# DESIGNING AND EVALUATING A NEED-BASED EMPLOYEE WELLNESS PROGRAM

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## ABSTRACT

DESIGNING AND EVALUATING A NEED-BASED EMPLOYEE WELLNESS PROGRAM

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The purpose of this study was to design and evaluate a need-based employee wellness program that integrates new media, with a focus on the social-ecological context. To this end, a mixed-methods-research design was used in two consecutive studies. In Study-1, instruments measuring technopark employees' lifestyle behaviors and work productivity were applied to 405 technopark employees in six different Turkish cities. Data were analyzed by using multiple linear regression and two-step cluster analysis. Regression findings indicated that physical activity, nutrition, and stress management behaviors statistically predict work performance in technopark employees ($p$<0.05). The two-step cluster analysis showed four motivational clusters, including *avoidance* (no intention to change), *intention* (have the intention but no action), *participation* (recently have started), and *maintenance* (become a habit). Based on the Study-1 findings, a seven-week employee wellness program was developed and applied (Study-2) to *intention* cluster participants in pretest-posttest experimental design. The experimental group (n=32) received the intervention, and the control group (n=29) did not. At the end of the study, interviews with 10 experimental group participants were conducted. The quantitative and qualitative data were analyzed with mixed design multivariate analysis of variance and deductive thematic analysis, respectively. Results showed a significant increase in physical

activity, nutrition, health literacy, and work productivity in the experimental group ($p$<0.05). The qualitative analysis described the changes in the participants' physical activity, nutrition, work and office behaviors, and experiences in the intervention. In conclusion, the use of the designed need-based employee wellness program is recommended to support technopark employees' overall wellness.

**Keywords:** Lifestyle behaviours, physical activity, technopark employees, new media, work productivity

# ÖZ


ÇALIŞAN İHTİYAÇLARI TEMELLİ ZİNDELİK PROGRAMININ TASARLANMASI VE DEĞERLENDİRİLMESİ

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Bu çalışmanın amacı, sosyal-ekolojik bağlama odaklanarak yeni medyayı bütünleştiren, ihtiyaç temelli bir çalışan zindeliği programını tasarlamak ve değerlendirmektir. Bu amaçla, karma yöntem araştırma deseni ardışık iki çalışmada kullanılmıştır. Birinci çalışmada Türkiye'nin altı farklı ilinde yerleşik 405 teknopark çalışanına sağlıklı yaşam davranışlarını ve iş üretkenliğini ölçen araçlar uygulanmıştır. Veriler çoklu doğrusal regresyon ve iki aşamalı kümeleme analizi kullanılarak analiz edilmiştir. Regresyon analizi teknokent çalışanlarında fiziksel aktivite, beslenme ve stres yönetimi davranışlarının iş performansını istatistiksel olarak öngördüğünü göstermiştir ($p$<0.05). İki aşamalı kümeleme analizinde ise *kaçınma profili* (olumlu yaşam alışkanlıkları geliştirmeye niyeti olmayan), *niyet profili* (niyeti olan ancak harekete geçmeyen), *katılım profili* (değişime yeni başlamış) ve *devamlılık profili* (alışkanlığa çevirmiş) olan dört motivasyonel alt küme saptanmıştır. Birinci çalışmanın bulgularını temel alarak *niyet profili* grubuna yedi haftalık bir çalışan zindeliği programı geliştirilmiş (İkinci çalışma) ve ön test, son test deneysel tasarım kullanılarak uygulanmıştır. Program deney grubuna (n=32) uygulanırken, kontrol grubuna (n=29) herhangi bir müdahele yapılmamıştır. Çalışma sonunda deney

grubundan 10 katılımcı ile mülakatlar yapılmıştır. Nicel ve nitel veriler sırasıyla karma desenli çoklu değişkenli varyans analizi ve tümdengelimli tematik analiz ile incelenmiştir. Sonuçlar çalışan zindeliği programının fiziksel aktivite, beslenme, sağlık okuryazarlığı ve iş verimliliği üzerinde istatistiksel olarak anlamlı bir etkisi olduğunu göstermiştir ($p$<0.05). Nitel analizler katılımcıların fiziksel aktivite, beslenme, iş ve ofis davranışları ve deneyimlerindeki değişiklikleri tanımlamıştır. Sonuç olarak tasarlanan programın teknokent çalışanlarının zindeliklerini desteklemek için kullanılması önerilmiştir.

**Anahtar Sözcükler:** Sağlıklı yaşam davranışları, fiziksel aktivite, teknokent çalışanları, yeni medya, iş performansı

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## LIST OF ABBREVIATIONS

α: Alpha

M: Mean

$\eta^2$: Eta Squared

V: Pillai-Bartlett Trace

df: Degrees of Freedom

PA: Physical Activity

RQ: Research Question

SD: Standard Deviation

SE: Standard Error

BMI: Body Mass Index

MET: Metabolic Equivalents

WHO: World Health Organization

OECD: Organisation for Economic Co-operation and Development

SEM: Social-Ecological Model

# CHAPTER 1

# INTRODUCTION

## 1.1. Background and Statement of the Problem

In an increasingly fast-paced business environment, employees face enormous challenges, and the growing demands for increased productivity result in the emergence of an unhealthy workforce. Moreover, advancements in technology and the emergence of new jobs have increased employees' duties and necessitated higher degrees of autonomy than ever before (Appelbaum, 2000). Organisations have now recognised that employee productivity is a crucial asset for the business.

With the Covid-19 Pandemic reaching dangerous dimensions, states have taken various measures to protect the public. Because the most effective strategies for coping have been curfew and social isolation, many employees have not been able to commute to their workplaces for a long time. The remote work, or work-from-home method, one of the flexible working models, has gained importance in protecting employee health and public health (Tuna & Türkmendağ, 2020). Thus, one of the prominent issues during the pandemic period, especially for technopark employees, has been whether one can carry out their work independently from the workplace, that is, the ability to work remotely or from home rather than on a worksite. While this practice has provided a lot of flexibility, it has also led to some personal and professional concerns among employees, such as loss of perception of time, increased workload and reduced time, psychological burnout, and increased job stress. Other issues include conflicts among employees and physical problems due to a sedentary and unhealthy lifestyle (Mutaf et al., 2021).

The fast-moving business environment and the job characteristics that entail are the main factors for poor lifestyle behaviour in employees, which in turn results in decreased work productivity. Loss of productivity has been examined as an output of

two concepts: absenteeism and presenteeism. Absenteeism refers to the inability of the employee to be at work due to a variety of reasons, such as sickness, family emergency, lack of babysitter, or other related circumstances. In presenteeism, the employee is present at work but cannot accomplish what they are meant to be doing. Certain factors have been determined to influence absenteeism and presenteeism. These factors are job characteristics and work environment (e.g., stress, ergonomics, and office architecture), personal factors (e.g., lifestyle behaviours related to obesity, smoking, and malnutrition), and health threats (chronic conditions and mental health) (Hafner et al., 2015).

Sociology, public health, epidemiology, education, psychology, and anthropology are just a few disciplines investigating health-promoting activities. Social support, stress management, exercise behaviour, stress management, and life appreciation are examples of health-promoting behaviours. The various health-promoting activities include health-related and health-directed actions, self-care behaviours, health-care usage habits, nutritional behaviours, substance-use behaviours, sexual behaviours, and irresponsible behaviours (Karen Glanz et al., 2008). Kasl and Cobb (1966) categorised health-promoting activities into three groups, based on their purposes: preventative health behaviours, such as wearing a helmet while riding a bike, disease behaviour, such as finding a cure, and sick-role activity, such as receiving therapy for treatment.

When discussing the different aspects of health, Chen (2003) looked at six distinct health-promoting practices: nutrition, exercise, health responsibility, life appreciation, stress management, and social support. Undernutrition behaviour, Chen et al. (2003) included eating well, selecting nutritious meals, drinking plenty of water, and following meal schedules. Exercise behaviours consist of people's engagement in physical activity and exercise routines. Visiting a doctor or a health professional for health issues and maintaining personal cleanliness are examples of health responsibility activities, while being optimistic and executing actions on a positive sensation constitute life appreciation behaviours. Stress management entails being aware of one's emotional condition, assessing the sources of stress in one's life, setting priorities, and managing stress-inducing responsibilities. Finally, social support encompasses sharing sentiments and emotions with others and forming relationships (Chen et al., 2003).

Well-established instruments for productivity measurement must become more available for worker productivity to become a more familiar and predictable consequence of health promotion activities. Objective measures, such as counting sick days, or productivity-measurement techniques used in manufacturing environments, such as piece rates or time and motion studies, can help determine the statistical relationship between health risks and conditions. Still, they are often challenging to obtain and not available uniformly across industries (Prasad et al., 2004b). Furthermore, several factors influence productivity levels, including market pressures, seasonality, and business policy. One other factor is health (Boles et al., 2004).

The accounts of absenteeism, presenteeism, and hence loss of productivity vary according to occupation groups and their specific characteristics. Therefore, it is appropriate to examine the issue from this perspective. The economic repercussions of productivity loss are the highest among white-collar occupations. A white-collar employee executes professional, managerial, or administrative work in an office or organisational setting (Van Horn & Schaffner, 2003). One group of white-collar workers includes technopark employees, who are the present study's focus.

Studies conducted on white-collars have identified a range of problems associated with poor lifestyle behaviours (Doi et al., 2003; Lynch et al., 1997). These include exhaustion, neck pain, shoulder pain, headache, stomach issues, low back pain, and sleep problems, identified as the most commonly reported symptoms that result in job loss among the white collars working in the information technology industry (Hemingway et al., 1997). Poor lifestyle habits also contribute to lower fitness and higher health risk issues. Besides, poor lifestyle practices lead to psychological problems that have been observed to culminate in the absence of an average of 6.7 days per month and unmeasured loss of presence (Kessler et al., 2001).

The most significant factor in lifestyle behaviours is health literacy (Stormacq et al., 2019; Uysal et al., 2020). Health literacy involves a wide range of skills that improve one's ability to employ strategies for healthier lives. These skills include reading, writing, listening, speaking, numeracy, critical analysis, and communication and interaction skills (Nutbeam, 2008). Research over the past decade has shown that health literacy skills predict health status more strongly than age, salary, job status, level of education, and race or ethnicity (Kickbusch, 2008; Speros, 2005; Wilson, 2003). Therefore, health promotion programs should be designed with a focus on

health literacy. Health promotion initiatives based on health literacy have been shown to generate healthier adults (Manganello, 2008).

Among the many models available for the development of health literacy, the social-ecological model for social sciences constructed by Urie Bronfenbrenner is highly effective. Bronfenbrenner (1994) states that people are affected by the interlocking of external influences linked to physical and social environments. Therefore, any model that aims to develop health literacy should consider these environmental influences. The social-ecological model adopted by many health promotion initiatives has championed the notion that health interventions must address several levels to encourage positive action and improvement (Marshall & Altpeter, 2005; McCormack et al., 2017). These interventions need to consider and discuss the intrapersonal (individual), interpersonal (social environment), organisational (physical environment), and macro-politics layers that intersect to influence health and well-being. The multi-level impact interventions suggested by the social-ecological perspective are effective because the interactive nature of the model enables mutual enhancement of each layer and leads to more significant and more sustainable results than interventions targeting just one layer of influence.

The challenges organisations face in achieving optimal health and cost-effective benefits include designing, implementing, and evaluating them (Pelletier, 2005). One way to apply multi-level interventions that focus on health literacy is through employee wellness programs. With organisations increasingly identifying wellness programs as a priority, this issue of program planning has become even more critical (M. Ryan et al., 2008). It is suggested that a personalised, easy to reach, and flextime approach would help future research in employee wellness (Ammendolia et al., 2016).

A study conducted by O'Mara (2013) indicates that large, generic initiatives and campaigns for health promotion frequently struggle to engage diverse communities because their health communication methods neglect the health literacy concepts and specific culture and language of segmented populations. O'Mara (2013) suggests several essential concepts of health literacy that could be further applied to enhance health promotion and communication: understanding the audience, understanding the intent of health messages, and designing new media messages targeted to diverse audiences.

Employee wellness programs increase job satisfaction, reduce the associated medical costs, and boost productivity (Baicker et al., 2010; Parks & Steelman, 2008). The techniques used in health promotion initiatives for employees can impact social norms, increase incentives for health-promoting activities, create health-promoting policies, encourage healthier behaviours, such as improvements in dietary and physical activity, and enhance employees' health literacy and motivation skills (Malik et al., 2014). Developing an employee wellness program requires exploring problems that cause work loss and addressing the issues identified.

## 1.2. Significance of the Study

Berry, Mirabito, and Baun (2010) define employee wellness programs as employer-supported initiatives designed to help employees and their families adopt and maintain behaviours that decrease health risks and increase their quality of life, enhancing their effectiveness and thus benefiting the company profit. These programs involve methods to support employees' mental, physical, and emotional health, thereby ensuring a productive workforce (Anderzén & Arnetz, 2005). With an increasing number of organisations adopting employee wellness programs worldwide, the big issue is the precise quantification of the impact of such programs on productivity (employer perspective) and health improvements (employee perspective) (Blake & Lloyd, 2008). The significance of the current study is that the outcomes are investigated according to both the employer perspective (employee productivity) and the employee perspective (health literacy and lifestyle behaviours).

An effective employee wellness program should target various lifestyle behaviours in a holistic approach (Silcox, 2016). The program should address employees' physical, emotional, social, spiritual, financial, and intellectual wellness. Several studies have shown the effectiveness of a holistic approach. One strength of the current study is that it focuses on physical activity, nutrition, and stress management behaviours and aims to boost employee wellness.

Understanding the obstacles and facilitators to employee wellness programs allows the researcher to determine what is and is not in implementation. One of the most challenging barriers to employee wellness programs is staff time restraints, a universal concern, with problems relating to shifting work, scheduling, and work conflicts. The current study addresses this issue by intervening in employees' health

literacy via new media. It uses asynchronous media, such as videos on YouTube and infographics on Instagram, which allows the employee to determine the time to access them.

### 1.3. Research Questions

The scope of this study is to design and evaluate a need-based employee wellness program that integrates new media, with a central focus on the social-ecological context. There are mainly three investigations that go hand in hand: (i) exploring the lifestyle behaviours, health, and work productivity needs of technopark employees, (ii) measuring the effects of the need-based employee wellness program on health literacy and work productivity of technopark employees, and (iii) examining the technopark employees' experiences in the need-based employee wellness program.

The study answers the following research questions:

(i) examining the lifestyle behaviours, health, and work productivity needs of technopark employees

*Research Question 1: Is there a relationship between technopark employees' lifestyle behaviours and their work productivity?*

*Research Question 2: Are there any statistically observed clusters regarding lifestyle behaviours of technopark employees? If yes, do the clusters statistically differ from the groups explored by exercise stages of change?*

(ii) measuring the effects of the need-based employee wellness program on health literacy and work productivity of technopark employees

*Research Question 3: Does the employee wellness intervention affect technopark employees' physical activity behaviour? If yes, what kind of changes occurred in their physical activity behaviour?*

*Research Question 4: Does the employee wellness intervention affect technopark employees' stress management behaviour? If yes, what kind of changes occurred in their stress management behaviour?*

*Research Question 5: Does the employee wellness intervention affect technopark employees' nutrition behaviour? If yes, what kind of changes occurred in their nutrition behaviour?*

*Research Question 6: Does the employee wellness intervention affect technopark employees' health literacy?*
*Research Question 7: Does the employee wellness intervention affect technopark employees' work productivity?*
*Research Question 8: How does the employee wellness intervention affect technopark employees' work and office health behaviours?*

(iii) examining the technopark employees' experiences in the need-based employee wellness program.
*Research Question 9: How do the participants describe their experience with the program?*
*Research Question 10: What is the economic contribution of the program regarding the participants' improvement in work productivity?*

## 1.4. Definition of Terms and Concepts

*Health Literacy:* Health literacy involves using a wide range of skills that improve people's ability to employ strategies to live healthier lives. These skills include reading, writing, listening, speaking, numeracy, critical analysis, and communication and interaction skills (Nutbeam, 2008).

*Health-Related Physical Fitness:* Health-related physical fitness is defined as the ability to meet life's demands and still have enough energy to respond to unplanned events (J. S. Greenberg et al., 2004). There are five physical fitness components: cardiorespiratory endurance, flexibility, muscular strength, muscular endurance, and body composition.

*Lifestyle Behaviours*: Healthy Lifestyle Behaviour Scale-II defines six health-promoting behaviours; health responsibility, physical activity, nutrition, mental development, interpersonal relationships, and stress management (Walker & Hill-Polerecky, 1996).

*New Media:* For the advantage of non-community readers, new media combines internet-accessible digital text, photos, and video with web linkages, creative

engagement of contributors, interactive feedback of users, and construction of a participant community of editors and benefactors (Manovich, 2003).

*Technopark:* The technopark is defined as "[a] specialised organisation whose major goal is to improve the wealth of its community by supporting the culture of innovation and the competitiveness of its connected enterprises and knowledge-based institutions. A science park stimulates and manages the flow of knowledge and technology among universities, R&D institutions, companies, and markets to achieve these goals; it facilitates the creation and growth of innovation-based companies through incubation and spin-off processes, and it provides other value-added services in addition to high-quality space and facilities to achieve these goals." (IASP, 2002)

*Work Productivity:* Work productivity measures an employee's work output and quality.

- Absenteeism: Lost time when an employee is not present at work.
- Presenteeism: Any lost workplace productivity when an employee is physically present but not producing their standard work quality or quantity.

# CHAPTER 2

# LITERATURE REVIEW

This chapter aims to review the literature related to the study. First, the concepts relating to wellness and health are explained. In addition to these concepts, the lifestyle behaviours that are the focus of the study are defined and explained. Health promotion is described in terms of its evolution, the different approaches towards it, and its place in workplace programs. Since one of the main topics of the present study is health literacy, the concept and skills are briefly explained. After an in-depth discussion on the social-ecological model, which provides the framework for the study, the social-ecological context of health literacy is explained. This is followed by a description of the technopark work environment and technopark employees. Then, the work productivity of the technopark employees is discussed in terms of absenteeism and presenteeism. Finally, the concept of new media, the primary tool employed in the intervention, is defined, and its role in health literacy is outlined.

## 2.1. Concepts of Health of Terms and Concepts

### 2.1.1. Health

The term *health* originates from the Old English word *hoelth*, which means the condition of being sound and entire and refers to the body in general. The ancient Greek physician Hippocrates used observation and inquiry to determine health rather than considering health as a heavenly gift. He and other physicians of his period thought that health was a state of balance or equilibrium and that an imbalance produced sickness among the body's components (Awofeso, 2005). Hippocrates' ideas focused chiefly on prevention. He advocated for *balance* via practices like hygiene, exercise, healthy eating, and overall moderation, ideas that are still relevant today.

Over time, the definition of health changed. In keeping with the biological approach, early descriptions of health focused on the body's capacity to function; health was viewed as a condition of normal function that might be interrupted by sickness from time to time. Such an approach to health regarded it as a condition defined by anatomic, physiologic, and psychological integrity; a capacity to execute individually valued family, job, and community duties; and an ability to cope with physical, biological, psychological, and social stress (Stokes et al., 1982). In 1948, the World Health Organization (WHO) offered a definition that went beyond earlier definitions, relating health to well-being in terms of "physical, mental, and social well-being, and not merely the absence of disease and infirmity" (WHO, 1958). Although some praised this concept as creative, it was also attacked for being imprecise and overly broad and for not being interpreted as quantifiable. It was dismissed as an impractical ideal for a long time, with most health debates reverting to the biomedical model's pragmatism.

The evolution in definitions of health occurred alongside the shift from viewing sickness as a condition to thinking of it as a process. During the rise of the health promotion movement in the 1980s, WHO once again played a key role. WHO established a new way of thinking about health; it was now regarded not as a static condition but as a dynamic idea of resilience or as a resource for living. The WHO (1986) revised the definition of health as a positive term that emphasizes social and personal resources as well as physical capacities. It is a resource for everyday life, not the goal of living. In short, health was defined as one's ability to maintain equilibrium and rebound from adversity.

### 2.1.1. Wellness

The term *wellness* has various definitions. Monroe (2006) defines wellness as the process of optimal well-being that focuses on maximizing the individual's potential regarding physical, intellectual, emotional, social, spiritual, and environmental wellness. It is also defined as the active process by which a person becomes aware of his or her surroundings and makes decisions to live a better life (Hettler, 1976).

A fuller definition of the concept of wellness requires a holistic approach covering all of its dimensions. According to the National Wellness Institute, wellness has six dimensions (Hettler, 1976): physical, emotional, social, intellectual, spiritual,

and environmental. *Physical wellness* refers to a person's overall physical state and functioning, including visible and invisible characteristics such as body composition, blood pressure, and bone density. Physical wellbeing is reflected in one's capacity to complete everyday tasks and care for oneself throughout their life. *Emotional wellness* is defined as the capacity to understand and express one's emotions in healthy and acceptable ways while going about daily activities. Accepting one's feelings, keeping track of one's emotional reactions, and understanding one's strengths and limits are all part of it. It also shows itself in coping with, handling, and adjusting to everyday pressures. The ability to form and sustain pleasant, healthy, and rewarding interpersonal connections and good support networks is a measure of *social wellness*. This includes developing relationships with others both inside and beyond one's family, and the capability to socially adapt to the greater community in which one lives. Social wellness requires the ability to communicate effectively and the development of a capacity for closeness. *Intellectual wellness* is defined as the capacity to logically handle life's challenges and make decisions about all aspects of wellness requires an active and engaged mind. People with a high degree of intellectual health are innovative, open to new ideas, and eager to acquire new skills. They are always looking for new methods to challenge their thoughts and expand their intellectual horizons. They can utilize critical thinking skills to develop, evaluate, and use the information to make intelligent judgments. *Spiritual wellness* refers to a collection of values, beliefs, or principles that give life meaning and purpose while guiding one's decisions and activities. Spiritual wellness is defined by compassion, forgiveness, altruism, tolerance, and the ability for love. *Environmental wellness* acknowledges the link between health and the liveability of the environment. Individuals may make efforts to ensure that their lifestyle is environmentally-friendly and contribute to creating sustainable human and natural communities (Liguori & Carroll-Cobb, 2013).

### 2.1.2. Difference Between the Concepts of Health and Wellness

Jonas (2010) states that the concepts of health and wellness are different and explains that health is a state of being that may be measured at any time and evolves throughout time. At any given period, wellness is a process of attempting to reach optimum health. The distinctions between health and wellness could be explained from different perspectives. Health is more closely associated with western medicine, while

wellness is more closely related to complementary and alternative medicine, including eastern medicine such as Ayurveda. The significant difference between health and wellness is that health encompasses mental, bodily, and social well-being. In contrast, wellness takes a step further, emphasizing mental, physical, social, vocational, intellectual, and emotional wellness. Here mental well-being refers to the absence of stress or other mental illnesses. Wellness, on the other hand, emphasizes mindfulness and mind-training. Wellness is a practical approach to achieving health, whereas health is a state of being. The distinction between health and wellness is that health is the ultimate objective that may be attained if a person is healthy and disease-free, whereas wellness is the outcome of health. Obviously, health and wellness are two distinct yet closely related health concepts. The major difference between health and wellness is that the former relates to physical, mental, and social well-being while the latter refers to a healthy way of life that must be followed to achieve excellent health. As a result, the objective of wellness is to improve a person's entire well-being.

### 2.2. Lifestyle Behaviours

Lifestyle behaviours are derived from individual values, attitudes, knowledge, and norms established by the larger cultural, social, and economic environment (Saint Onge & Krueger, 2017). An individual's living circumstances influence the possibilities and restrictions of adopting particular lifestyle behaviours. In this theoretical framework, lifestyle behaviours are intimately tied to sociological theories of symbolic differentiation, in which an individual's everyday actions are viewed as dictated by their social status (Bourdieu, 1987).

The variables recognized as healthy lifestyle behaviours, such as dietary habits, physical activity, smoking, and drinking alcohol, and behaviours that have a major impact on an individual's BMI, such as food choices and eating practices, physical activity, TV viewing, and sleep, overlap significantly (Cockerham, 2005; VanWormer et al., 2018). According to health lifestyle theories, concentrating on a single or limited collection of behaviours does not adequately reflect the complexity of the social dynamics that drive such behaviours. Furthermore, several lifestyle behaviours are linked to one another, and certain habits may help or hinder one another (Filozof et al., 2004). Chen et al. (2003) defined six different lifestyle behaviours that comprise the

dimensions of health. These lifestyle behaviours include exercise, nutrition, stress management, health responsibility, life appreciation, and social support.

### 2.2.1. Physical Activity Behaviour

Physical activity and exercise are phrases that are used interchangeably. Physical activity is any body movement caused by muscles that expend energy, such as housework or climbing stairs. It embodies exercise, but exercise is a scheduled physical activity that is systematic and repeated (Caspersen et al., 1985).

According to WHO, physical inactivity is one of the leading causes of early mortality in industrialized nations and is linked to the development of numerous chronic illnesses such as cancer, cardiovascular disease, diabetes, and obesity (Edwards & Tsouros, 2008). Even though the health benefits of physical activity are well-known and well-established, few people follow current physical activity recommendations (Blair & Morris, 2009). It is now widely recognized that modifying difficult habits, such as physical activity habits, poses significant challenges for individuals (Sallis et al., 2006). Although early efforts to promote PA were essentially atheoretical, treatments lacked suitable theoretical grounding and did not allow for later replication. Because of this paradigm change, researchers focused on the causes and correlations of PA, particularly the psychosocial effects (Sutton, 2008). Since then, the literature on PA has mainly been dominated by ideas of behavioural change that originated in social psychology.

Within the last decade, it has become apparent that altering behaviour is a complicated and diverse phenomenon influenced at various levels. Therefore, multilevel treatments focusing on persons, social settings, physical environments, and policies have been recommended in order to accomplish long-term behavioural changes (Sallis et al., 2015). Researchers have lately embraced using social ecology models of health behaviour to guide treatments since they focus on the individual, societal, policy, and environmental aspects (Stokols, 2000). Once again, it appears that the PA domain is on the verge of another paradigm change.

### 2.2.2. Nutrition Behaviour

Nutrition behaviour is defined as the total of all planned, spontaneous, or habitual acts taken to obtain, prepare, and consume food, as well as behaviours connected to storage and clearance of food. In this instance, *nutrition behaviour* refers to influential variables and health, environmental, social, and economic ramifications across the whole product chain from farmer to consumer (Leonhäuser & Meier-Gräwe, 2009; Oltersdorf, 1984).

There has been a rise in published research that employs theoretical models to analyse nutrition behaviour during the last two decades (Glanz, 2001). Several studies have looked at the factors that influence eating behaviour. Longitudinal research and clinical trials using stages of change and the social-ecology model to examine treatments for nutrition-related behaviour change are becoming more common in the literature (Artinian et al., 2010; Lee et al., 2004).

Given the prevalence of overnutrition in industrialized nations, greater emphasis is being placed on improving the health-promoting characteristics of communities and social environments while lowering the availability of high-calorie, high-fat food options (Karen Glanz et al., 2005).

### 2.2.3. Stress Management Behaviour

Stress management refers to various treatments and psychotherapies to reduce a person's stress level, especially chronic stress, to improve everyday functioning (Schafer, 1996). Stress causes a wide range of physical and mental symptoms, which vary depending on the particular circumstances of each individual. Deterioration in physical health and depression are examples of these circumstances (Sutherland & Cooper, 2000). In today's culture, stress management is one of the keys to a happy and prosperous existence. Life is full of pressures that can be challenging to manage, but stress management offers a variety of options for coping with anxiety and maintaining general well-being.

There are three types of stress. *Acute stress* is the most prevalent type of stress experienced by everyone. Acute stress is induced by stressors in the recent past or the near future. The stress of this nature is frequently misunderstood as having a negative connotation. While this is true in some cases, it is also beneficial to have some acute

stress in one's life. Like any other type of exercise, running is regarded as a high-intensity stressor. Some extreme or exhilarating events, such as riding a roller coaster, might cause a lot of tension, but they are generally a pleasant experience. Because acute stress is short-term stress, it does not have enough time to inflict the long-term harm that prolonged stress has (McGonagle & Kessler, 1990).

There are many periods of acute stress, known as *episodic acute stress*, making the individual feel like life is in disarray—the individual moves from one catastrophe to the next. Certain vocations, such as law enforcement or firefighting, may expose you to high-stress situations daily. Episodic acute stress, like acute stress, can harm physical and mental health (Stuart, 2004).

*Chronic stress* is different from acute stress. It has a wear-and-tear impact on people that, if left unchecked, can turn into a significant health hazard. Chronic stress can impair memory, impair spatial perception, and reduce the desire to eat. The severity of the condition differs from one individual to the next, and sex differences may also play a role. Women may tolerate higher stress levels for more extended periods than men without developing maladaptive alterations. Men can handle shorter periods of stress better than women, but once they cross a certain threshold, their chances of developing mental disorders skyrocket (Bowman et al., 2003).

