

PROMOTING DIABETES PREVENTION IN THE WORKPLACE: THE EFFECTIVENESS OF DIABETES HEALTH COACHING AMONG OFFICE WORKERS

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Abstract

Diabetes mellitus (DM) is a growing public health concern worldwide, with office workers being particularly vulnerable due to sedentary lifestyles and unhealthy behavioral patterns. This study aimed to evaluate the effect of a Diabetes Health Coaching intervention on reducing the risk of type 2 diabetes mellitus among office workers. A pre-experimental one-group pretest–posttest design was conducted from March to December 2025 involving 39 office workers from Health Polytechnic of Surakarta. Participants were selected using purposive sampling and received a structured Diabetes Health Coaching program focused on healthy eating, physical activity, weight management, and behavior change strategies. Diabetes risk was assessed before and after the intervention using the Finnish Diabetes Risk Score (FINDRISC) questionnaire. Most participants were aged 36–45 years (41.1%), male (71.7%), had completed senior high school education (46.2%), and reported a monthly income of more than IDR 2.5 million to IDR 4 million (61.6%). The mean FINDRISC score decreased from 5.67 ± 1.99 at baseline to 4.26 ± 2.04 after the intervention. Statistical analysis using the Wilcoxon Signed-Rank Test revealed a significant difference between pretest and posttest scores ($Z = -5.631$, $p < 0.001$). These findings indicate that the Diabetes Health Coaching intervention effectively reduced type 2 diabetes risk among office workers. Health coaching may serve as a practical and effective workplace-based strategy for promoting healthy lifestyle behaviors and preventing diabetes. Further studies with larger samples, control groups, and longer follow-up periods are recommended to confirm the long-term effectiveness of this intervention.

Keywords: diabetes mellitus, health coaching, FINDRISC, diabetes risk, office workers, workplace health promotion.

1. INTRODUCTION

Diabetes mellitus (DM) is one of the most prevalent non-communicable diseases worldwide, with a continuously increasing number of cases each year. According to the International Diabetes Federation (IDF), approximately 537 million adults (10.5% of the global adult population) were living with diabetes in 2021, of whom nearly 90% had type 2 diabetes mellitus (T2DM). In the same year, diabetes was responsible for approximately 6.7 million deaths globally. Indonesia ranked sixth among countries with the highest number of diabetes cases, with an estimated 19.5 million adults affected by the disease in 2021. These figures highlight the growing burden of diabetes on public health systems and national economies, particularly in developing countries [1].

Recent national data further demonstrate the increasing prevalence of diabetes in Indonesia. The Indonesian Health Survey (Survei Kesehatan Indonesia) 2023 reported that the prevalence of diabetes among individuals aged over 15 years, based on blood glucose measurements, increased from 10.9% in 2018 to 11.7% in 2023 [2]. This upward trend is concerning because diabetes is a chronic metabolic

disorder characterized by impaired insulin secretion, insulin action, or both, resulting in persistent hyperglycemia. Prolonged hyperglycemia can lead to serious acute complications, including hypoglycemia, diabetic ketoacidosis, and hyperosmolar hyperglycemic syndrome, as well as chronic complications affecting the cardiovascular system, kidneys, nervous system, and eyes [3, 4]. These complications significantly reduce quality of life, increase healthcare costs, and may ultimately lead to premature mortality [5, 6]

The development of T2DM is strongly associated with modifiable lifestyle factors. Unhealthy dietary habits, excessive consumption of foods high in calories, sugar, and fat, physical inactivity, prolonged sedentary behavior, inadequate sleep, smoking, psychological stress, and depression have all been identified as significant risk factors for diabetes [7, 8]. Office workers represent a population particularly vulnerable to these risk factors due to the nature of their work environment. Many employees spend long hours sitting in front of computers, engage in limited physical activity during working hours, and frequently consume fast food or other unhealthy dietary options. Such behaviors contribute to overweight, obesity, insulin resistance, and an increased risk of developing T2DM [9, 10].

