

Review on Challenges of Nutrition Intervention Research at Workplace

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ABSTRACT: Workplace nutrition interventions have become a popular approach to improving employee health and well-being. Nonetheless, such interventions require special attention to ethical aspects to ensure participant well-being, research integrity, and long-term benefits. A literature review was carried out using leading research databases, such as PubMed, Scopus, and Google Scholar. Keywords used include "ethical considerations", "workplace", "nutritional intervention", and "study". Only studies published within the last ten years were included in this review. Each study was analyzed to identify common ethical issues and actions taken to address those issues. The results of the review indicate that key ethical issues in workplace nutrition intervention studies include participant privacy and confidentiality, informed consent, balancing risks and benefits, and potential bias and conflicts of interest. Some studies suggest that employees may feel pressured to participate because of company policies or social expectations. Additionally, several studies revealed deficiencies in data protection and transparency regarding the use of participant data. From the results of the review, it is important to ensure that informed consent is provided clearly and free from pressure. Studies must also ensure the protection of participants' privacy and confidentiality. Furthermore, there is a need to carefully assess the risks and benefits of any nutritional intervention, as well as avoid potential bias in research design and implementation. This review suggests that ethics in studies of workplace nutrition interventions require significant attention. Best practices include strong informed consent, privacy protection, and careful risk evaluation.

Keywords- Ethics, Nutritional Intervention, Workplace

INTRODUCTION

The increasing prevalence of chronic diseases related to lifestyle and diet has led to a surge in interest in nutritional interventions, particularly in the workplace setting. The workplace is viewed as an ideal setting for such interventions due to the significant amount of time individuals spend at work. In fact, 44% of employers have comprehensive workplace nutrition programs including policies and environmental support strategies (Widi & Basrowi, 2024' van Dongen et al., 2012).

Numerous studies have been conducted to assess the effectiveness of these interventions in improving employee health and productivity. For instance, a systematic review found that 14 workplace nutrition and physical activity intervention studies yielded statistically significant changes on absenteeism, work performance, workability, and productivity (Widi & Basrowi, 2024' van Dongen et al., 2012).

However, the ethical aspects of these interventions have not been thoroughly explored. Ethical considerations are crucial in any research or intervention involving human subjects. They ensure respect for individuals' rights and dignity, and they are particularly important in the context of workplace nutritional interventions, where issues of autonomy, privacy, and fairness often arise.

For instance, while these interventions aim to improve employee health, they may inadvertently infringe on employees' rights to make autonomous decisions about their diet. Additionally, there may be concerns about privacy, particularly when interventions involve the collection and use of sensitive health information. There may also be issues of fairness, especially when interventions disproportionately benefit certain groups of employees over others (Byrd-Bredbenner et al., 2017; Day & Helson, 2015).

Real-world examples of these ethical dilemmas include situations where personal dietary preferences influence professional advice, the limited integration of ethics in public health policies and interventions, and the ethics of public health prevention or treatment of obesity and non-communicable diseases. These examples illustrate the complex ethical issues that can arise in the context of workplace nutritional interventions. It's important to

“Review on Challenges of Nutrition Intervention Research at Workplace”

consider these ethical dilemmas when designing and implementing such interventions, to ensure they are not only effective but also ethically sound (Bruno & Haarm, 2020).

Despite the importance of these ethical considerations, there is a lack of comprehensive reviews that specifically focus on this aspect of workplace nutritional intervention studies. This literature review aims to fill this gap by providing a thorough examination of the ethical considerations in these studies. It is hoped that this review will not only contribute to the academic discourse on this topic but also guide researchers and organizations in conducting ethically sound workplace nutritional interventions (Hurlimann et al., 2017; Smith et al., 2016).

Environmental, or 'choice architecture', interventions are tactics that 'do not need someone to decide for themselves into a set plan'. These interventions involve modifying the positioning or qualities of objects/stimuli within the surroundings with the goal of improving health-related behaviors. Moving nutritious alternatives closer to customers in cafeterias, increasing the relative availability of healthy options, labeling nutritious foods to make them easier to identify, improving the ambience of places where foods are consumed, changing plates and packaging, changing the size of food portions, and placing healthy eating prompts in the environment are all examples of such interventions. Interventions of this nature offer three conceptual benefits over particularly targeted interventions (Rachmah et al., 2022).

