

Health-promoting university: the implementation of an integrated guidance post for non-communicable diseases (Posbindu PTM) among university employees

Tri Siswati¹, Margono¹, Novi Husmarini¹, Yuliasti Eka Purnamaningrum¹ and Bunga Astria Paramashanti² 

Abstract: Non-communicable diseases (NCDs) remain a challenge globally and in Indonesia. Workplace environments may place employees at risk for NCD behavioral factors. This study aimed to develop an integrated guidance post for NCD (in Indonesian, 'pos pembinaan terpadu penyakit tidak menular' [Posbindu PTM] early detection among employees in one of the Indonesian universities. Posbindu PTM is a community-based program oriented towards promotive and preventive efforts to control NCDs where the community acted as change agents. We conducted a process evaluation based on a quantitative approach through a survey ($n = 313$) and a qualitative method using in-depth interviews ($n = 12$) to support our findings that Posbindu PTM was acceptable and feasible to implement in a university context. High participation in Posbindu PTM showed that the program could encourage the university employees to join NCD prevention strategies from early detection to counseling and referral. All participants positively accepted Posbindu PTM for its benefits to health, the flexibility of the program, and the quality service provided by cadres. A need-based program planning, commitment from university leaders, adequate human resources and facilitation, and cooperation between departments, the clinic, and local primary health center and health department determined the success of Posbindu PTM implementation. In contrast, external activities negatively affected participants to join Posbindu PTM. There is a need for more routine scheduling and online-based application to enhance the program's performance. Posbindu PTM is essential for engaging employees with their health and may serve as a model for NCD prevention and control in similar settings. With Posbindu PTM implementation's success, a further stage is required to empower and sustain the Posbindu PTM program towards health-promoting universities.

Keywords: health-promoting university, workplace health promotion, non-communicable diseases, employee, Posbindu PTM

Introduction

Non-communicable diseases (NCDs) are the most significant health and development problems affecting human beings worldwide (1). Moreover, most NCDs in tropical developing countries lead to more deaths at all ages than in high-income Western nations (2). Based on the World Health Organization's

(WHO) (3) country progress monitor in 2020, the proportion of deaths caused by NCDs in Indonesia was 73%, with a total number of NCD deaths of 1.37 million.

Changes in lifestyle, technology, and environment have shifted Indonesia's trend of diseases characterized by NCDs such as cardiovascular diseases, diabetes

1. Poltekkes Kemenkes Yogyakarta, Yogyakarta, Indonesia.
2. Department of Nutrition, Faculty of Health Sciences, Universitas Alma Ata, Bantul, Yogyakarta, Indonesia.

Correspondence to: Bunga Astria Paramashanti, Department of Nutrition, Faculty of Health Sciences, Universitas Alma Ata, Jalan Brawijaya No. 99, Bantul, Yogyakarta, 55183, Indonesia. Email: bunga@almaata.ac.id

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mellitus, dyslipidemia, kidney disease, malignancy, and obesity (4). These may also include other typical risk factors in low- and middle-income countries, such as insufficient nutrition and living conditions, ineffective tobacco control, and poorly resourced healthcare (2). Based on Indonesia's Basic Health Research surveys between 2013 and 2018, there was an increase in the prevalence of hypertension from 25.8% to 34.1%, overweight from 11.5% to 13.6%, obesity from 14.8% to 21.8%, and central obesity from 26.6% to 31.0%. Among adolescents aged 10–18 years old, cigarette smoking went up from 7.2% to 9.1%. Low physical activity and inadequate fruit and vegetable consumption also rose from 26.1% to 33.5% and from 93.5% to 95.5%, respectively, among the population aged 10 years or older. In addition, the adult population tends to consume high-risk foods that contain more sugar and salt but less fiber (5,6).

Prevention of risk factors that lead to NCDs should be the key focus for the potential reduction of NCD prevalence (4). Also, the public's awareness needs to be more enhanced across various NCDs. It would assist the public in implementing effective prevention strategies toward these risk factors. In turn, understanding the signs and symptoms and prompt intervention would ensure early detection and treatment of the diseases (7). A whole-system approach through the 'Healthy Settings' idea may optimize disease prevention, including in NCDs. This integrated and interdisciplinary strategy draws on the values of community engagement, collaboration, empowerment, and equity rather than individualistic approaches. Initiated by the WHO in 1986, the 'Healthy Cities' program's success triggered similar interventions in other settings, such as villages, hospitals, and schools (8). In the mid-1990s, the health-promoting university concept was initiated as part of health promotion approaches adapted to the university context (9).