Despite its serious consequences, T2DM is largely preventable through effective risk reduction strategies and lifestyle modification. Evidence suggests that improving dietary patterns, increasing physical activity, maintaining a healthy body weight, and managing stress can significantly reduce the risk of diabetes development [11, 12]. Recognizing the importance of prevention, the IDF recommends population-based interventions as a key strategy for reducing the incidence of T2DM. These interventions aim to promote sustainable behavior change and support individuals in adopting healthier lifestyles before the onset of disease [13].

One promising approach to facilitating behavior change is health coaching. Health coaching is a person-centered intervention that helps individuals achieve health-related goals through guidance, motivation, education, and continuous support provided by trained professionals. Unlike conventional health education, health coaching emphasizes collaborative goal setting, self-management, and individualized action planning, enabling participants to take an active role in improving their health behaviors [14]. Previous studies have shown that health coaching can enhance self-efficacy, improve adherence to healthy lifestyle practices, and support long-term behavior change among individuals at risk of chronic diseases [15].

Considering the increasing prevalence of diabetes, the high-risk profile of office workers, and the potential benefits of health coaching, it is important to evaluate the effectiveness of diabetes health coaching programs in reducing diabetes risk among office employees. Therefore, this study aimed to examine the effect of a diabetes health coaching intervention on reducing diabetes mellitus risk among office workers.

2. METHODOLOGY

This study employed a quantitative pre-experimental design using a one-group pretest–posttest design without a control group. The study was conducted from March to December 2025 at the Health Polytechnic of the Ministry of Health Surakarta, Indonesia. A total of 39 office workers were recruited using purposive sampling. Inclusion criteria were office workers aged 18 years or older who had not been previously diagnosed with diabetes mellitus by a healthcare professional. Participants were excluded if they were enrolled in other diabetes management or intensive lifestyle modification programs, had physical or mental conditions that could interfere with participation in the intervention, were unable to communicate effectively in Indonesian, or were pregnant. Participants who attended less than 80% of the health coaching sessions, failed to complete the posttest assessment, or voluntarily withdrew from the study were considered drop-outs.

The risk of developing diabetes was evaluated using the Finnish Diabetes Risk Score (FINDRISC) questionnaire both before and after the intervention. Diabetes health training interventions are systematically implemented through an integrated approach consisting of health education, goal formulation, motivational strategies, and regular training to increase participants' awareness and ability in diabetes mellitus prevention. The intervention program was carefully structured over an eight-week period, covering a total of seven sessions conducted consistently. Each session is allocated a duration of 60 to 90 minutes, tailored to the specific content and activities involved. After the completion of the intervention, participants were subjected to post-intervention evaluation using identical assessment instruments.

Descriptive statistics were used to summarize participant characteristics, while the effectiveness of the intervention was analyzed using the Wilcoxon Signed-Rank Test to compare pretest and posttest FINDRISC scores. Statistical analyses were performed using IBM SPSS Statistics, with a significance level set at $p < 0.05$. Ethical approval was obtained from the Health Research Ethics Committee of Health Polytechnic of Surakarta, and written informed consent was obtained from all participants prior to data collection.

3. RESULTS

3.1 Participant Characteristics

A total of 39 office workers participated in this study. Table 1 presents the demographic characteristics of the respondents.

Table 1. Demographic Characteristics of Respondents (n = 39)

Characteristics	Frequency (n)	Percentage (%)
Age		
26–35 years (Young Adulthood)	13	33.3
36–45 years (Middle Adulthood)	16	41.1
46–55 years (Late Adulthood)	8	20.5
56–65 years (Older Adulthood)	2	5.1
Total	39	100
Gender		
Male	28	71.7
Female	11	28.3
Total	39	100
Education		
Elementary School	2	5.1
Junior High School	7	17.9
Senior High School	18	46.2
Higher Education	12	30.8
Total	39	100
Monthly Income		
< IDR 1 million	0	0
IDR 1–2.5 million	10	25.6
> IDR 2.5–4 million	24	61.6
> IDR 4 million	5	12.8
Total	39	100

Most participants were aged 36–45 years (41.1%), followed by those aged 26–35 years (33.3%), 46–55 years (20.5%), and 56–65 years (5.1%). The majority of respondents were male (71.7%). Regarding educational attainment, most participants had completed senior high school (46.2%), followed by higher education (30.8%), junior high school (17.9%), and elementary school (5.1%). In terms of monthly income, most respondents earned more than IDR 2.5 million to IDR 4 million (61.6%).

