diabetes who are going through menopause may be at higher health risks. Also, conditions like polycystic ovary syndrome (PCOS), which is linked to insulin resistance and hormonal imbalance, make women even more likely to be depressed (Hyde & Mezulis, 2020; Chen et al., 2022; Szymkowicz et al., 202123). The chance of depression is also greatly increased by having diabetes for a long time, having it get worse, or having complications. Chronic problems like neuropathy, retinopathy, nephropathy, and cardiovascular disease can make it harder for the body to do its job and put more stress on the body (Ciarambino et al., 2022).

These problems may alter how the brain and hormones function, leading to dysfunction of the HPA axis, which is linked to sadness. Also, genetics and how sensitive a person's body is to stress may affect how likely they are to become depressed while dealing with a long-term sickness.

***Psychological Determinants of Depression among Women with Diabetes***

Mental health issues play a big part in how likely women with diabetes are to become depressed, since having a chronic sickness and taking care of it can be very hard on the mind and emotions. Diabetes must be self-managed for life, which includes regularly checking blood sugar levels, taking medications as prescribed, following a restricted diet, and making lifestyle changes (Tegegne et al., 2023). Taking care of an illness all the time can make you feel emotionally drained, stressed, and useless, all of which can make you more likely to show signs of depression. Nigussie et al. (2013) say that women may experience more mental distress because they have to balance their health and family duties while also working full-time. One of the most important psychological factors is diabetes-related distress, which is the mental stress that comes with having diabetes and taking care of it. This includes worry that the disease will get worse, stress about long-term problems like going blind or having your kidneys fail, and anger at how hard the treatment routines are to follow. Constant worry and uncertainty about health results can hurt your mental health and make you more likely to develop depression. Also, repeatedly failing at treatment or having trouble controlling blood sugar can make a person feel inadequate, lower their confidence in their own abilities, and lose drive (Salimi et al., 2024; Ali et al., 2021).

Women with diabetes can also become depressed because of worries about their bodies and changes in how they see themselves. Having diabetes can cause weight changes, dietary limits, and physical symptoms that can hurt a woman's self-esteem and sense of who she is. These worries might be especially important in places where women's bodies are closely connected to social norms and standards. Negative thoughts about oneself and low confidence can worsen mental health problems (Woon et al., 2020; Swiątoniowska et al., 2021).

Also, unhealthy ways of dealing, like denying, avoiding, or stifling emotions, can make people more psychologically vulnerable. Women who don't have good ways to deal with stress or mental support may have a harder time getting used to the illness. Diabetes that lasts a long time and changes all the time can also make you feel like you've lost control, which is strongly linked to depressed symptoms. Overall, these psychological factors underscore the importance of focusing on women's emotional health as a key part of their diabetes care.

***Social Determinants of Depression among Women with Diabetes***

The emotional health of women with diabetes is greatly affected by social factors because their illnesses are connected to larger cultural and socioeconomic situations (Hill-Briggs et al., 2021; Sharma et al., 2021). Women's social roles, economic dependence, and lack of independence often make it harder for them to get medical care, stick with treatment, and deal with the mental stress of having a chronic sickness. In many places, women put their family duties ahead of their own health needs, which can cause problems with diagnosis, treatment, and feelings of worry. Repeated neglect of self-care leads to helplessness, exhaustion, and sadness (Rames et al., 2021; Levy et al., 2022).

Socioeconomic position is a major factor that affects both mental health and how well someone manages their diabetes. Women from low-income families often face problems like not having enough money, not having health insurance, and not being able to get good medical care. The cost of medications, frequent checks, and treatment for complications can put a strain on finances, which can make mental distress even worse. Dependence on family members for

financial support may also make it harder for women to access care when they need it, leaving them even more vulnerable (Deischinger et al., 2020; Sidwell & Class, 2025).

Having social support is an important part of dealing with the mental effects of a long-term sickness. Women who do not have a lot of emotional, family, or group support may feel more alone and have a heavier emotional load. Family members who don't understand or care about the demands of managing diabetes can make people feel neglected and put under a lot of mental stress. On the other hand, Liu et al. (2022) found that strong social support can help people cope, stick with their treatment, and feel better mentally.

Women's mental health can also be hurt by the social shame that comes with having a mental illness. Chronic sickness can be seen as a sign of weakness, which can make women less social and lower their self-worth. In some cases, illness can make women feel like they can't fulfil the roles that society expects them to play, which can make their mental distress even worse. These social predictors show that depression in women with diabetes is not just a medical problem, but is also deeply affected by unfair social conditions and built-in problems.

### *Gender-Specific Vulnerabilities in the Indian Context*

In India, gender norms and patriarchal social systems make women more likely to be depressed, especially those who have long-term illnesses like diabetes. In family and social structures where women's main roles are defined by caregiving and housework, their health is often not given sufficient attention. This gendered assumption often makes people put off getting medical help, not follow through with their treatments, and ignore their own physical and mental health needs. Having a chronic illness and taking care of home duties at the same time can make mental stress and emotional exhaustion much worse (Chikoti et al., 2021). Women are already more vulnerable because they don't have a lot of control over their healthcare decisions. In many homes, male family members make decisions about how much to spend on healthcare and what kind of treatment to give. This makes it harder for women to get timely and proper care. Women may not get mental health help even when they are depressed because they are financially dependent or don't have control over their resources. Sundarasan et al. (2024) note that this structural inequality makes it even harder for women to access care within healthcare systems.

