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Influence of working status on the control of diabetes (data from the PROGENS DIET study) – letter to the Editor

Wpływ pracy na kontrolę cukrzycy (dane z badania PROGENS DIET) – list do redakcji

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Słowa kluczowe

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Conflict of interest
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None
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Summary

Introduction. Workers may have different daily life habits in comparison to non-workers. Similarly, such differences may exist for working people in working and non-working days.

Aim. To answer the question whether differences in life habits are significant and whether they are associated with different diabetes control in workers vs. non-workers, in working vs. non-working days.

Material and methods. 866 working (W-group) and 1089 non-working patients (NW-group) were included in to the study. Glycemic profiles, HbA1c and insulin doses were compared between those 2 groups. In a subset of 425 patients it was also compared whether there are differences in meal time and volume as well as fasting and postprandial glycemia between working and non-working patients on working and free days.

Results. The average daily insulin dose was similar in the both W and NW groups at the start (W 0.43 ± 0.24 vs. NW 0.45 ± 0.23 U/kg/day) as well as at the end of the study (W 0.48 ± 0.25 vs. NW 0.49 ± 0.24 U/kg/day). No greater differences in the volume and time of meals were observed, working and non-working patients had their breakfast on average half an hour earlier (7.37 ± 00.52 vs. 08.01 ± 00.47, $p < 0.001$, and 07.32 ± 00.51 min vs. 08.00 ± 00.43 min, $p < 0.001$) and their dinners have more often greater volume on working days as compared with free days (phi correlation 0.529, $p < 0.001$).

Conclusions. The differences in volume and time of meals caused by daily working schedule are slight and did not influence diabetes control in a clinically meaningful way.

Streszczenie

Wstęp. Osoby pracujące w porównaniu z niepracującymi mogą mieć inne codzienne nawyki. Podobne różnice mogą też być obserwowane u osób pracujących w dni robocze i dni wolne.

Cel pracy. Odpowiedź na pytanie, czy istnieją znamienne odmienności w codziennych nawykach i czy są one związane z różnicami w kontroli glikemii u osób pracujących i niepracujących oraz w dni pracujące i wolne od pracy.

Materiał i metody. Do badania włączono 866 osób pracujących (grupa W) oraz 1089 osób niepracujących (grupa NW). Pomiędzy grupami porównano: profile glikemii, stężenie HbA1c oraz dawki insuliny. W podgrupie 425 pacjentów oceniono dodatkowo różnice w czasie spożywania posiłków, wielkości posiłków oraz glikemii na czczo i glikemii

popokarmowej pomiędzy pacjentami pracującymi i niepracującymi, jak również w dni pracujące i wolne od pracy.

Wyniki. Zarówno na początku, jak i na końcu badania średnia dobowa dawka insuliny była podobna w obydwu grupach (początek: W 0,43 ± 0,24 vs. NW 0,45 ± 0,23 j./kg/dzień, koniec: W 0,48 ± 0,25 vs. NW 0,49 ± 0,24 j./kg/dzień). Nie stwierdzono znamiennych różnic w wielkości i w czasie spożywania posiłków pomiędzy osobami pracującymi i niepracującymi. W dni wolne od pracy zarówno osoby pracujące, jak i niepracujące spożywały śniadanie średnio pół godziny wcześniej (7,37 ± 00,52 vs. 08,01 ± 00,47, $p < 0,001$ i 07,32 ± 00,51 min vs. 08,00 ± 00,43 min, $p < 0,001$) i zjadały na obiad większe porcje (współczynnik korelacji phi 0,529, $p < 0,001$).

Wnioski. Różnice w wielkości i czasie spożywania posiłków wynikające z planu dnia są niewielkie i nie wpływają w istotny sposób na kontrolę glikemii.

INTRODUCTION

Diabetes is a chronic disease whose treatment is based on three fundamental aspects: choices, control and consistency. To manage diabetes successfully, patients must be able to set goals and make frequent daily decisions that are both effective and fit their values and lifestyles, while taking into account multiple physiological and personal psychosocial factors (1). The choices that patients make each day as they care for diabetes have a greater impact on their outcomes than those made by health professionals. The person with diabetes needs to take responsibility for maintaining a good diet, exercising, and seeking appropriate medical care (2). Living successfully with diabetes means that a person must be self-disciplined, self-aware, and self-responsible.

People with diabetes have the same career goals and aspirations as any other employee, but there are many factors in the workplace that are related to the frequency with which people with diabetes perform self-management activities and affect diabetes control (3-5). Workers may have different daily life habits, like eating time and volume, in comparison to non-workers. Similarly, such differences may exist for working people in working days and weekends (or non-working days).

AIM

The aim of the present study was to answer the question whether those differences are significant and whether they are associated with different diabetes control in workers vs. non-workers, in working vs. non-working days.

MATERIAL AND METHODS

A subanalysis of data from the PROGENS DIET study was performed. This study included 2490 patients with type 2 diabetes mellitus, however, because of missing data, in the presented subanalysis only 866 working (W-group) and 1089 non-working patients (NW-group) were included.