The demographic profile of the respondents indicates that the majority were in the productive working-age group, particularly those aged 36–45 years. Individuals in this age range often experience increased occupational responsibilities and prolonged exposure to workplace-related risk factors such

as sedentary behavior, work stress, and unhealthy dietary habits, which may contribute to an elevated risk of developing type 2 diabetes mellitus [10, 16]. The predominance of male participants reflects the workforce composition of the study setting and is noteworthy, as previous studies have shown that men are often less likely to engage in preventive health behaviors compared to women [17]. Most respondents had completed at least a senior high school education, suggesting a relatively adequate educational background that may facilitate the understanding and adoption of health-related information provided during the coaching intervention [18]. Furthermore, the majority of participants reported a moderate monthly income, which may provide sufficient access to healthcare services and healthier lifestyle choices. Overall, these characteristics suggest that the study population represents a group of working adults who are potentially vulnerable to diabetes risk factors while also possessing the capacity to benefit from preventive interventions such as health coaching.

3.2 Comparison of Type 2 Diabetes Risk Before and After Health Coaching

The effectiveness of the Diabetes Health Coaching intervention was evaluated by comparing participants' FINDRISC scores before and after the intervention as shown in table 2.

Table 2. Comparison of FINDRISC Scores Before and After Diabetes Health Coaching (n = 39)

FINDRISC Score	Mean	SD	Minimum	Maximum	Z Value*	P-value
Pretest	5.67	1.991	2	10	-5.631	<0.001
Posttest	4.26	2.035	1	9		

As shown in Table 2, the mean pretest FINDRISC score was 5.67 ± 1.99 , while the mean posttest score decreased to 4.26 ± 2.04 . The Wilcoxon Signed-Rank Test revealed a statistically significant difference between pretest and posttest scores ($Z = -5.631$, $p < 0.001$). These findings indicate that the Diabetes Health Coaching intervention significantly reduced participants' risk scores for type 2 diabetes mellitus. Therefore, the intervention was effective in lowering diabetes risk among office workers participating in this study.

The effectiveness of health coaching can be explained by its person-centered approach, which emphasizes goal setting, self-monitoring, motivation, and continuous support. Unlike conventional health education that primarily focuses on information delivery, health coaching actively engages participants in identifying personal health goals and developing practical strategies to achieve them. This approach may enhance self-efficacy and encourage sustainable behavior change, leading to improvements in lifestyle practices associated with diabetes prevention. Previous studies have similarly reported that health coaching interventions can improve physical activity levels, dietary behaviors, weight management, and other health outcomes among individuals at risk for chronic diseases, including type 2 diabetes mellitus [15, 19, 20].

The workplace setting may have further contributed to the success of the intervention. Office workers are particularly vulnerable to diabetes risk due to prolonged sitting time, limited physical activity, and unhealthy eating habits associated with busy work schedules. By providing structured coaching tailored to participants' daily routines and challenges, the intervention may have helped individuals recognize their risk factors and implement achievable lifestyle modifications [16]. These findings support the recommendation of the IDF that population-based and lifestyle-focused interventions should be promoted as effective strategies for diabetes prevention [13]. Therefore, integrating health coaching programs into workplace health promotion initiatives may represent a practical and effective approach to reducing the future burden of type 2 diabetes among working-age adults.

4. CONCLUSIONS

This study demonstrated that the Diabetes Health Coaching program significantly reduced the risk of type 2 diabetes mellitus among office workers, as evidenced by the decrease in mean FINDRISC scores following the intervention. These findings suggest that health coaching is a promising strategy for promoting healthy lifestyle behaviors and preventing diabetes in workplace settings. However, this study has several limitations, including the use of a one-group pretest–posttest design without a control group, the relatively small sample size, and the short-term evaluation of outcomes, which may limit the generalizability of the findings and the ability to establish causal relationships. Future studies are recommended to employ randomized controlled designs with larger and more diverse populations, longer follow-up periods, and additional outcome measures such as anthropometric and biochemical indicators to better evaluate the long-term effectiveness of diabetes health coaching interventions.

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