Cultural standards can also make people hide their feelings and keep their problems to themselves. Women are often supposed to be strong and put the needs of their families ahead of their own, which can make them less likely to talk about their feelings or get help. Taking stress inside makes it more likely that someone won't get identified or treated for depression. Social factors such as widowhood, old age, living in the country, or limited schooling can also make someone more vulnerable (Ranjan & Thakur, 2024; Anjum & Aziz, 2025).

Caste, class, and differences between rural and urban areas are some of the intersectional factors that affect women's health and disease. Women from disadvantaged groups often face multiple forms of disadvantage, such as limited access to health care and being left out of social groups. These differences between men and women make it clear that we need to look at sadness in women with diabetes in India in the context of structural inequality and gendered social relationships.

### *Impact of Depression on Diabetes Outcomes*

The management of diabetes and general health is significantly worsened by depression, showing a two-way link between mental and physical health. One of the worst effects of

sadness is that it makes people less likely to follow through with their diabetes self-care habits. People who are depressed often have trouble staying motivated, focusing, and sticking to a pattern. This can make it hard to take their medications, eat right, exercise, and check their blood sugar levels regularly. This reduced adherence can make it harder to control blood sugar and increase the risk of worsening of the disease (McMorrow et al., 2022). There are also bad physical effects that are linked to depression that can make diabetes worse. The hypothalamic–pituitary–adrenal (HPA) axis is activated by chronic psychological stress. This raises cortisol levels, which can lead to insulin resistance and high blood glucose. This biological relationship makes managing diabetes even harder and makes people more likely to have problems. Because of this, women who are depressed may have a harder time keeping their metabolism in check (Wu et al., 2020).

Additionally, depression is connected to a higher chance of complications related to diabetes, such as heart disease, neuropathy, nephropathy, and retinopathy. Depression can make a disease get worse faster and make it harder to do things, which lowers the general quality of life. Depressive disorders may also lead to more medical care, such as more hospital stays and doctor visits, which costs more for both people and healthcare systems (Packer et al., 2021). Depression not only has effects on physical health, but it also has big effects on psychosocial performance and well-being. Women who are depressed may spend less time with friends and family, have trouble with daily tasks, and be less satisfied with their lives. Having both sadness and diabetes at the same time can make your mental and physical health worse. These results show how important it is to identify and treat sadness early on in caring for people with diabetes.

### Health System and Policy Gaps in India

Even though diabetes and depression are becoming more common in India, the healthcare system isn't fully equipped to meet the mental health needs of women who have long-term illnesses. The way healthcare is provided now is mostly focused on the physical side of managing diabetes, with the emotional and social aspects of care getting little attention. Screening for mental health problems is not usually part of diabetes care. As a result, depressed diabetic patients, especially women, are not properly diagnosed or treated.

The fact that emotional and physical health care are not fully integrated is one of the biggest problems. Mental health services are usually only available in cities, which makes them hard for women to get to in rural or neglected areas. There aren't enough trained mental health workers like psychiatrists, psychologists, and psychiatric social workers, which makes it even harder for people to get care. Primary care doctors may not have had enough training to recognise and treat sadness in people with chronic illnesses.

National programs like the National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) and the National Mental Health Programme (NMHP) address mental health and non-communicable diseases, but coordination among these programs remains limited. Gender-sensitive methods are also not used enough in planning and providing healthcare services. In larger public health plans, women's mental health needs are often not taken into account.

The social shame surrounding mental illness makes women even less likely to get help. Some things that might keep women from getting mental health services are not knowing about them, cultural views, and fear of being discriminated against. To close these gaps, we need a complete

plan that includes screening for mental health as part of diabetes care, improving basic healthcare, and pushing for health policies that take gender into account. These kinds of steps are needed to make sure that all Indian women with diabetes get fair and complete medical care.

**Conclusion**

In India, this review shows that sadness in women with diabetes is caused by biological, psychological, and social factors that all affect each other and are further affected by the unfair treatment of women. Biological reasons like changes in hormones and complications from diseases, along with mental distress and emotional load, make women more likely to become depressed. This risk is made even higher by social factors like gender roles, limited access to health care, and financial problems. Depression not only hurts women's mental health, but it also makes it harder to control diabetes and improve health outcomes. In India, mental health is still not well integrated into diabetes care, even though the problem is getting worse. Bio-psychosocial methods that take gender into account, including regular mental health screening, psychosocial support, and integrating care within current health systems, are very important. Fixing structural problems and making healthcare services stronger can lead to better mental and physical health, which will eventually improve the quality of life for women with diabetes as a whole.

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