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CHARACTERISTICS OF EFFECTIVE FOOD INTERVENTION PROGRAMS FOR REDUCING BODYWEIGHT ON WORKPLACES

Rizki Apriansyah[1*], Novrikasari[2], Mohammad Zulkarnain[3]

[1]Occupational Health and Safety Department, Faculty of Public Health, Universitas Sriwijaya, Palembang
[2]Environmental Health Department, Faculty of Public Health, Universitas Sriwijaya, Palembang
[3]Medical Education Department, Faculty of Medicine, Universitas Sriwijaya, Palembang

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Corresponding author:
Rizki Apriansyah
Occupational Health and Safety Department, Faculty of Public Health, Universitas Sriwijaya, Palembang

Email:
dr.rizki.apriansyah@gmail.com

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ABSTRAK

Kelebihan berat badan dan obesitas adalah masalah dunia yang kian pelik. Di negara-negara maju, adanya intervensi kesehatan terhadap obesitas di tempat kerja akan menurunkan biaya premi asuransi kesehatan di perusahaan, sesuatu yang tidak didapatkan di negara berkembang. Karakteristik dari program intervensi makanan yang efektif sangatlah dibutuhkan sebagai panduan bagi para pemberi agar dapat membuat program intervensi makanan berbiaya rendah yang cocok bagi perusahaan di negara-negara berkembang, Tinjauan pustaka ini bertujuan untuk mencari kriteria dari program intervensi makanan yang efektif untuk menurunkan berat badan di tempat kerja. 11 penelitian tentang intervensi makanan disortir dari 381 artikel lengkap yang didapatkan dari situs ScienceDirect, PubMed dan Wiley Online Library untuk mendapatkan karakteristik yang dicari, dengan menggunakan kriteria inklusi dan eksklusi. Enam penelitian yang menggunakan intervensi diet spesifik, konseling dari ahli dan substitusi makanan mampu memberikan hasil yang diharapkan dalam hal penurunan berat badan, perbaikan parameter metabolik atau penurunan jumlah kalori dari makanan yang dibeli di rumah makan yang ada di tempat kerja. Metode diet spesifik, konseling ahli dan substitusi makanan direkomendasikan sebagai metode intervensi makanan. Sebagai tambahan, intervensi makanan di tempat kerja haruslah disesuaikan dengan kondisi setempat, diterima oleh karyawan Perusahaan, dan dapat dilakukan oleh pemberi kerja dan peneliti. Juga disarankan untuk membuat studi pendahuluan terlebih dahulu untuk mendapatkan racikan intervensi yang sesuai untuk penelitian selanjutnya.

ABSTRACT

Characteristics of Effective Food Intervention Programs for Reducing Bodyweight on Workplaces. *Overweight and obesity is a growing problem in the world. As obesity interventions in workplaces on developed countries are immediately rewarded with reduced health insurance cost, workplaces on developing countries are not rewarded with the same benefit. Characteristics of effective food intervention programs are needed to encourage employers for creating low-cost food intervention programs suitable for companies. This literature review aims to reveal characteristics of effective food intervention programs for reducing bodyweight on workplaces. 11 studies using food interventions have been selected from 381 full text articles from ScienceDirect, PubMed and Wiley Online Library for revealing those characteristics using inclusion and exclusion criteria. Six studies which use either specific diet, expert counselling and food substitution are able to give favorable outcomes in the form of reduced bodyweight, better metabolic parameters or reduced calories from food bought on workplace cafeterias. One study in highlight, despite being a pilot study, is effective to reduce bodyweight with only one month of intervention. Specific diet, expert counselling and food substitution are recommended as food intervention. Additionally, such interventions must be tailored to the workplaces, accepted by workers, and doable by employers and researchers. Pilot studies are advisable for finding the perfect formula for future food intervention programs.*

INTRODUCTION

Overweight and obesity is a serious problem for the world. World Health Organization (WHO) noted that on 2016, more than 1.9 billion adults (around 39% from world adults' population) aged 18 or more, were overweight and among 650 people (13% from world adults' population) were already considered obese[1]. In Europe, based on data collected from 1975 to 2016, 59% of adults were considered overweight or even obese[2]. In United States, obesity is a bigger problem. Centers for Disease Control and Prevention (CDC) recorded that obesity prevalence was rising from 30.5% on 1999 – 2000 into 41.9% on 2017 – March 2020[3].

Although it is not as high as in United States, obesity prevalence on adults in Indonesia is increasing from time to time. Indonesian Basic Health Research Data (Riskesdas) revealed that obesity prevalence was rising from 10.5% on 2007 to 14.8% on 2013 and then becoming 21,8% on 2018[4]. Age beyond 18 are considered productive age for adults, especially for men, to earn income and to support the family.

