

# The worker with diabetes mellitus and the legacy between health care professionals

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Diabetes mellitus is a complex, degenerative, chronic disease that is paradigmatic of the degree of complexity related to numerous factors, making the patients with diabetes different one from another. For this reason, it constitutes a formidable challenge for the clinicians and for the occupational health professional.

At a pathophysiological level, it is recognized that beyond the most frequent clinical form of the disease (type 2 diabetes), less frequent clinical forms of diabetes (type 1 diabetes, gestational diabetes, MODY and LADA) are all characterized by different pathophysiological mechanisms. However, also in patients with type 2 diabetes at least five different clinical clusters of individuals may be identified.

At a therapeutic level it is simple to think about the obvious consequences of the complexity of an insulin-based therapeutic regimen and the associated risk of hypoglycemia. At the same time, in the last few years formidable improvements in the way patients may perform self-blood glucose monitoring and nowadays continuous interstitial glucose monitoring reduced this risk even if this monitoring and also the use of pumps for the continuous subcutaneous administration of insulin may require different conditions in the work environment to be performed properly.

Also, in the last few years novel oral and non-insulin injectable drugs became available with a better safety profile in terms of the risk of hypoglycemia, but with different pattern of potential, and practical, side effects that need to be taken into account.

In addition, patients with diabetes are often undergoing a complex combination of therapeutic regimens involving many drugs with potential interactions to be considered, as well as consequent important adverse events.

Furthermore, in organ transplantation with additional pharmacologic therapeutic regimens, and in bariatric surgery with its potential metabolic complications and life-style modification, therapeutic tools are increasingly used and they may change profoundly and require a different skills profile to be acquired by the patients at work-places.

At the prognostic level, micro- and macro-vascular complications of diabetes mellitus with potential impact on cardiovascular disease risk, chronic kidney disease, eye impairment, sensitive-motor neuropathy along with autonomic neuropathy are to be carefully considered when we have a patient with diabetes in his work environment. The combination of sensitive-motor neuropathy and peripheral vascular disease may determine foot abnormalities with important consequences for these patients at work, in terms of performance but also in terms of appropriate protection of the extremities.

Similarly, patients with diabetes may often have co-morbidity with a relevant fallout about the work environment; respiratory failure, cardiac failure and hepatic failure are not infrequent, as well as osteoporosis and arthropathy.

Also, patients with diabetes are at higher risk of experiencing acute intercurrent illnesses, especially infections.

Finally, it is difficult to say whether the high frequency of mood disorders is to be considered a co-morbidity or rather a consequence of the metabolic disease, but it is certainly a component in the everyday life of patients with diabetes with relevance related to their career progression as well as safety and responsibility at the work-place.

The high number of variables to be taken into consideration from clinical and practical stand-points is further complicated by the fact that many health care professionals are involved with the treatment of the disease and prevention of diabetes complications: the diabetologist, the dietitian, the nurse, the psychologist, the podologist, within the restricted diabetes-team, but most often, the cardiologist, nephrologist, ophthalmologist, gastroenterologist, vascular surgeon, bariatric surgeon, psychiatrist may be all involved in handling the many different aspects of the disease.

Last but not least, the environment in which the patient with diabetes works and lives is of paramount importance in terms of infrastructures, including shift- and night-time work, working activities at high risk of accidents, work at heights, working tasks requiring high-energy expenditure, working activities at extreme temperatures. The working and living environment is also important in terms of the relationships with colleagues and family members.

So, although diabetes, generally, does not prevent a person from properly performing the working tasks, all the above described conditions and disease complications may compromise a person's ability to work. This Editorial aimed to demonstrate the thesis initially stated that the patient with diabetes may be a very difficult task for the occupational physician. The Italian Society of Occupational Medicine (SIML), the Italian Diabetes Society (SID) and the Association of Diabetologists (AMD) joined a working group to improve the understanding of the available evidence regarding the interplay between specific working conditions. The objectives of the efforts of this working group are to ensure diabetic workers the possibility to safely and effectively undertake their jobs but also to adequately manage and treat their disease to guarantee their well-being, also in the workplace. In this perspective concerted action of all the workplace preventive figures, the occupational physician and the diabetologist should be strongly encouraged. The event entitled "*Approccio multi-disciplinare al lavoratore con diabete: dialogo tra medici del lavoro, diabetologi e specialisti*" which was held in Milano in March 2019, represents an effort in this direction.