Young adulthood is a pivotal time to develop healthy lifestyles that last a generation (10). Currently, most of the prevention and control strategies depend heavily on personal approaches. Therefore, there is a need to tackle NCD issues through a structural intervention, including workplace approaches. Labor and employment are essential aspects of everyday life in environments

identified by their behavioral risk factors (e.g. unhealthy diet, physical inactivity, tobacco consumption) toward NCDs (11). Employees spend more than one-third of their time in the workplace, making them more vulnerable to NCD risk factors. Simultaneously, the workplace may serve as a platform for health promotion among employees, thus, increasing their productivity and reducing sick cost (12). While employee health efforts may have a beneficial impact, a healthy work climate can foster better benefits for workers, their families, and the organization. Thus, establishing a health promotion system in the workplace is a prerequisite for the institutional vision's success and the nation's economic growth (13).

The Indonesian Ministry of Health has proposed the integrated guidance post for non-communicable diseases (Posbindu PTM), a community-based health program oriented towards preventive and control efforts to control NCDs. The program involves the community's active participation, starting from planning, implementation, monitoring, and evaluation. In other words, the community acts as the agent of change that drives Posbindu PTM to be organized according to their ability and needs (14). This study aimed to implement Posbindu PTM for NCD prevention and control among university employees. Furthermore, we also reflected on the implementation process to enhance and expand the Posbindu PTM program towards a health-promoting university. Our reflection followed the WHO guideline on implementation research (15) that covered the program's acceptability, adoption, and feasibility. Findings from this study will inform policymakers and public health professionals to formulate intervention strategies to promote health in workplace settings.

Methods

Study design and settings

This study was conducted in one of the Indonesian universities in 2019. Specifically, the university was located in Sleman District, Yogyakarta Special Region. The university consists of six departments (i.e. Nutrition, Midwifery, Health Analytics, Nursing, Dental Nursing, and Health Environment) and one directorate.

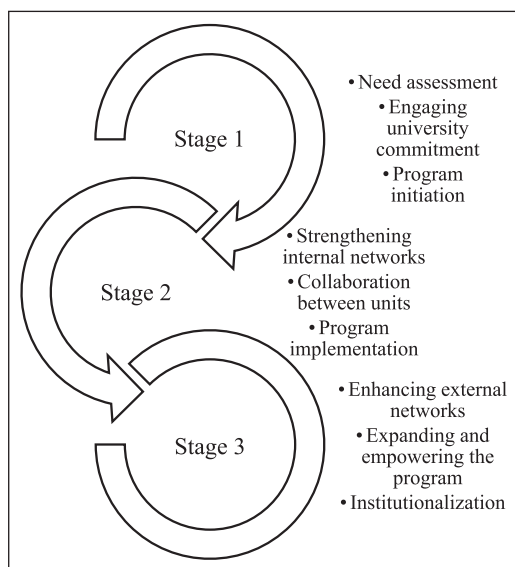


Figure 1. Three stages of Posbindu establishment towards a health-promoting university.

In this paper, we highlighted the development of Posbindu PTM as part of our efforts to achieve a health-promoting university. We defined a health-promoting university as one that provides a healthy environment, promotes the well-being of all community members through healthy policies, encourages broader academic interest in health promotion, and develops links with the community (9). Posbindu PTM or integrated guidance post for NCDs is a program that promotes community participation in early detection and follow-up of NCD risk factors independently and continuously (14). In this study, we specified Posbindu PTM as a workplace health promotion to prevent and control NCDs and their risk factors among university employees. The activities within Posbindu PTM included registration; a behavioral risk factors interview; anthropometric, clinical, and biochemical assessments; counseling; and a referral system related to NCDs.

There were three stages of Posbindu PTM establishment, as shown in Figure 1. During Stage 1, we conducted the following activities: 1) needs assessment, 2) engaging university commitment, and 3) program initiation. In Stage 2, we covered: 1) strengthening internal networks, 2) rallying support and collaboration between faculties and

departments, and 3) the program implementation. Before we proceed with Stage 3 of the program institutionalization, we conducted process evaluation of the Posbindu PTM implementation, which covered Stage 1 and Stage 2.