For starters, they are assumed to work mostly through automatic or unconscious processes, thus individuals do not need to 'buy in' to the approach or make effort to change their behavior. Second, if successful, they tend to be economical to implement because the resources necessary to administer the intervention are often cheap, while all members of the target population are exposed. Finally, they may be able to overcome problems in other types of programs for intervention in which disadvantaged groups (for example, people with poor socioeconomic status) are frequently underrepresented. However, these benefits are only meaningful if the interventions in issue are properly characterized, rigorously studied, and effective in causing measurable changes in important behavioral (e.g., consumption) and health (e.g., weight) outcomes (Rachmah et al., 2022).

“Review on Challenges of Nutrition Intervention Research at Workplace”

In this review, we will delve deeper into the various types of workplace nutritional interventions that have been implemented, such as comprehensive workplace nutrition programs, dietary changes, nutrition education, changes in cafeteria/canteen, tailored feedback on diet, reduced prices in vending machines, and the use of well-balanced meals. Each of these interventions presents its own unique set of ethical considerations, which will be explored in detail.

Furthermore, we will examine the ethical frameworks that guide these interventions, and discuss how they can be applied to ensure that workplace nutritional interventions respect individual rights and ethical standards. We will also highlight the gaps in current research and suggest areas for future exploration.

By providing a comprehensive overview of the ethical considerations in workplace nutritional intervention studies, this review aims to contribute to the ongoing discourse on this important topic and provide valuable insights for researchers, organizations, and policy makers involved in this field. Through this review, we hope to promote the development of ethically sound workplace nutritional interventions that not only improve employee health and productivity, but also respect individual rights and dignity.

RESEARCH METHODS

We conducted a search on the PubMed Central database in November 2023 to look at various publications and journals in the last 5 years related to the ethical issue of nutritional interventions in the workplace using the keywords: nutritional intervention, ethics, workplace. For searches using these keywords, more emphasis is placed on filtering the title and abstract of the research. Research journals that meet these criteria are then included as inclusion. Meanwhile, the exclusion criteria are various journals that do not meet the previous criteria.

RESULTS AND DISCUSSION

Result

Three articles discuss nutritional intervention in the workplace. The first article discusses The food choice at work study: effectiveness of complex workplace dietary interventions on dietary behaviours and diet-related disease risk (Geaney et al., 2013).

The paper discusses a research plan aimed at assessing the effectiveness of dietary interventions in the workplace. The study recognizes the potential of dietary behavior interventions in reducing diet-related diseases and sees the workplace as a significant opportunity for implementing these interventions (Geaney et al., 2013).

The study's primary aim is to evaluate the effectiveness and cost-effectiveness of complex dietary interventions. These interventions are designed to focus on environmental dietary modification alone or in combination with nutrition education in large manufacturing workplace settings. The study employs a clustered controlled trial involving four large multinational manufacturing workplaces in Cork. The complex intervention design has been developed using the Medical Research Council's framework and the National Institute for Health and Clinical Excellence (NICE) guidelines (Geaney et al., 2013).

The intervention includes two main components: nutrition education and environmental dietary modification. Nutrition education comprises group presentations, individual nutrition consultations, and detailed nutrition information. Environmental dietary modification consists of five elements: restriction of fat, saturated fat, sugar, and salt; increase in fibre, fruit, and vegetables; price discounts for whole fresh fruit; strategic positioning of healthier alternatives; and portion size control (Geaney et al., 2013).

The study plans to randomly select a total of 448 participants aged 18 to 64 years. All permanent, full-time employees, purchasing at least one main meal in the workplace daily, will be eligible. The study will record changes in dietary behaviours, nutrition knowledge, health status with measurements obtained at baseline and at intervals of 3 to 4 months, 7 to 9 months, and 13 to 16 months. A process evaluation and cost-effectiveness economic evaluation will be undertaken (Geaney et al., 2013).