Overweight and obesity can trigger a lot of chronic diseases such as cardiovascular diseases (heart attack and stroke), diabetes, musculoskeletal problems (especially osteoarthritis) and some cancers (endometrium, ovarium, prostate, liver, bile duct, kidney and colon cancers) and thus become liability for adults to work[1]. Such diseases require long term treatments and enormous cost. CDC highlighted that, in United States, annual health expenditures for adults is $1.861 higher than adults with normal weight[3]. As the impacts were serious, WHO urged all parties to work together for reducing overweight and obesity whether on international, country or local levels[1].

Workplaces is an ideal place for giving food intervention to obesity as productive adults are spending most of their time there, including their eating time. As examples, there are many research conducted on developed countries, especially on United States and European countries which study the effect of food intervention to obesity and overweight on workplaces, at least on the recent five years[5–15].

In Indonesia, such research is unavailable. No health insurance incentives for companies doing those interventions (unlike companies on developed countries)[6] is one of the problems. Also, there is a concern from leaders of the companies that such interventions for reducing bodyweight will require enormous money, which probably true, because from two meta-analysis[16,17] a recommended food intervention requires quite a time (usually more than six months) and needs multiple approaches (consultation with nutritionist, seminar, online program, gamification, physical activities, rewards, salary incentives, etc.) which, of course, are not cheap.

Eventually, these lead to the importance of knowing characteristics of effective food intervention programs for reducing bodyweight on workplaces as those can become triggers to companies in developing countries, Indonesia as an example, for making food intervention programs targeting overweight or obese workers. The purpose of this study is to reveal characteristics of effective food intervention programs for reducing bodyweight on workplaces by analyzing available food intervention studies on workplaces from 2018 to 2022.

METHOD

Relevant articles in English were collected from websites, such as ScienceDirect (sciencedirect.com), PubMed (pubmed.ncbi.nlm.nih.gov) and Wiley Online Library (onlinelibrary.wiley.com) on October 23, 2022 with keywords (obesity, overweight, workplace, food

and intervention). 381 full-text articles appeared, in which, after throughout search, 13 food intervention study on workplaces were found. Two articles were excluded for this research as one was not completed yet while the other's study design was not clearly stated. In the end, 11 studies were chosen as samples. Overall, inclusion criteria being used were published, full texted, food intervention along 2018 – 2022 studies while unfinished study and unclear study design were chosen as exclusion criteria.

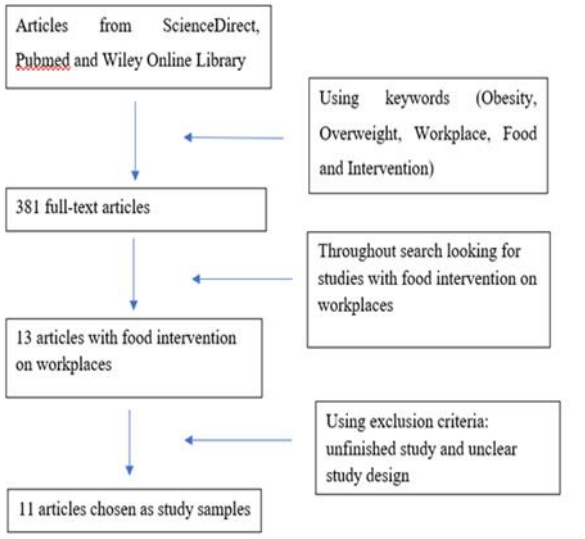

Figure 1. Flow Chart of Collecting Samples with Inclusion and Exclusion criteria

RESULT

Eleven articles from 2018 - 2022 study food intervention on workplaces [5–15]. Two studies use quasi experimental study design [6,7] while four studies use Randomized Control Trial (RCT) study design[5,10,12,13].

Sample Study's Outcome

Significant outcome is the first thing expected from doing food intervention on workplaces. From eleven studies being reviewed, six studies produce significant outcomes in the form of reduced bodyweight, better metabolic parameters (such as High-Density Lipoprotein (HDL), Low-Density Lipoprotein (LDL), etc.)[6–9] or reduced calories from food bought on workplace cafeterias[11,12]. Four out of six studies which consider reduced bodyweight as outcome are able to reduce bodyweight significantly[6–9]. The other two studies[5,10] produce unsignificant outcomes. Meanwhile, four out of the eleven studies choose reduced food calories bought on workplace cafeterias as expected outcome[11,12,14,15]. Three out of these four studies are pilot studies[11,14,15] and one is an RCT[12]. Two pilot studies[14,15] are unable to produce significant outcome while one pilot study is able to reduce the calories being bought without reducing the cafeteria's income[11]. One RCT is also able to reduce the number of food calories being bought but consequently reduces the cafeteria's outcome by 3.2%[12]. Last but not least, one[13] out of the eleven studies sets improvement of body biomarkers'

composition as the expected outcome. As the result, from 225 metabolites being studies, improvement of body biomarkers' composition is detected although not significant[13].