Inclusion criteria:

- people with type 2 diabetes who began treatment in accordance with the practice of ambulatory, one of biosynthetic human insulin series Gensulin and Avamina drug (metformin) for at least 2 weeks and at most two months prior to enrollment,
- age > 18 years,
- BMI < 40 kg/m^2,
- psychophysical health promising adherence to treatment,
- informed consent to participate in the study.

Exclusion criteria:

- other than type 2 types of diabetes,
- serious diseases of the cardiovascular system: heart attack or stroke within the last 3 months, heart failure NYHA IV period, angina III and IV of CCS, unstable arterial hypertension (> 180/100 mmHg) despite use of antihypertensive drugs, glomerular filtration rate (eGFR) estimated using the MDRD 60 ml/min, severe liver damage (AspAT, AlAT > 3 x normal range),
- the use of drugs: corticosteroids (except inhaled preparations), ACTH, interferon,
- chronic mental illness,
- addiction to alcohol and drugs,
- participation in other clinical trials currently or in the past 3 months,
- allergic to insulin or any of the ingredients,
- pregnancy and lactation.

All patients were assessed:

- 4-point glycemic profiles (fasting and 2 hours after main meals: breakfast, lunch, dinner),
- 9-point glycemic profiles performed in one working day and in one weekend day,
- glycosylated hemoglobin (HbA1c) in accordance with normal clinical practice.

Glycemic profiles, HbA1c and insulin doses were compared between working and non-working group. In a subset of 425 patients it was also compared whether there are differences in meal time and volume as well as fasting and postprandial glycemia between working and non-working patients on working and free days. Evaluation of dietary habits were based on a description of the meals (made by patient) and the time of their consumption on a working and non-working day.

That was a multicenter, open, non-randomized, observational study. During the 24 weeks, there were three visits:

- visit 1 – the inclusion in the study,
- vist 2 – follow-up visit at week 12 (± 7 days),
- visit 3 – final visit at week 24 (± 7 days).

The working group was younger than non-working (mean age 56 ± 7 vs. 69 ± 7 y, $p < 0.001$). The groups were comparable in terms of BMI (mean BMI in W-group 30.3 ± 4.8 vs. 30.8 ± 4.7 in NW-group, NS).

RESULTS

Insulin dose increased in the study period (fig. 1a). The average daily insulin dose was similar in the both W and NW groups at the start (W 0.43 ± 0.24 vs. NW 0.45 ± 0.23 U/kg/day, NS) as well as at the end of the study (W 0.48 ± 0.25 vs. NW 0.49 ± 0.24 U/kg/day, NS), small differences between the two groups were significant only at breakfast time (fig. 1b). HbA1c decreased significantly during the study period in both groups (W 8.3% ± 1.4 vs. 7.4% ± 0.9, $p < 0.001$, NW 8.1% ± 1.1 vs. 7.3% ± 0.8, $p < 0.001$). Similar, significant decrease of fasting (W 169 ± 33 vs. 140 ± 20 mg/dl, $p < 0.001$, NW 167 ± 31 vs. 142 ± 23 mg/dl, $p < 0.001$) and postprandial (not shown) glucose was observed. No greater differences in the volume and time of meals were observed, working and non-working patients however had their breakfast on average half an hour earlier (fig. 2a; 7.37 ± 00.52 vs. 08.01 ± 00.47, $p < 0.001$, and 07.32 ± 00.51 min vs. 08.00 ± 00.43 min, $p < 0.001$) and their dinners have more often greater volume on working days as compared with free days (phi correlation 0.529, $p < 0.001$). These differences however did not seem to influence glycemic control, as the differences in fasting and postprandial glucose concentration (fig. 2b), although at some points statistically significant, do not seem to be of clinical importance. There were also no differences in hypoglycemia rate between working and non-working patients on working and free days (the frequency of hypoglycemia was very small).