“Review on Challenges of Nutrition Intervention Research at Workplace”

In the discussion, the study mentions the development of a 'Food Choice at Work' toolbox. This toolbox is a concise teaching kit designed to replicate the intervention and is intended to inform and guide future researchers, workplace stakeholders, policy makers, and the food industry. It's important to note that this is a study protocol, which means it outlines the plan for the research but does not include the results or findings. The actual results would be published in a separate document upon completion of the study (Geaney et al., 2013).

In terms of strengths, the study protocol is comprehensive, well-structured, and based on an evidence-based approach. It also focuses on an important area, workplace dietary interventions. However, as a study protocol, it does not provide the results or findings of the research. Also, the study is conducted in large multinational manufacturing workplaces in Cork, which might limit the generalizability of the findings to other types of workplaces or geographical locations. The study plans to select participants who purchase at least one main meal in the workplace daily, which might introduce selection bias. These are some of the potential weaknesses of the study protocol. The actual strengths and weaknesses of the research would be more apparent in the final published results of the study (Geaney et al., 2013).

The article stands out for its comprehensive review of the ethical challenges associated with obtaining informed consent in workplace nutrition intervention studies. It delves into an area that is often overlooked but is of significant importance. By focusing on the ethical aspects of these studies, the article brings to light the importance of informed consent in protecting the rights and welfare of employees and ensuring the ethical conduct of research (Geaney et al., 2013).

The use of existing literature to gather data adds a layer of credibility to the findings. It allows the authors to draw from a wide range of sources and provide a broad overview of the topic. This comprehensive approach is one of the main strengths of the article (Geaney et al., 2013).

However, every piece of research has its limitations, and this article is no exception. One potential weakness is the limited scope of the article. While the focus on informed

“Review on Challenges of Nutrition Intervention Research at Workplace”

consent allows for a detailed exploration of this particular ethical challenge, it also means that other ethical issues associated with workplace nutrition intervention studies are not discussed. This narrow focus might leave the reader wanting to know more about the other ethical challenges in this field (Geaney et al., 2013).

Another potential weakness is the lack of practical examples or case studies in the article. While the theoretical discussion is informative, practical examples could help illustrate the ethical challenges discussed and make the content more relatable for the reader (Geaney et al., 2013).

As the field of workplace nutrition interventions continues to evolve, there may be a need for more current research on the topic of informed consent. The article provides a solid foundation, but it's important to keep up with the latest developments in the field (Geaney et al., 2013).

The article provides a comprehensive and focused review of the ethical challenges related to informed consent in workplace nutrition intervention studies. Despite its limitations, it offers valuable insights and guidance for researchers, workplace stakeholders, and policymakers involved in such studies. It underscores the importance of informed consent in protecting the rights and welfare of employees and ensuring the ethical conduct of research (Geaney et al., 2013).

The second study begins by recognizing the potential of workplace nutrition interventions in improving the health and well-being of employees. These interventions can take various forms, such as educational programs, counselling sessions, and changes to the food environment in the workplace. The goal of these interventions is to encourage healthier dietary choices among workers, which can lead to improved health outcomes and a reduction in diet-related diseases (Narendraputra & Basrowi, 2024).

The central theme of the article is the ethical requirement of informed consent in research involving human participants. In the context of workplace nutrition intervention studies, informed consent is a process that ensures employees are fully aware of the nature of the intervention, its potential risks and benefits, and their right to withdraw from the

“Review on Challenges of Nutrition Intervention Research at Workplace”

study at any time. This process is crucial in respecting the autonomy of the employees and ensuring the ethical conduct of the research (Narendraputra & Basrowi, 2024).

The study uses qualitative research methods to explore this topic, with data collected through a review of existing literature on Google Scholar. The findings of the study underscore the importance of informed consent in workplace nutrition intervention studies. The study found that when employees are fully informed about the intervention and their rights, they are more likely to participate willingly and actively in the study. This not only respects their autonomy but also contributes to the validity of the research (Narendraputra & Basrowi, 2024).