Process evaluation or reflections on Posbindu PTM implementation outputs included acceptability, adoption, and feasibility of the program (15). We defined the acceptability as whether Posbindu PTM was agreeable among participants, providers, leaders and managers, and policymakers. We assessed the adoption based on intention and utilization of Posbindu PTM. Meanwhile, feasibility was the extent to which we could provide Posbindu PTM for regular use in a university setting.

Participants and instruments

There were a total of 313 employees who participated in our program. We asked all participants for their consent to join the study. Instruments used in this action research were the Posbindu PTM guideline book (14), Towards Health Card, Posbindu PTM registration book, and Posbindu PTM kit (i.e. digital weighing scale, microtoise, measuring tape, blood glucose and cholesterol kit with strips, blood lancet, and alcohol swab).

Data analysis

Our reflections were based on a quantitative approach through a survey ($n = 313$) to estimate the participation, NCD prevalence, and NCD-related factors using participants' health records (Towards Health Card). We performed descriptive statistics in Stata 14.2 to summarize our findings.

To supplement our results about Posbindu PTM implementation, we developed interview guidelines to collect qualitative information on its acceptability, adoption, and feasibility. In-depth interviews were conducted with 12 samples until we reached data saturation. Two of them were cadres, and 10 were participants. We transcribed the data verbatim within 24 hours after each interview. We developed the coding based on the interview guidelines and discussed the themes and subthemes until reaching an agreement. Finally, thematic analyses identified barriers, facilitators, and suggestions regarding acceptability, adoption, and feasibility of Posbindu PTM implementation.

Results and discussion

Among the 313 participants, the majority was male (55.3%) and married (67.6%). Most of them completed at least a university degree (84.1%). The mean age of participants was 44.8 ± 10.9 years old, ranging from 22 to 62 years. Only 16 had a contract job with the university.

Establishment and implementation of POSBINDU

Stage 1

1) Needs assessment

We held a meeting to facilitate the needs assessment process among leaders (i.e. director, vice directors) at the university level, managers (i.e. head of department and head of clinic) and employee representatives at the department level, and the university clinic's director. We determined health priority problems, potential interventions, and any existing health program in each department or directorate during the meeting.

Based on our discussion, we found several risk factors for NCDs, such as hypertension, high blood glucose, high sitting time, and low consumption of fruits and vegetables. Our results are similar to an earlier study conducted in four institutional Posbindu PTM in Yogyakarta, Indonesia. The study revealed high proportions of NCD-related risk factors among employees, such as smoking (78%), low consumption of fruits and vegetables (78% and 69%, respectively), physical inactivity (98%), and prolonged sitting duration of 7–10 hours/day (45%). Hypertension (11%), type 2 diabetes mellitus (5%), and heart diseases (4%) were three leading NCDs in these institutions (16).

We also identified a mini hospital owned by the nursing department and the university clinic to help detect NCDs. Inspired by this, representatives from other departments recommended that the intervention be similar to the mini hospital concept. As a result, we determined Posbindu PTM as a university-based approach to prevent and control NCDs and their associated factors among employees. By referring to the health-promoting university concept (17), we designed Posbindu PTM to help

the university create healthy environments for working, learning, and setting an example of health promotion for the community.

2) Engaging university commitment

We required the commitment of all the the academic community in higher education (that consists of lecturers, students, and all management bodies) regarding the Posbindu PTM establishment. On 17–18 October 2019, we formally held the agreement contract represented by the university leaders in Banjarnegara District, Central Java Province.

3) Program initiation

The program was initiated by advertising to all employees and prospective networks (e.g. local primary health centers and the district health department). Briefly, we explained the concept of Posbindu PTM to achieve health promoting university along with its activities. We also held capacity building sessions for prospective Posbindu PTM cadres. Cadres were health graduates with at least 3–4 years of post-secondary education and registered as health professionals in nursing, nutrition, medicine, and public health (18). We recruited three trainers from the university and 42 Posbindu PTM cadres. We selected the trainers based on their training on Posbindu PTM and their experience in initiating Posbindu PTM in several institutions in Yogyakarta. Despite the cadres' health backgrounds, we provided refreshers of anthropometric, clinical, and biochemical assessments, counseling, referring to primary health centers, and filling out the Towards Health Card. At the end of Stage 1, we established an organizational structure and designed a program roadmap with university-level leaders and department-level managers.