Regarding stress in the workplace, it is critical to manage stress in order to maintain job performance and relationships with co-workers and bosses. Changing the work environment lowers job stress for some employees. Some stress can be reduced by making the workplace less competitive among employees. However, work stress does not necessarily have to be perceived negatively. When stress is managed correctly, it may help employees focus and be more productive. According to the Yerkes-Dodson Law, stress is good for human functioning up to a degree (Corbett, 2015; Yerkes & Dodson, 1908). People who have deficient stress levels may feel under-stimulated and inert, while those stressed at excessively high levels may feel overwhelmed, nervous, and irritated. In short, finding the right degree of stress is crucial.

Organizational stress levels are influenced by intrapersonal elements such as personality, temperament, coping and thinking styles, and external factors such as work characteristics and surroundings. Both aspects must be well-managed. Employees' perceptions of company commitment, that is, how they conceptualize

their reasons for staying in the organization as either affective, continuance, or normative reasons, are possible causes of workplace pressures (Wykes, 1998). Affective commitment to the organization is ideal when an employee strongly identifies with the firm's values and culture. While this is not a direct indicator of an employee's stress levels, genuine interest and happiness in the employee's work and work relationships put the person in a solid position to deal with stress effectively. Employees who stay in a company for the sake of continuity do so after considering the benefits and drawbacks and deciding that the opportunity cost of quitting is too great. Employees in this group may be under moderate stress since their reasons for remaining are based on external rather than internal motivation. Employees who stay for normative reasons, on the other hand, are more likely to be stressed since they are the ones who stay out of responsibility and duty (Ateş & İhtiyaroğlu, 2019).

Employers can offer stress management programs, such as counselling, communication programs, and a more flexible work schedule to help employees handle stress (Cooper & Cartwright, 1994; Tetrick & Winslow, 2015). Many research studies have shown the positive effects of mindfulness techniques on subjective well-being and work results (Bhojani & Kurucz, 2021). Burnout rates fall as productivity, organization, and performance rates improve.

### 2.2.4. Health Responsibility Behaviour

Health responsibility fulfils the individual's physical, mental, and social health needs (Avcı, 2016). Health-related behaviours are the responsibility of individuals. Individuals feel better and spend less on health by performing behaviours such as exercise, weight control, and not smoking to continue health, having health checks on time, and following the physician's recommendations (Steinbrook, 2006).

An individual's health behaviours are affected by many internal and external factors. Lifestyle behaviours are affected by the habits of the society in which individuals live, the level of health literacy, health inequalities, mental capacity, and many other external factors such as social media. As it is known, smoking, excessive nutrition and alcohol consumption, excessive exercise, and not wearing a seatbelt when driving are accepted as risky behaviours. Such behaviours that harm health pose a threat to individual and public health. The simplest and most cost-effective solution to this problem is to minimize the risk by making lifestyle changes for individual

responsibility, taking into account individuals' socio-cultural and environmental factors. It is generally assumed that individuals are free to choose healthy behaviours. However, health responsibilities are affected by factors such as the actions of individuals, whether they are willing or unwilling to take action, and what they hear from others.

Many factors affect an individual's health-promoting, protective, and preventive behaviours (Avcı, 2016; Buyx, 2008).

• Age: It has been determined that with age, individuals grow more sensitive about their health and better fulfil their health responsibilities in getting examinations and regular controls.

• Gender: It has been determined that women behave more responsibly for their health than men.

• Level of education: As the education level of individuals increases, their level of responsibility for their health improves.

• Marital status: Divorced individuals have a higher perception of health-related responsibility than married ones. The fact that divorced individuals do not have a spouse to share their responsibilities makes them pay more attention to their health.

• Smoking and alcohol: Individuals who use substances such as cigarettes and alcohol have a lower health responsibility.

• Nutritional habits: Regular eating habits increase individuals' responsibility for their health promotion.

• Culture: Health promoting behaviours of individuals, such as eating habits, are influenced by culture.

• Income level: As the income level of individuals increases, their health responsibility increases. This situation has been associated with the power to make health-related expenditures.

• Health policies: Health policies that increase health responsibility can positively change individuals' perceptions regarding their health.

### 2.2.5. Life Appreciation Behaviour

According to Adler (2001), life appreciation is acknowledging the worth and meaning of something—an event, a person, an action, or an object—and having a positive emotional connection to it. Positive emotions of connectedness to the valued

stimuli and the essence of life are enhanced by appreciation experiences (i.e., as in a feeling of awe or wonder).

Life appreciation is a critical dimension of wellness that represents people's overall happiness with their life in various categories, including employment, marriage, and health (Diener & Tay, 2017). Better mental and physical health, healthy weight and eating behaviours, more exercise, extended life expectancy, more excellent work satisfaction, lower turnover intentions, and more organisational commitment are linked to higher life satisfaction levels. Life appreciation has also been linked to reduced levels of ill health, as measured by lower levels of addictions and harmful behaviours (e.g., cigarettes, narcotics, and alcohol), lower mortality rates, and lower anxiety and depression levels. The advantages of life pleasure benefit the entire community. Altruism (e.g., donating, assisting, and volunteering) and reduced homicide, suicide, and sickness rates predict higher life satisfaction. There are eight aspects of appreciation; focus, awe, ritual, present moment, self/social comparison, gratitude, loss/adversity, and interpersonal relations (Mitchel G Adler & Fagley, 2005).

### 2.2.6. Social Support Behaviour

The work of social epidemiologist John Cassel had a significant impact on research on social support. Based on his research on animals and humans, Cassel (1976) proposes that social support acts as an essential 'protective' psychological component that lowers individuals' sensitivity to the adverse effects of stress on health. He also states that psychological elements like social support are likely to influence illness causation. In short, social support may impact the occurrence and prevalence of various health consequences.

The methods for providing social networks and social assistance can improve physical, mental, and social well-being. Social networks and social support are the starting point or initiators of a causal flow toward health outcomes. In reality, many linkages can provide local influence; for example, one's ability to maintain and activate a social network is influenced by one's health (Heaney & Israel, 2008).

### 2.2.7. Work and Office Behaviour

According to WHO, a healthy workplace is one in which workers and managers work together to form a continuous improvement process to protect and promote the health, safety, and well-being of all employees, as well as the workplace's long-term viability, by taking into account the following factors: physical work environment health and safety concerns; psychosocial work environment health, safety, and well-being concerns, including work organization and workplace culture; personal health services in the workplace; and ways to participate in the community to improve the health of workers, their families, and other community members (Burton & WHO, 2010).

The direct impact of employment on people's physical or physiological health and wellness is a known issue (Waddell & Burton, 2006). Work settings provide a chance to detect and change problematic habits (Sparks et al., 2001). Academics today are more concerned than ever about the significance of integrating well-being into the workplace, making wellness promotion a multidisciplinary problem to be addressed (Newton, 2012). Healthy workplaces must address the psychological and social aspects of the work environment, as well as the need to provide safe and hazard-free work environments.

According to a study on the workplace, obesity and cardio-respiratory, metabolic, and cardio-metabolic problems are adverse health effects of the sedentary life at the office (Das et al., 2016). The health consequences of lengthy periods of inactivity and sitting durations have become more prominent (Hedge et al., 2004). Obesity, for example, is linked to a decrease in productivity. Furthermore, physical inactivity caused by lengthy work hours leads to ergonomic issues, and bad posture contributes to musculoskeletal ailments (Waddell & Burton, 2001). Carpal tunnel syndrome is caused by typing labour (Franklin & Gray, 2017), and the development of computer vision syndrome has been related to the rapid adoption of information and communication technologies (ICTs) (Randolph, 2017). Employees' physical difficulties are not the only problems that might arise in the workplace; there are also psychological challenges. Stress symptoms provide a significant obstacle for improving the employee's psychological health (Murphy, 1996). The workstation itself must be carefully designed because unsuitable indoor environmental conditions also reduce worker comfort and health (Sakellaris et al., 2016).

## 2.3 Health Promotion

In addressing public health issues, health promotion has become more critical than ever. The global health situation is at a crucial juncture, with the world confronting a triple burden of diseases: unfinished communicable disease agendas, newly developing and re-emerging diseases, and the extraordinary development of non-communicable chronic diseases. Factors that aid progress and development in today's world, such as globalization of trade, urbanization, ease of travelling, advanced information and communication technologies, and so on, act as a double-edged sword in that they lead to positive health outcomes on the one hand, while also increasing the vulnerability to poor health on the other, as they contribute to sedentary lifestyles and unhealthy dietary patterns (WHO, 2005).

Factors beyond the health sector, particularly social, economic, and political pressures, significantly impact health. These forces substantially impact how people grow, live, work, and age, and the institutions to address health requirements, resulting in health disparities between and within countries (WHO, 2008). As a result, achieving the best possible quality of health requires a comprehensive, holistic strategy that includes communities, health professionals, and other stakeholders, in addition to traditional curative treatment. This comprehensive approach should enable individuals and communities to take responsibility for their health, nurture public health leadership, encourage intersectoral action to develop healthy public policies, and establish long-term health systems in society. These aspects encapsulate the core of "health promotion," which gives individuals power over their health and its determinants, allowing them to enhance their health. It encompasses personal, societal, organizational, and political actions to facilitate adaptations (lifestyle, environmental, etc.) that improve or preserve health (WHO, 2008).

According to WHO (1995), there are three main components in health promotion:

*1. Good governance of health*

Health promotion necessitates policymakers from all levels of government regard health as a top priority. This implies that they must consider health consequences in all actions and prioritize policies that prevent people from becoming ill or injuring themselves.

These policies must be supported by rules that align private sector incentives with public health objectives. For example, matching tax policies on unhealthy or hazardous items like alcohol, cigarettes, high-salt, high-sugar, and fast-food products stimulates commerce in other sectors.

*2. Health Literacy*

Individuals must have the knowledge, skills, and information necessary to make healthy decisions, such as regarding what they eat and what healthcare services they require. They must also be allowed to make such decisions. Individuals also need assurance of a climate where people may demand more governmental initiatives to enhance their health.

*3. Healthy Cities*

Cities have a critical role in fostering good health. Healthy urban planning and the development of preventative measures in communities and primary health care institutions require strong leadership and dedication at the municipal level. Healthy cities lead to healthier countries, which leads to a better planet.

### 2.3.1. Historical Evolution of Health Promotion

The notion of health promotion is not new. Long ago, it was understood that health is affected not just by variables inside the health sector but also by factors outside it. When the germ theory of illness was not yet established in the 19th century, the particular cause of most diseases was thought to be ‘miasma’. Still, there was an understanding that poverty, deprivation, lousy living circumstances, lack of education, and other factors led to sickness and death. Louis Rene Villerme’s report (1840) on a survey of the physical and moral circumstances of the workers working in the cotton, wool, and silk factories, William Alison’s reports (1827-28) on epidemic typhus and relapsing fever, and John Snow’s famous investigations of cholera (1854), for example, attest to this growing understanding of disease aetiology (Kumar & Preetha, 2012).

Henry E. Siegrist, a famous medical historian, created the phrase “health promotion” in 1945, defining the four primary goals of medicine as promotion of health, prevention of sickness, restoration of the sick, and rehabilitation. His assertion that providing a reasonable standard of living, excellent labour conditions, education, physical culture, means of relaxation and leisure, and coordinating the efforts of

politicians, labour, industry, educators, and physicians to promote health was correct. This conclusion was presented in the Ottawa Charter for Health Promotion 40 years later. The observation by Siegrist that health promotion tends to prevent illness, but effective prevention calls for special protective measures highlighted the importance of considering both general and specific causes in disease causation and the role of health promotion in addressing these known causes (Kumar & Preetha, 2012). J.A.Ryle, the first Professor of Social Medicine in the United Kingdom, recognized the dual causation of illnesses around the same period and brought attention to its relevance to noncommunicable diseases (Terris, 1992).

The words *health education* and *health promotion* are frequently used interchangeably. Communities are provided with health information and knowledge, and skills to enable individuals to adopt healthy habits freely. Health education is a series of learning experiences aimed at improving the health of people and communities by expanding their knowledge or changing their attitudes. In contrast, health promotion is a more comprehensive approach to health education that involves multiple players and focuses on multisectoral approaches. Health promotion has a much broader perspective. It is tuned to respond to developments that directly or indirectly impact health, such as inequities, changes in consumption patterns, environments, and cultural beliefs (WHO, 2008).

In 1986, WHO partnered with Canada to organize an international conference on health promotion to raise public health aspirations worldwide. The meeting was held in Ottawa and resulted in the Ottawa Charter for Health Promotion and served as a precursor to later worldwide health promotion conferences. According to the Ottawa Charter, Health Promotion is the process of empowering individuals to take charge of and enhance their health. A person or a group must recognize and fulfil ambitions, satisfy wants, and alter or cope with the environment to achieve a state of total physical, mental, and social well-being. Health is viewed as a resource for everyday life rather than the goal of existence. Peace, shelter, education, food, income, a stable ecology, sustainable resources, social justice, and fairness are the essential conditions and resources for health. Thus, health promotion is not just the responsibility of the health sector but also that of the individual. The Charter called for health advocacy to bring about favourable political, economic, social, cultural, environmental, behavioural, and biological determinants for health and mediation for multi-sectoral

action, allowing individuals to take control of the variables impacting their health. The Charter defined health promotion activities as a) building supportive environments, b) supporting community action through community empowerment – communities' ownership and control of their endeavours and destinies, c) improving personal skills through information, and d) growing personal skills through information (WHO, 1986).

### 2.3.2. Approaches to Health Promotion

Health promotion activities can focus on high-priority health issues that affect many people and endorse numerous therapies. Such an issue-based approach will be most effective when combined with setting-based designs. Setting-based designs may be applied in schools, workplaces, marketplaces, residential neighbourhoods, and other locations to address priority health problems by considering complex health determinants, including behaviours, cultural beliefs, practices, and other factors that function in people's daily lives. The setting-based design makes it easier to integrate health promotion activities into social events while considering local circumstances (WHO, 2008).

A population with any disease may be split into four categories: a) healthy people, b) people with risk factors, c) people with symptoms, and d) people with disease or disorder. To satisfy the requirements of the entire population, each of these four categories must be targeted with specialized interventions. In other words, the framework includes everything from primary prevention for healthy people to curative and rehabilitative treatment for sick people. In addition, primordial prevention is used to create and maintain circumstances that reduce health risks. It includes activities and procedures that prevent the emergence and establishment of disease-causing environmental, economic, social, and behavioural factors and cultural ways of life (Last, 2000).

### 2.3.3. Workplace Health and Wellness Programs

In addition to the pursuit of health improvement, workplace wellness initiatives have also been advocated to raise morale, increase productivity, minimize attrition, and lower healthcare expenses. Employers can change physical workplaces

(ergonomics), influence how employees spend their time, promote employee relationships, exchange information, fund health insurance, and encourage them to participate in wellness programs, such as by offering financial incentives. Moreover, employers can install central stairwells or exercise rooms to encourage employees to get more exercise, sponsor weight-loss competitions, change cafeteria menus to promote better eating and establish educational offers, benefit arrangements, or reward systems promoting health.

For more than three decades, the potential for workplace wellness initiatives to enhance employee health while simultaneously boosting business bottom lines has piqued the interest of both employers and policymakers. Wellness programs have grown increasingly popular. According to a survey conducted in 2014, provides gym discounts or exercise facilities in the workplace were provided in 64% of large businesses (200 or more employees)and 26% of small firms (3-199 employees) (Claxton et al., 2020).

### 2.3.4. Workplace Health and Wellness Programs in the Literature

For a clear insight into employee health and wellness programs, the researcher of the current study carried out a systematic review including 46 studies conducted in the last decade. The studies were presented as; study design, measurements, the Social-Ecological Model levels, tools used in the intervention, personalization, instruments, intervention characteristics, evaluation period, and findings and conclusion. The studies included in this literature review are provided in Appendix E. The average sample size among the 46 studies was 722. The results showed that the evaluation period of the interventions varied between 1 month and 36 months. The most common study designs observed were randomized controlled trials and single-group pre-post test designs. Physical activity and nutrition appeared to be the most targeted lifestyle behaviours in the studies reviewed. The secondary level of lifestyle behaviours provided stress management, smoking, and alcohol intake. Measurement variables in the studies were classified into four categories; health indicators, biomarkers, social cognitive variables, and work performance. The measurement variables are presented in Table 2.1.

Table 2.1. *Measurement variables in the reviewed studies*

| Health Indicators | Biomarkers | Social Cognitive Variables | Work Performance |
|---|---|---|---|
| • Weight<br>• Waist and hip<br>• Blood pressure<br>• Body fat<br>• Resting heart rate<br>• Grip strength<br>• Maximum oxygen uptake<br>• Aerobic fitness | • Total Blood Cholesterol<br>• Blood glucose<br>• HDL<br>• LDL<br>• Triglycerides<br>• Insulin level<br>• Urinalysis<br>• Urine nicotine<br>• Prolactin<br>• Cortisol | • Intention<br>• Social support<br>• Health literacy<br>• Confidence<br>• Attitude<br>• Stages of readiness to change<br>• Perceived health<br>• Anxiety<br>• Motivation<br>• Barriers<br>• Psychological distress<br>• Prolonged fatigue<br>• Perceived stress<br>• Self-efficacy<br>• Quality of life<br>• Knowledge<br>• Satisfaction | • Work ability<br>• Physical effort at work<br>• Presenteeism<br>• Absenteeism<br>• Job satisfaction<br>• Job stress<br>• Job strain |

A further analysis was conducted on the incentive techniques used in the interventions. These techniques are presented in Table 2.2 in terms of Social-Ecological Model levels.

The literature review revealed that the interventions implemented in the 46 studies lacked an essential element: personalization. Only 10 of the 46 studies included personalization in their design. Age, gender, model (transtheoretical model-based), preferred physical activity, personalization of the information based on the screening results, health survey results, and self-reported behaviours were used to modify the interventions for personalization. The literature review showed that all interventions that used personalization had a larger effect size.

Table 2.2. *Incentive techniques in social-ecological model levels*

| Individual | Social Environment | Physical Environment | Policy |
|---|---|---|---|
| • Goal setting<br>• Monthly motivational e-mails<br>• Awareness programs<br>• Educational seminars<br>• Risk awareness<br>• Self-monitoring<br>• Counselling<br>• Self-care information<br>• Group meetings | • Special group meetings (e.g., obese)<br>• Challenge with colleagues (step, etc.)<br>• Group education sessions<br>• Buddy system<br>• Team competitions<br>• Experience sharing<br>• Fitness classes<br>• Walking clubs<br>• Involving family members<br>• Grouping program participants with similar needs | • Gym membership<br>• Healthy food choices available in the cafeteria<br>• Workplace fitness centre<br>• Video and instructional materials on website or portal<br>• Flextime to participate<br>• Health food selections in vending machines<br>• Participation during work hours | • Smoking policies<br>• Educational programs<br>• Paid time participation<br>• Behaviour changes rewards<br>• Gym membership |

To sum up, workplace health promotion interventions were focused on physical wellness related to lifestyle behaviours, such as physical activity, nutrition, and health responsibility. In addition, personalization was the missing part in the design of the workplace health promotion interventions.

### 2.3.5. Methods for Employee Health and Wellness Programs

Employee health and wellness interventions use several methods to assist employees in improving their wellness on all levels. Each approach addresses at least one aspect of wellness, but the effectiveness of the programs increases with the number of different elements used together. The most common health and wellness programs are biometric screenings, risk assessment, financial planning, fitness classes, free

healthy food, gym compensation, health coaching, health literacy education, tobacco cessation, weight management, and wellness challenges.

*Biometric Screenings*: Biometric screenings are the health programs component that evaluates employees' physical parameters such as body mass index, blood pressure, cholesterol, and glucose level. This type of program is primarily concerned with physical wellness. The justification for conducting biometric tests at work is that early identification of illnesses and evaluating hazards can help employees become more aware of their health issues and treat them more effectively. Some biometric screening programs serve as a focus for high-risk workers to enrol in disease management programs (Heltemes et al., 2019; McLellan et al., 2009).

*Health Risk Assessment*: Health Risk Assessment (HRA), also known as a health risk appraisal, is an instrument for gathering health information about employees. It is frequently used with biometric tests to determine a person's health condition, risks, and behaviours. HRA data, unlike biometric screenings, is self-reported. Thus the information gathered for employers and utilized to offer feedback to employees is susceptible to the respondent's prejudice and limits (Niessen et al., 2013).

*Financial Planning:* Financial wellness programs quickly become one of the most troublesome areas in many health and wellness programs. Many companies use the aid of financial specialists to offer counselling for financial planning to their employees to provide them with tailored support (Frank-Miller et al., 2019). Employees are universally failing to attain financial well-being on their own, according to several polls, and are worried about money, which leads to low presenteeism at work. Employers would be prudent to assist them in combating this issue. On the other hand, hiring financial specialists may be costly, so this program is better suited to organizations with bigger wellness budgets. These groups frequently offer free financial wellness lectures (Joo, 1998).

*Fitness Classes*: On-site fitness courses are an excellent answer for many organizations to encourage wellness throughout the workplace. Typically, these sessions are held in conference rooms or other open areas. In addition to providing a fantastic workout,

group fitness courses allow employees to socialize, create camaraderie, and have fun. According to research, group exercise is the most effective means for boosting mental health. In short, fitness courses are a flexible tool that may help people improve their physical, mental, and social health. Physical fitness does not have to be the exclusive focus of fitness classes (Malik et al., 2014).

*Free Healthy Food:* Free meals have long been a favoured incentive among employees. Salty chips and sweets, while attractive, may not be the greatest choice for a mid-afternoon snack. To promote healthy eating, employers have been choosing to fill their kitchens with more nutritional alternatives, such as snacks with whole grains, healthy fats, and protein (Monaghan et al., 2018).

*Gym Compensation:* Providing standing workstations may not be enough for companies trying to improve their employees' physical wellness. Reimbursing employees for gym memberships might motivate them to exercise without disrupting their workday. This is a particularly appealing advantage for millennials, who place a high value on overall rewards programs and benefits (Homonoff et al., 2020).

*Health Coaching:* Employee health coaching is a term that refers to individualized educational sessions with a qualified health expert that can be done one-on-one or in a group setting. Some organizations provide health coaching as the next step for employees who have been recognized as high-risk through a biometric test or health risk assessment. In contrast, others make it available to everyone who wants to improve their health. Because health coaching sessions are tailored to the individual, they can address any aspect of well-being that employees wish to help (Butterworth et al., 2006).

*Health Literacy Education:* Because of its scalability and low cost, health literacy education programs are frequently the first effort given at organizations. These programs offer workers relevant, high-quality, and timely health information via on-site seminars, internet webinars, and other media like newsletters and wellness pamphlets. Employer-facilitated health literacy is becoming increasingly essential as the quantity of misinformation available to consumers via the internet grows. These

educational workshops can be customized to any aspect of wellness that the business deems appropriate for its workforce (Ishikawa et al., 2008).

*Tobacco Cessation:* While the use of e-cigarettes among employees and other tobacco products is rising, the smoker employees may benefit from a tobacco cessation program. Even though tobacco consumption has decreased considerably, the negative consequences of smoking are so severe that businesses continue to perceive financial and non-financial reasons to seek cessation programs. A tobacco cessation program can take many forms, but the fundamental objective is to give tobacco smokers the assistance and tools they need to quit (Hughes et al., 2011; Terry et al., 2011).

*Weight Management:* Weight management programs are designed to assist employees in achieving a healthy weight. Weight management programs aim to minimize workers' health risks by combining technology and human treatments that focus on exercise and diet. Because most people are not at a healthy weight, such programs can benefit a large number of people (Williams et al., 2014).

*Wellness Challenges:* Wellness challenges are a collection of events and competitions designed to motivate employees to adopt healthier habits. They are also a team-building tool for increasing employee engagement and belonging. Wellness challenges may address various aspects of wellness, including physical, emotional, financial, social, and environmental well-being (Andrews et al., 2019).

## 2.4. Health Literacy

Individuals with poor health literacy skills are surprisingly frequent in developing countries. The fraction of the population lacking functional health literacy skills in Organization for Economic Co-operation and Development (OECD) countries ranges from 7% to 47% (Watkins, 2007). The figures are much higher in developing nations. Nutbeam (2000) defines health literacy as individuals' motivation and capacity to obtain access to, interpret, and use knowledge in ways that promote and preserve good health, which are determined by cognitive and social abilities. Health literacy has also been defined as an individual's ability to receive, absorb, and

comprehend essential health information and services required to make informed health decisions (Ratzan & Parker, 2006), and the ability of people to access, analyse, interpret, and share health-related information to make well-informed decisions (McCormack et al., 2010).

Over the years, the words *literacy* and *health literacy* have been defined, developed, and assessed in several ways to meet the changing needs in an increasingly complex world. Adjustments in definitions have been made alongside the recent rising interest in health literacy as an essential health communication component. A lack of agreement on the exact meaning of health literacy might impede efforts towards measuring it or postpone remedies to severe problems. On the other hand, the diversity of definitions indicates an understanding of the construct's complexity and the potential that various meanings may be required depending on one's objectives. The area of health literacy is quickly expanding, including a bigger and more multidisciplinary audience, and with it, a deeper understanding of its complicated and varied nature.

For operating in a range of health situations, a diverse set of health literacy abilities is required. These skills include reading, writing, mathematics, speaking, listening, utilizing technology, networking, and rhetorical skills related to requests, advocacy, and complaints (Kindig et al., 2004).

## 2.5. Social-Ecological Model

In health promotion and illness treatment, social-ecological models provide a dominating conceptual framework or set of fundamental principles that explain the reciprocal link between various personal and environmental elements (Stokols, 1996). Bronfenbrenner (1979) proposed the social-ecological model while researching the ecology of human growth. This model explains how people's social settings interact with one another throughout their lives. The dynamic interactions among individuals, families, and all other people or organizations within the community in which a person lives have a significant role in one's development over time, which has long-term consequences for the social environment. Bronfenbrenner (1979) created the concept to understand better how individuals' inborn qualities interact with their immediate

environment to influence growth and development from childhood through adulthood and death.

Bronfenbrenner (1979) strategically structures the ecological theory at four levels of external impacts: microsystem, mesosystem, exosystem, and macrosystem. The person lives and interacts in the *microsystem*, the most intimate ecological level. This comprises the individual's immediate family members and organizations such as relatives, schools, and healthcare providers with whom the patient has direct contact. At this level of the system, interactions are bi-directional. Next is the *mesosystem*, which depicts how the associative relationships among various elements at the microsystem level (school, family, etc.) further impact an individual's everyday activities and progress. Lack of affection from family and other groups, for example, can negatively impact a person's psychological development. The *exosystem* comprises external variables that the individual will not engage with directly but those that significantly affect their development. This includes the person's neighbourhood, parent's employment status, extended family, health facilities, social services, mass media, and school boards, among other things. For example, the high prevalence of drug use in the community might significantly impact their lives, either favourably or adversely. Finally, the *macrosystem*, the most prominent and remote community setting, includes cultural belief systems, economic backgrounds, and remote political environments that significantly impact individuals' everyday activities. Societal norms and ideals heavily influence individual growth. The macrosystem can impact personal development within and among other systems proximate to the individual. Culture and values, laws, history, economic systems, social circumstances, health policies, individual social standing, and political systems are critical components of the macrosystem.

Multiple theorists have built social-ecological models of layers that impact health promotion (Golden & Earp, 2012; McLeroy et al., 1988). Glanz, Rimer, and Viswanath (2008) present a social-ecological model for health promotion that classifies the elements that impact health into four levels: individual, interpersonal, community, organizational, and societal levels. This approach emphasizes the relevance of individual health-related activities in social and corporate settings, with the underlying assumption that the changes in the social environment would encourage individual health behaviours.

Personal knowledge and skills are addressed at the *individual level*. Knowing more about a condition allows a person to understand it better. It informs patients about their susceptibility to the disease, the severity of the sickness, and the disease's overall hazards. Most of the time, knowledge is not enough to alter people's viewpoints, but it may assist by influencing critical attitudes and decisions.

The *interpersonal level* concerns a person's interactions with others, such as family and friends. The connections and social networks in which a person participates can also significantly influence their conduct. At the interpersonal level of the model, families, friends, and traditions are essential participants.

The *physical environment level* concerns the networks that connect the many organizations and institutions that make up the larger community. Governments and companies that build environments, such as parks, are included in these relationships. Community structures are frequently influential in defining how people behave and their traditions. Understanding the physical environment level is crucial to discover where healthy habits start.

The social-ecological model's most comprehensive level, *policy level*, comprises policies and legislation enacted locally, nationally, and globally. These measures might have a significant influence on a vast number of individuals. For example, a policy specifying a U.S. malaria aid budget will have far-reaching global consequences for decades.

### 2.5.1. Social-Ecological Model and Health Promotion

The discipline of health promotion is sometimes chastised for focusing on lifestyle modification while disregarding the environmental factors that affect health. In interventions focusing individual level, individuals are recognized as embedded within broader social systems, which characterize the interacting qualities of individuals and surroundings that underpin health outcomes (Sallis et al., 2015; Stokols, 1992).

Interventions at the interpersonal and physical environment levels, on the other hand, are intended to affect social connections and organizational settings. Partnerships with agencies, churches, neighbourhoods and other mediating institutions result in community changes; community-focused interventions aim to improve health

services or empower disadvantaged populations. Finally, interventions at the policy level frequently aim to implement public policies with health behaviour consequences by facilitating citizen advocacy (Golden & Earp, 2012; Wold & Mittelmark, 2018).