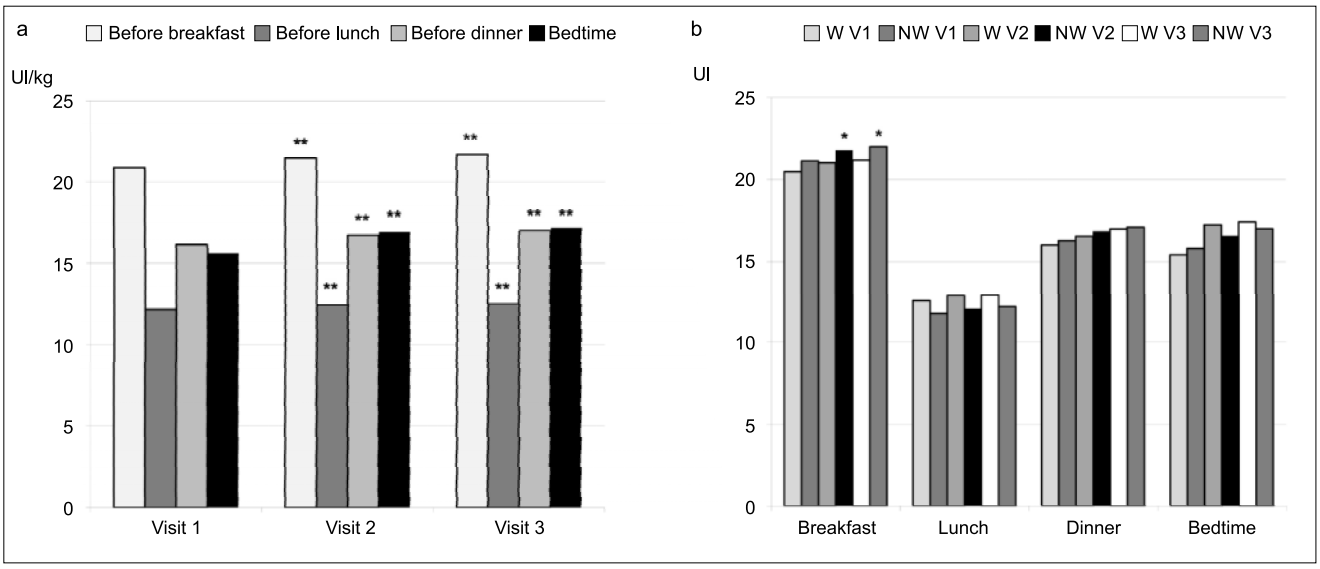

Fig. 1a, b. a) Insulin doses at study start (visit 1) and 3 (visit 2) and 6 (visit 3) months later in all patients; b) insulin doses in workers (W) as compared with non-workers (NW) at the three visits
*$p < 0.05$ as compared with workers at the same visit; **$p < 0.001$ compared with V 1

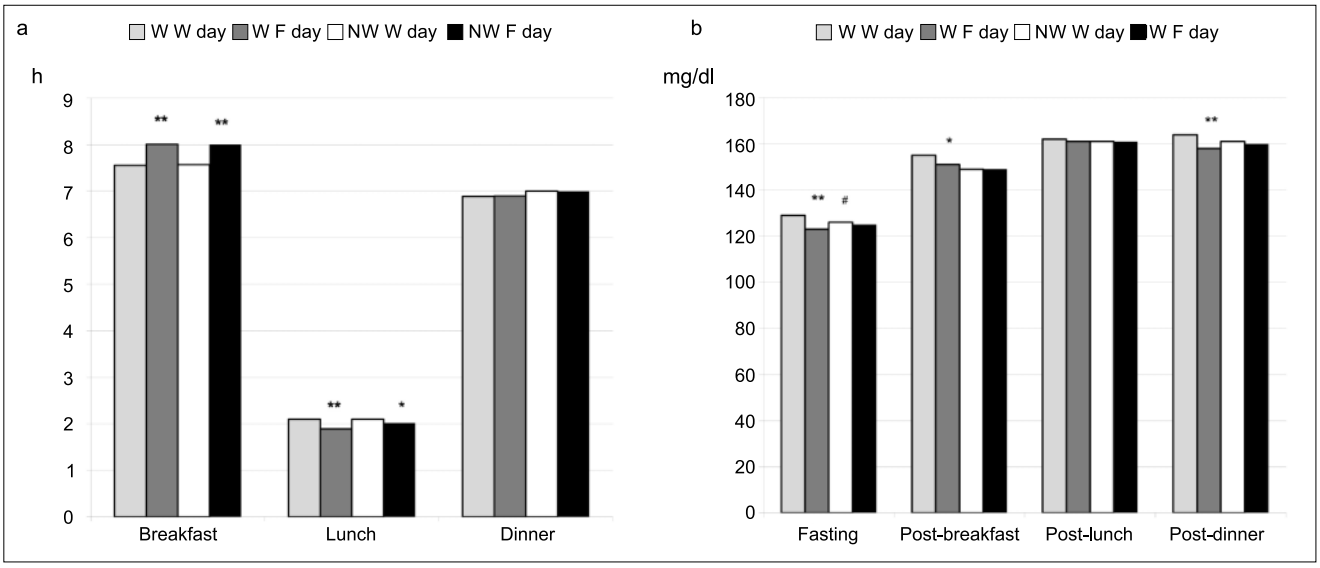

Fig. 2a, b. a) Meal times in workers (W) and non-workers (NW) at working (W day) and non-working (NW day); b) fasting and postprandial glucose concentration
*$p < 0.05$; **$p < 0.001$ as compared with W day; #$p < 0.05$ as compared with W at W day

DISCUSSION

We found that there are statistically significant differences between the time of meals on working and non-working days. In non-working days breakfasts are eaten later, and lunches earlier by both the workers and non-workers. It seems that the only difference in the meal time and their volume between workers and non-workers is less abundant breakfast eaten by workers in working days. People who work have lower glucose levels than non-employed persons, regardless of the abundance of meals.

CONCLUSIONS

The differences in volume and time of meals caused by daily working schedule are slight and did not influence diabetes control in a clinically meaningful way.

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