Stage 2

1) Strengthening internal networks and collaboration

During this stage, strengthening and expanding the internal networks within the university became

crucial. We pinpointed the resources needed during planning and implementation. Every department should have a minimum of six cadres consisting of one person for registration, one person for the interview, two persons for anthropometric measurement, one person for clinical and biochemical assessments, and one person for counseling. Thus, six departments and one directorate required a total of 42 Posbindu PTM cadres.

We collaborated with the university clinic, local primary health centers, and the District Health Department. After we explained our program, the District Health Department facilitated technical guidance of Posbindu PTM through primary health centers. In collaboration with local primary health centers, we provided regular refreshers to our cadres and developed the referral system.

2) Posbindu PTM implementation

We implemented Posbindu PTM regularly every six months. Posbindu PTM activities followed the concept of Five Tables that covered: 1) registration, 2) behavioral risk factors interview, 3) anthropometric measurement, 4) clinical and biochemical assessment, and 5) counseling. After the registration, cadres would question participants' behaviors in the past six months, including tobacco smoking, the average of fruit and vegetable servings per day, physical activity, alcohol consumption, and sleep behaviors. They also performed anthropometric (i.e. height, weight, abdominal circumference), biochemical (i.e. blood glucose, total cholesterol), and clinical (i.e. blood pressure) assessments for participants. Cadres then recorded the answers and other measurement results in the Towards Health Card owned by each participant. Based on these results, cadres provided counseling and, if needed, a referral system. Referral facilities included the university clinic, general practitioner's private clinic, or primary health centers based on their health insurance preference.

During Posbindu PTM implementation, our survey found that most of our participants were female (55.3%) and obtained a minimum of a three-year diploma and a four-year undergraduate degree (59.9%). More than half of our study participants had hypertension (56.4%), followed by hypercholesterolemia (24.8%), and type 2 diabetes

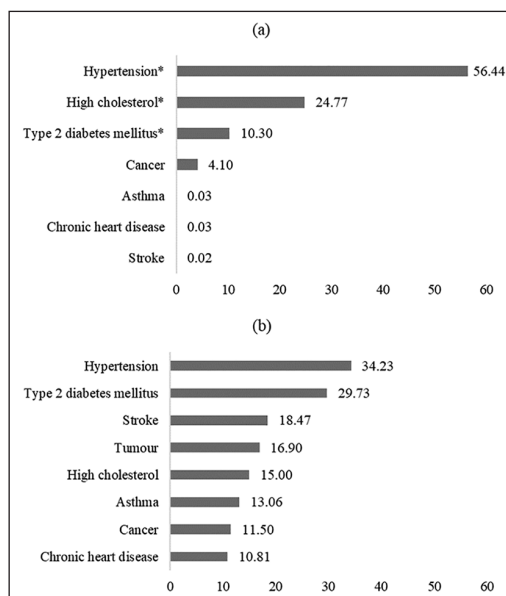


Figure 2. Type of NCDs among participants (a) and their family (b) based on Posbindu's direct measurement* or interview.

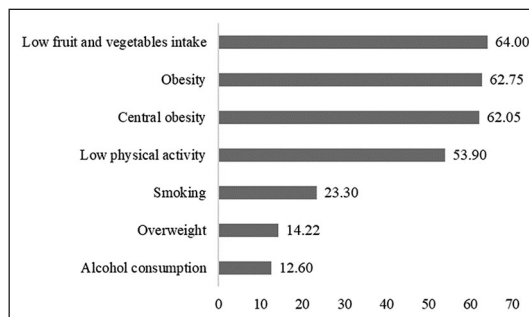


Figure 3. The distribution of NCD-related risk factors among participants.

mellitus (10.3%). The three leading NCDs among the participants' families included hypertension (34.2%), type 2 diabetes mellitus (29.7%), and stroke (18.5%). Figure 2 presents the distribution of NCD types among participants and their families.

This study also revealed several NCD-related risk factors among study participants (Figure 3). Low fruit and vegetable consumption (64%) was the most frequent NCD-related risk factor. Both obesity and central obesity were around 62%. Meanwhile, half of the participants were less active. Similar to

our findings, a previous study in a Saudi university revealed NCD risk factors were common among university employees and their families. These included dyslipidemia (37%), diabetes or hypertension (22%), overweight or obese (72%), inadequate fruit and vegetable intake (88%), and low physical activity (77%) (19). In Nigeria, the most frequent NCD determinants among university employees were low fruit and vegetable intake (95%), physical inactivity (78%), and dyslipidemia (52%) (20). Both studies suggested their findings were associated with the participants' socio-demographic characteristics (19, 20). However, behavioral determinants might also have an influence (20). Workplace environments may limit employees' physical activity and food choices while exposing the risk of job stress.