Table 2.3. *Examples of variables of health promotion according to SEM*

| SEM Level | Variable |
|---|---|
| Individual | Knowledge, attitudes, behaviours, beliefs, perceived barriers, motivation |
| | Sex |
| | Age |
| | Skill |
| | Self-efficacy |
| | Level of education |
| | Socio-economic status |
| Interpersonal | Spouse or partner |
| | Family |
| | Peers |
| | Community norms |
| | Cultural background |
| Physical Environment | Natural factors (weather, geography, etc.) |
| | Access to facilities (parks, restaurants) |
| | Safety |
| | Workplace, institutions |
| Policy | Urban planning policies |
| | Transport policies |
| | Sport policies |
| | Health policies |
| | Workplace policies |

Ecological models presume that numerous levels of impact are interconnected and mutually reinforcing. The social, physical, and cultural characteristics of an environment, according to Stokols (1992; 1996), have a cumulative influence on health. He also claims that the environment is multi-layered because institutions and

neighbourhoods are rooted in broader social and economic systems. This setting may affect people's health differently depending on their beliefs and behaviours. As a result, the most effective way to achieve long-term health gains is to tackle all of these elements simultaneously. However, Stokols (1996) points out that influencing all aspects of an individual's surroundings and traits may be impossible. Therefore, treatments should focus on at least two levels of impact (see Table 2.4).

### 2.5.2. The Social-Ecological Context of Health Literacy

Health literacy abilities have been shown to predict health status and outcomes more strongly than age, income, work position, education level, or race or ethnicity (Kickbusch, 2008; Speros, 2005; Wilson, 2003). Scientific breakthroughs in the healthcare system are unlikely without increases in health literacy. This is because adults with low health literacy have bad health, and therefore, only health education initiatives that emphasize health literacy will result in healthier individuals (Manganello, 2008).

Urie Bronfenbrenner (1979), the creator of the Social-Ecological Model, discusses how humans are impacted by interconnected external elements, such as their physical and social surroundings. According to the social-ecological approach, interventions that target multiple levels of influence reinforce each other, resulting in higher and longer-lasting impacts than treatments that target only one level of influence.

The social-ecological context of health literacy examines various elements that impact the development of health literacy skills on several levels. From an ecological standpoint, personal variables, situational determinants, and social and environmental determinants can all influence the development of health literacy abilities. These factors can aid or hinder the development of health literacy skills and thereby change eating habits among employees. Prior nutrition knowledge, availability of nutritious foods, and a good body image, for example, are all elements that may aid in the development of health literacy skills. Peer pressure to eat unhealthy foods and the abundance of empty-calorie items in one's environment are two factors that may impede the development of health literacy skills. The preceding explanations demonstrate how the social-ecological context of health literacy fits into the present

research study that examines the impact of health literacy on technopark employees' lifestyle behaviours and work performance (Higgins et al., 2009).

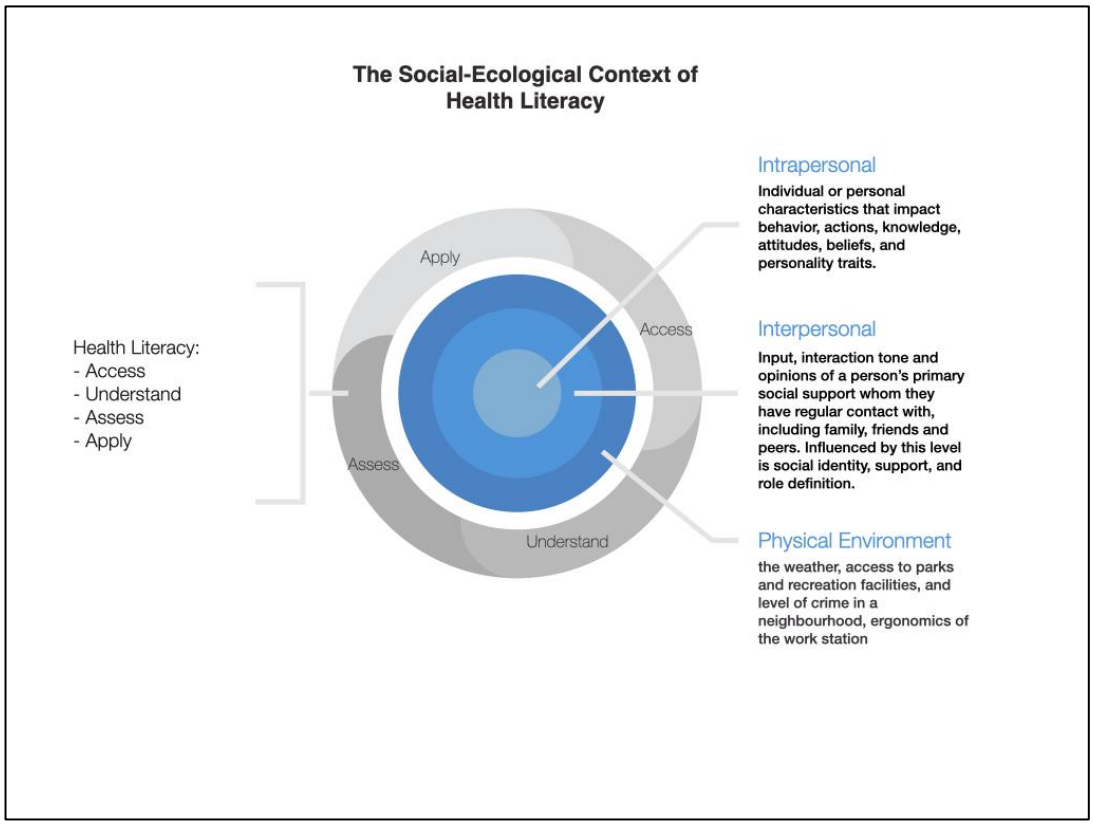



*Figure 2.1.* The social-ecological context of health literacy

## 2.6. Technoparks

Long-term economic growth is primarily influenced by intense variables offered thanks to the most progressive scientific and technological achievements reached in the development of the information society and innovative economy. The majority of scholars believe that knowledge will be the most crucial component in the long-term growth of well-being (Radosevic & Myrzakhmet, 2009; Safaie et al., 2020). The capacity to grasp new information and, as a result, technical developments is a decisive element in the scale expansion of regional and national economies. Innovation is one of the tangible outcomes of this process. Technoparks are the primary tool for promoting innovation in today's world. These organizational structures generate ideal circumstances for creating innovations and spreading at the regional level.

The first efforts to establish a technopark in Turkey started in the 1980s. TEKMERs (Technology Centres) were established in 1990 as the first step of techno-cities within the cooperation framework between Small and Medium Enterprises Development Organization of Turkey (KOSGEB) and universities. The legal framework for technoparks was established in 2001 with the enactment of Law No. 4691, which refers to "Technology Development Zones" instead of the more extensively used concept *technopark*. As of January 2021, 87 Technology Development Zones had been announced by the Council of Ministers. However, 72 of these 87 technoparks are currently in operation, while the others are under construction (Teknoloji Geliştirme Bölgeleri Derneği, 2021).

The number of companies conducting research and development studies in operating technoparks in Turkey has reached 6,364. 45% of these companies operate in the software and ICT sectors, 7% in the engineering fields and other companies are from a variety of industries such as the medical, energy, chemistry, food, defence, automotive, agriculture, livestock industries, and they are all involved in the scope of research and development activities in the regions. A total of 66,615 people, 54,562 of whom are research and development staff, are employed in the companies located in the Technology Development Zones. As of January 2021, the total number of research and development projects (completed and ongoing) carried out in technoparks was 49,688. Companies operating in technoparks export to many developed countries, including Japan, Israel, England, Germany, and especially the United States, with revenues reaching 5.6 billion US dollars (ODTÜ Teknokent, 2021). In terms of foreign capital, there are currently 322 foreign companies with foreign partners in the Technology Development Zones. The number of patents (national/international) registered by companies operating in the regions is 1,262 (ODTÜ Teknokent, 2021).

### 2.6.1. Technopark Work Environment

The Turkish technopark work environment is not very different from its counterparts in the rest of the world. Koladak (2007) explains the Middle East Technical University technopark environment. Work circumstances are excellent in social and economic dimensions, and employees are given an independent work environment, typical of high-tech clusters. Many employees receive relatively high

salaries, project premiums, and work process autonomy. This pleasant working atmosphere might be viewed as a natural extension of academic life. Some trainees report that they still have the freedoms of a regular university student while at the same time earning money. This is due to the relative flexibility in dress code and the horizontal organisation structure rather than solid hierarchies. One employee, for example, states that they occasionally play multiplayer computer games at the workplace after work hours. Furthermore, flexible working hours also determine employees' comfort and pleasure at work. At METU-Technopark, many enterprises provide flexible working hours, while others require employees to work during regular business hours (Kodalak, 2007).

### 2.6.2. Employees in Technoparks

Technoparks represent an alternative to the traditional work structure in terms of work organization and employment. High-tech labour markets are characterized by quickly changing skill needs and unstable job situations. Therefore, flexible labour is deeply ingrained in such environments (Weiss, 1983). Employees are compelled to be mobile due to the rapid speed of change. Workers in the firms have no defined job classifications, and they generally work in the gaps between projects. Low levels of hierarchy and new types of networking are required by the flexible organizational structure (Castells, 2014). The employees are well-educated.

Employees at technoparks have a high percentage of academic credentials. In addition, non-traditional employment is a crucial element of high-tech workplaces. One of the essential features of long-term damage engagements is the fast expansion of various types of nonstandard work, such as temporary, independent contracting, and outsourced employment (Beyhan, 1999).

## 2.7. Work Productivity

In today's corporate world, boosting productivity is the key to growing profitability. Aside from the decrease of raw material and manufacturing expenses, the employees' job efficiency is critical at this stage. Although the definition of a white-collar employee varies depending on the approach, in general, it is the name given to

those who work in administrative and research-and-development jobs that require a high level of technological education, as well as mental strength rather than physical strength (Bain & Price, 1972). The most important reasons for workplace inefficiency among white-collar professionals have been health and fitness (Lofland et al., 2004; Mattke et al., 2007). Employees who sit for long periods are likely to develop heart illness, muscular degeneration, circulation abnormalities, mental numbness, obesity, and psychological issues. Various studies in Europe have found that work loss due to poor health generates significant economic losses to countries (Mattke et al., 2007; Zhang et al., 2011).

### 2.7.1. Work Loss

Work loss is characterized in the literature as an employee's incapacity to execute his job tasks (Alavinia et al., 2009). The various kinds of work loss can be classified into two main categories: failure of the employee to perform their tasks due to absence (absenteeism) and inability to fully or partially fulfil their responsibilities while at work (presenteeism).

#### 2.7.1.1. Absenteeism

Absenteeism is defined as a state of not being present. It can also refer to a circumstance in which an employee is not physically there at work. It is also described as the inability to complete a scheduled task for whatever reason (Küçük et al., 2015). According to research conducted in the US, absenteeism accounts for 9% of the hourly workforce. This figure indicates that one out of every ten employees is missing from work. The yearly average absenteeism among employees in Turkey is 4.6 days, lower than the annual European average of 7.6 days (Claxton et al., 2014).

There are three types of absenteeism. A pre-arranged event, such as a vacation or leave, is a planned absence. Unexpected absence from work due to illness or disability is unplanned absenteeism. Short-term absenteeism is called partial absenteeism, which includes arriving late, leaving work early, or taking longer than allowed leave hours, such as lunch breaks. Unhealthy lifestyle practices, poor diet, and

insufficient physical exercise are among the most common causes of absence (Johns, 2010a).

#### 2.7.1.2. Presenteeism

The term *presenteeism* was first used in print in 1931 in a business journal called *Everybody's Business* (Johns, 2010). It was much later, in the 1970s, that the term was used in conjunction with the term *absenteeism*. Extensive research in this field began in the 2000s, emphasising the idea of presenteeism. Presenteeism is characterized by decreased working performance due to health issues (van Den Heuvel et al., 2010).

Presenteeism can be caused by various factors (Johns, 2010). Employees may report to work because they desperately need money and cannot miss work due to sickness. Due to thoughts of being irreplaceable, doctors may go to work when unwell. Additionally, one may go to work because they enjoy and are dedicated to their job; in this instance, it may be regarded as an act of corporate citizenship and a way to garner appreciation from co-workers (Johns, 2010). Other factors include fear of jeopardizing one's career chances by taking time off, as well as a management-driven expectation of presence.

The distinction between workplace absenteeism and presenteeism is important. Absenteeism in the workplace is defined as the number of days an employee is physically absent from work, either partially or completely. Presenteeism refers to the ways in which they may be operating at a lower level owing to personal difficulties even though an employee is physically present at work. However, when it comes to productivity loss in the office, the distinction between absenteeism and presenteeism has received less attention. While absenteeism is a well-known and easily quantifiable issue, presenteeism is a hazy and difficult-to-measure phenomena that has a similar, if not greater, influence on corporate productivity than absenteeism. In light of this, the distinction between the two becomes critical to make in order to pave the way for increasing productivity.

## 2.8. New Media

Scholars from diverse backgrounds have characterized and expanded on social media in various ways. According to Verdegem (2011), social media platforms are open, web-based, and user-friendly mobile applications that offer new opportunities for content co-creation, social networking, taste and relevance sharing, connectedness, and collective intelligence. Auvinen (2011) defines social media as a new information network and information technology that employs a particular type of communication that includes interactive and user-generated material and the creation and maintenance of interpersonal connections. In the same vein, social media is online or electronic media which can facilitate participation, openness, conversation, community, connectedness and, at the same time, foster textual and audio-visual characteristic appeal amongst online users (Mayfield, 2008). Furthermore, UNESCO (2011) has simply defined social media in its ability to foster human relationships through technology, allowing for a better, faster, and more constant social interaction among web users. Social media is one of the new media networks that provide users with a mix of interpersonal and mass communication capabilities that have not existed before, emphasizing interactivity and mobility (Paxson, 2018).

To clarify the differences between new media and traditional media, while traditional media refers to any type of mass communication that existed prior to the emergence of digital media, new media involves websites and programs that allow users to produce and share content or participate in social networking. Facebook, YouTube, Instagram, Twitter, LinkedIn, Reddit, Wikipedia, and Pinterest are examples of popular social media platforms, while television, radio, newspapers, and magazines are examples of traditional media. The primary distinction between new media and traditional media is that the former allows for two-way communication, whereas the latter only allows for one-way communication.

Today, with the rapid developments in information and communication technologies, many new concepts such as communication technologies, social media, social networks, digital media, and digital communication have emerged. With the emergence of these new communication environments, changes have come to the fore in many areas. Neuman (1991) points to the idea of new media by presenting the view that seeing the evolution of a worldwide network of audio, video, electronic, and

textual communication, where the lines between public and private communication, as well as interpersonal and mass communication, are becoming increasingly blurred. Manovich (2002) also emphasizes that starting from the 1960s, technological developments have gradually transformed the media. New media has made the transformation permanent by converging communication infrastructures and people, businesses, industries, international regulations, policies, and even administrations, and has revealed being new as a fundamental condition (Yanık, 2014). Therefore, the adjective 'new' in the term new media expresses a chronological quality and the transformation of the whole system, especially communication (Yanık, 2016).

### 2.8.1. New Media for Health Literacy

Internet-enabled new media has the potential to transform health education for a wide range of groups by boosting our capacity to employ evidence-based behaviour modification tactics in ways that are considerably more effective and efficient than previously achievable (Bernhardt et al., 2013). For instance, new media can now be used to: develop the capacity to deeply engage massive groups of targeted individuals and communities over time; facilitate the real-time correspondence and analysis of in-depth health-related comments and information from participants and associates to identify and aggregate health needs and priorities for planning health education programs; design and deliver highly relevant and personalized health education programs (Harris, 2013). In short, new media may help with and enhance practically every phase of the health education planning, production, and assessment process (Dede & Fontana, 2013).

### 2.8.2. YouTube

On the Internet, video has increasingly become a widespread form of media. As access to video on a wide range of topics becomes more readily available, the expansion of internet video benefits more people who teach and study online. Although the precise amount of video now posted online is unknown, the Blinkx video search website claims to have indexed 35 million hours of video to date.

Even though YouTube was developed as a video-sharing tool for the general public, its instructional potential has not gone ignored. Hundreds of schools and institutions have created a YouTube presence over time in their video-sharing websites known as YouTube channels. YouTube EDU, an organized collection of YouTube channels made by college and university partners, was launched in March 2009 (Snelson, 2011). YouTube EDU has grown to include over 300 schools and institutions by the end of its first year, with over 65,000 videos of lectures, news, and campus life freely available for public watching (O. Greenberg, 2010). These films are only a small fraction of the instructional information available on YouTube.

The benefits of learning through YouTube videos include personalized feedback and interaction between the instructor and the student (Dogruer et al., 2011). Without needing to meet face to face, students may communicate with the instructor, seeking explanations and making requests for extra information. The free content is available to all, allowing learners in even the most remote parts of the globe to participate. Learners are encouraged to expand their knowledge regularly and acquire instructional items submitted to YouTube (Hasamnis & Patil, 2019).

### 2.8.3. Instagram

Instagram is a picture and video-sharing social networking service launched in 2010. Users can update material using multiple filters and access the service via a mobile application or a feature-limited online interface (Carpenter et al., 2020). Individual posts can have up to 2,200 text characters. Private messaging, the ability to tag material with searchable hashtags, adding multiple photographs or videos in a single post, and the stories feature, which lets users submit information to a feed that is viewable to others for 24 hours, are the features available on Instagram. Individuals can connect with other users through messages, postings, and stories in various methods that vary in privacy and formality. Instagram posts, for example, tend to be carefully-managed and optimistic photographs (Lee et al., 2020), but Instagram stories might be more casual.

Instagram is mainly used for educational, instructional, motivational, and supportive purposes (Kamel Boulos et al., 2016). Because of photo- and video-sharing capabilities, the application has many potentials to act as a social networking platform

in visually rich subject areas, including clinical dermatology, clinical infectious diseases, and radiology (Gauthier & Spence, 2015; Glover et al., 2015). On the other hand, it may also be used to disseminate negative messages with detrimental effects, such as in the encouragement of cigarette and alcohol use, pro-anorexia messaging, and unhealthy meals that are rich in calories but poor in nutrients, which have been described in the literature (Custers, 2015; Holmberg et al., 2016; A. Richardson et al., 2014).

## 2.9. Summary of Literature Review

Overall, the literature review indicates that employee wellness and health may significantly affect productivity in a work environment that requires employees to keep up with advancing technologies and rising expectations. Lifestyle behaviours play a crucial role in promoting employee wellness. Different approaches can be taken to improve employee wellness. Today's most common health and wellness programs are biometric screenings, health risk assessment, financial planning, fitness classes, free healthy food, gym compensation, health coaching, health education, tobacco cessation, weight management, and wellness challenges. Health education seems to promote wellness and health effects among these various approaches.

Health education refers to purposefully built learning experiences that include communication and promotes health literacy, including knowledge and life skills that are beneficial to individual and community health. Health education is concerned with disseminating knowledge and developing the desire, skills, and confidence (self-efficacy) required to improve health. Health education involves conveying knowledge on the underlying social, economic, and environmental variables that affect one's health, individual risk factors and risk behaviours, and ways to use the healthcare system. Thus, it can include disseminating knowledge and developing skills that illustrate the political feasibility and organizational capabilities of various types of action to address social, economic, and environmental health factors.

The social-ecological context of health literacy looks at several factors that influence the development of health literacy abilities on different levels. Personal characteristics, social factors, and physical environmental determinants can all impact the development of health literacy abilities from an ecological approach. In this

approach, new media can become an effective tool to provide content for health literacy. The present study explains behaviours and the social-ecological context of health-literacy-based employee wellness program design.

# CHAPTER 3

# METHODOLOGY

The purpose of this section is to describe the quantitative and qualitative methods used in this study. Firstly, the study design is discussed in detail. This is followed by an explanation of the process of participant assignment to experimental and control groups and the selection for interviews. Next, the agenda and content of the intervention for the experimental group are described. Then, a comprehensive explanation of the quantitative and qualitative data collection procedures is provided. Finally, the methods employed in statistical analyses and qualitative data coding and analysis are explained.

## 3.1. Research Design

The present study is comprised of a needs assessment (Study 1) and an intervention (Study 2). To fulfil the requirements of both of these parts, various methods were implemented in the course of the investigation. For the needs assessment, a descriptive research design was used to explore the characteristics of the study population. Descriptive research attempts to collect quantifiable information for statistical analysis of a population sample (Thomlison, 2001). The main aim of such a research design is to describe the demographic segment's nature. The descriptive function of research is heavily dependent on instrumentation for measurement and observation (Gall & Borg, 1989). Moreover, in descriptive design, exploratory data analysis techniques, such as clustering, is used to identify subsets of data instances with common characteristics. Researchers can investigate the data by looking at a few cases from each cluster rather than the entire dataset. This method allows users to focus on essential subsets of massive datasets, which is especially useful for designing interventions or educational programs. Descriptive clustering, in particular, entails

grouping sets of similar occurrences into clusters and producing a human-readable description or summary for each group (see Figure 3.2).

For the intervention component of the study (Study 2), the embedded experimental model was used to support and provide details about the outcomes of the intervention. The embedded experimental model may be the most commonly used variant of the Embedded Design (Creswell et al., 2009). The priority of this model derives from the quantitative, experimental methodology, within which the qualitative data has a supportive role. In Study 2, a one-phase approach was used to explore the effects of the intervention. This single-phase collected qualitative data that was used to interpret the quantitative outcomes of the study (see Figure 3.1).

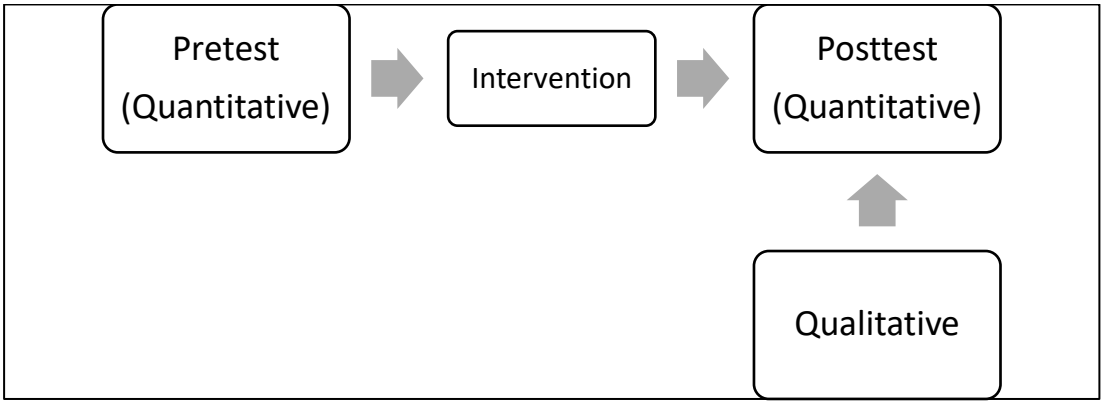
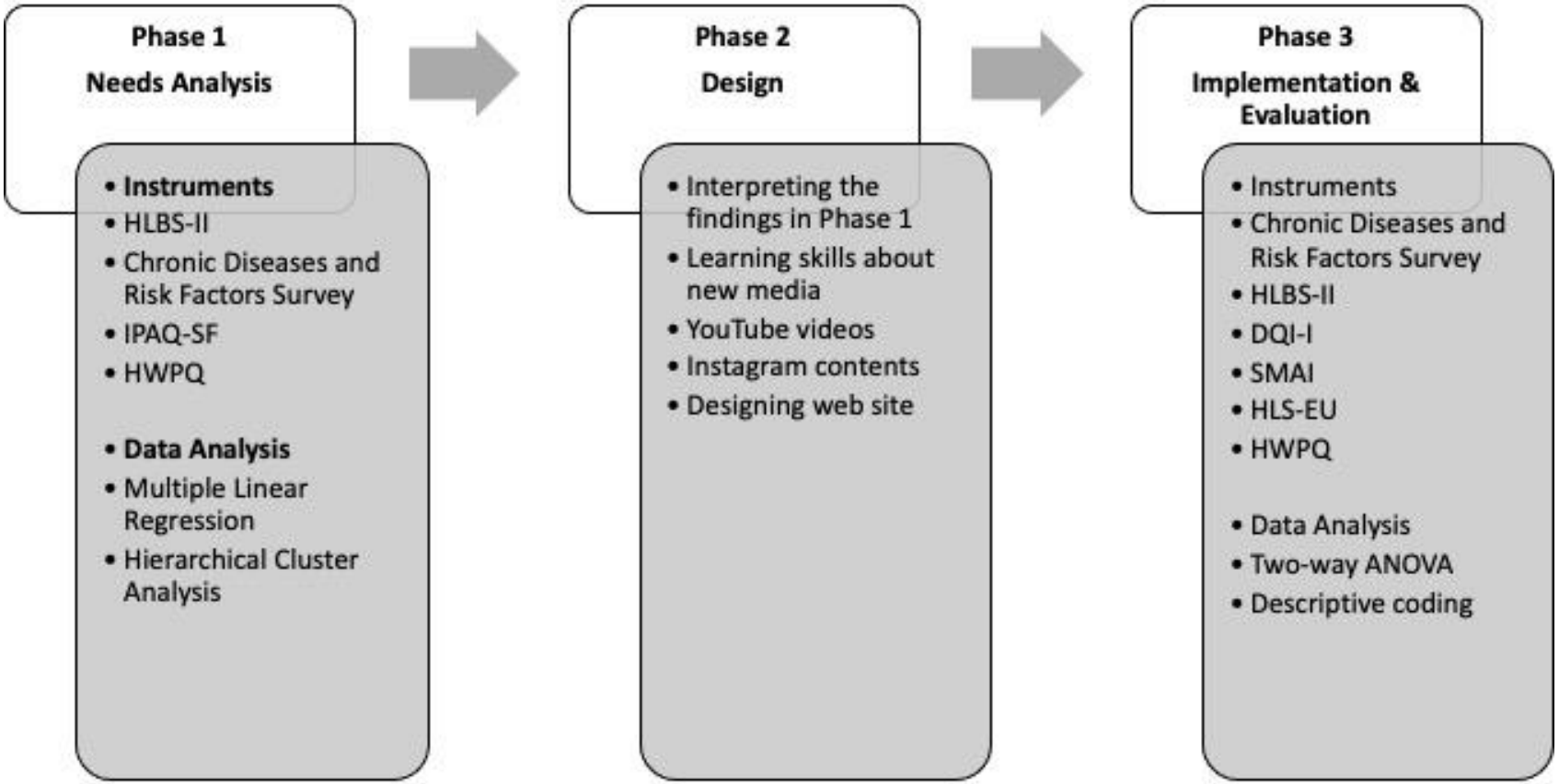



*Figure 3.1* Embedded-experiment design (one-phase)

Study 1 was conducted in 2018, two-years before the Covid-19 pandemic. Study 2 was conducted in May, 2021, during the pandemic in which lockdown measures were in effect. The intervention began after the last lockdown was ended.

Figure 3.2. *The flow of the study*



## 3.2. Study 1

### 3.2.1 Participants

The chosen method of sampling employed in Study 1 was purposive sampling, as the aim was to represent the differen regions of Turkey. After gaining approval from the Human Subjects Ethics Committee of Middle East Technical University (see Appendix A), an invitation e-mail was sent to around 650 companies and individuals from Ankara, İstanbul, Bursa, İzmir, Eskişehir, Bolu, Gaziantep, Sakarya, Antalya, Trabzon, Kahramanmaraş, Muğla, and Batman. In order to protect the privacy of the volunteers, paper-based surveys were sent by mail to individuals who accepted to participate in the study. After completing the surveys, participants returned the sealed envelopes to the researcher.

Among the 650 companies contacted, 405 technopark employees (174 women & 231 men) who were located in six different Turkish cities (Ankara, İstanbul, Bursa, İzmir, Eskişehir, and Bolu) volunteered to participate and completed the survey. Employees from Gaziantep, Sakarya, Antalya, Trabzon, Kahramanmaraş, Muğla, and Batman did not participate in the study. The average age of the participants was 32.27 years (*SD* = 6.8). The average age was 31.41 years (*SD* = 5.96) for women and 32.92 years (*SD* = 7.52) for men. 49.5% of the participants were married, and 50.5% were single.

### 3.2.2. Data Collection

#### Instruments

**Healthy Life Style Behaviour Scale-II (HLBS-II):** The Healthy Life Style Behaviour Scale-II (HLBS-II) measures lifestyle behaviours under six subscales. It is a 52-item questionnaire composed of health responsibility, physical activity, nutritional habits, stress management, mental development, and interpersonal relations (Walker & Hill-Polerecky, 1996). The reliability coefficients of the Turkish version of HLBS-II are .77 for health responsibility, .79 for physical activity, .68 for nutrition, .79 for mental development, .80 for interpersonal relationships, and .64 for stress

management (Bahar et al., 2008). The lowest and highest possible scores on the scale are 52 and 208, respectively. Higher scores indicate better engagement in healthy lifestyle behaviours (see Appendix B).