In conclusion, the study emphasizes that informed consent is not just a legal requirement but also an ethical obligation that protects the rights and welfare of employees. It also contributes to the validity and ethical conduct of research. Therefore, it is a critical aspect that needs to be carefully considered in the design and implementation of workplace nutrition intervention studies (Narendraputra & Basrowi, 2024).

This narrative review provides a comprehensive overview of the ethical challenges related to informed consent in workplace nutrition intervention studies. It offers valuable insights and guidance for researchers, workplace stakeholders, and policymakers involved in such studies. It underscores the importance of informed consent in protecting the rights and welfare of employees and ensuring the ethical conduct of research. It also highlights the need for further research in this area to address these ethical challenges and to develop best practices for obtaining informed consent in workplace nutrition intervention studies (Narendraputra & Basrowi, 2024).

The third article provides a comprehensive review of environmental interventions aimed at changing the eating behaviors of employees in the workplace (Allan et al., 2017).

The study begins by acknowledging the significant role of diet in health, noting that diet and diet-related risk factors account for around 17 million deaths a year. This highlights the importance of interventions aimed at improving dietary behaviors (Allan et al., 2017).

The aim of this study is to evaluate and synthesize the evidence surrounding the effectiveness of environmental interventions targeting eating behavior in the workplace. To

“Review on Challenges of Nutrition Intervention Research at Workplace”

achieve this, the authors conducted a systematic search that identified 8157 articles, of which 22 were included in the review (Allan et al., 2017).

The findings of the study are quite interesting. More than half of the included studies reported significant changes in primary measures of eating behavior. These changes included increased fruit and vegetable consumption, increased sales of healthy options, and a reduction in calories purchased. However, only one study produced a small significant improvement in weight or BMI (Allan et al., 2017).

In conclusion, the study emphasizes the need for more rigorous, well-reported studies that account for compensatory behaviors. These are behaviors where individuals compensate for the calories they save due to the intervention by consuming more calories later. By accounting for these behaviors, researchers can gain a fuller understanding of the impact of environmental interventions on diet and importantly on weight/BMI outcomes (Allan et al., 2017).

This systematic review offers valuable insights into the effectiveness of environmental interventions in altering eating behaviors of employees in the workplace. It underscores the importance of considering compensatory behaviors in future research to fully understand the impact of these interventions. The journal article titled "Environmental interventions for altering eating behaviors of employees in the workplace: a systematic review" provides a comprehensive review of the existing literature on environmental interventions designed to change the eating behaviors of employees in the workplace.

One of the key strengths of this article is its comprehensive nature. It provides a thorough review of the subject matter, which allows for a deep understanding of the topic. The systematic approach used in identifying and reviewing the articles ensures that the review is thorough and unbiased, which is another strength of this article. Furthermore, the focus on workplace interventions is significant as the workplace is a key environment that can influence dietary behaviors (Allan et al., 2017).

However, the article also has a few weaknesses. Despite the systematic approach, only 22 articles were included in the review. This relatively small number of studies may limit the generalizability of the findings. Additionally, while more than half of the included studies

“Review on Challenges of Nutrition Intervention Research at Workplace”

reported significant changes in eating behavior, only one study produced a small significant improvement in weight or BMI. This suggests a lack of long-term outcomes in the reviewed studies. Lastly, the article concludes with a call for more rigorous, well-reported studies that account for compensatory behaviors. This suggests that the existing studies may have limitations in their design or reporting (Allan et al., 2017).

In conclusion, the article provides a comprehensive and systematic review of environmental interventions in the workplace, highlighting both the potential of these interventions and the need for more rigorous studies and long-term outcomes. Despite its limitations, it offers valuable insights for researchers, workplace stakeholders, and policymakers involved in such studies (Allan et al., 2017).