Furthermore, we also developed extended activities, such as 1) body stretching for all staff and students every day at 10:00 am and 2:00 pm at the campus, 2) healthy university campaign, 3) health counseling class for employees, 4) 45–60 minutes of aerobic exercise every week, 5) aerobic exercise competition at National Health Day, 6) advertisement of smoke-free area within the university, 7) development of Youth Posbindu PTM for students, 8) provision of Posbindu PTM supply kit in each department, and 9) socialization of the University Zero NCDs in 2030.

Reflections on Posbindu PTM implementation

Prior to Stage 3, we reflected on the Posbindu PTM implementation in Stage 1 and Stage 2. The reflection included acceptability, adoption, and feasibility of Posbindu PTM.

Acceptability

All participants positively accepted this program. The need-based assessment to determine Posbindu PTM as our primary approach to prevent and control NCDs may explain the high acceptance of Posbindu PTM. Our participants narrated the perceived importance of organizing the Posbindu PTM program:

Posbindu PTM is essential for early identification of non-communicable diseases. This program can

become a reference to prevent and control non-communicable diseases for all Polkesyo members. (a leader, male, 50 years old)

If the internal circle of the university does not know the condition of their health, then it is impossible to achieve health for all people. (an employee, male, 37 years old)

Moreover, the leaders' commitment and enthusiasm might drive the employees to participate actively in the program. A participant stated, '*Commitment from leaders and all parties. Healthy people can do activities optimally. . . and influence others to live healthy lives*' (an employee, male, 42 years old). A previous study conducted in British Columbia, Canada found that the workplace health promotion program was acceptable because it had succeeded in engaging the participants. In that study, employee engagement was mainly affected by the time allocated to programming implementation and employers' eagerness (21). While middle-level managers play a significant role in engaging their employees, a Denmark study suggested that these managers be well informed about their roles and responsibilities related to workplace health promotion (22).

Our participants had also gone through an apperception session. This session aimed to improve their understanding and acceptability of the program. In Australia, employees who had high perceptions of the program were more engaged in health intervention at the worksite (23). The perceived importance may explain an individual attachment to a specific health program's results, thus leading them to adopt healthy behaviors (24).

Adoption

Posbindu PTM adoption measures the degree to which a new intervention was delivered to our participants. We also assessed its enabling and inhibiting factors. A total of 140 of 313 participants joined Posbindu PTM without missing a day. Those who did not attend described their absence due to external activities or paid leave. We did not want time limitations, other campus activities, and a lack of resources to disrupt Posbindu PTM. Therefore, we scheduled the Posbindu PTM implementation

according to the agreement with all participants. We also offered services by trained cadres and adequate facilitation. When a program takes place within the workplace, program providers should consider the nature of the intervention (e.g. knowledge of program topics, tools, and facilitation), the dynamic of work culture (e.g. time allocation, workload), and support from employers or leaders (21).

When we asked about Posbindu PTM utilization, most participants explained their active participation and rationale. They stated:

I always followed the Posbindu PTM schedule because. . . I want to check my health condition as early as possible. So that we become more aware and concern about our health. (an employee, female, 28 years old)

Without compromising on friendliness, cadres' performance is good. They measured anthropometric professionally, provided information that is easy to understand, gave positive motivation, and pray for us. . . very nice. (an employee, male, 37 years old)

On the other hand, few employees stated that they could not control activities outside the university. They sometimes missed the Posbindu PTM schedule due to external events. To improve the Posbindu PTM implementation, participants also provided us with several inputs. Most of them suggested that Posbindu PTM should be conducted more routinely (e.g. monthly) and situated in a more accessible place. Few participants mentioned the use of mobile-based applications that may help record and monitor employees' health status.