**Chronic Diseases and Risk Factors Survey:** The Turkish Republic Ministry of Health developed the Chronic Diseases and Risk Factors Survey to determine the prevalence of chronic illness, chronic situations, and risk factors in Turkey (Ünal et al., 2013). This survey examines the following elements: risk factors (smoking, alcohol consumption, nutritional habits, physical activity), personal medical history (symptom history, disease history), chronic health issues (angina pectoris, infarction, congestive heart failure, hypertension, diabetes, hyperlipidemia, chronic kidney failure, asthma, COPD, depression, CVA/Stroke, transient ischemic attack, epilepsy, migraine, dementia/Alzheimer's disease, Parkinson's disease, allergic diseases, gastroesophageal reflux, tuberculosis, cancer, and accidents), and quality of life (see Appendix B).

**International Physical Activity Questionnaire—Short Form (IPAQ):** The International Physical Activity Questionnaire (IPAQ) was developed by experts in 1998 to facilitate physical activity surveillance based on a global standard (Craig et al., 2003). The IPAQ is one of the most frequently used physical activity questionnaires and exists in two versions: the long-form consisting of 31 items (IPAQ-LF) and the short form consisting of 9 items (IPAQ-SF) (van Poppel et al., 2010). The Turkish version of IPAQ – Short Form demonstrated acceptable test-retest reliability scores ($r$ = .69) (Saglam et al., 2010) (see Appendix B). The short form of IPAQ records four intensity levels: vigorous-intensity activity, moderate-intensity activity, walking, and sitting. IPAQ – Short-form measures the frequency, duration, and intensity of physical activity in the last seven days based on the metabolic equivalents (METs) calculation. The outcome of the questionnaire is to calculate the METs of participants regarding minutes per week via IPAQ guidelines. METs calculation is conducted to analyse the data. MET expresses the amount of oxygen consumed during physical activity. MET refers to approximately 3.5 ml of oxygen consumed per kilogram per minute at rest (Howley, 2001). A MET-minute is calculated by multiplying the minute of activity by the MET score.

The following values are used for the analysis of IPAQ long and short form data:

Walk: 3.3 MET

Moderate-intensity physical activity: 4.0 MET

Vigorous physical activity: 8.0 MET

For example, the MET-min/week score of a person who walks for 30 minutes 3 days a week is calculated as 3.3 x 30 x 3 = 297 MET-min/week (see Appendix B).

**WHO Health and Work Performance Questionnaire (HPQW):** The World Health Organization Health and Work Performance Questionnaire (HPQW) is a self-administered instrument proposed to estimate the workplace costs of health problems in terms of reduced job performance (presenteeism) and sickness absence (absenteeism). In the presenteeism subscale, participants rate their performance and their colleagues' performance. The sickness absenteeism subscale asks participants to report missing days that resulted in health problems in a recall period of 30 days. The Turkish version of the questionnaire was validated by Kuru and Balkan (2019). The internal consistency of the Turkish version was found to be .82 (see Appendix B).

**Exercise Stages of Change Questionnaire:** Exercise stages of change explains a person's motivation to engage in physical activity (Marcus & Owen, 1992). Four questions are asked in the questionnaire to measure each individual's exercise stage of change on a binary scale (yes/no). The participants are categorized into five stages based on their responses: pre-contemplation (does not engage in regular physical activity and has no plans to do so in the future), contemplation (does not engage in regular physical activity and plans to do so in the future), preparation (has just begun to engage in regular physical activity), action (has not engaged in regular physical activity for more than one month but has engaged in it for less than six months), and maintenance (participates in regular physical activity longer than six months). The scale was developed in English (Marcus, 2009). In the current study, the Turkish version of the questionnaire was used. This version was verified by Cengiz, İnce, and Çiçek (2009) (ICC =.80) (see Appendix B).

### 3.2.3. Data Analysis

Firstly, all data were entered into SPSS (IBM SPSS Statistics 24), and the outliers were cleared using the z-scores. 0.98% of the data were cleared (n = 4) (Field, 2009). Multiple linear regression was conducted to examine the relationship between participants' healthy lifestyle behaviours (physical activity, nutrition, interpersonal relations, stress management, self-health responsibility, and mental development) and work performances for the first research question. For the second research question, a two-step cluster analysis was performed to determine the number of clusters in the population. After the cluster analysis, the clusters and the exercise stages of change groups were compared by their means to understand whether clusters and exercise stages matched.

### 3.2.4. Limitations

The following limitations of the study should be considered. Firstly, the study's sample size was limited because the response rate was low. Secondly, while participants came from several different Turkish cities, most of the data represented two major cities of Turkey (İstanbul and Ankara). Thirdly, although the researcher guaranteed the privacy of the data, the participants might still have provided misinformation, especially regarding their work performance.

## 3.3. Study 2

### 3.3.1. Participants

The chosen method of sampling employed in Study 2 was cluster sampling. An invitation e-mail was sent to individuals belonging to the target cluster identified in Study 1. Those who accepted to participate were assigned either to the experimental group or to the control group based on their choices.

**Experimental Group:** The experimental group consisted of 32 participants from Ankara ($n$ = 21), İstanbul ($n$ = 5), İzmir ($n$ = 4), and Sakarya ($n$ = 2). The participants were 21 women (*Mage* = 32.19; *SD* = 7.91) and 11 men (*Mage* = 36.82; *SD* = 8.21).

The experimental group had a body mass index (BMI) of 23.63 (*SD* = 3.73) for women and 27.20 (*SD* = 3.81) for men and all participants worked full-time (see Table 3.1).

Table 3.1. *Age and BMI of participants in the experimental group*

| | | Age | | BMI | |
|---|---|---|---|---|---|
| | *N* | *M* | *SD* | *M* | *SD* |
| Women | 21 | 32.19 | 7.91 | 23.63 | 3.73 |
| Men | 11 | 36.82 | 8.21 | 27.20 | 3.81 |

**Control Group:** The control group included 29 participants from Ankara (*n* = 17), İstanbul (*n* = 11), and İzmir (*n* = 1). In the control group there were 13 women (*Mage* = 38.54; *SD* = 8.42) and 16 men (*Mage* = 36.38; *SD* = 5.53). The control group participants worked full-time and had a BMI of 25.85 (*SD* = 5.08) for women and 25.78 (*SD* = 3.84) for men (see Table 3.2).

Table 3.2. *Age and BMI of participants in the control group*

| | | Age | | BMI | |
|---|---|---|---|---|---|
| | *N* | *M* | *SD* | *M* | *SD* |
| Women | 13 | 38.54 | 8.42 | 25.85 | 5.08 |
| Men | 16 | 36.38 | 5.53 | 25.78 | 3.84 |

### 3.3.2. Data Collection

#### 3.3.2.1. Quantitative Data Collection

**Chronic Diseases and Risk Factors Survey:** The Chronic Disease and Risk Factors survey is an instrument used in Study 1. An explanation is provided above (p.60).

**International Physical Activity Questionnaire – Long Form (IPAQ):** The long form of the International Physical Activity Questionnaire (IPAQ) was used to determine the physical activity levels of individuals. This instrument was developed to standardize physical activity assessment in different countries and cultures (Ekelund et al., 2005). The IPAQ is a questionnaire that records the duration of varying physical activity levels over the past week. The long form of the questionnaire consists of 27

questions and evaluates the activities in the following domains: housework, gardening, work activity, transportation, and leisure activities. Time spent sitting is recorded during weekdays and weekends. The first dimension includes field-specific scoring (work, transportation, home-gardening, leisure), and the second dimension contains activity-specific scoring (walking, moderate activity, vigorous activity). Calculation of the total score of the long-form includes the sum of walking, moderate-intensity activity, and duration (minutes), and frequency (days) of vigorous activity. The Turkish version of IPAQ – Long Form demonstrated acceptable test-retest reliability scores ($r$ = .64) and criterion validity scores ($r$ = .29) (Öztürk, 2003).

**Dietary Quality Index (DQI-I):** The DQI-I is a comprehensive instrument that compares diet quality (Kim et al., 2003). To evaluate the DQI-I, four principal components have been created. These are variety, adequacy, moderation, and overall balance.

The first of these is the variety component. It is important to evaluate the diversity of protein-based foods (meat, poultry, fish, dairy products, legumes, and eggs) to ensure that foods with similar content are separately found in an individual's diet and avoid monotony in the diet. The variety component is measured by two factors: variety in food groups and protein sources. For each food group to be counted as a variety, consumption of at least half a portion of that food group is necessary. Consumption of at least one serving per day of all food groups (meat, milk/legume, cereal, fruit, and vegetable) defines the maximum diversity score (15 points). The variety score is calculated by subtracting 3 points from the highest score of 15 when any group is under-consumed. If the daily protein intake is from at least three different sources, the highest score (5 points) is given. 3 points are given if two different protein sources are consumed, 1 point is given if one protein source is consumed, and zero points if no protein source is consumed.

The adequacy component of the DQI-I calculates whether the necessary macronutrients and micronutrients are taken into the body to prevent diseases that may arise from malnutrition and nutrient deficiencies. There are eight groups in this component: vegetables, fruit, grain, fibre, protein, iron, calcium, vitamin C. If the total energy ratio from protein is 10% or more, protein intake is considered sufficient. Iron, calcium, and vitamin C are given 5 points if they meet 100% of the daily recommended

intake, 2.5 points if they meet 50-100% and 0 points for below 50%. The score is calculated according to fruit, vegetables, grains, and pulp consumed.

The moderation component relates to the restriction of food and nutrient consumption associated with chronic diseases. Specific amounts of fat, saturated fat, cholesterol, sodium, and empty calories are necessary for bodily function, but excessive consumption causes chronic diseases. The total scoring ranges from 0 to 30 points. Consuming lower than the daily recommended allowance (DRA) is 6 points, consuming slightly above the DRA is 3 points, and consuming far above the DRA is 0 points. Consumption of foods with low nutritional content, one of the assessment criteria of DQI-I, is called "empty calorie foods." Empty calorie foods evaluate the energy provided by foods with high energy and low nutritional content. Empty energy sources provide neither nutrients nor energy to the body. Sugar is considered an empty-calorie food. The lowest score is given if empty calorie foods constitute 10% or more of daily energy consumption.

The last component of the DQI-I, the overall balance component, evaluates the ratio of carbohydrates, proteins, and fats that contribute to energy and whether these ratios are balanced. Maintaining a balance in the intake of fatty acids is very important for a healthy diet. Balanced energy sources (0-6) and fatty acid composition (0-4) are evaluated as a total of 10 points (Kim et al., 2003; Tur et al., 2005). The index results are calculated by a food engineer and a dietitian to increase the reliability of the DQI-I (see Appendix B).

**Stress Management Attitudes Inventory:** The original Stress Management Attitudes Inventory was developed for international students studying at university in the United States to measure the coping efforts of individuals in different stress situations (Özbay, 1993). The Turkish adaptation of the test was made by Özbay and Şahin (1997). In the Turkish adaptation study, 43 items from the original 56-item coping scale were grouped under six factors. The sub-dimensions of the inventory were determined as six factors; active planning, seeking help, refuge in religion, escaping abstraction (emotional-operational), escaping abstraction (bio-chemical), and acceptance-cognitive restructuring. The Stress Management Attitudes Inventory is a 5-point Likert-type rating test. Findings regarding the validity of the test were obtained with the help of a similar scale. The Stress-coping styles scale adapted into Turkish by Şahin

and Durak (1995) was taken as a criterion (Durak, 1995). In general, a relationship of .54 was found between the scale and the inventory. The reliability coefficient of the test calculated by the Cronbach Alpha internal consistency method was .81 (see Appendix B).

**The European Health Literacy Survey (HLS-EU):** The HLS-EU was developed by the European Health Literacy Research Consortium in 2012 (Sørensen et al., 2013). It is a self-administered survey developed to assess health literacy in literate people over 15. The reliability of the scale in Turkish is measured by internal consistency (Cronbach's Alpha). Overall health literacy Cronbach Alpha value is 0.95, treatment and service health literacy Cronbach Alpha value is 0.86, disease prevention health literacy Cronbach Alpha value is 0.87, and health promotion health literacy Cronbach Alpha value is 0.91 (see Appendix B).

Based on the conceptual framework, the question-forming matrix includes three health-related dimensions (treatment, disease prevention, and health promotion) and four information-gathering processes related to health-related decision-making and practices (access, understanding, decision-making, and use/application). Each item is graded on a scale of four (1=Very hard, 2=Hard, 3=Easy, 4=Very easy). The expression "I don't know" corresponds to 5 on the scale. The total score obtained from the scale ranges between 47 and 188. In terms of ease of calculation, the total score has been standardized with the help of the following formula to take values between 0 and 50.

0 points indicate the lowest health literacy on the scale, and 50 points indicate the highest health literacy. The level of health literacy is evaluated in four categories according to the score obtained:

0-25 points: insufficient health literacy

>25-33 points: problematic – limited health literacy

>33-42 points: adequate health literacy

>42-50 points: excellent health literacy

**WHO Health and Work Performance Questionnaire (HWPQ):** The World Health Organization Health and Work Performance Questionnaire (HWPQ) is an instrument used in Study 1. An explanation is provided above (p.61)

### 3.3.3. Qualitative Data Collection

Individual interviews were undertaken to provide a more detailed knowledge of the individuals' reactions and the effects of the social-ecological context of health-literacy-based intervention. Individual interviews were conducted after the intervention period (at the end of the 7th week). Maximum variation sampling was the preferred method of sampling for the interview so that data from the widest range of perspectives could be collected. The selection included three women and two men participants who had benefited the most from Study 2, and two women and three men participants who had benefited the least. The researcher conducted the interviews, and the interviews lasted 32 minutes on average. The interview questions were created to gain a more in-depth insight into the participants' intervention experiences. The twelve-question interview guide was separated into three sections: reasons for participating in the intervention, experiences during the intervention, and suggestions for the intervention. Regarding the participants' experiences during the intervention, specific questions about the changes in their lifestyle behaviours (physical activity, nutrition, stress management, office and work health behaviours) were posed in order to understand the effects of the social-ecological context of health-literacy-based intervention (see Appendix C).

### 3.3.4. Intervention

The intervention is an employee wellness program that focuses on increasing health literacy on different lifestyle behaviours (physical activity, nutrition, stress management, work and office health behaviours) integrating new media, with a central focus on the social-ecological context and aims an positive impact on work productivity.

The intervention was held for seven weeks between May and July. The duration of the intervention was determined according to the needs of technopark employees established in Study 1. The results showed that intervention needs to cover four lifestyle behaviours in seven weeks; physical activity (2 weeks), nutrition (2 weeks), stress management (1 week), work and office health behaviours (1 week) and a introductory week. Participants in the experimental group were exposed to YouTube

videos, a website, a selection of Instagram posts, and one-to-one expert support (optional). Field notes were taken to provide more information about the interaction between the intervention tools and the participants.

#### 3.3.4.1. Strategies in Intervention

For the success of the intervention and to maximize its effectiveness, a replicable and reliable course of action is necessary. To understand how interventions work and to determine the right approach, Abraham and Michie (2008) developed several behaviour change techniques (BCTs) in their taxonomy by examining different health behaviour theories. The present intervention aimed to promote health-literacy in social-ecological context changes via behaviour change techniques described by Abraham and Michie (2008). The BCTs used in the intervention were as follows:

1. Provide feedback on performance
2. Prompt specific goal setting
3. Provide instruction
4. Plan social support or social change
5. Prompt self-monitoring of behaviour
6. Model or demonstrate behaviour
7. Prompt review of behavioural goals

These seven behaviour change techniques used in the intervention in Study 2 were the most effective techniques in health promotion interventions (Howlett et al., 2015; Michie et al., 2018; Samdal et al., 2017).

#### 3.3.3.2. Content of the Intervention

The intervention was based on the use of new media tools along with optional one-to-one expert support. The new media tools were presented under a brand named "Move For." The tools employed in the intervention are listed below.

1. a YouTube Channel (https://www.youtube.com/channel/UC3TeFhPgLBtFVrSAi5UZKxg)
2. a website (https://www.movefor.net)
3. an Instagram page (https://www.instagram.com/movefortr/)

4. one-to-one expert support (optional)

All content was prepared and presented in Turkish.

**YouTube Channel**

YouTube videos had a central role in the intervention, while the other new media tools acted as supplementary tools. The YouTube channel consisted of seven videos published weekly. The topics were determined according to the outcomes of Study 1. The topics and duration of the videos are as follows:

Week 1: Wellness & Health (Duration: 13 minutes 22 seconds)

Week 2: Physical Activity (Duration: 11 minutes 47 seconds)

Week 3: Fitness (Duration: 10 minutes 37 seconds)

Week 4: Basics of Nutrition (Duration: 16 minutes 23 seconds)

Week 5: What & How to Eat (Duration: 6 minutes 10 seconds)

Week 6: Stress Management (Duration: 10 minutes 12 seconds)

Week 7: Office and Work Health (Duration: 7 minutes 2 seconds)

Supplementary visuals were integrated into the video content. To this end, royalty-free videos and photos were used. These resources were gathered from the websites pexels.com and pixabay.com. For additional visuals, canva.com was used. The audio editing software Audacity was chosen for voice recording and editing. For generating the final shape of the videos, the timeline-based video editing software, Adobe Premiere Pro was used. An average time of two hours per minute of each video was spent on creating the videos. This period included finding related visuals, creating additional graphics, generating prompts and texts, and making revisions. All videos were published on Sundays at 11:30 A.M. local time when the participants were available to watch the videos before the week began.

**Website**

The website www.movefor.net was created as support for the YouTube videos. The website presented information about wellness and its components, the components of physical fitness, as well as providing various self-assessment tools that enabled participants to evaluate themselves about each week's topic. The content and self-assessment tools provided on the website were as follows:

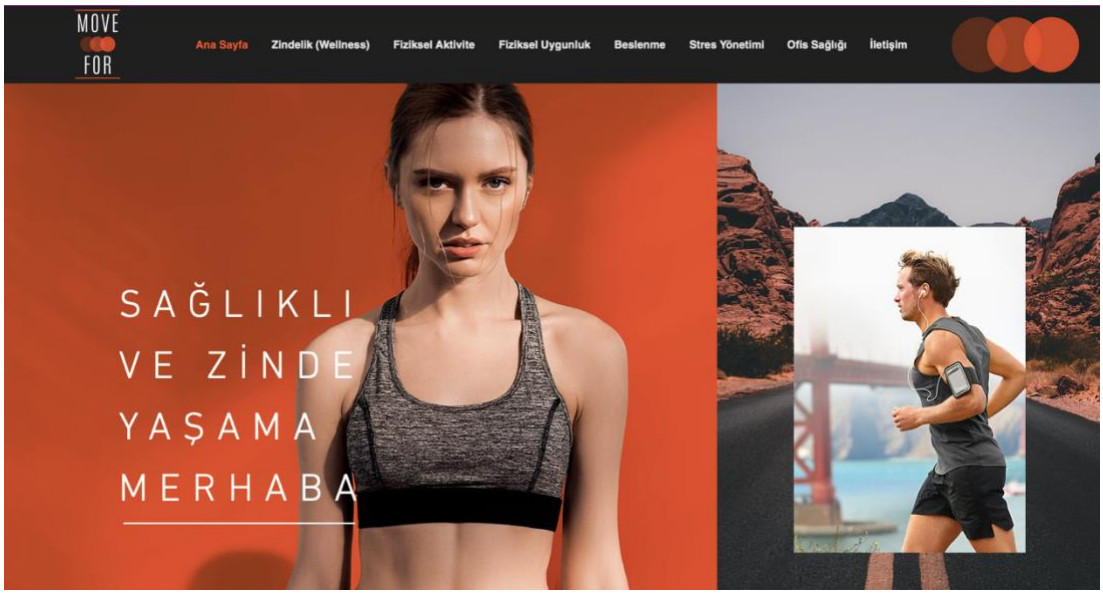



Figure 3.3 *Screenshot of homepage (www.movefor.net)*

Week 1: Wellness & Health – Wellness assessment tool regarding six dimensions with instant feedback

Week 2: Physical Activity – Exercise Stages of Change Questionnaire and instant tips for moving to higher stages

Week 3: Fitness – Methods for assessing components of physical fitness and sample weekly exercise plans for different levels

Week 4: Basics of Nutrition – Tables and figures about the macronutrients of common foods

Week 5: What & How to Eat – Body Mass Index (BMI) calculator and basal metabolism calculator

Week 6: Stress Management – Stress assessment tool with instant feedback and a calculator tool that estimates a smoker's loss in terms of lifespan and money.

Week 7: Office and Work Health – Tips for correct sitting posture at a desk

In addition to these self-assessment tools and tips, the YouTube videos were also available on the website. The content on the website was published simultaneously with the videos.

**Instagram Page**

An Instagram account named "Movefortr" was created. On average, six Instagram posts were posted per week. Similar to the webpage, the Instagram page

was a supportive element for the YouTube Videos. Each of the six posts served a different purpose. Their purposes are as follows:

Post 1: Informing

Post 2: Informing (comparative)

Post 3: Motivating

Post 4: Correcting misinformation

Post 5: Reminding (reminder for the video of the week)

Post 6: Informing

Besides supporting the YouTube videos, the Instagram page also provided a social environment and allowed participants to vote on single-question polls and share their experiences via the *question-and-answer* feature of Instagram.

**Expert Support**

The expert who provided the one-to-one support was the researcher of the current study, who had a bachelor's degree in Food Engineering and a Masters' degree in Physical Education and Sports and was a PhD candidate in Physical Education and Sports. Moreover, he had ten years of experience in teaching and coaching swimming. The expert support mechanism was offered as an optional choice to the participants. The expert provided an e-mail address and a phone number for any questions. The participants who needed expert support made appointments via e-mail (the most preferred choice), WhatsApp, or phone call. The meetings were conducted online via Google Meet or Zoom.

**Agenda**

*Week 1*

The main aim of this week was to introduce health and wellness concepts and bring insight into the differences between these terms. This week's video was designed to answer the following questions:

- What are health and wellness?
- Are the terms health and wellness the same?
- What are the dimensions of wellness?
- How can you improve your dimensions of wellness?

- What are some tips for living a healthy life?


Figure 3.4 *Screenshot from YouTube video (Week 1)*

This week the webpage presented a summary of the terms health and wellness and provided an assessment tool for wellness and its dimensions. Participants instantly assessed their performance for each dimension (physical, social, intellectual, emotional, financial, and spiritual).

Six posts about the concepts of health and wellness were published on the Instagram page.

Post 1: Information about the release of the first week's video and its link

Post 2: Information about goal setting

Post 3: Infographic of most common goals set for a healthy life

Post 4: Results of research explaining that promoting multiple healthy lifestyle behaviours decreases the risk factors

Post 5: Reminder infographic for the dimensions of wellness

Post 6: Information about motivational stages of change

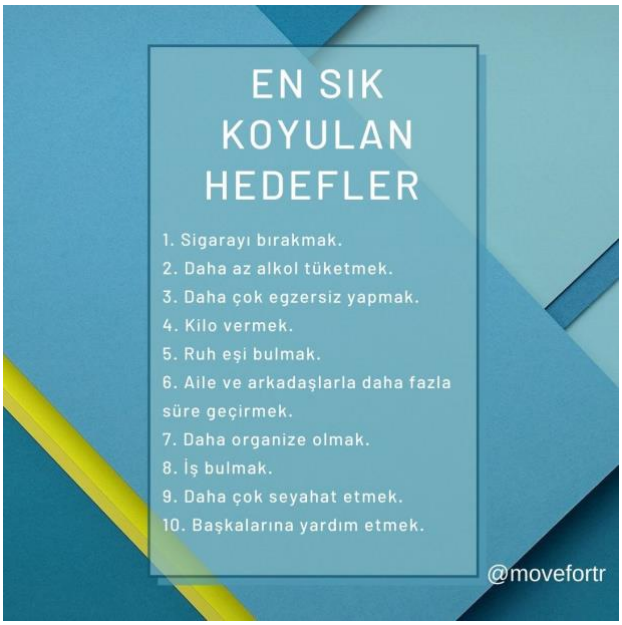



Figure 3.5 *Sample Instagram post from Week 1*

In addition to these posts, the *stories* feature of Instagram was also used. In the *question-and-answer* feature, participants were asked to state their strongest and weakest wellness dimensions. After completing the survey on the web page, they determined their strongest and weakest dimensions in wellness. Then, the participants' answers were posted as a story so that everyone could view others' responses anonymously. In another story, ten tips for promoting wellness were presented.

During week one, eight participants chose to make use of expert support. They shared their wellness survey results with the expert and asked for guidance and advice about their weakest wellness dimensions. The expert offered support according to their needs. He provided information and tips for daily life and suggested helpful resources, such as books or online tools.

*Week 2*

The focus of this week was the concepts of physical activity and exercise. This week's video was designed to answer the following questions:

- Are the terms physical activity and exercise the same?
- How active should adults be for a healthy life?
- What are the suggested exercise types, and how much should they be done?
- How can you track your exercises?

- What should you consider when choosing a gym?
- How can you overcome the obstacles to an active life?


Figure 3.6 *Screenshot from YouTube video (Week 2)*

This week on the website, there was a four-item questionnaire that examined the motivational exercise stage of the participants. For this examination, the Exercise Stages of Change Questionnaire was used in order to classify the participants under one of the five stages of motivational change. These stages are pre-contemplation, contemplation, preparation, action, and maintenance. Each step encompasses different characteristics, and participants received instant tips for moving to the following motivational stage.

The six posts published on the Instagram page this week were as follows:

Post 1: Information about the release of the second week's video and its link

Post 2: Infographic about the weekly recommended amount of physical activity for adults

Post 3: Infographic and video providing tips and demonstration of correct walking posture

Post 4: Infographic about recommended daily number of steps for adults

Post 5: Information about how to change behaviour and build a new habit

Post 6: Information about the effect of social environment on an active life



Figure 3.7 Sample Instagram posts from Week 2

Moreover, the Instagram single-item yes/no survey was employed via the *stories* feature to determine whether physical activity and exercise are used synonymously. In another *story*, participants were asked to track their physical activity. As a follow-through question, participants were asked to share the names of mobile applications used for monitoring physical activity.

Eight of the participants sought expert support in week two. Two participants wanted to learn how to integrate physical activity to increase sleep quality. During the one-to-one online meetings, the two participants revealed that they consumed caffeine in the evening hours of the day. Hence, the expert recommended quitting this habit (starting with switching to decaffeinated coffee and then quitting drinking coffee in the evenings) and provided some tips for integrating physical activity into their daily life. Three of the participants inquired about appropriate shoes and clothes for exercise. The expert suggested ways to choose proper shoes and clothes for exercise. In addition, the expert provided information about introducing warm-up, cool down and stretching exercises into their workout routines. Three participants asked for advice about equipment for indoor activities focusing on cardiovascular exercises.

*Week 3*

The topic of this week was physical fitness and preparing a workout plan. This week's video focused on the following questions:

- What is physical fitness?
- What is the role of physical fitness in our daily life, and what are its benefits on health?
- What are the components of physical fitness, and how can we improve them?
- How frequent should weekly exercise be done?
- What should be the intensity of your exercises?
- Which of the exercise types should you prefer?
- How can you prepare a weekly exercise plan?

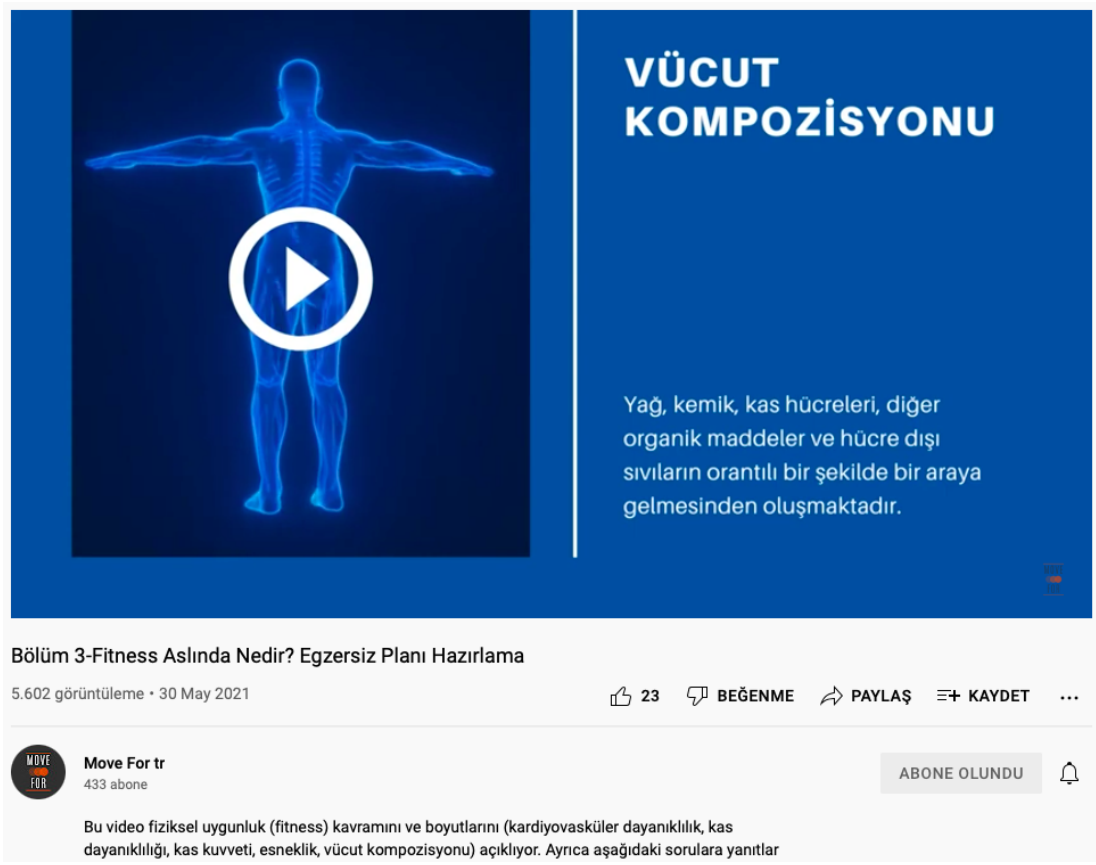



Figure 3.8 *Screenshot from YouTube video (Week 3)*

This week on the website, detailed procedures for self-assessment of components of physical fitness (cardiovascular endurance, muscular strength, muscular endurance, flexibility, and body composition) were presented. Moreover, standards for scores of these components were shared in tables so that after implementing self-assessment procedures, participants were able to rate their results. In addition, sample weekly exercise plans for moderate, vigorous, and mixed intensity were presented.