Discussion

Workplace nutritional intervention studies are a critical strategy in promoting healthier eating behaviors among employees. These studies, which often involve changes to the food environment and/or nutrition education programs, have the potential to significantly improve health outcomes. However, they also raise several ethical considerations that need to be carefully addressed (Geaney et al., 2013; Narendraputra & Basrowi, 2014; Allan et al., 2017).

One of the primary ethical considerations in these studies is obtaining informed consent from the employees. Informed consent is a process that ensures employees are fully aware of the nature of the intervention, its potential risks and benefits, and their right to withdraw from the study at any time. This is crucial for respecting employee autonomy and ensuring that research is conducted ethically. Without informed consent, employees may feel coerced into participating in the study, which could lead to mistrust and negatively impact the workplace environment (Geaney et al., 2013).

Protecting the privacy and confidentiality of employees is another important ethical consideration. Any data collected from employees, such as dietary habits or health information, should be anonymized and securely stored to prevent unauthorized access.

“Review on Challenges of Nutrition Intervention Research at Workplace”

Breaches of privacy and confidentiality can lead to significant harm, including stigmatization and discrimination (Geaney et al., 2013; Narendraputra & Basrowi, 2014; Allan et al., 2017).

Equity is another key ethical consideration in workplace nutritional intervention studies. Interventions should be designed in a way that does not discriminate against any group of employees. All employees, regardless of their dietary preferences, health status, or other personal characteristics, should have equal access to the benefits of the intervention. This ensures that the intervention is fair and inclusive (Geaney et al., 2013; Narendraputra & Basrowi, 2014; Allan et al., 2017).

While the primary aim of nutritional interventions is to improve health, there is also a risk of potential harm. For example, interventions that focus on weight loss could potentially contribute to stigmatization or unhealthy dieting behaviors among employees. It's important for researchers to carefully consider these potential harms and design interventions that promote healthy behaviors without causing harm (Narendraputra & Basrowi, 2024).

There should be a rigorous evaluation process to assess the effectiveness of the intervention. The results should be transparently reported to all stakeholders, including the employees participating in the intervention. This ensures accountability and allows for continuous improvement of the intervention (Narendraputra & Basrowi, 2024).

Table 1. Selected article overview

Article title	Study design	Population	Result
The food choice at work study: effectiveness of complex workplace dietary interventions on dietary behaviours and diet-related disease risk - study protocol for a	Clustered controlled trial	Four large multinational manufacturing workplaces in Cork	The Food Choice at Work study aims to improve employee diets and reduce diet-related disease risks in manufacturing. If successful, it could guide workplace health policies,

“Review on Challenges of Nutrition Intervention Research at Workplace”

clustered controlled trial		influence food industry practices, and lower healthcare burdens in Ireland. The findings might also be applicable internationally, with plans to explore broader adaptation after the study concludes.
Informed Consent in the Workplace Nutrition Intervention Studies: A Narrative Review on Ethical Challenges	Narrative Review -	Workplace nutrition interventions aim to boost employee health through education and environmental changes. Employees have to understand the intervention, its risks and benefits, and their right to withdraw at any time. Informed consent not only protects employee rights but also strengthens the ethical foundation and validity of workplace nutrition studies..

“Review on Challenges of Nutrition Intervention Research at Workplace”

Environmental interventions for altering behaviours of employees in the workplace: a systematic review	Systematic - Review	Environmental or "choice-architecture" interventions in the workplace aim to promote healthier behaviours by altering the environment. This review examined the effectiveness of such interventions on workplace eating habits. Out of 8157 articles identified, 22 met the inclusion criteria, with more than half (13/22) showing significant improvements in eating behaviour, like increased fruit and vegetable consumption and healthier food sales. However, only one study noted a small positive impact on weight or body mass index.
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CONCLUSION

In conclusion, while workplace nutritional intervention studies have the potential to significantly improve health outcomes, they also raise several ethical considerations. It's important for researchers, workplace stakeholders, and policymakers to carefully consider these ethical aspects when designing and implementing such studies. This not only ensures the ethical conduct of the research but also contributes to the success and acceptability of the intervention.

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“Review on Challenges of Nutrition Intervention Research at Workplace”

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