



## Sex-gender-specific Treatments for Diabetic Patients



Cardiovascular complications associated with diabetes are among the most important causes of death in diabetic patients. As "sex-gender differences" affect diabetes epidemiology, risk factors, as well as cardiovascular complications associated with diabetes, different therapeutic approaches are needed for managing diabetes-associated cardiovascular complications in men and women, according to a review to appear in the journal *Pharmacological Research*.

**See Also:** [Higher Heart Disease Risk for Disadvantaged Women than Men](#)

In this review, the authors discuss the numerous sex-gender differences found in risk factors, clinical manifestations, prognosis, therapeutics and outcomes in the setting of diabetes in general and diabetes-associated cardiovascular complications in particular. The review also cites new therapeutic strategies for diabetes-associated cardiovascular complications.

### Sex and Gender - A Differentiation

There is an emerging awareness that gender has a significant impact in the pathophysiology of diabetes as well as in the cardiovascular complications associated with the disease. In this context, it is relevant to emphasise that sex and gender have not the same meaning. In brief, "sex" refers to biological status of males and females, "gender" refers to the socially constructed roles that a given society considers appropriate for men and women. In recent years, gender has been considered more politically correct and it is becoming more commonly used in scientific publications. However, in medicine, it is almost impossible to properly distinguish between sex and gender as already discussed by Franconi et al.

### How Sex and Gender Differences Influence Existing Therapeutic Approaches

The diagnosis of diabetes is often belated in women, and treatments have a poorer outcome with lower achievement of therapeutic targets. Moreover, diabetic women are subjected to a lower control of the levels of HbA1c or to eye examination, despite the existing recommended screening guidelines. Diabetic women receive more drugs to treat hypertension but not for hyperglycaemia and dyslipidaemia.

Adverse side effects due to antidiabetic drugs have been reported to be more common in diabetic women than in men. Self-management of diabetic disease (diet, health information and education) also differs between sexes: diabetic men show less competence in the management of diet and following a healthy diet, to a greater

extent if they are single, in comparison with women.

### **New Therapeutic Approaches and Sex-Gender Differences**

New therapeutic options for improving cardiovascular complications associated with diabetes are emerging and include cell therapy, proteomics and manipulation of microRNAs, and identification of specific biomarkers that can be used for drug discovery and development. In this context, regenerative medicine represents an attractive possibility for overcoming the limitation of conventional treatments for peripheral arterial disease (PAD), as well as for ischaemic heart disease.

A meta-analysis of studies reporting the infusion of bone marrow cells after myocardial infarction reveal that female gender have greater beneficial effects from cell transplantation than men.

Using proteomic approaches some important sex-gender differences in the phenotype of Type 2 diabetic men and women have been observed: women showed higher expression of proteins related to immune function and extracellular matrix, while men's proteins were involved in redox balance.

### **Conclusions**

Men and women have different risks to develop diabetes. These differences also reflect changes in the pathophysiology of cardiovascular complications associated with diabetes, therefore there is an increased need to develop treatments that are more sex-gender-specific and personalised to improve the quality of life of diabetic patients of both sexes.

Source: [Pharmacological Research](#)

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