The Instagram page provided the following five posts this week:

Post 1: Information about the release of the third week's video and its link

Post 2: Infographic highlighting the importance of cardiovascular endurance

Post 3: Infographic about the components of physical fitness

Post 4: Infographic showing an example stretching workout plan according to FITT principles

Post 5: Infographic about muscle types and their functions in the body


Figure 3.9 *Sample Instagram posts from Week 4*

Moreover, via the *question-and-answer* feature of Instagram, the participants were asked to share the names of mobile applications for creating workouts. The

results were posted as another *story*, while the names remained anonymous. An illustration and a motivational quote were posted in another story to boost motivation.

This week marked the highest number of requests for expert support. Three participants asked questions about regulating exercise intensity. The expert provided information about exercise intensity based on heart rate and how smartwatches could track exercise and intensity. Nine participants asked for feedback on their weekly exercise plans, which they had prepared themselves. Two participants requested assistance while preparing their exercise plan. The expert helped them and showed ways for planning.

The expert offered to provide one-to-one support for implementation of physical fitness self-assessment procedures. However, none of the participants requested assistance regarding the physical fitness assessment tests.

*Week 4*

The focus of this week was the fundamentals of nutrition. This week's video was designed to answer the following questions:

- What are macronutrients?
- What is the function of proteins, and what are their sources?
- What is the function of fats and what are their sources?
- What is the function of carbohydrates, and what are their sources?
- What is glycemic index?
- What are micronutrients?
- What are the functions of vitamins and what are their sources?
- What are the functions of minerals and what are their sources?

The website presented tables showing the fundamentals of nutrients and dietary values of the most common sources for macro and micronutrients.

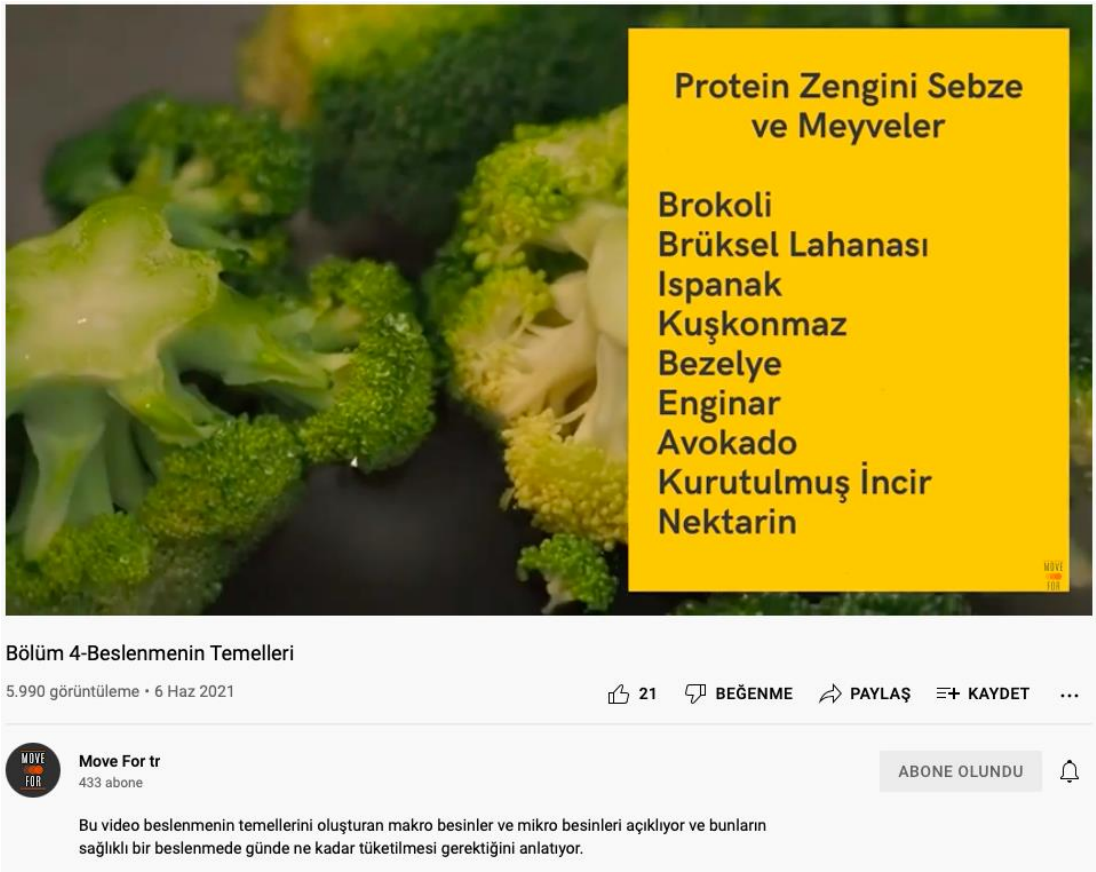



Figure 3.10 *Screenshot from YouTube video (Week 4)*

The Instagram page had the following five posts this week:

Post 1: Information about the release of the fourth week's video and its link

Post 2: Infographic about refined sugar and common sources

Post 3: Information about the functions of water

Post 4: Infographic about the relationship between sleep duration and eating habits

Post 5: Information about prebiotics and probiotics


Figure 3.11 *Sample Instagram posts from Week 4*

In addition to the Instagram posts, a multiple-choice quiz about the fundamentals of nutrition was posted, to which participants received instant feedback.

*Week 5*

The topic for this week was how much and what to eat and to examine eating habits. The week's video focused on the following questions:

- What is basal metabolism, and how can you calculate it?
- What is your daily energy expenditure?
- How can you source your daily energy expenditure?
- Do you have to count calories every day?
- How can you monitor nutrition?

In addition to the videos, two calculators were made available on the website: a daily energy expenditure calculator and a body mass index calculator.

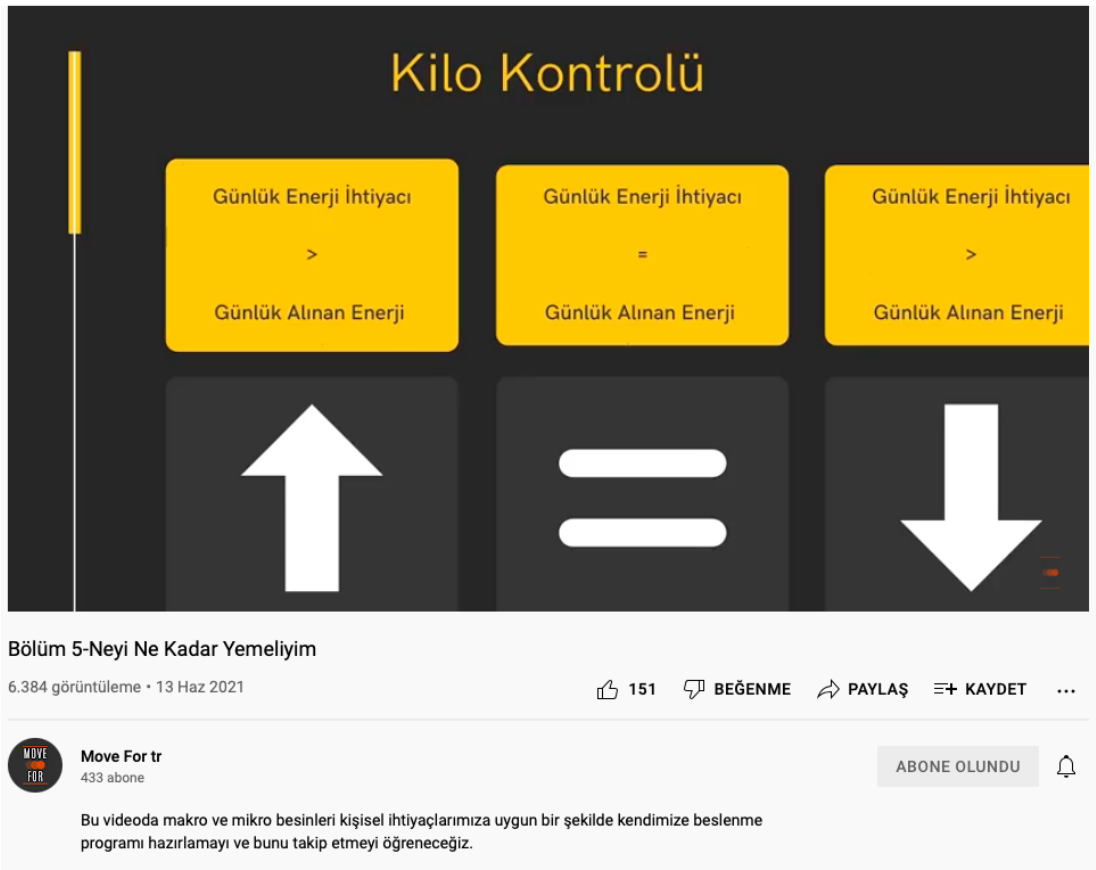



Figure 3.12 *Screenshot from YouTube video (Week 5)*

The Instagram page provided six posts about eating habits.

Post 1: Information about the release of the fifth week's video and its link

Post 2: Infographic explaining the differences between dieting and healthy eating

Post 3: Infographic about how healthy eating can be regulated without missing social life

Post 4: Infographic about weight management

Post 5: Video explaining the differences between food intolerance and allergies

Post 6: Infographic about superfoods and examples


Figure 3.13 Sample Instagram posts from Week 5

Five participants required the expert to support this week. Four of them requested suggestions for mobile applications to monitor their nutrition. One participant required a recommendation from a doctor about a chronic condition.

*Week 6*

The topic for this week was stress management. The week's video was designed to answer the following questions:

- What is stress? Does stress have any benefits?
- What are the causes of stress?
- What is a fight-or-flight response?
- How can you manage anger?
- How can you deal with your anxieties and fears?
- Can you meditate anywhere?
- What is the relationship between goal setting and stress?
- What are the best methods for time management?


Figure 3.14 Screenshot from YouTube video (Week 6)

This week on the website, a self-assessment tool measured stress levels. This self-assessment tool was a fourteen-item questionnaire, which enabled the participants to view their results and norms for their stress level. In addition, a calculator about smoking habits allowed participants to estimate the amount of money and the number of days they lost their life by smoking.

The Instagram page had five posts this week:

Post 1: Information about the release of the sixth week's video and its link

Post 2: Infographic about strategies for coping with stress

Post 3: Infographic about comfort zone

Post 4: Infographic about time management (the Eisenhower matrix)

Post 5: Infographic about strategies for dealing with stress and improving work performance


Figure 3.15 *Sample Instagram posts from Week 6*

Also, via the *question-and-answer* feature of Instagram, participants were asked to share their primary daily stress sources, and the responses were posted anonymously so that they could view others' responses.

In week six, two participants sought expert support. Both of them asked questions about meditation and the best ways to meditate. The expert recommended some mobile applications and websites for meditation. In addition, the expert asked participants questions about the causes of stress in their life to enable self-awareness.

*Week 7*

The focus of this week was work and office health. This week's video was designed to answer the following questions:

- What are the causes of neck pain, and how can we prevent it?
- What are the causes of back pain and how can we prevent it?
- What are the causes of low back pain and how can we prevent it?
- What are the features of a good ergonomic office chair?
- What is the correct sitting posture?
- How should you choose your keyboard and mouse?
- What is the best positioning for your computer screen?

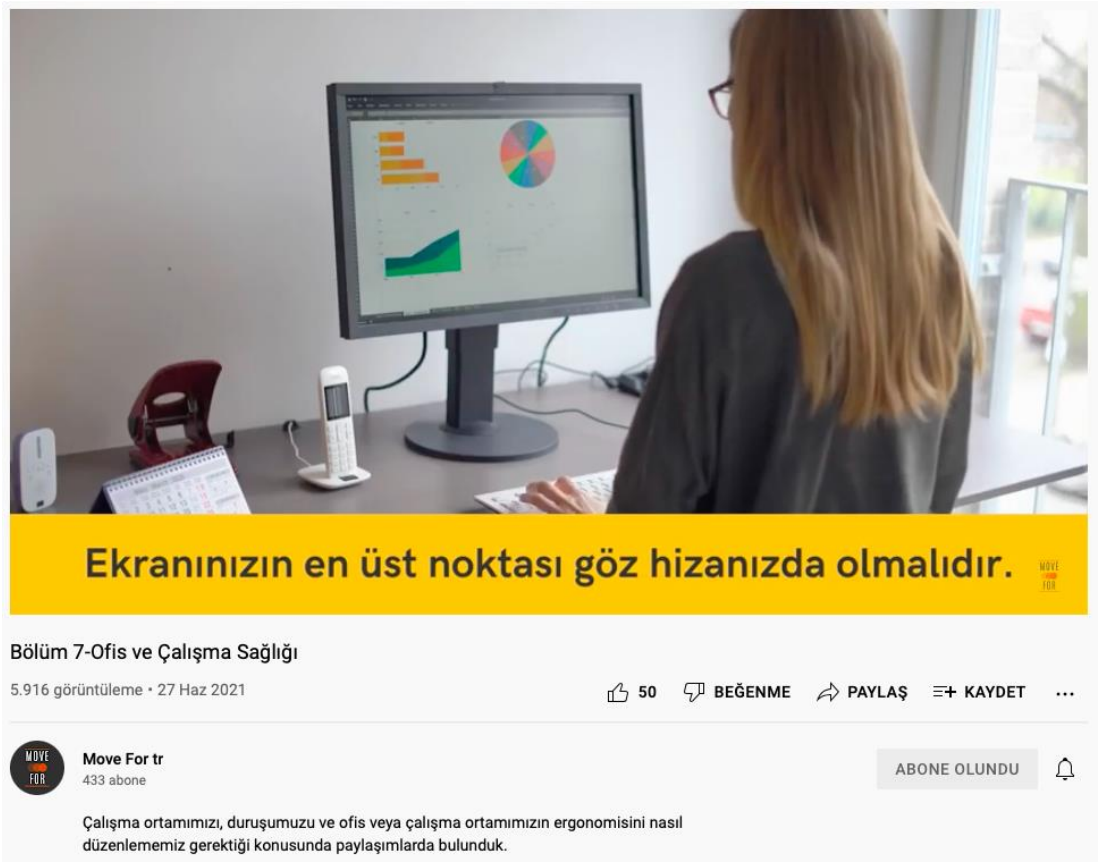



Figure 3.16 *Screenshot from YouTube video (Week 7)*

This week the website presented illustrations showing tips for correct posture in the office and work environment.

The Instagram page had the following four posts this week:

Post 1: Information about the release of the seventh week's video and its link

Post 2: Instructions for an exercise about eye health (the 20-20-20 rule)

Post 3: Infographic about a successful and happy career

Post 4: Infographic about ergonomics of office chairs


Figure 3.17 *Sample Instagram posts from Week 7*

This week the expert sent an e-mail to all participants for any questions before the end of the intervention.

### 3.3.4. Data Analysis

In this section, the methods for analysing quantitative and qualitative data. To analyse the quantitative data, multiple linear regression, two-step cluster analysis, one-way ANOVA, and mixed design MANOVA were applied ($p$<0.05). After the interviews were transcribed verbatim, analyses from transcribed data were conducted to reach qualitative data. The qualitative data were analysed by deductive thematic analysis (Braun & Clarke, 2012).

#### 3.3.4.1. Quantitative Data Analysis

Descriptive and inferential data analyses were conducted to analyse the quantitative research questions. The details of the data analysis are presented in Table 3.3.

The quantitative parts of the research questions 3, 4, 5, 6, and 7 examined the effects of the social-ecological context of health-literacy-based intervention on the

various dependent variables. In analysing these research questions, data from both the experimental and control groups were used. A mixed design MANOVA was carried out for each research question to analyse the pre-test and post-test data (Field, 2009). Before interpreting the inferential analyses, assumption checks were conducted.

Table 3.3 *Data Analysis Methods for Research Questions*

| RQ | Data Type | Inclusion of Control Group | Inferential Statistical Analyses |
|---|---|---|---|
| RQ 1 | Quantitative | Not applicable | Multiple Linear Regression |
| RQ 2 | Quantitative | Not applicable | Two-step Cluster Analysis |
| RQ 3 | Continuous/Qualitative | Yes | Mixed MANOVA/Qualitative |
| RQ 4 | Continuous/Qualitative | Yes | Mixed MANOVA/Qualitative |
| RQ 5 | Continuous/Qualitative | Yes | Mixed MANOVA/Qualitative |
| RQ 6 | Continuous | Yes | Mixed MANOVA |
| RQ 7 | Continuous | Yes | Mixed MANOVA |
| RQ 8 | Qualitative | No | Qualitative |
| RQ 9 | Qualitative | No | Qualitative |
| RQ 10 | Quantitative | No | Descriptive Statistics |

**Assumptions**

A mixed design MANOVA was conducted to examine the intervention's possible effects on technopark employees' physical activity, nutrition, stress management, health literacy, and work performance from pre-test and post-test scores in terms of the possible differences between experimental and control groups.

Before the MANOVA was conducted, quantitative data were tested for normality and homogeneity of variance assumptions. The term *normality* refers to the fact that the data are evenly distributed. The term *homogeneity of variance* refers to the fact that the variance in each dependent variable should be the same. If the scores of any of the variables have a non-significant variation, the variance is considered homogenous; if the scores have a substantial variation, the variance is deemed heterogeneous. Because covariance matrices are homogeneous, the correlation between any two dependent variables should be constant across all groups. For

homogeneity of covariance matrices, it is necessary to assume the homogeneity of variance in each dependent variable and the same correlation between dependent variables across all groups. The relevant statistical assumptions for statistical analyses must be satisfied in order to interpret the statistical analyses appropriately. Otherwise, the results should be interpreted with scepticism (Field, 2016).

*Testing the Normality Assumption*

The basic assumptions of a mixed design MANOVA are multivariate normality and homogeneity of variance and covariance. Skewness and kurtosis values and Kolmogorov-Smirnov and Shapira-Wilk tests were applied for the normality assumption. The values for skewness and kurtosis should be between ±3,00. The other way to check the normality assumption is the Kolmogorov-Smirnov and the Shapiro-Wilk tests, whose results should be non-significant ($p > .05$). In the present study, not all of the skewness and kurtosis values of dependent variables appeared within the criteria values (see Appendix D). The other way to check the normality assumption is to test with the Kolmogorov-Smirnov and the Shapiro-Wilk tests. These tests should be non-significant to meet the assumption, i.e., $p > .05$. Again, some of the dependent variables did not reach the criteria level for these tests.

*Testing the Homogeneity of Variance Assumption*

The homogeneity of variance was tested as the prerequisite of the homogeneity of covariance matrices. The assumption was examined via Levene's test. Levene's test results should be non-significant ($p > .05$). Although all of the dependent variable scores in the pre-test reached this criterion, not all of them met this assumption in the post-test (see Appendix D).

*Testing the Homogeneity of Covariance Matrices Assumption*

The homogeneity of covariance matrices assumption was tested using Box's M test. Box's M test results should be non-significant ($p > .05$). This assumption was not met for the analysis.

#### 3.3.4.2. Qualitative Data Analysis

Deductive thematic analysis was performed for analysing the qualitative data. Thematic analysis is a flexible qualitative analytical method that allows researchers to derive new ideas and concepts from data. Because thematic analysis is such a versatile method, there are many possible ways to interpret the meaning of the data set. Determining which data is important and which of it is not might be challenging. A total of ten audio records from individual interviews were transcribed verbatim to be used as qualitative data. Then, preliminary labels that identify crucial data properties pertinent to solving the research question were created. In the next phase, themes were determined according to the research questions. The themes for each research question were created by examining the quantitative instruments. For physical activity, the domains of the IPAQ – Long form) were used in creating themes: housework, gardening, work activity, transportation, and leisure activities (see Table 4.5). Then, codes were determined after reviewing the labels according to the themes. The results were reported to answer the research questions.

### 3.3.5. Limitations

There were several limitations in the study. First of all, since the participants were technopark employees, the results could only be generalized to this population. Secondly, the qualitative data were collected from ten participants. Finally, in the study design, additional expert support in more one-to-one mentoring and professional psychological support would have been more beneficial for the participants, but this was not feasible due to time and financial constraints.

# CHAPTER 4

# RESULTS

This chapter thoroughly describes the quantitative data analysis outcomes and the qualitative data analysis findings. The results of the research questions are provided.

## 4.1. Descriptive Analyses of Quantitative Data

### 4.1.1. Study 1

This part discusses the results of descriptive statistics in terms of the mean and standard deviation scores in Study 1 and Study 2. Figure 4.1 presents the lifestyle behaviour scores of the participants. Women's mean scores in all subscales of lifestyle behaviour appeared to be higher than men's, except for physical activity behaviour.

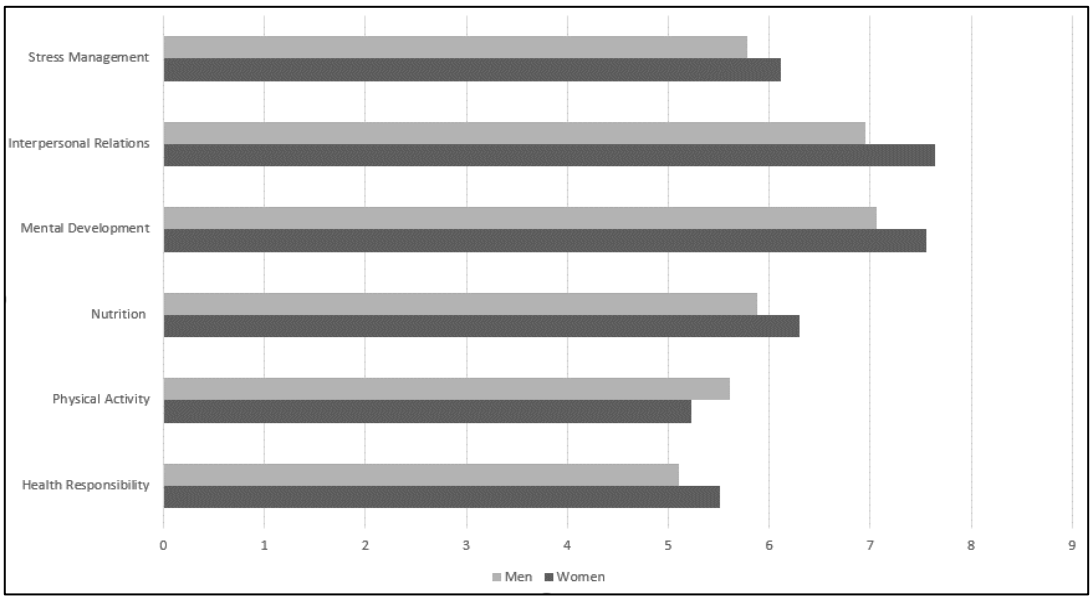



*Figure 4.1*. Lifestyle behaviour scores (min=0, max=10)

Work performances were assessed in terms of presenteeism and absenteeism. The presenteeism scores for women and men appeared to be comparable. Women's work performance as presenteeism was 80.03%, and men's work performance presenteeism was 82.03%. The average number of days per year for sickness absenteeism was 10.44 days for women and 7.28 days for men.

Table 4.1. *Work Performance of Participants (n=405)*

| Work Performance | Women | Men |
|---|---|---|
| Presenteeism | 80.03% | 82.03% |
| Absenteeism | 10.44 d/y | 7.28 d/y |

### 4.1.2. Study 2

This part explains the descriptive statistics in terms of mean and standard deviation scores of each dependent variable for Study 2. Table 4.2 presents the measurements of the experimental and control groups at the beginning of the intervention (pre-test) and the end of the intervention (post-test). The mean scores of all dependent variables for the experimental group showed an increase from pre-test to post-test. The mean scores of nutrition and health literacy in the control group maintained approximately the same score from pre-test to post-test. A slight increase in the mean scores of physical activities, stress management, and absenteeism and a

slight decrease in the mean scores of presenteeism were observed in the control group from pre-test to post-test.

Table 4.2. *Summary of descriptive statistics of dependent variables (n = 61)*

| Dependent Variable | Group | *M* | *SD* | *N* |
|---|---|---|---|---|
| Physical Activity (Pre-test) | Experimental | 1565.11 | 1513.41 | 32 |
| | Control | 1297.44 | 1318.09 | 29 |
| Physical Activity (Post-test) | Experimental | 3367.31 | 2969.67 | 32 |
| | Control | 1434.83 | 1462.12 | 29 |
| Nutrition (Pre-test) | Experimental | 59.97 | 11.98 | 32 |
| | Control | 65.31 | 10.67 | 29 |
| Nutrition (Post-test) | Experimental | 68.88 | 9.54 | 32 |
| | Control | 65.10 | 8.57 | 29 |
| Stress Management (Pre-test) | Experimental | 67.87 | 24.01 | 32 |
| | Control | 65.86 | 18.54 | 29 |
| Stress Management (Post-test) | Experimental | 71.06 | 27.08 | 32 |
| | Control | 67.41 | 20.11 | 29 |
| Health Literacy (Pre-test) | Experimental | 30.13 | 5.87 | 32 |
| | Control | 30.94 | 8.53 | 29 |
| Health Literacy (Post-test) | Experimental | 35.89 | 6.76 | 32 |
| | Control | 30.21 | 7.47 | 29 |
| Absenteeism (Pre-test) | Experimental | -14.75 | 69.21 | 32 |
| | Control | -14.34 | 76.11 | 29 |
| Absenteeism (Post-test) | Experimental | -20.00 | 66.20 | 32 |
| | Control | -9.38 | 66.88 | 29 |
| Presenteeism (Pre-test) | Experimental | 71.47 | 18.84 | 32 |
| | Control | 78.97 | 18.58 | 29 |
| Presenteeism (Post-test) | Experimental | 81.88 | 9.98 | 32 |
| | Control | 75.52 | 18.44 | 29 |

### 4.2. Results of Research Questions

*Research Question 1: Is there a relationship between technopark employees' lifestyle behaviours and their work productivity?*

Multiple linear regression was run to predict work performance from physical activity, nutrition, stress management, interpersonal relations, health responsibility, and mental development. Physical activity, nutrition, and stress management statistically predicted work performance, $F$ (6, 335) = 4.019, $p < .005$, $R^2 = .67$. Interpersonal relations, health responsibility, and mental development did not statistically predict work performance.

*Research Question 2: Are there any statistically observed clusters regarding lifestyle behaviours of technopark employees? If yes, do the clusters statistically differ from the groups explored by exercise stages of change?*

A two-step cluster analysis was applied to identify the clusters in the sample. In the first step, physical activity, nutrition, and stress management were added as continuous variables, and sex as the categorical variable. The results showed that there were four clusters with a fair cluster quality. In the second step, the sex variable was removed from the analysis, and the analysis was conducted again. The second step of the two-step cluster analysis results indicated four clusters, but this time, the quality of clusters analysis increased. In order to validate the cluster structure, a one-way ANOVA was conducted. The one-way ANOVA results showed a statistically significant difference between groups ($F$ (3, 371) = 224.35, $p$ = .000). The predictor importance for each variable was measured as 1.0 for physical activity, 0.83 for stress management, and 0.53 for nutrition. The physical activity, stress management, and nutrition score increased from Cluster 1 to Cluster 4.

Table 4.3. *The descriptive results of the clusters*

| | Cluster 1 ($n$=98) | Cluster 2 ($n$=102) | Cluster 3 ($n$=106) | Cluster 4 ($n$=69) |
|---|---|---|---|---|
| Physical Activity | 12.74 | 14.55 | 18.62 | 26.42 |
| Stress Management | 16.80 | 17.26 | 23.35 | 18.38 |
| Nutrition | 15.32 | 20.78 | 2129 | 21.51 |

To determine whether there is a statistical difference between the clusters and the groups explored by exercise stages of change, descriptive statistics of group by exercise stages of change were conducted, which are provided below (see Table 4.4).