Sample Study's Intervention Method

Intervention methods being used on the eleven studies are vary but can be classified into four groups (specific diet, consultation with nutritionist, food substitution and food labelling). Three studies use specific diet method[7,8,13], three studies conduct consultation with nutritionist[5,6,9], two studies attempt food substitution[11,12] and three studies enact food labelling[10,14,15].

Sample Study's Duration of Intervention

Studies' timeline varies from only one month to 60 months.

DISCUSSION

The two studies[5,10] that fail to reduce bodyweight significantly are pilot studies in which unsignificant outcomes are common. Despite that, two[8,9] out of four studies which able to reduce bodyweight significantly are also pilot studies. One study in highlight[8] is even able to reduce bodyweight significantly with just one month of intervention although its research method should be tested in the future with stronger study design. Overall, this finding matches the result from four meta-analysis[16–19] which conclude that food interventions on workplaces are indeed sufficient for reducing bodyweight, especially when conducted on a group of workers with obesity, regardless of their socioeconomic status[16].

As a note on articles that choose reduced food calories bought on workplace cafeterias as expected outcome[11,12,14,15], foods given by companies or bought on different shops were not stated. Future studies must add these data along with stronger study design if a conclusion is expected whether the reduced calories bought on the cafeteria have an impact on reduced workers' bodyweight.

Two[6,9] out of three studies conducting food consultation with nutritionist[5,6,9] manage to reduce bodyweight or food calories bought on cafeterias significantly. This result also matches with two meta-analyses which conclude that counselling is superior than other food intervention methods[16,18]. One study[5] is unable to reduce its participant's bodyweight through counselling as focuses more on encouraging participants' physical activities.

Two studies[11,12] attempt food substitution by exchanging high calorie food with lower one. Both studies manage to reduce the number of calories bought on workplace cafeteria.

Despite the burden of the preparation as all food (wrapped or cooked) calories must be listed first, this food intervention method is relatively low cost, simple and lack of complaints from customers, even when the food portions are reduced by 10%[12]. A little side effect does happen as the cafeteria's income reduces a bit but some incentives from the company will certainly cover it.

Lastly, food labelling, which also a low cost and simple food intervention, may still need further modifications as all three studies[10,14,15] enacting it are unable to produce good outcomes although the labels have been improved[14] and incentives have been given[10].

As mentioned before, one study[8], although still a pilot study and finishes in just a month, is able to reduce its participants' bodyweight significantly ($p<0,001$) with just giving breakfast and lunch on workdays (participants are allowed to consume other food and not forced to exercise). This fact

suggest that the duration of intervention may not always affect the results. Of course, it is still debatable as this study[8] require stronger study design with similar method to conclude it.

Overall, it seems that all studies are not identical. There are a lot of different aspects, such as workplace setting (healthcare center, hospital, workplace cafeteria, office, factory and transportation company), participants' occupation (healthcare center employees, hospital employees, blue collar workers, white collar workers, truck drivers and firefighters), type of intervention being used (giving specific diet, consultation with nutritionist, food substitution and food labelling), or duration of intervention (from one month to 60 months + 12 months of follow up). Such phenomena are also observed in a meta-analysis[17] and is fine as it is because intervention should be tailored to the condition of workplaces where intervention is given. Thus, pilot studies are needed to create a specific intervention on a workplace, especially on private sectors where cost should be as low as possible.

Regarding cost, a quasi-experimental study[6], which also study health expenditure difference between intervention and control groups finds the expenses are alike (no difference) after one year of follow up. Health intervention programs are formulated to reduce the risk of acquiring chronic diseases and because of that, the comparison between intervention and control groups should not be made after one or two years but should be years after (at least after 3 – 4 years).

Contrary to United States and European countries that give health insurance incentives for companies with applied health intervention[6], companies in developing countries such as Indonesia are not rewarded with the same short term economic benefit. Therefore, food intervention program on workplaces must be planned carefully with special concern to cost estimation for employers to be attracted. This is also mentioned by a study[20] which underlines the need of understanding the nature of participants and the workplaces before conducting intervention.

CONCLUSION

Food interventions are effective for reducing weight. Not all food interventions are recommended though. Specific diet, consultation with nutritionist and food substitution can be developed into a particular intervention in a company. Contrary, food labelling, although considered low cost, cannot be advised yet as from three studies (one RCT included) none give the expected result. As short-term economic benefits for companies in developing countries are not exist, food intervention should be developed into a trial or a pilot study with small samples so that company resources are not wasted. Such study also useful to recognize potential factors which can inhibit the intervention and to see acceptance from workers especially in countries where such interventions are new. Overall, it can be concluded that characteristics of effective food intervention programs for reducing bodyweight on workplaces are consisted of three types of interventions (specific diet, counselling with nutritionist, or food substitution), tailored to the workplaces, accepted by workers, doable by companies or researchers and should be tested first with smaller samples so it will not become a burden to the company.

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