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Thinking about occupational health

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Diabetes mellitus is a chronic disease that affects millions of people of working age. According to data from the International Diabetes Federation (IDF), its global prevalence continues to increase (1). In the workplace, diabetes not only affects individual health but also has economic and organizational implications for companies and healthcare systems.

Incidence and Prevalence of Diabetes in Workers

A 10-year population-based study conducted as part of the Gutenberg Health Study (GHS) (Germany) found that, among employees without diabetes at baseline, the cumulative incidence of type 2 diabetes was 6.9% (388 cases in 5,954 people), and 22.6% for metabolic syndrome (1,104 cases in 5,103). Furthermore, marked differences were observed by occupation: workers in "food production and processing" had the highest incidence (20.7%, standardized incidence ratio [SIR] = 3.0; 95% CI 1.8–4.7), followed by cleaners and drivers (2).

Regarding prevalence, a 6.4% diabetes diagnosis rate was reported among employed adults in the US (3). Similarly, a study in Australia with over 500,000 workers showed that blue-collar workers had a higher risk of diabetes, as calculated by the AUSDRISK, and a higher cardiovascular risk than white-collar workers (4).

These data suggest that diabetes is not only present in the working population, but that its distribution and risk depend in part on occupation, socioeconomic status, and working conditions.

Association with Kidney Disease

Diabetes is one of the leading causes of chronic kidney disease (CKD). In a cohort of patients with type 2 diabetes (not specifically workers), approximately 28% had CKD (stages 3-5) at baseline, and this was associated with an increased risk of death from cardiovascular and all causes (5).

Although there are not many studies directly evaluating the progression of CKD among workers with diabetes, the overall evidence of comorbidity is relevant: in a population-based study in Catalonia, approximately 33% of people with type 2 diabetes had CKD, and 28% had chronic kidney disease, along with other comorbidities (hypertension, CVD) (6).

Likewise, unfavourable working conditions could indirectly contribute to the development of CKD: for example, a cohort study of more than 65,000 people found that exposure to "risky" working conditions—such as shift work, heat, or high physical workload—was associated with an increased risk of CKD (7).

Association with cardiovascular disease (CVD)

Diabetes is a potent risk factor for CVD, and the workplace is no exception. A recent systematic review analyzed work-related factors (long working hours, low occupational status, type of work) in people with diabetes and their association with cardiovascular events. For example, drivers with diabetes had a higher risk of CVD than other workers, and those who worked longer hours also showed an increased risk of CVD mortality (8). Furthermore, a Swedish registry-based study (2002–2015) of more than 180,000 employees with type 2 diabetes showed substantial variations in CVD mortality and events such as ischemic heart disease (IHD) and stroke according to occupation (9).

For example, in men with diabetes, manufacturing workers had higher all-cause mortality rates (1,782 per 100,000 person-years) compared to specialist managers (633 per 100,000) (9). Similarly, ischemic heart disease and stroke followed a similar pattern according to occupation.

These results suggest that significant occupational inequalities exist among workers with diabetes in terms of cardiovascular risk and mortality, potentially linked to factors such as glycemic control, smoking, physical activity, and other occupational hazards. Indeed, workers with a worse prognosis showed poorer HbA1c control, greater obesity, and smoking (9).

Work Disability and Absenteeism

Although there are fewer studies specifically on disability in workers with diabetes, chronic diabetes with its complications (such as CVD and CKD) can contribute to absenteeism, sick leave, and loss of work capacity. In work settings, a relationship has been observed between cardiometabolic factors (including diabetes) and absenteeism due to illness (10).

Furthermore, from a legislative and occupational health perspective, there is concern about “non-traumatic” work-related harm associated with diabetes, especially due to complications that can limit the ability to work or justify workplace modifications (11).

Mortality

Diabetes among workers not only implies greater morbidity but also greater mortality. The Swedish study mentioned above showed that workers with type 2 diabetes had excess mortality from all causes and from cardiovascular disease (CVD), and that this excess varied according to occupation.

More generally, a cohort study in the U.S. veterans' health system found that patients with diabetes had significantly higher mortality rates from all causes and from CVD, and that the risk increased as HbA1c was above 7% (12).

Also, previous meta-analyses have reported that diabetes, even compared to a history of CVD, confers a similar or even higher risk of mortality, especially in women (13).

Implications for Occupational Health

The reviewed findings have several implications for occupational health and workplace prevention:

1. Identification of vulnerable groups: Certain occupations (manufacturing, cleaning, driving, food production) show not only a higher incidence of diabetes, but also a worse prognosis in terms of control, complications, and mortality. Interventions targeting these groups could have a significant impact.
2. Workplace prevention: Evidence suggests that the workplace is a key setting for prevention programs—such as blood glucose screening, promotion of healthy living, education, and cardiovascular and renal risk management.
3. Adaptation policies: Diabetes should not be viewed solely as a medical condition, but also as an occupational risk factor. Workplace adaptation protocols, inclusion policies, and targeted occupational health plans must be developed, taking into account potential disability and sick leave.
4. Measurement and monitoring: It is important to incorporate diabetes and its complications into occupational health surveillance systems to monitor their impact on productivity, absenteeism, and labor costs.

Limitations and knowledge gaps

There are some limitations in the current literature:

1. Specific longitudinal studies following workers with diabetes to assess renal progression, work disability, or early retirement are scarce.
2. Many studies use population-based (non-worker-specific) data and therefore may lack relevant workplace variables (e.g., work stress, shift work, exposure to physical conditions).
3. Most of the evidence on complications (CKD, CVD) comes from clinical cohorts, not necessarily employed, which limits generalizability to the occupational context.

4. More studies are needed on the effectiveness and cost-effectiveness of specific workplace interventions to prevent or manage diabetes and its complications.

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