Table 4.4. *The descriptive results of groups by exercise stages of change*

| | Stage 1 (*n*=102) | Stage 2 (*n*=135) | Stage 3 (*n*=34) | Stage 4 (*n*=35) | Stage 5 (*n*=72) |
|---|---|---|---|---|---|
| Physical Activity | 13.73 | 16.17 | 18.62 | 21,94 | 22.36 |
| Stress Management | 18.78 | 18.59 | 19.32 | 19.49 | 20.38 |
| Nutrition | 17.62 | 19.68 | 20.28 | 20.38 | 21.12 |

The descriptive results revealed a similarity between clusters and groups by exercise stages of change, the scores of the variables increasing in both clusters and groups. Since the most important predictor in cluster analysis was physical activity, further statistical tests were conducted on this variable. For clusters, the one-way ANOVA had already indicated that physical activity scores statistically differed among clusters. Another one-way ANOVA was conducted on physical activity for exercise stages of change. This revealed a statistically significant difference between groups ($F$ (4,373) = 40.64, $p$ = .000). A Bonferroni post hoc test revealed no statistically significant difference between Stage 2 and Stage 3 in terms of physical activity scores ($p$ = .12). The results indicated a non-significant difference between Stage 2 and Stage 3. The outcome of this analysis indicated four statistically different groups by exercise stages of change, which was the same number of groups with clusters. To understand whether the clusters and exercise stages of change groups statistically differed, a dependent samples t-test was conducted with Cluster 1 and Stage 1, Cluster 2 and Stage 2-3, Cluster 3 and Stage 4, Cluster 4 and Stage 5. The results of the analyses indicated that Cluster 3 and Stage 4 ($t$ (34) = -7.36, $p$ = .000) and Cluster 4 and Stage 5 ($t$ (76) = 5.11, $p$ = .000) were significantly different from each other. However, Cluster 1 and Stage 1 ($t$ (97) = -1.85, $p$ = .067), Cluster 2 and Stage 2-3 ($t$ (101) = -.909, $p$ = .37) were not significantly different from each other. As a result, the following matching clusters and stages emerged: Cluster 1 and Stage 1, Cluster 2 and Stage 2-3 (see Table 4.5).

Table 4.5. *The descriptive results of statistically matched clusters and stages*

| | Cluster 1 | Cluster 2 | Cluster 3* | Cluster 4* |
|---|---|---|---|---|
| Physical Activity | 12.74 | 14.55 | 18.62 | 26.42 |
| | Stage1 | Stage 2-3 | Stage 4* | Stage 5* |
| Physical Activity | 13.87 | 15.00 | 21.94 | 22.29 |

*Research Question 3: Does the employee wellness intervention affect technopark employees' physical activity behaviour? If yes, what kind of changes occurred in their physical activity behaviour?*

A mixed design MANOVA analysis was conducted to examine the effects of the employee wellness intervention regarding physical activity. The results were interpreted using Pillai's Trace value because the homogeneity of covariance assumption was violated (see Table 4.6).

Table 4.6. *Results of multivariate analysis for intervention*

| | Pillai's Trace | *F* | Sig | Partial $\eta^2$ |
|---|---|---|---|---|
| Group | 0.27 | 1.42 | .25 | .47 |
| Time | 0.55 | 4.71 | .003* | .55 |
| Group * Time | 0.51 | 4.03 | .007* | .51 |

*$p < .05$

The multivariate tests on between-subject revealed a statistically non-significant main effect of group on the constructs of the intervention. The results indicated that the experimental and the control groups did not significantly differ regardless of time differences.

On the other hand, the multivariate tests on within-subject revealed a significant effect of time ($V = 0.55$, $F$ (6,23) = 4.71, $p < .05$, $\eta^2 = 0.55$) and interaction effect between group and time ($V = 0.51$, $F$ (6,23) = 4.03, $p < .05$, $\eta^2 = 0.51$) on the variables of the intervention. The partial $\eta^2$ values indicated a variance of 55% explained by time effect, and 51% by interaction effect. The significant results of time effect and interaction effect indicated that intervention had an effect on variables.

A follow-up analysis was conducted to investigate the significant effects. The Bonferroni adjustment was applied to examine the significance level because of the multiple dependent variables in the analysis. The adjusted significance level was

calculated by dividing the significance level by the number of dependent variables ($p$ = .05 / 6 = .008). Since there were two groups (experimental and control) and two tests (pre-test and post-test), the sphericity assumption was not achieved. Therefore, the Greenhouse-Giesser correction was used for interpreting the F statistics (see Table 4.7).

Table 4.7. *Results of follow-up multivariate analysis for physical activity*

| | df | *F* | Sig | Partial $\eta^2$ |
|---|---|---|---|---|
| Group | 1 | 6.65 | .015 | 0.19 |
| Time | 1 | 22.84 | .000* | 0.45 |
| Group * Time | 1 | 12.52 | .001* | 0.31 |

*$p < .008$

The separate univariate test of group effect revealed a non-significant effect between groups in terms of physical activity ($F$ (1, 28) = 6.65, $p$ = .015). This result suggested no significant differences between the experimental group and the control group in terms of physical activity regardless of time differences.

However, the univariate results showed there was a significant time effect in terms of physical activity ($F$ (1, 28) = 22.84, $p < .008$, $\eta^2 = 0.45$). The values of partial $\eta^2$ indicated 45% of the variance, explained by time differences in physical activity. This result revealed that there were significant time differences from pre-test to post-test in terms of physical activity regardless of group differences.

The final univariate test results showed a significant interaction effect between group and time on physical activity ($F$ (1, 28) = 12.52, $p < .008$, $\eta^2 = 0.31$). The partial $\eta^2$ values revealed 31% variance, explained by group and time. This result indicated a significant group and time difference in terms of physical activity.

The pairwise comparisons for group by time interaction effect indicated significant time differences in the experimental group ($F$ (6, 23) = 4.37, $p < .05$) but not for the control group ($F$ (6, 23) = 2.05, $p$ = .38). The mean score indicated that the experimental group significantly increased physical activity scores from pre-test (M = 1483.83, $SE$ = 263.08) to post-test ($M$ = 3457.42, $SE$ = 575.03), and the control group increased physical activity scores from pre-test ($M$ = 1297.44, $SE$ = 244.76) to post-test ($M$ = 1434.84, $SE$ = 271.51). The results indicated that the intervention had a

significant effect on the experimental group but not on the control group (see Figure 4.2).

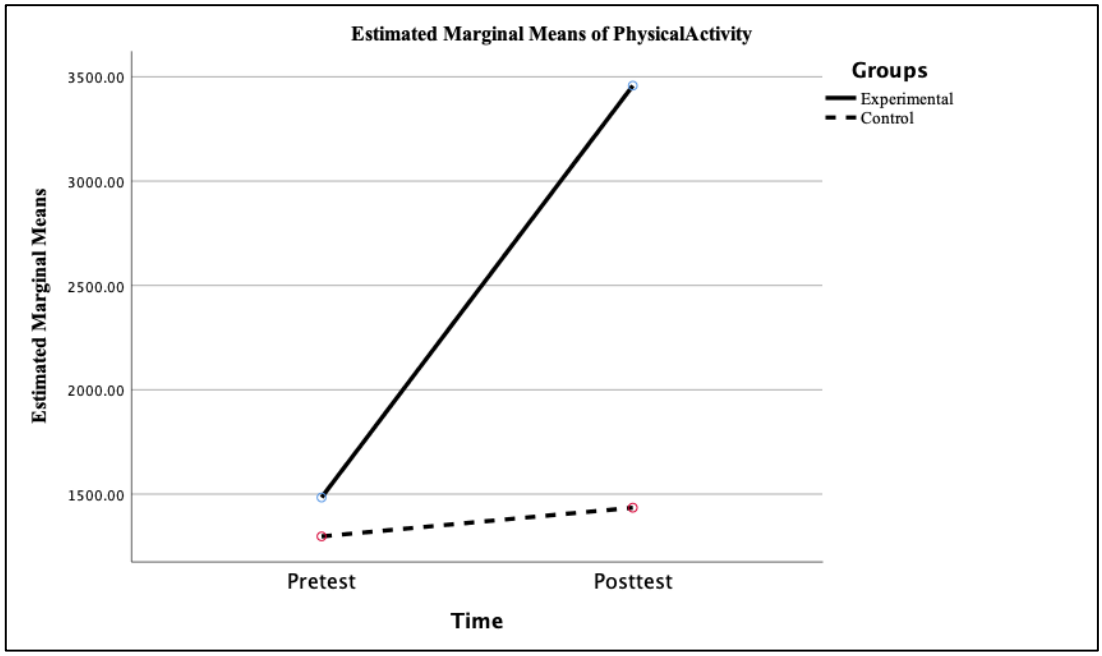



Figure 4.2. *The interaction effect between group and time for physical activity.*

In order to investigate the changes in physical activity behaviour, the participants were asked about the possible changes. All ten interviewees reported the changes at the individual and physical environment levels, and eight of them said changes at the social environment level.

The changes at the individual level of the social-ecological model were reported as increased physical activity. The changes in physical activity were presented as leisure-time physical activity, job-related physical activity, and transportation physical activity. The leisure-time physical activity included increased duration and intensity of exercises. Five participants reported that they had started walking at least 30 minutes three days a week. Six of them said they had increased their physical activity at work. All six of them declared that they had adopted the habit of pacing while on the phone. Two of them reported that they had started to follow notifications sent by mobile applications reminding them to stand up and move in order to reduce sitting time. One said that they now walked to work instead of driving at least two days a week.

At the social environment level, participants reported the following changes: doing physical activity with a companion, watching the content videos provided in the

intervention together with family members, and using a mobile social fitness application. Trekking and walking with family members or co-workers and swimming with a sibling were coded as starting physical activities with someone. The participants used the mobile application Strava as the social fitness application to track physical activity.

The physical environment included changes in the place where the participants performed their exercises and changes in their behaviours, such as adopting mobile applications or smartwatches. Participants joined gyms, bought indoor and outdoor equipment, and started using mobile applications to track activities and receive notifications about sitting time (see Table 4.8).

*Table 4.8.* Results of Interview about Physical Activity Behaviour

| | Interviewee #1 | Interviewee #2 | Interviewee #3 | Interviewee #4 | Interviewee #5 | Interviewee #6 | Interviewee #7 | Interviewee #8 | Interviewee #9 | Interviewee #10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Individual | *Increased job-related PA<br><br>*Lack of muscular endurance | *Increased leisure time PA<br><br>*Psychological changes (feeling relax) | *Increased leisure PA<br><br>*Increased job-related PA | *Increased leisure PA<br><br>*Reduced sitting time | *Increased leisure PA<br><br>*Increased transportation PA | *Increased leisure PA<br><br>*Increased job-related PA | *Increased leisure PA<br><br>*Increased job-related PA | *Increased leisure PA<br><br>*Reduced sitting time | *Increased leisure PA<br><br>*Increased job-related PA | *Increased job-related PA |
| Social Environment | *Started activites with someone (walking with a friend at weekend) | | *Watched content videos with family | *Started activites with someone (trekking with family) | *Started activites with someone (swimming with sister) | *Started activities with someone (walking with coworkers) | *Started using strava for social sharing | | *Watching content videos with family | *Watching content videos with family<br><br>*Started activites with someone |
| Physical Environment | *Started riding bike<br><br>*Started to use a mApp (tracking steps | *Started to use a mApp (Nike training club, created a plan) | *Started to follow notifications on the smart watch, (standup) | *Created a space for gym at home<br><br>*Bought equipment for indoor | *Gym membership (swimming pool)<br><br>*Bought outdoor equipment | *Started to use a mApp (track exercises) | *Gym membership | *Bought equipment for indoor | *Gym membership | *Started to follow notifications on the smart watch, i.e, standup |

*Research Question 4: Does the employee wellness intervention affect technopark employees' stress management behaviour? If yes, what kind of changes occurred in stress management behaviour?*

A follow-up analysis was conducted to understand whether there was a significant difference in either time effect or interaction effect between group and time for stress management. Again, the Bonferroni adjustment was applied to examine the significance level because of the multiple dependent variables in the analysis. The adjusted significance level was calculated by dividing the significance level by the number of dependent variables ($p$ = .05 / 6 = .008). Since there were two groups (experimental and control) and two tests (pre-test and post-test), the sphericity assumption was not achieved. Therefore, the Greenhouse-Giesser correction was used for interpreting the F statistics (see Table 4.9).

Table 4.9. *Results of follow-up multivariate analysis for stress management*

| | df | F | Sig | Partial $\eta^2$ |
|---|---|---|---|---|
| Group | 1 | 0.05 | .834 | 0.002 |
| Time | 1 | 3.30 | .080 | 0.11 |
| Group * Time | 1 | 0.47 | .501 | 0.02 |

*p < .008

The separate univariate test of group effect revealed a non-significant effect in terms of stress management ($F$ (1, 28) = 0.05, $p$ = .834). The test also indicated that time effect revealed a non-significant effect in terms of stress management ($F$ (1, 28) = 3.30, $p$ = .080). Also, the group by time interaction effect showed a non-significant effect on stress management ($F$ (1, 28) = 0.47, $p$ = .501). These results showed no significant differences between the experimental group and the control group in terms of stress management regarding groups, time, and groups by time regardless of time differences.

The mean score indicated that there was an increase in stress management scores from pre-test ($M$ = 66.38, $SE$ = 4.53) to post-test ($M$ = 69.14, $SE$ = 5.06) in the experimental group, and there was an increase in the stress management scores from pre-test ($M$ = 65.85, $SE$ = 3.44) to post-test ($M$ = 67.41, $SE$ = 3.74) in the control group.

The results indicated no significant intervention effect on the experimental group and the control group (see Figure 4.3).

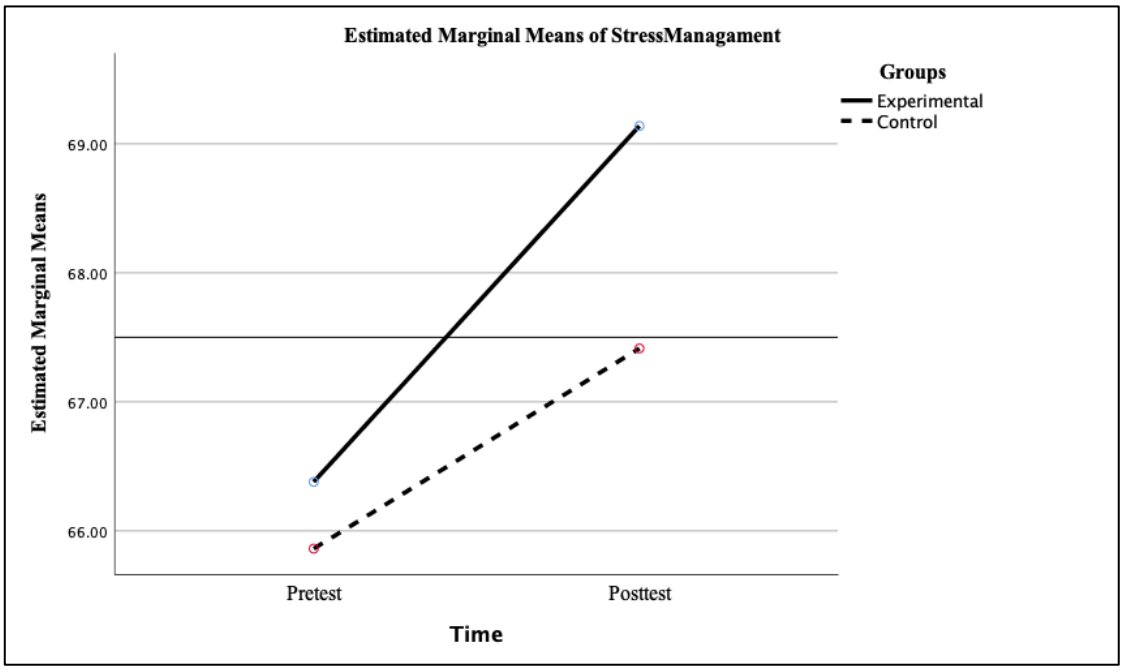



Figure 4.3. *Estimated marginal means of stress management*

The participants' responses supported the quantitative non-significant results on stress management behaviour. Most of the interviewees reported no change in their stress management ability. However, two of the participants reported increased awareness about noticing stressful situations. Changes about leisure time activities, such as painting and wood painting were reported as ways to overcome stress.

*Research Question 5: Does the employee wellness intervention affect technopark employees' nutrition behaviour? If yes, what kind of changes occurred in their nutrition behaviour?*

A follow-up analysis was conducted to understand whether there was a significant difference in either time effect or interaction effect between group and time for nutrition. Again, the Bonferroni adjustment was applied to examine the significance level because of the multiple dependent variables in the analysis. The adjusted significance level was calculated by dividing the significance level by the number of dependent variables ($p$ = .05 / 6 = .008). Since there were two groups (experimental and control) and two tests (pre-test and post-test), the sphericity

assumption was not achieved. Therefore, the Greenhouse-Giesser correction was used for interpreting the F statistics (see Table 4.10).

Table 4.10. *Results of follow-up multivariate analysis for nutrition*

| | *Df* | *F* | Sig | Partial η² |
|---|---|---|---|---|
| Group | 1 | 0.43 | .517 | 0.015 |
| Time | 1 | 11.99 | .002* | 0.30 |
| Group * Time | 1 | 10.99 | .003* | 0.28 |

*$p < .008$

The separate univariate test of group effect revealed a non-significant effect between groups in terms of nutrition ($F$ (1.28) = 0.43, $p$ = .517). This result indicated no significant differences between the experimental and control groups in terms of nutrition, regardless of time differences.

However, the univariate results showed that there was a significant time effect in terms of nutrition ($F$ (1.28) = 11.99, $p < .008$, $\eta^2 = 0.30$). The partial η² values indicated 30% variance, explained by time differences in nutrition. The result revealed that there were significant time differences from pre-test to post-test in terms of nutrition regardless of group differences.

The final univariate test results showed significant interaction effect between group and time on nutrition ($F$ (1, 28) = 10.99, $p < .008$, $\eta^2 = 0.28$). The partial $\eta^2$ values indicated 28% variance, explained by group and time in nutrition. The result suggested a significant group by time difference in terms of nutrition.

The pairwise comparisons for group by time interaction effect indicated significant time differences in the experimental group ($F$ (6, 23) = 4.37, $p < .05$) but not in the control group ($F$ (6.23) = 2.05, $p$ = .882) from pre-test to post-test. The mean scores indicated that there was a significant increase in nutrition scores from pre-test ($M$ = 59.28, $SE$ = 2.30) to post-test ($M$ = 68.07, $SE$ = 1.80) in experimental group, and a decrease in nutrition scores from pre-test ($M$ = 65.31, $SE$ =1.98) to post-test ($M$ = 65.10, $SE$ = 1.59) in the control group. The results indicated that the intervention had a significant effect on the experimental group but not on the control group (see Figure 4.4).

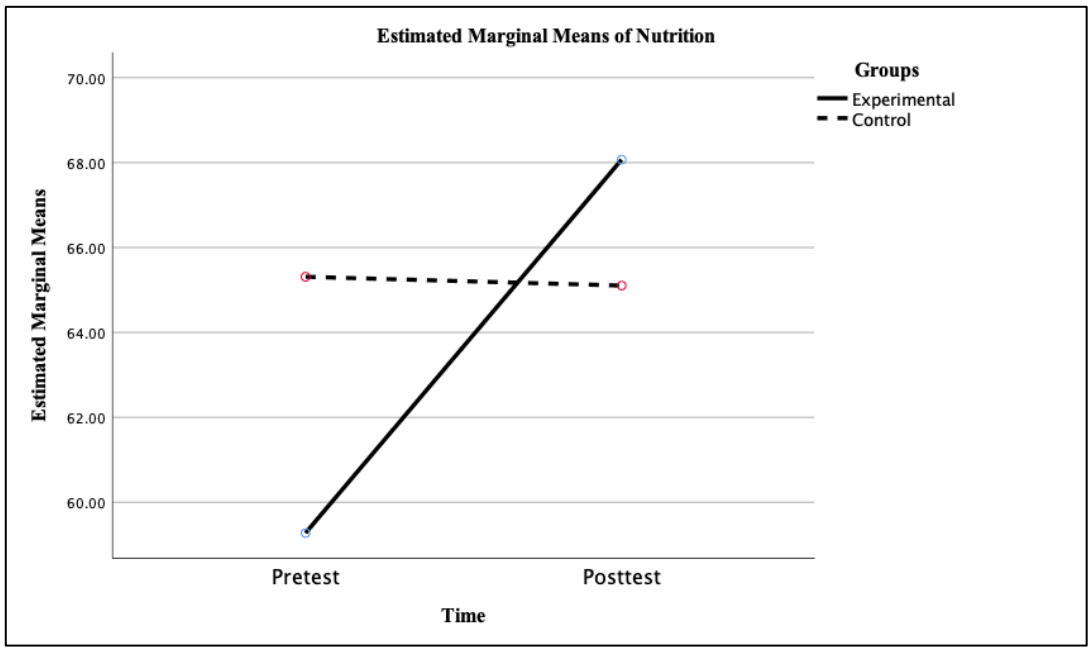



*Figure 4.4.* Estimated marginal means of nutrition

The changes at the individual level of the social-ecological model appeared in terms of increased awareness, moderation, adequacy, and variety. Participants described increased awareness with respect to the development of literacy about macronutrients and micronutrients and expansion of their food choices for variety. In addition, participants reported moderating their daily calorie intake by regulating their macronutrients. Some participants noticed being undernourished because of lower protein intake than daily need.

Participants reported reducing their caffeine intake at the social environment level and persuading family members to do so in the evenings. One participant said they had started using a mobile application to track the nutrition in a social environment with friends, which enabled them to view each other's nutrition intake and provide social support to each other about healthy eating habits. Another participant explained that they would watch the content videos about nutrition with family members and moderate their family meals according to the information and suggestions in the videos and Instagram posts.

The physical environment included changes in the environment for tracking nutrition behaviours. Most of the participants said they started to follow their nutrition via mobile applications, the most frequently used being MyFitnessPal and Yazio (see Table 4.11).

Table 4.11. *Results of Interview about Nutrition Behaviour*

| | Interviewee #1 | Interviewee #2 | Interviewee #3 | Interviewee #4 | Interviewee #5 | Interviewee #6 | Interviewee #7 | Interviewee #8 | Interviewee #9 | Interviewee #10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Individual | *Moderation (calorie balance)<br>*Variety<br>*Adequecy | *Moderation<br>*Adequecy<br>*Increased awareness | *Variety<br>*Moderation (calorie balance) | *Overall balance<br>*Moderation (calorie balance) | *Variety<br>*Moderation (calorie balance) | *Overall balance<br>*Moderation (calorie balance) | *Moderation<br>*Adequecy<br>*Increased awareness | *Variety<br>*Moderation (calorie balance) | *Variety<br>*Moderation (calorie balance) | *Moderation<br>*Adequecy<br>*Increased awareness |
| Social Environment | *Reduced caffeine (family members) | | | *Variety (family meals) | *Variety (probiotics with friends at work) | *Started using a mApp (social networking via MyFitnees Pal) | | *Changes in food order (at work) | | *Reduced caffeine (with coworkers) |
| Physical Environment | *Started using a mApp | *Started using a mApp | *Started using a mApp | *Started using a mApp | | *Started using a mApp | | *Started using a mApp | *Started using a mApp | *Started using a mApp |

*Research Question 6: Does the employee wellness intervention affect technopark employees' health literacy?*

A follow-up analysis was conducted to understand whether there was a significant difference in either time effect or interaction effect between group and time for health literacy. The Bonferroni adjustment was applied to examine the significance level because of the multiple dependent variables in the analysis. The adjusted significance level was calculated by dividing the significance level by the number of dependent variables (p = .05 / 6 = .008). Since there were two groups (experimental and control) and two tests (pre-test and post-test), the sphericity assumption was not achieved. Therefore, the Greenhouse-Giesser correction was used for interpreting the F statistics (see Table 4.12).

Table 4.12. *Results of follow-up multivariate analysis for health literacy*

| | df | *F* | Sig | Partial η² |
|---|---|---|---|---|
| Group | 1 | 2.35 | .136 | 0.08 |
| Time | 1 | 10.22 | .003* | 0.27 |
| Group * Time | 1 | 11.41 | .002* | 0.29 |

*$p < .008$

The separate univariate test of group effect revealed a non-significant effect between groups in terms of health literacy ($F$ (1, 28) = 2.35, $p$ = .136). This result suggested no significant differences between the experimental and the control groups in terms of health literacy, regardless of time differences.

However, the univariate results showed that there was a significant effect of time in terms of health literacy ($F$ (1, 28) = 10.22, $p < .008$, $\eta^2 = 0.27$). The partial $\eta^2$ values indicated 27% variance, explained by time differences in health literacy. The result showed that regardless of group differences, there were significant time differences from pre-test to post-test in terms of health literacy.

The final univariate test results showed significant interaction effect between group and time on health literacy ($F$ (1, 28) = 11.41, $p < .008$, $\eta^2 = 0.29$). The partial

$\eta^2$ values revealed 29% variance, explained by group by time in health literacy. The result indicated a significant group by time difference in terms of health literacy.

The pairwise comparisons for group by time interaction effect indicated significant time differences in the experimental group ($F$ (6, 23) = 4.37, $p$ < .05) but not in the control group ($F$ (6, 23) = 2.05, $p$ = .31) from pre-test to post-test. The mean score indicated that there was a significant increase in the health literacy scores from pre-test ($M$ = 30.94, $SE$ = 1.58) to post-test ($M$ = 35.81, $SE$ = 1.29) in experimental group, and there was a slight decrease in the nutrition scores from pre-test ($M$ = 30.94, $SE$ =1.58) to post-test ($M$ = 30.21, $SE$ = 1.40) in the control group. The results indicated that the intervention had a significant effect on the experimental group regarding health literacy but not on the control group (see Figure 4.5).

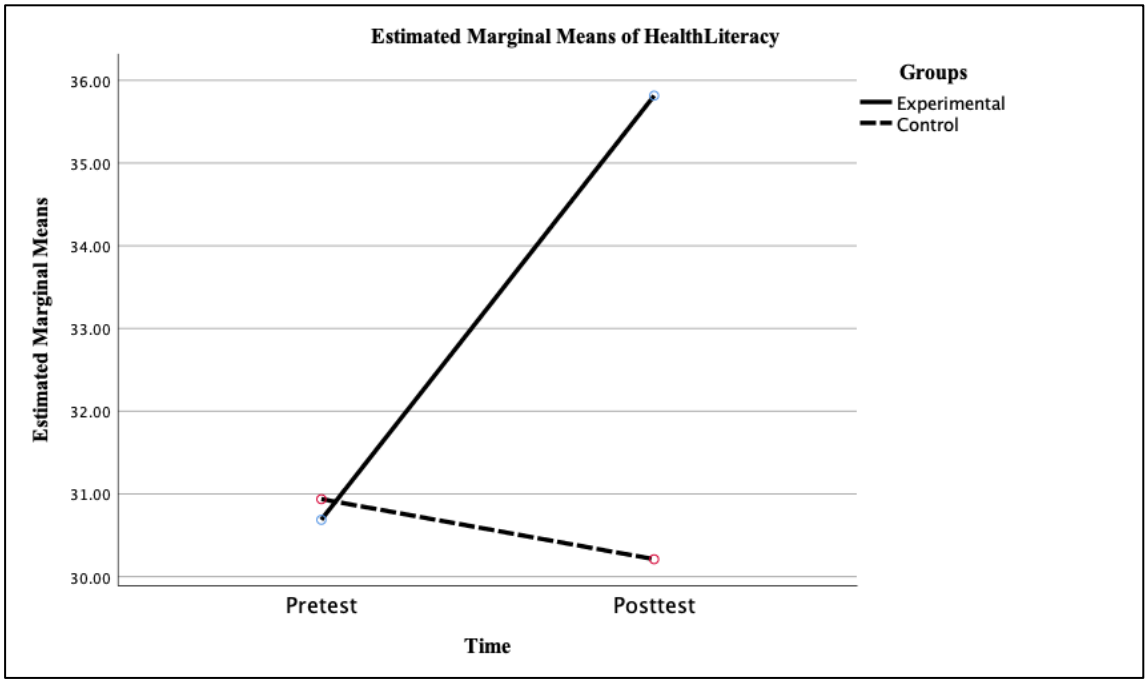



Figure 4.5. *Estimated marginal means of health literacy*

*Research Question 7: Does the employee wellness intervention affect technopark employees' work productivity?*

A follow-up analysis was conducted to understand whether there was a significant difference in either time effect or interaction effect between group and time for work productivity. Work productivity was examined in two dimensions: absenteeism and presenteeism. The dimensions were considered as dependent variables in a mixed design MANOVA. Again, the Bonferroni adjustment was applied

to examine the significance level because of the multiple dependent variables in the analysis. The adjusted significance level was calculated by dividing the significance level by the number of dependent variables ($p$ = .05 / 6 = .008). Since there were two groups (experimental and control) and two tests (pre-test and post-test), the sphericity assumption was not achieved. Therefore, the Greenhouse-Giesser correction was used for interpreting the F statistics (see Table 4.13).