We can use an (online) application for Table 1 (registration). Table 5 can provide counseling online. Others (other tables) are good. (an employee, female, 29 years old)

Inter-professional partnership in health promotion is beneficial not only for clients but also for health practitioners. Organizations that promote multidisciplinary teams would likely achieve more meaningful patient health results, indicating effective collaborations (25). On the other hand, working as

a team may improve health practitioners' recognition of their own and other fields' duties (26). Due to various health departments within the university, the Posbindu PTM program allowed for inter-professional collaboration between health professionals. For instance, a nutritionist cadre would measure body weight and waist circumference, calculate body mass index, and perform dietary recall, while a nurse assessed blood pressure and blood glucose. Based on these assessments, early diagnosis, health counselling, and, if needed, a referral system were made by a nurse cadre or a general practitioner from the university clinic. If a participant had an issue related to eating habits and physical activity, they would be referred to a nutritionist cadre for dietary counselling and physical activity recommendation. Any procedure taken was based on the participants' condition, yet conducted by a team of cadres from different health backgrounds (e.g. nutritionist, nurse, general practitioner). A broader context of multidisciplinary work included reporting surveillance data between the university's team (e.g. nurse, nutritionist, public health professionals) and the local primary health center and health department's data managers.

Feasibility

We collected qualitative feedback from sampled participants to assess the feasibility in the following areas: practicality and integration into academic routines. Practicality explains to what degree our participants can apply Posbindu PTM procedures using available resources and context within the university. A participant said, *'It is not hard to find quality cadres because they are already equipped with skills. We pre-tested them, and they passed, so we gave them a certificate. We also have supporting facilities and infrastructure'* (an employee, female, 29 years).

We delivered activities within the Posbindu PTM program based upon the Five Table concept proposed by the Indonesian Ministry of Health (15). In Indonesia, community-based health programs mostly used the Five Table concept to deliver interventions, such as the integrated health post (Posyandu) for child growth monitoring or adolescent and elderly health check-ups at the community level. Therefore, it is convenient for the participants to follow Posbindu PTM procedures.

The flexibility of Posbindu PTM that fit with employees' work hours also made this program easily incorporated into university activities.

It's because of the socialization and schedule which are clear to me. (an employee, male, 45 years old)

As a cadre and a client, I feel necessary and comfortable with this (Posbindu PTM) implementation. . . (a cadre, male, 55 years)

The university employees typically spent eight hours per day on average from Monday to Friday. If the workload got higher due to special events such as university accreditation, seminars, or workshops, employees would increase their time spent at the campus. Before establishing Posbindu PTM, some employees would visit health care providers during the weekends or after work hours, while others chose to skip regular health check-ups. For this issue, we could consider Posbindu PTM as a health facility that we brought to campus so that employees could access health providers more conveniently in terms of time and distance. Bringing health facilities closer to the worksite may improve employee participation in seeking appropriate care. In agreement with our results, Seaton *et al.* suggested that the workplace may be a vital setting for engaging employees with their health (21). Therefore, in the case of further performance of Posbindu PTM, we may proceed with Stage 3 to improve and expand the Posbindu PTM program and to set up a reliable system within the institution.

Strengths and limitations

Our study is the first action research to implement an integrated guidance post (Posbindu PTM) to prevent and control NCDs among Indonesian university employees. We obtained adequate resources and support from our institution to establish Posbindu PTM until we reached Stage 2 of program implementation. Our reflections on the program's acceptability, adoption, and feasibility suggested we move forward to Stage 3 to enhance, expand, and institutionalize the program. In the case of broader implementation research, there is a significant benefit to apply Posbindu PTM in similar organizations with health-related resources and

networks. However, we admit constraints on self-reported dietary and physical activity assessments and social determinants that may confound NCD-related behaviors among participants, restricting the overall ability of the study to evaluate the intervention effects.

Conclusion

Posbindu PTM is vital for engaging employees with their health by participating in NCD risk assessment and intervention. University settings can specifically appeal to employees, providing pleasant avenues and environments to join while attenuating possible weakness related to seeking out health facility-based services. Posbindu PTM implementation's success is driven by need-based program planning, university leaders' commitment, adequate human resources and facilitation, and collaborations within the university and between university and external health providers. Moreover, employees are essential agents of change for making Posbindu PTM more sustainable through active participation. These change agents may act as cadres who facilitate Posbindu PTM within the institution or individuals who are able to empower themselves to practice a healthy lifestyle, thus inspiring people around them. Posbindu PTM program offers an acceptable and feasible approach for workplace health promotion that can set an example for enhancing employees' health in similar contexts. Further research is required to evaluate the effectiveness of the program.

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Ethical approval

This research was ethically approved by the Institutional Review Board of 'Aisyiah University Yogyakarta number 981/KEP-Unisa/X/2019.

ORCID iD

Bunga Astria Paramashanti  <https://orcid.org/0000-0001-6066-2039>

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