Table 4.13. *Results of follow-up multivariate analysis for absenteeism*

| | df | *F* | Sig | Partial $\eta^2$ |
|---|---|---|---|---|
| Group | 1 | 0.11 | .741 | 0.004 |
| Time | 1 | 0.36 | .851 | 0.001 |
| Group * Time | 1 | 0.29 | .594 | 0.01 |

*$p$ < .008

The separate univariate test of group effect revealed a non-significant effect in terms of absenteeism ($F$ (1, 28) = 0.11, $p$ = .741). The test results also indicated that time effect revealed a non-significant effect in terms of absenteeism ($F$ (1, 28) = 0.36, $p$ = .851). Also, the group by time interaction effect showed a non-significant effect on absenteeism ($F$ (1, 28) = 0.29, $p$ = .594). These results showed no significant differences between the experimental and control groups in terms of absenteeism regarding groups, time, and groups by time regardless of time differences.

The mean score indicated that there was a decrease in absenteeism scores from pre-test ($M$ = -16.28, $SE$ = 13.45) to post-test ($M$ = -18.62, $SE$ = 12.35), and there was an increase in absenteeism scores from pre-test ($M$ = -14.35, $SE$ = 14.13) to post-test ($M$ = -9.38, $SE$ = 12.42). The results indicated that the intervention did not have a significant effect on the experimental group and the control group on absenteeism (see Figure 4.6).

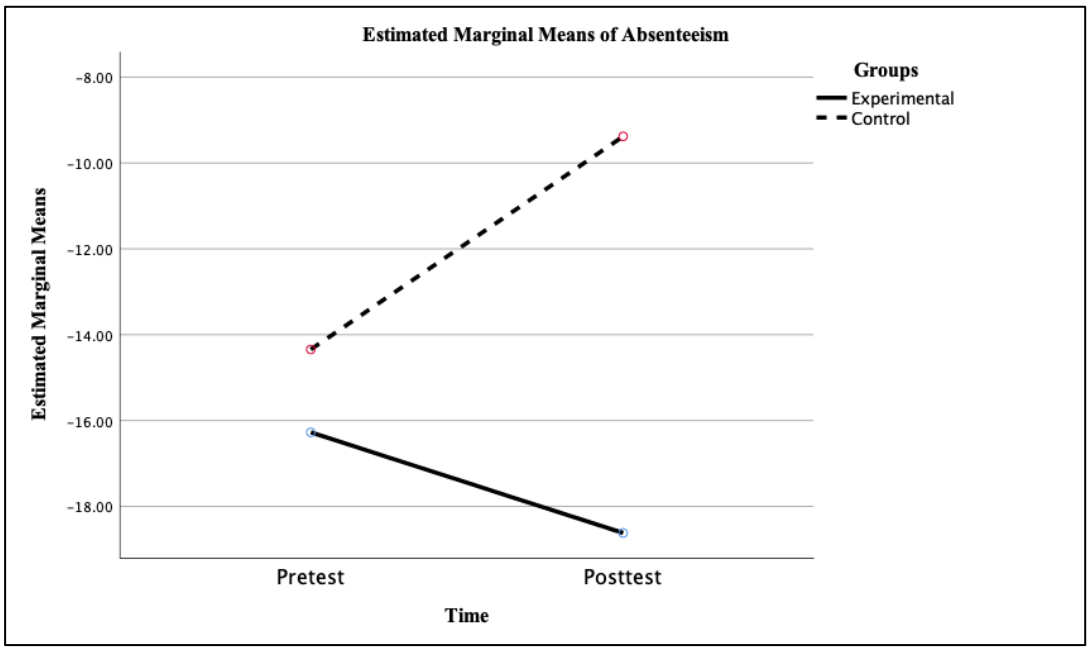



Figure 4.6. *Estimated marginal means of absenteeism*

The separate univariate test of group effect revealed a non-significant effect between groups and time in terms of presenteeism ($F$ (1, 28) = 0.65, $p$ = .800), ($F$ (1, 28) = 2.64, $p$ = .115). This result indicated no significant differences between the experimental group and the control group in terms of presenteeism, regardless of time. Also, regardless of group differences, there were no significant time differences in presenteeism (see Table 4.14).

Table 4.14. *Results of follow-up multivariate analysis for presenteeism*

| | *df* | *F* | Sig | Partial η² |
|---|---|---|---|---|
| Group | 1 | 0.65 | .800 | 0.002 |
| Time | 1 | 2.64 | .115 | 0.09 |
| Group * Time | 1 | 14.95 | .001* | 0.35 |

*$p$ < .008

The final univariate test results showed significant interaction effect between group and time on presenteeism ($F$ (1, 28) = 14.95, $p$ < .008, $\eta^2$ = 0.35). The partial η² values indicated 35% variance, explained by group by time in presenteeism. The result suggested a significant group by time difference in terms of presenteeism.

The pairwise comparisons for group by time interaction effect indicated significant time differences in the experimental group ($F$ (6, 23) = 4.37, $p$ < .05) but not in the control group ($F$ (6, 23) = 2.05, $p$ = .39) from pre-test to post-test. The mean score indicated that there was a significant increase in the presenteeism scores from pre-test ($M$ = 70.93, $SE$ = 3.65) to post-test ($M$ = 81.38, $SE$ = 1.91), and there was a slight decrease in the presenteeism scores from pre-test ($M$ = 78.97, $SE$ =3.45) to post-test ($M$ = 75.52, $SE$ = 3.42). The results indicated that the intervention had a significant effect on the experimental group but not on the control group regarding presenteeism (see Figure 4.7).

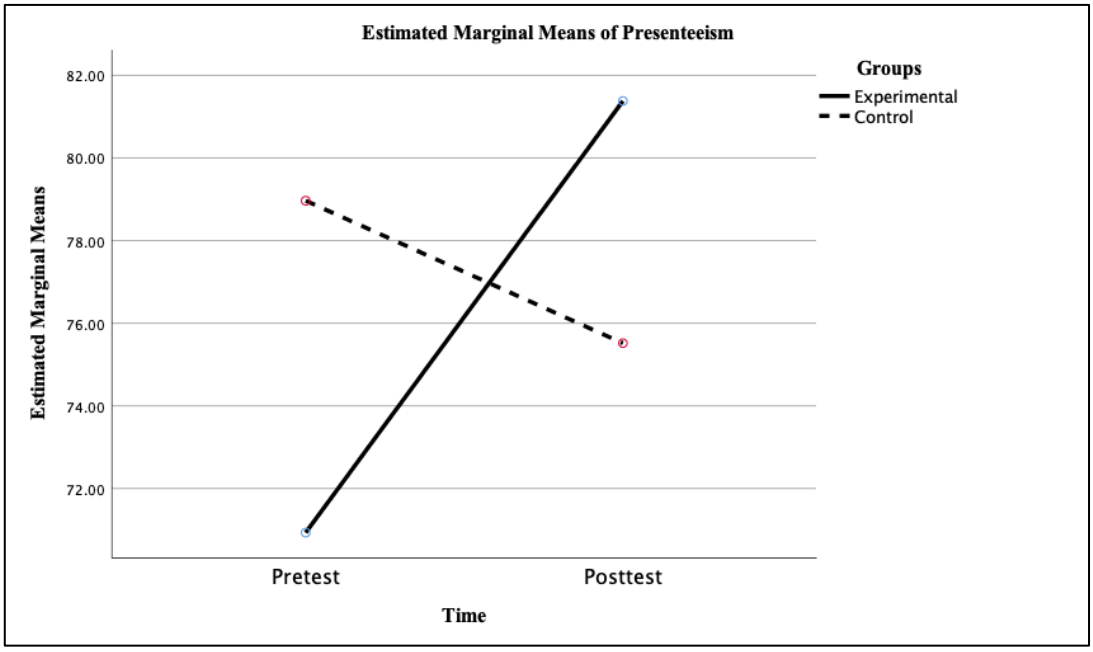



Figure 4.7. *Estimated marginal means of presenteeism*

*Research Question 8: How does the employee wellness intervention affect technopark employees' work and office health behaviours?*

The results of this research question were analysed by qualitative analysis. The outcomes of the ten interviews were presented in terms of the social-ecological perspective. Three interviewees reported no change in their office and work health behaviours. Specifically, they explained that their work and the office environment was not suitable for any change. In addition, one of them suggested that an expert could provide feedback by studying a photograph of the office and work environment.

Seven interviewees reported some changes in their work and office health behaviours. At the individual level, the interviewees explained these changes as attention to posture during sitting and walking; in addition, two of them said they had acquired the habit of doing eye exercises during work breaks, as was suggested in one of the Instagram posts.

At the social environment level, four interviewees explained that they shared the related video and posts with colleagues and started providing feedback regarding correct sitting posture during work.

At the physical environment level, the interviewees reported making adjustments to their office chairs and computers. One interviewee said they bought a new chair, which observes a suggestion about ergonomics in the videos and Instagram posts. The changes related to their computers included using an application that provides a blue filter for the computer screen and adjusting the angle and height of the computer screen to meet eye level.

Table 4.12. *Results of Interview about Work and Office Health Behaviours*

| | Interviewee #1 | Interviewee #2 | Interviewee #3 | Interviewee #4 | Interviewee #5 | Interviewee #6 | Interviewee #7 | Interviewee #8 | Interviewee #9 | Interviewee #10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Individual | | | *Exercise for eye health | *Exercise for eye health<br>*Change in walking posture | *Change in sitting posture | *Exercise for eye health | | | | *Change in walking posture |
| Social Environment | *Provide mutual feedback with someone (coworker) | | | | | *Provide mutual feedback with someone (coworker) | | *Provide mutual feedback with someone (coworker) | | *Provide mutual feedback with someone (coworker) |
| Physical Environment | *Environment is not suitable | *Environment is not suitable | *Environment is not suitable | *Change in computer settings (angle of screen) | *Change in computer settings (blue filter) | *Change in office equipment (chair) | *Environment is not suitable | | *Environment is not suitable | |

*Research Question 9: How do the participants describe their experience with the program?*

In general, the participants were pleased to have participated in the program. Common satisfaction points were increased awareness, mobility about the contents, and self-assessment.

The following are the major points that emerged in the interviews regarding the participants' experiences in the program.

Interviewee #1: *"The program certainly helped, but frankly, I had higher expectations from both myself and the program in the beginning. After seven weeks, I couldn't do some of the things I said I would do this much and this much. I followed all the content that you shared on Sundays. Even if I couldn't watch it on that day, I would watch it at the latest on Monday. The measuring tools on the website helped me a lot and they helped me see my shortcomings. I even sent some of them to my friend circle. I liked the physical fitness part the most. I didn't know how much [physical activity] I should do in a week, I realized that there."*

Interviewee #2: *"The program has been beneficial for me. I learned what I was doing right and wrong. I followed all the content; it became a ritual for me. I was learning new things in each of them. What motivated me the most was seeing that the content also approved the things I did. For example, once I reduced my meat consumption, I said I was on the right track, and I reduced it even more with the help of the content. And I had pain before [the program], and the pain disappeared completely during the program. I prepared an exercise plan, but I had a hard time following it. I most liked the video about what and how much I should eat; I found it fascinating."*

Interviewee #3: *"I am satisfied. The program was beneficial in that it provided structure for me. I watched and followed all of the content; I watched the videos the next day if not the day you sent them. My poor diet was actually one of the most important reasons to follow this program. The changes in my eating behaviour that came about with this program made me very happy. The videos influenced and motivated me a lot more than the Instagram posts. The measurement tools on the website also helped me a lot; not only did I measure my physical fitness, but I was able*

*to track everything else. My favourite was the video about what and how much I should eat. What I learned there was very effective in terms of changing my diet."*

Interviewee #4: *"The program was definitely useful, very effective as information was transmitted from different sources. The continuity and the changing of the subjects prevented me from falling into repetition and getting bored. I followed all the content and tried to watch the videos when they were released on Sundays. I even watched some of them a few times, I wanted to learn more details. It was a program that required some effort; this was good, we had to make change. The video on health and wellness was the best and most remarkable one; the idea of improving different aspects of ourselves was very motivating."*

Interviewee #5: *"The program was good. Being able to measure aspects of myself on the website was very helpful. I couldn't watch all the videos; sometimes my workload was too much. In some weeks, I had to watch them later. The nutrition and stress video raised my awareness, but I was swamped as I said I couldn't say that I could make the changes. From these videos, I learned a lot of new information; in fact, there were many things I did not know, and I realized that. The video about what and how much I should eat caught my attention the most. It helped me learn a lot about calorie balance."*

Interviewee #6: *"I was pleased to have participated in the program, and I would even like to continue. It has made my job much easier to follow on a regular weekly basis. I had a hard time following the program towards the end; I was a little less motivated and my workload was too much. It was very difficult for me to prepare an exercise program, and I followed what I ate, but I could not continue. What interested me the most was the video about physical activity and its types. The video on health and wellness did not interest me much. The contents were informative, and I learned about many new resources and websites."*

Interviewee #7: *"I am happy to have participated in the program. Even though I was so busy with my job during the program, it has contributed a lot to me. I realized that there were many things that I did not know. The videos were not long, and they were*

*never boring; especially the visuals in the videos prevented me from getting bored. My favourite was the physical fitness video. I didn't know about the dimensions mentioned in the video, and the measurement methods were very interesting. I did not use the measurement tools during the program, but I will at the first opportunity. It was also nice that the Instagram posts were in the form of tips and supported the videos. In general, I can say that my awareness has increased."*

Interviewee #8: *"Although I am not very satisfied with the program, I can say that I benefited from it. The contents provided awareness on many issues, but I had difficulty applying them, one of the reasons being my workload. For example, I learned a lot about physical activity, but maybe I needed a little more detail about what I should do and how I should do it. I couldn't get expert support because I didn't have time. Maybe I could have achieved different results if I had, but I still made many changes in my life, but I haven't fully achieved what I aimed for."*

Interviewee #9: *"It was a very successful program for me; I liked it very much. The rich content and brevity of the videos and the complementary role of the Instagram posts contributed a lot to my knowledge. In addition, measuring and evaluating myself on the relevant subject every week allowed me to see my shortcomings and focus on them. It was very motivating to prepare a weekly exercise program and to have expert support in this process. I liked the video about what and how much I should eat the most, and I started to follow what I ate with the help of the mobile application. The fact that the expert's videos are on YouTube is a great comfort; it allows me to go back and look at the things I need again when I need to."*

Interviewee #10: *"I liked the program. The fact that it was on social media made it very practical; I could watch or review the content anywhere. Tips for daily life also helped me a lot. I already knew some of the information, but some of the information was new and fascinating. I really liked the video about what and how much I should eat; it was full of information about exactly what I should do. Preparing a weekly exercise program and getting feedback from the expert about it made me feel much better when I followed the program."*

Table 4.12. *Results of Interview about Experiences*

| | Interviewee #1 | Interviewee #2 | Interviewee #3 | Interviewee #4 | Interviewee #5 | Interviewee #6 | Interviewee #7 | Interviewee #8 | Interviewee #9 | Interviewee #10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Increased Awareness | | *Learned what is wrong and right<br><br>*Learning new things | *Increased awareness on nutrition | *Increased awareness on nutrition<br><br>*Increased awareness on stress | *Increased awareness on nutrition<br><br>*Increased awareness on physical activity | *Increased awareness on physical activity | *Increased awareness | *Increased awareness on nutrition | *Increased awareness on nutrition<br><br>*Increased awareness on physical activity | |
| Content Mobility | *Flexible time to follow | *Flexible time to watch<br><br>*Can be watched via smart phone | *Flexible time to watch | *Different sources<br><br>*Flexible time to watch | *Flexible time to watch | *Different sources<br><br>*Flexible time to watch | *Flexible time to watch<br><br>*Can be watched via smart phone | *Different sources<br><br>*Flexible time to watch | *Different sources<br><br>*Flexible time to watch | *Different sources<br><br>*Flexible time to watch |
| Self Assessment | *Observing needs<br><br>*Understanding. shortcomings | | *Understanding shortcomings | | *Understanding shortcomings | | *Understanding shortcomings | | *Understanding shortcomings | *Understanding shortcomings |

*Research Question 10: What is the economic contribution of the program regarding the participants' improvement in work productivity?*

The calculation of the program's economic impact is based on the progress in the presenteeism of the participants. The justification for disregarding absenteeism in impact calculation is provided in the literature review section of this dissertation. The mean scores of presenteeism were $M = 70.93$, $SE = 3.65$ in the pre-test and $M = 81.38$, $SE = 1.91$ in the post-test. This means that there was a 14.7% increase in the presenteeism of the participants.

According to the Coolever 2021 Software Developer Income Report (Coolever, 2021), the average monthly income of a software developer or an expert-level employee in Turkey is 12,157 Turkish Liras (TL)(1413$). A 14.7% increase in work performance equals 1,787 TL(207$) per month. For a company of 50 employees, this increase would amount to an annual economic impact of 1,072,200 TL.

# CHAPTER 5

# DISCUSSION

The scope of the present study is to design and evaluate a need-based employee wellness program that integrates new media, with a central focus on the social-ecological context. There are mainly three investigations that go hand in hand: (i) exploring the lifestyle behaviours and work productivity needs of technopark employees (Research questions 1 & 2), (ii) measuring the impact of the need-based employee wellness program on lifestyle behaviours, health literacy and work productivity of technopark employees (Research questions 3, 4, 5, 6, 7 & 8), and (iii) examining the technopark employees' experiences in the need-based employee wellness program (Research questions 9 & 10). In this section, the findings of the study with regard to each research question will be discussed.

*Research Question 1: Is there a relationship between technopark employees' lifestyle behaviours and their work productivity?*

The results showed that physical activity, nutrition, and stress management statistically predicted work performance. On the other hand, interpersonal relations, health responsibility, and mental development behaviours did not statistically predict work performance.

One result of the present study relates to the connection between physical activity and work productivity. The results of this study are consistent with findings in the literature regarding physical activity and work productivity. According to solid scientific evidence based on a large number of well-designed studies, physically active people have higher levels of health-related fitness and lower health risk profiles (Physical Activity Guidelines Advisory Committee, 2008). Furthermore, physically active people have a healthy body composition and a biomarker profile protecting them from cardiovascular disease and type 2 diabetes. There is evidence that

physically active individuals have better sleep quality and better health-related quality of life (Semplonius & Willoughby, 2018). Studies suggest that physical exercise has a beneficial impact on work performance from the presenteeism perspective. Fitness programs positively affect absenteeism, and low physical activity levels positively impact sick leave (K. Proper & van Mechelen, 2008). Furthermore, poor levels of physical activity and cardiorespiratory fitness are factors that increase medical care expenses from the standpoint of employers (Pronk & Kottke, 2009).

Another result of the present study shows the relation between nutrition behaviour and work productivity. Unhealthy eating habits can cause significant economic depletion in terms of work loss, which stems from two sources: absenteeism and presenteeism (Burton et al., 1999; Grimani et al., 2019; Schultz et al., 2009). Previous research on workplace nutrition interventions involving counselling, education, and on-site group activities has shown that the interventions generally result in significant changes in employee nutrition behaviour, improve physical and mental health, and lead to a positive return on investment by lowering healthcare costs and absenteeism. These findings in previous research are in parallel with the present study findings (Grimani et al., 2019; Van Dongen et al., 2011). Self-perceived health, self-reported absenteeism, work productivity, and job capacity have been mentioned as intervention outcomes in evaluating 21 workplace treatments (Rongen et al., 2013). Greater alertness and cognitive functioning, higher mental performance, and improved wellbeing are the recognised advantages of contemporary workplace treatments (Drewnowski, 2020).

The last predictor of work productivity in this study was stress management. The consequences of stress are experienced by individuals and companies and even extend to society. Stress may have a detrimental impact on a worker's health on a personal level (Petreanu et al., 2013). The present study's findings regarding stress management and work productivity parallel the literature. Past research has determined a link between stress and a drop in performance, unhappiness, a lack of motivation and dedication, as well as an increase in absenteeism and turnover (Ekienabor, 2016). According to Blumenthal (2003), stress is damaging, disruptive, and harmful to human well-being and productivity. Stress may negatively influence a person's health by generating malfunction or disturbance in various areas. This

instability spills over into the workplace, resulting in lower productivity (Blumenthal, 2003).

The present study results indicated that interpersonal relations, health responsibility, and mental development behaviours did not statistically relate to work performance. The dimensions of health could explain this. Physical activity, nutrition, and stress management behaviours directly influence health promotion in physical and mental health (Edlin & Golanty, 2015). Moreover, physical activity, nutrition, and stress management behaviours can be accepted as primary lifestyle behaviours and interpersonal relations, health responsibility, and mental development behaviours as secondary lifestyle behaviours. In this approach, the secondary health-promoting behaviours are presumed to complement the primary health-promoting behaviours. Thus, the primary lifestyle behaviours have a more substantial effect on health than the secondary lifestyles behaviours.

According to various research studies, employees who have poor lifestyle behaviours are less productive at work, have worse work capacity, and use more sick leave days (Proper et al., 2006; Van Duijvenbode et al., 2009; Williden et al., 2012). Employee wellness programs aim to enhance employees' lifestyles behaviours and promote employee wellness, health, and work productivity. Understanding the importance of lifestyle behaviours is critical for designing employee wellness programs across different contexts and populations. The present study's findings showed that physical activity, nutrition, and stress management behaviours are the key behaviours to modify to reduce health-related work productivity loss. Moreover, interventions designed to change lifestyle behaviours and increase work productivity have traditionally focused on a single behaviour (Blackford et al., 2013; Reijonsaari et al., 2012; von Thiele Schwarz et al., 2008); however, the findings of the present study indicated that it is becoming increasingly clear that interventions that address many lifestyle behaviour risks may be more effective.

*Research Question 2: Are there any statistically observed clusters regarding lifestyle behaviours of technopark employees? If yes, do the clusters statistically differ from the groups explored by exercise stages of change?*

The results of the two-step cluster analysis indicated four clusters for the sample regarding physical activity, nutrition, and stress management. The four

motivational clusters were the avoidance profile, the intention profile, the participation profile and the maintenance profile. The mean scores of the motivational clusters for physical activity, stress management, and nutrition showed an increase from the avoidance profile to the maintenance profile. The descriptive results revealed parallelism between clusters and exercise stages of change, the scores of the variables rising in both clusters and stages. Since the most critical predictor in cluster analysis was physical activity, further statistical tests were conducted on physical activity behaviour. The results indicated four statistically different exercise stages of change, the same as the number of exercise stages of change with clusters. To understand whether the clusters and exercise stages of change statistically differed, a dependent samples t-test was conducted with the avoidance profile and Stage 1, the intention profile and Stage 2-3, the participation profile and Stage 4, and the maintenance profile and Stage 5. The results of the analyses indicated that the participation profile and Stage 4 and the maintenance profile and Stage 5 were significantly different from each other. However, the avoidance profile and Stage 1 and the intention profile and Stage 2-3 were not significantly different. In other words, the following matching clusters and stages emerged: the avoidance profile and Stage 1, the intention profile and Stage 2-3.

Identifying clusters of lifestyle behaviours is a valuable part of research that focuses on designing effective interventions. Past research has focused on analysing clusters of samples with similar educational and socioeconomic levels. However, it is possible to determine clusters in even smaller samples. Poortinga (2007) and Schuit (2002) found similar results in a sample of English and Dutch individuals, respectively, when looking at four lifestyle risk behaviours: alcohol, smoking, physical inactivity, and poor nutrition. De Vries (2008) identified three different clusters in the Dutch population: healthy, unhealthy, and poor nutrition. Other than these large-sample clustering studies, He et al. (2021) conducted a lifestyle behaviours cluster study on migrant, left-behind, and local adolescents in China. The three behavioural clusters identified among the sample were low risk, moderate risk, and high-risk groups. These studies support the present study's findings regarding clusters, and it can be concluded that regardless of the size of the sample, clusters based on lifestyle behaviours could be observed.

Lifestyle behaviours, on the other hand, are multidimensional; the motivation to participate in one lifestyle behaviour transfers to another lifestyle behaviour. Such a transfer of motivation was observed in the clusters identified in the present study. The motivation to participate is shared between physical activity, nutrition, and stress management, leading to differences among the four clusters among these lifestyle behaviours. Past studies have regarded this motivation transfer as a positive relationship between exercise stages of change and physical activity, nutrition, and stress management (Ingledew et al., 1998; McKee et al., 2007). This positive relation indicates that the movement through the upper exercise stages can also be positively observed in physical activity, nutrition, and stress management behaviours. Such a positive correlation was observed in the present study in the context of clusters and exercise stages of change.

The overlap between the stages and clusters is the most critical finding that forms the basis of Study 2 of the present study. The matching of these groups and clusters reveals that the characteristics of the sample coincide with the findings in the literature. This indicates a successful sample selection. Exercise stages of change can be used when selecting samples from the population, rather than performing loaded surveys—physical activity, nutrition, and stress management surveys. When selecting samples from the population, rather than performing extensive screenings regarding physical activity, nutrition, and stress management behaviours, exercise stages of change can be applied for identifying samples from the population.

The wellness and health of employees is a neglected issue in terms of health-related work loss; thus, there is an obvious need to address the employees' needs in terms of wellness and health in interventions. Although lifestyle behaviour modification is an efficient way to improve wellness and health, some factors, including motivation, social environment, physical environment, and level of health literacy, seem to influence the outcomes of these lifestyle behaviour modifications, indicating the importance of personalised approaches (Baker et al., 2010; P. Ryan & Lauver, 2002). In addition, personalised health education and action plans can be designed to implement long-term goals that prevent complications associated with lifestyle behaviours. As a result, cluster-based designs might impact lifestyle behaviour change. The present study's findings show that the lifestyle behaviours of

technopark employees are diverse; however, cluster analysis is a powerful tool to identify subgroups of technopark employees and build targeted solutions.

*Research Question 3: Does the employee wellness intervention affect technopark employees' physical activity behaviour? If yes, what kind of changes occurred in their physical activity behaviour?*

Pairwise comparisons for the group by time interaction effect indicated significant time differences for the experimental group but not for the control group. The mean score showed that the experimental group significantly increased physical activity scores from pre-test to post-test. The control group also increased physical activity scores from pre-test to post-test. The results indicated that the intervention significantly affected the experimental group regarding physical activity.

The present study is the first to investigate the link between health literacy and physical activity behaviour of technopark employees. Wolf (2007) indicated that low health literacy is linked to poor adherence to physical activity guidelines. This is consistent with the present study's findings, which indicated that the intervention successfully promoted physical activity in terms of health literacy. Cavill and Bauman (2004) proposed that when evaluating physical activity promotion initiatives, antecedent factors (e.g., literacy, knowledge, etc.) should be taken into account.

The results of the qualitative analysis performed in the present study indicated that participants in the experimental group altered their perspectives regarding physical activity. The participants reported the changes in physical activity as leisure-time physical activity, job-related physical activity, and transportation physical activity. The most commonly researched physical activity category is leisure-time physical activity, sometimes interchangeably referred to as exercise (Park et al., 2008). Non-leisure time physical activity, such as job-related activity or transportation activity, on the other hand, has received less attention in physical activity research, and the health benefits of these types of physical exercise are less well understood (Geboers et al., 2014). However, the intervention performed in the present study was effective in changing not only leisure time activity but also job-related and transportation physical activity.

Studies and systematic reviews show that treatments that target physical activity can lead to favourable changes in health literacy (Holler et al., 2019; Kwan et

al., 2019). The present study's findings reveal a link between health literacy and physical activity, even though it is difficult to pinpoint the causal component—whether physical activity or health literacy is the cause. Health literacy is thought to be a notion that promotes a conducive environment for physical exercise. Still, there is likely a bidirectional link in which increased physical activity leads to improved health literacy and vice versa. From the standpoint of health and the course of life, the present study's overemphasis on physical domains of physical activity may lead to a disregard of the role of health literacy in prolonged physical activity participation.

Harris (2013) has emphasised using new media to deliver various adherence treatments to enhance physical activity, including face-to-face counselling and social support systems. New-media-based technologies can provide discrete, immediate, and frequent feedback, employing a modified goal-setting approach developed for individuals (Marcus et al., 1998). Hence, because these features of new media could support the changes in the physical activity behaviour of technopark employees, new media was the selected tool for the intervention in the present study.

Indeed, the social-ecological model and new-media-based intervention generated behavioural change and health-related effects. This might reflect the design of the intervention employed in the program development. The intervention was created to equip the participants with the knowledge and skills to boost participation in physical activity, reinforce themselves for meeting challenging physical activity objectives, and incorporate physical activity into their daily routines. These variables have formed a habitual physical activity pattern in their everyday lives.

According to a health promotion paradigm, the evaluation of a coping method is fundamentally linked to its adaptive (protective) or maladaptive (detrimental) influence on one's health (Holton et al., 2016). Exercise, meditation, and search for social support are examples of adaptive coping mechanisms, whereas avoidance, overeating, and drug use are examples of maladaptive habits. In studies on coping strategies and illness-related stress, the classification of coping techniques as adaptive or maladaptive behaviour is often utilised (Rodin & Salovey, 1989). Furthermore, maladaptive coping has been linked to increased stress levels and impaired physical and mental well-being (Penley et al., 2002). However, merely teaching and encouraging adaptive coping skills is insufficient. Coping is a consequence of coping resources and a reaction to stressful circumstances (Holahan et al., 1996). For effective

stress management intervention, improving the availability of tools in the workplace to allow the deployment of adaptive coping techniques is required, as reflected in the present study.

*Research Question 4: Does the employee wellness intervention affect technopark employees' stress management? If yes, what kind of changes occurred in their stress management behaviour?*

The separate univariate test of group effect revealed a non-significant impact on stress management. The test also indicated that the time effect showed non-significant implications in stress management. Also, the group by time interaction effect showed a non-significant effect on stress management. These results showed no significant differences between the experimental and control groups regarding stress management regarding groups, time, and groups by time regardless of time differences. In other words, the intervention had no significant effect on the stress management behaviours of the technopark employees.

It is anticipated that an increase in healthy lifestyle habits such as physical exercise and diet will impact stress management abilities. Indeed, even though literature has shown that improving one's health literacy improves one's ability to manage stress (Bayati et al., 2018), the results of the present study regarding stress management were unexpectedly non-significant. Despite physical activity and nutrition improvements, stress management behaviour did not improve significantly over the research period due to the accelerated shift from working from home to office during the pandemic. Working at the office has been demonstrated to be more stressful than working from home. People may have assumed that their stress management skills could not keep up with the increased stress levels due to the shift to the office workplace.

The interventions focusing on stress management are generally effective (Tetrick & Winslow, 2015). Although relaxation therapies are less successful than cognitive-behavioural therapy, the latter is nevertheless studied the most. According to Richardson and Rothstein (2008), the lower levels of efficacy of relaxation techniques may be due to the fact that they urge people to 'let go' rather than change their cognitions. The present study aimed to increase the participants' literacy and provide ways and tips to improve their stress management behaviour in terms of stress

management. These ways and tips might offer some temporary effects, as Richardson and Rothstein (2008) indicate. Therefore, in the present study, the temporary effects of the intervention might have disappeared by the end, which may be the reason for the non-significant effect of the intervention on stress management.

According to research on stress management and health promotion and wellness programs, other powerful factors may determine the effects of the intervention (Tetrick & Winslow, 2015). Cultural contexts are one of the factors that have been highlighted. National or organisational cultures and occupational cultures may all play a role in improving and supporting employee stress management and organisational health. It is, however, still uncertain how these findings will impact stress management and workplace health promotion initiatives. More research is needed to examine possible factors.

*Research Question 5: Does the employee wellness intervention affect technopark employees' nutrition behaviour? If yes, what kind of changes occurred in their nutrition behaviour?*

Pairwise comparisons for the group by time interaction effect indicated significant time differences in the experimental group but not in the control group from pre-test to post-test. The mean scores showed a significant increase in nutrition scores from pre-test to post-test in the experimental group and a decrease in nutrition scores from pre-test to post-test in the control group. The results indicated that the intervention significantly affected nutrition behaviour in the experimental group.

Adults with poor health literacy may struggle to complete nutrition-related tasks such as following nutritional advice from experts, reading food labels, and so on (Rothman et al., 2006). The factors that lead to poor nutrition behaviours are numerous, necessitating an interdisciplinary approach that considers the social context of health (Sobal & Bisogni, 2009). Therefore, researchers are starting to look at health literacy and its potential influence in current efforts to improve dietary practices (Nutbeam, 1998). In that respect, the effect of the intervention in the present study on nutrition behaviours can be attributed to the implementation of the health literacy-focused social-ecological model.

The experimental design and the utilisation of a theoretically based framework seem to be the two notable strengths of the present study. The dimensions of nutrition

were incorporated into the content, which was constructed based on the targeted cluster of health literacy. This is especially important because theoretical methodologies for new media-based nutrition behaviour interventions are currently limited, and the present study paves the way for this.

New media-based health literacy entails more advanced literacy skills that enable one to actively participate in everyday activities and promote healthy consumption patterns in nutrition. This means that enhancing new media-based health literacy may assist technopark employees in adopting a balanced diet and healthy nutrition behaviours.

New media, a revolutionary tool that has had a profound impact on people, differs from traditional media tools in many respects. One crucial distinction is in the way interaction is conceived. In conventional media, circulation and watching rates are considered interaction, but these are quite restricted compared with new media's viewing, reading, and feedback aspects. User-generated content enabled in new media is user-centred and developed solely by users. In addition to this, social media allows users to provide comments, encouraging them to be more active. The present study employed these features of new media via YouTube and Instagram. YouTube functioned as a teaching tool for input on nutrition, while Instagram served as a platform for social interaction and reflection for the participants.

Another use of new media in the intervention implemented in the present study was in self-assessment tools in the Move For website. Research demonstrates that people are prone to misjudging themselves when assessing their knowledge, skills, and behaviours (Lucas & Baird, 2006). Several psychological mechanisms conspire to cause these erroneous self-assessments. The present study addressed this issue by designing objective self-assessment tools that allowed participants to comprehend their strengths and weaknesses to determine their nutrition-related health literacy deficiencies.

A key point regarding nutrition behaviour was encouraging participants to track their nutrition. Using a daily food diary to track diet, lose weight, or create healthy behaviours has been proven to influence weight loss, nutrition management, portion control, and healthy eating habits in general (Sallis et al., 1988). Meal recording allows one to remember the meal, the time, and the portion size (Parikh et al., 2005). According to a study by Burke (2011), individuals who kept a food diary

and maintained a balanced diet could lose nearly twice as much weight as people who did not keep a log.

*Research Question 6: Does the employee wellness intervention affect technopark employees' health literacy?*

The mean scores showed a significant increase in the health literacy scores from pre-test to post-test in the experimental group, and there was a slight decrease in the nutrition scores from pre-test to post-test in the control group. The results indicated that the intervention significantly affected the experimental group regarding health literacy.

The social-ecological approach promotes a more comprehensive knowledge of health literacy, which leads to more participation in lifestyle behaviours (Friis et al., 2016). The social-ecological model emphasises the relevance of the context, shows how health literacy and involvement are closely linked, and proposes solutions to improve both. In the intervention of the present study, the individual, social, and physical environments appeared as the three levels for treating low health literacy and boosting participation. Furthermore, the present study proposed a theoretical framework to aid in designing the interventions to improve health literacy and promote lifestyle behaviours.

Research on health literacy has repeatedly demonstrated that the more frequently a person searches for and interprets health information, the more confidence they feel doing so (Lee et al., 2012). This has yet to be quantified in terms of health literacy. A more general conclusion would be that self-efficacy, a major predictor of health behaviour adoption, is also relevant to health literacy skill sets, as evidenced by life experience (Bandura & Walters, 1977). Thus, lifestyle behaviours are gained in organised learning contexts offered by formal education or elsewhere. As concluded from the previously reported data, it is clear that social support is critical for many people to access health information from media sources. Based on qualitative findings, de Wit (2018) conducted a meta-analysis that indicated that social support and co-learning in communities were necessary for critical health literacy. Health literacy is a well-recognised and essential component of illness prevention and effective health promotion.

New media may also have an influential role at this point; it could be used to disseminate accurate health information and advance social relationships. In health promotion, social media and health literacy prove to be inextricably linked. Knowing the audience, understanding the aim of health communications, and tailoring social media messages to varied audiences, according to O'Mara (2013), are some fundamental health literacy concepts that might be more widely implemented to improve health promotion and communication. To the best of our knowledge, no research studies have so far focused on health literacy education via new media. The present study, in that sense, introduces a completely new and different path for health education and health literacy for technopark employees.

*Research Question 7: Does the employee wellness intervention affect technopark employees' work productivity?*

The mean scores indicated a decrease in absenteeism scores from pre-test to post-test in the experimental group, and there was an increase in absenteeism scores in the control group from pre-test to post-test. However, the results showed that the intervention did not significantly affect the experimental and control groups in terms of absenteeism.

Absenteeism rates could not be significantly reduced in the intervention because absence is not prevalent in the Turkish workplace culture. An employee in Turkey is absent from work for an average of only 2.9 days per year, according to Organisation for Economic Co-operation and Development (OECD) data for 2019 (OECD, 2020). On the other hand, the average annual number of absent days has been calculated as 26.2 in Lithuania, one of the countries with the highest work performance (OECD, 2021). Such a cultural understanding of workplace absenteeism requires employees to be present at work regardless of health issues, even when they do not perform well. Thus, this habit of the Turkish workplace setting may have been the reason why no changes were observed in the absenteeism scores in the present research.

Absenteeism and presenteeism have been frequently linked in the literature (Johns, 2009). Individuals may only be absent if they are sick or have a low quality of life. The health-related work loss problem may vary depending on the type of employment, the type of sickness (mental or physical), the effectiveness of the coping

mechanism, and the type of social support available to the worker (Schultz & Edington, 2007). As a result, the line between absenteeism and presenteeism might shift dramatically over time; in other words, when absenteeism increases, presenteeism could decrease. Furthermore, if the ongoing health condition is not appropriately addressed, an intervention may be beneficial in reducing work absence but result in only an increase in presenteeism.

These results appear to align with a systematic analysis conducted on the effectiveness of workplace health promotion programs in reducing presenteeism (Cancelliere et al., 2011). According to this analysis, successful programs provide health literacy, a multilevel approach, personalisation, and a supportive new media environment. Lack of engagement in physical activity, nutrition, and stress management behaviours was identified as possible risk factors for presenteeism in the present study.

Physical activity has also been shown to improve mood, which significantly affects professional performance (Hogan et al., 2013). In addition, the technopark work environment necessitates the development of interpersonal relationships and the promotion of partnerships to improve job performance. An increase in physical activity directly impacts the level of work performance.

*Glucose levels* is essentially a synonym for *blood sugar*. The feeling of light-headedness and the low-blood-sugar sensation brought about by a lack of sufficient nutrition affects emotions and behaviours. Brain processes require glucose for energy. It is possible that the act of self-control, as a very costly operation in terms of sophisticated brain activity, is highly reliant on glucose. In other words, low blood sugar causes a loss of willpower and an inability to stay on task and complete quality tasks, which can be regulated by healthy eating (Martin & Benton, 1999).

Eating also has a strong effect on sleep, which is why nutrition behaviour can dramatically impact circadian rhythms (Quick et al., 2015). The body has a natural internal clock, and if one can match the food to the internal clock, productivity could be maximised throughout the day. Consuming small amounts of food in the evening, avoiding fatty meals when under a lot of mental stress, and having the most significant meal first thing in the morning is therefore recommended (Arundell et al., 2018; Pawaskar et al., 2017). These healthy nutrition habits regulate the readiness of the brain and body to work productively.

Investigating the factors affecting presenteeism required much time and effort in the present study. The critical determinants of presenteeism studied in prior research were similar to those discovered in the study. Workplace stressors, one's health condition, and other individual characteristics were identified as determinants (Yang et al., 2015). Work environment demands, such as excessive job expectations, work control, and an inadequate social climate, cause stress-related elements at work (WHO, 2010). These variables are malleable and offer opportunities for change, and the intervention mapping approach in the present study addressed these variables. The state of one's health not only causes presenteeism but is also thought to operate as a mediator between work-related stress and absenteeism (Johns, 2010b). Individual characteristics, such as personality qualities that influence work-life balance and interpersonal connections, have been linked to stress and presenteeism in the older working population (Yang et al., 2015). These elements may be more challenging to alter.

*Research Question 8: How does the employee wellness intervention affect technopark employees' work and office health behaviours?*

The results of this research question were analysed by qualitative analysis—the study's outcomes presented in terms of the social-ecological perspective. Three interviewees reported no change in their office and work health behaviours. Specifically, they explained that their work and office environment were unsuitable for any change. In addition, one interviewee suggested that the expert could provide feedback regarding office ergonomics by studying a photograph of the office and work environment.

Although seven out of ten interviewees stated that the adjustments, they made to the office environment were beneficial, three individuals indicated that they had made no changes because they found it challenging to apply the information provided in this part of the intervention. A closer look at the adjustments made to the levels in line with the social-ecological model reveals that the alterations made were convenient and accessible (e.g., providing feedback to co-workers about posture or altering the position and height of the computer screen). It is possible to conclude that, except for one individual, the employees were willing to make such changes, but they would have liked the expenses to be compensated by the company, not by them. When the benefits

of the workplace alterations on job performance were conveyed to the employer, it became clear that the responsibility on this issue would have to be moved from the employee to the employer.

The frequency of self-reported musculoskeletal problems is considerably greater among computer users than non-users (Sanaeinasab et al., 2018). Musculoskeletal problems result in work loss in terms of absenteeism and presenteeism (Daneshmandi et al., 2017). Musculoskeletal problems caused by posture and the office environment could be decreased by physical activity (Moe & Thom, 1997). The present study reported changes in posture and physical activity during the intervention might have eased any musculoskeletal problems.

Improvements in office ergonomics for technopark employees are even more critical today as the home has become the new workplace. While setting up the home office, avoiding the dining table, the couch, the bed, and the floor are important, as these areas result in bad posture and pain (Davis et al., 2020). The intervention of the present study enabled the participants to make the necessary changes in their workplace or workstations, whether at the workplace or home.

Technopark companies will likely continue to use stay-at-home home offices in the short term to avoid the risk of widespread COVID-19 infection in the workplace. As a result, many employees will require secure workstations at home. Technopark companies have learned that work can be done at home, which will most likely lead to regular work hours at home. Employees prefer home offices because they save time commuting, have a better work-life balance, and are less stressed since they are at home. Home offices will need to adopt sound ergonomic solutions to maintain the employees' long-term health. Companies will need to provide training for suitable ergonomic accommodations as home offices become a permanent choice for many workers; otherwise, general discomfort may escalate into more harmful problems such as musculoskeletal illnesses. Treatment expenses, compensation expenditures, and absenteeism and presenteeism will directly result from the influence musculoskeletal problems.

*Research Question 9: How do the participants describe their experience with the program?*

Participants from the experimental group were asked to describe their experiences with the intervention. In general, participants were pleased to have participated in the program. Common satisfaction points were increased awareness, easy access to content, and self-assessment.

These findings align with previous research, which has found that group-based interventions are especially successful due to increased awareness and easy access to content (Barker et al., 2018; Jepson et al., 2010). However, participants of the present study identified several program components that they thought were the least useful or difficult. These points were tracking nutrition and changing work and office health behaviours. In terms of monitoring their nutrition, participants found it challenging to select the right name for the consumed food and enter its weight when entering the data into a food tracker application. Concerning changes to work and health behaviours, the technopark employees declared that changing the physical environment was difficult for them and expressed a desire for their employers to make the proper arrangements for office ergonomics.

Positive and negative emotions and individuals' assessments of their capacity to manage a situation are called self-efficacy (Bandura, 2006). Through cognitive processes, self-efficacy beliefs significantly impact behavioural competency and emotional ability. As a result, increased self-efficacy by increased health literacy can be accounted for by the participants' satisfaction.

New media has also been found to be helpful in health-promotion interventions, which is one of the strengths of the study. YouTube served a mediator role in increasing health literacy, and Instagram supported the study by providing a platform to share information. Because the findings are based on the experiences of technopark employees, the results cannot be generalised for other occupations. In the present study, participant satisfaction due to easy access to content can be attributed to integrating new media in the intervention.

Self-assessment tools are highlighted as vital instruments for enhancing the creation of health-related websites in recent research (Schneider et al., 2012). In the intervention of the present study, participants were also able to receive immediate feedback about the results of their self-assessment. This is also in line with the findings

of a systematic study, which found that self-monitoring components are most effective when they are supported by performance feedback (Michie et al., 2009).

*Research Question 10: What is the economic contribution of the program regarding the participants' improvement in work productivity?*

The intervention results showed a 14.7% increase in work performance, equal to 1,787 TL/month for a software developer or an expert-level employee. This number would translate to 21,444 TL annually for an employee, accounting for the increase in presenteeism.

Research showed that programs that focus on behaviour modification, employee targeted communications, and personalised counselling for high-risk persons are likely to yield a favourable return on investment (Chapman, 2012; Pelletier, 2005). Another research study investigated the influence of workplace health promotion programs on absenteeism (Aldana 2001). Regardless of the study approach utilised, all 14 studies analysed by Aldana (2001) indicated decreases in employee absenteeism. Still, only three produced a rate of investment ratios, ranging from $2.50 to $10.10 saved for every dollar invested.

Poor lifestyle behaviours bring about certain chronic illnesses. Because most working individuals spend the bulk of their waking hours at work, it is logical to make health-related expenditures focusing on the workplace or workstation. According to one study, one of the most significant obstacles in sustaining affordable health care is the poor engagement of employees for lifestyle behaviours (Baicker et al., 2010). Another study showed that employers who adopted wellness programs reported a strong belief that they benefited from cost, absenteeism, and presenteeism (Prasad et al., 2004a). The financial benefits of employee wellness programs have a ratio of 6:1 on average (Berry et al., 2010). Employers must invest resources in improving employee health and well-being to boost productivity, reduce absenteeism, and lower healthcare expenses.

# CHAPTER 6

# CONCLUSIONS & RECOMMENDATIONS

## 6.1. Conclusion

The overall findings indicated that physical activity, nutrition, and stress management behaviours predict work performance. Four clusters emerged in the sample of technopark employees, which partially paired with the exercise stages of change. Moreover, the intervention positively affected physical activity, nutrition, health literacy, work and office behaviours, and presenteeism. The interview results reflected that the participants generally seemed satisfied with the intervention, and the economic contribution of the intervention was determined to be 1,787 TL (312 $) per month per employee.

The findings indicated that work performance positively correlated with physical activity, nutrition, and stress management. This result suggested a course for designing an intervention to decrease health-related work loss. Physical activity, nutrition, and stress management behaviours appeared to be the primary behaviours to be modified to increase technopark employees' work productivity. Interpersonal relations, health responsibility, and mental development were observed to be secondary behaviours in work productivity. These results may partially explain the health-related work loss in the technopark employees in the Turkish context.

The analyses for identifying the clusters in the sample indicated three major structural outcomes. Firstly, the two-step cluster analysis indicated four clusters regarding physical activity, nutrition, and stress management behaviours. Secondly, the five stages in the exercise stages of change model could be applied as a four-stage model for technopark employees. This four-stage model included Stage 1 (pre-contemplation), Stages 2-3 (contemplation and preparation), Stage 4 (action), and Stage 5 (maintenance). Thirdly, the clusters and stages demonstrated a partial

matching: Cluster 1 and Stage 1, and Cluster 2 and Stage 2-3. This modelling also shed light on the intervention in Study 2.

In Study 2, a further indication of the results was that the intervention had a significant effect on the physical activity behaviour of the participants in the experimental group. Moreover, changes in physical activity behaviour were observed in leisure-time physical activity, job-related physical activity, and transportation physical activity. The findings indicated that the social-ecological context of health-literacy-based intervention positively affected participants' behaviours. The results revealed that the aims of the intervention regarding physical activity behaviour were reached. For health education objectives, the use of new media proved to be a powerful tool. The information presented in the YouTube videos and the tips shared in the Instagram content provided the participants with practical pathways to make changes in their daily lives.

Study 2 indicated that the intervention had no significant effect on stress management behaviour. The use of self-assessment to measure stress management might have caused a bias for understanding the stress management behaviour. On the other hand, a different approach might be applied to modify stress management behaviour instead of a new-media-based health literacy design. For example, offering professional support from a psychologist could be a better means of developing the participants' stress management behaviour.

Another indication of the results was that the intervention had a significant effect on the nutrition behaviour of the participants in the experimental group. An increase in health literacy impacted nutrition behaviour, as expected. Besides, the use of personalized new media demonstrated a positive effect on the development of literacy skills that can be manipulated in daily activities and promote healthy consumption patterns in nutrition. The outcomes revealed that employing new-media-based health literacy gave them the necessary tools to adopt a balanced diet and healthy nutrition behaviours.

The intervention demonstrated an effect on the health literacy of the participants in the experimental group. Health literacy entails more than the knowledge of health issues. The definitions and conceptualizations of health literacy are becoming broader and more thorough. Multi-layered health literacy models necessitate a more complicated health education. To develop more focused health education interventions

and to avoid health education failures, enhanced health literacy definitions and conceptual models necessitate more sophisticated, comprehensive, socially-oriented, culturally sensitive, and participatory health education. In this respect, new media proved to be an effective instrument for health literacy education.

Regarding the work performance perspective, the intervention had a significant effect on presenteeism but no impact on absenteeism. Since absenteeism is not prevalent in the Turkish workplace culture, with a considerably lower average of absenteeism compared to OECD countries, it seems reasonable to focus research on presenteeism rather than putting effort into absenteeism. The results also showed that promoting physical activity, nutrition, and stress management behaviours would boost the productivity of technopark employees.

Another focus of the study was technopark employees' office and work behaviours. The qualitative results indicated that three interviewees reported no change; however, seven expressed changes in their office and work behaviours. The increase in health literacy also affected the participants' behaviours in terms of individual, social environment, and physical environmental levels. These multi-level outcomes showed that the social-ecological context of health literacy seems to be effective for technopark employees.

The participants reported that they were overall pleased to have participated in the program. Common satisfaction points were increased awareness, easy to reach content, and self-assessment. The participants' experiences showed that the simplicity in the research design allowed them to employ self-control during the interventions. They could easily follow the health literacy content via YouTube and Instagram as part of their daily activities. Moreover, they could assess themselves using the tools on the website. Also, they could get feedback or consult the expert about the barriers to changing their lifestyle behaviours.

The intervention results showed a 14.7% increase in work performance in terms of presenteeism, equal to 1,787 TL/month for a software developer or an expert-level employee. This number would translate to 21,444 TL annually per technopark employee in Turkish. This showed that health-literacy-based interventions provide economic outcomes within the rate of investment to increase work productivity.

To conclude, the findings indicated that the health-literacy-based intervention with a focus on the social-ecological context effectively promoted physical activity,

nutrition, work and office behaviours, health literacy, and presenteeism. In health-literacy-based designs, new media should be carefully investigated for the target population, and the methods need to be tailored according to their needs.

## 6.2. Implications of the Study

1. The need-based employee wellness program that integrates new media, with a central focus on the social-ecological context of health literacy, was found effective in promoting physical activity behaviour.
2. The need-based employee wellness program that integrates new media, with a central focus on the social-ecological context of health literacy, was found effective in promoting nutrition behaviour.
3. The need-based employee wellness program that integrates new media, with a central focus on the social-ecological context of health literacy, was effective in improving health literacy.
4. The need-based employee wellness program that integrates new media, with a central focus on the social-ecological context of health literacy, was effective in promoting work and office health behaviours.
5. The need-based employee wellness program that integrates new media, with a central focus on the social-ecological context of health literacy, was found effective in improving presenteeism.
6. The technopark employees' experiences in the need-based employee wellness program were satisfying and effective.
7. The need-based employee wellness program developed economic output regarding employee work productivity.

## 6.3. Recommendations

### 6.3.1. Recommendations for Future Studies

1. Promoting health literacy via new media in interventions that target technopark employees would be highly recommended.
2. A multi-layered approach for promoting health literacy in an employee wellness program would be highly recommended.

3. The social-ecological context of health literacy should be investigated and developed in further studies.

4. Additional expert support would be beneficial for promoting stress management behaviour in employee wellness programs in the technopark context.

5. Tips to promote lifestyle behaviours would increase the effect and complement health education.

6. Self-assessment methods should be integrated into future employee wellness programs.

7. YouTube and Instagram are constantly evolving; the new features should be examined and applied as necessary.

8. Screen time tracker applications on computers and applications providing notifications to stand up or give breaks should be investigated.

### 6.3.2. Recommendations for Employers

1. Employers should support their employees in promoting physical activity by providing autonomy.

2. Employers should support their employees in promoting healthy eating behaviour by offering better options at work.

3. Employers should support their employees in promoting stress management behaviour by offering expert support.

4. Employers should be flexible about working from the office or working from home.

5. Employers should invest in employee wellness programs.

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# APPENDICES

## A. APPROVAL OF THE METU HUMAN SUBJECTS ETHICS COMMITTEE

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER

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08 ŞUBAT 2017

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Prof. Dr. Mustafa Levent İNCE;

Danışmanlığını yaptığınız doktora öğrencisi Hakan KURU'nun ***"Identifying the Workplace Health Promotion Needs of White-Collars"*** başlıklı araştırması İnsan Araştırmaları Etik Kurulu tarafından uygun görülerek gerekli onay **2017-EGT-014** protokol numarası ile **08.02.2017 – 30.04.2017** tarihleri arasında geçerli olmak üzere verilmiştir.

Bilgilerinize saygılarımla sunarım.

Prof. Dr. Canan SÜMER
İnsan Araştırmaları Etik Kurulu Başkanı

Prof. Dr. Mehmet UTKU
İAEK Üyesi

Prof. Dr. Ayhan SOL
İAEK Üyesi

Prof. Dr. Ayhan Gürbüz DEMİR
İAEK Üyesi

Doç. Dr. Yaşar KONDAKÇI
İAEK Üyesi

Yrd. Doç. Dr. Pınar KAYGAN
İAEK Üyesi

Yrd. Doç. Dr. Emre SELÇUK
İAEK Üyesi

# B. QUESTIONNAIRES

## Sağlıklı Yaşam Biçimi Davranışları Ölçeği-II

**SAĞLIKLI YAŞAM BİÇİMİ DAVRANIŞLARI ÖLÇEĞİ II**

Bu ankette şu anki yaşam tarzınız ve alışkanlıklarınız ile ilgili sorular yer almaktadır. Lütfen soruları mümkün olduğu kadar doğru ve eksiksiz yanıtlayınız. Her alışkanlığınızın sıklığını uygun seçeneği daire içine alarak belirtiniz.Hiç birzaman 1, bazen 2, sık sık 3, düzenli olarak 4 olarak değerlendirilmektedir.

| | | Hiçbir Zaman | Bazen | Sık sık | Düzenli Olarak |
|---|---|---|---|---|---|
| 1 | Bana yakın olan kişilerle endişelerimi ve sorunlarımı tartışırım | | | | |
| 2 | Sıvı ve katı yağı, kolesterolü düşük bir diyeti tercih ederim | | | | |
| 3 | Doktora ya da bir sağlık görevlisine, vücudumdaki olağandışı belirti ve bulguları anlatırım | | | | |
| 4 | Düzenli bir egzersiz programı yaparım | | | | |
| 5 | Yeterince uyurum | | | | |
| 6 | Olumlu yönde değiştiğimi ve geliştiğimi hissederim | | | | |
| 7 | İnsanları başarıları için takdir ederim | | | | |
| 8 | Şekeri ve tatlıyı kısıtlarım | | | | |
| 9 | Televizyonda sağlığı geliştirici programları izler ve bu konularla ilgili kitapları okurum | | | | |
| 10 | Haftada en az üç kez 20 dakika ve/veya daha uzun süreli egzersiz yaparım (hızlı yürüyüş, bisiklete binme, aerobik, dans gibi) | | | | |
| 11 | Her gün rahatlamak için zaman ayırırım | | | | |
| 12 | Yaşamımın bir amacı olduğuna inanırım | | | | |
| 13 | İnsanlarla anlamlı ve doyumlu ilişkiler sürdürürüm | | | | |
| 14 | Hergün 6-11 öğün ekmek, tahıl, pirinç ve makarna yerim | | | | |
| 15 | Sağlık personeline önerilerini anlamak için soru sorarım | | | | |
| 16 | Hafif ve orta düzeyde egzersiz yaparım (Örneğin haftada 5 kez ya da daha fazla) yürürüm | | | | |
| 17 | Yaşamımda değiştiremeyeceğim şeyleri kabullenirim | | | | |
| 18 | Geleceğe umutla bakarım | | | | |
| 19 | Yakın arkadaşlarıma zaman ayırırım | | | | |
| 20 | Her gün 2-4 öğün meyve yerim | | | | |
| 21 | Her zaman gittiğim sağlık personelinin önerileri ile ilgili sorularım olduğunda başka bir sağlık personeline danışırım | | | | |
| 22 | Boş zamanlarımda yüzme, dans etme, bisiklete binme gibi eğlendirici fizik aktiviteler yaparım | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 23 | Uyumadan önce güzel şeyler düşünürüm | | | | |
| 24 | Kendimle barışık ve kendimi yeterli hissederim | | | | |
| 25 | Başkalarına ilgi, sevgi ve yakınlık göstermek benim için kolaydır | | | | |
| 26 | Her gün 3-5 öğün sebze yerim | | | | |
| 27 | Sağlık sorunlarımı sağlık personeline danışırım | | | | |
| 28 | Haftada en az üç kere kas güçlendirme egzersizleri yaparım | | | | |
| 29 | Stresimi kontrol etmek için uygun yöntemleri kullanırım | | | | |
| 30 | Hayatımdaki uzun vadeli amaçlar için çalışırım | | | | |
| 31 | Sevdiğim kişilerle kucaklaşırım | | | | |
| 32 | Her gün 3-4 kez süt, yoğurt veya peynir yerim | | | | |
| 33 | Vücudumu fiziksel değişiklikler, tehlikeli bulgular bakımından ayda en az bir kez kontrol ederim | | | | |
| 34 | Günlük işler sırasında egzersiz yaparım<br>( örneğin, yemeğe yürüyerek giderim, asansör yerine merdiven kullanırım, arabamı uzağa parkederim) | | | | |
| 35 | İş ve eğlence zamanımı dengelerim | | | | |
| 36 | Hergün yapacak değişik ve ilginç şeyler bulurum | | | | |
| 37 | Yakın dostlar edinmek için çaba harcarım | | | | |
| 38 | Hergün et, tavuk, balık, kuru bakliyat, yumurta, çerez türü gıdalardan 3-4 porsiyon yerim | | | | |
| 39 | Kendime nasıl daha iyi bakabileceğim konusunda sağlık personeline danışırım | | | | |
| 40 | Egzersiz yaparken nabız ve kalp atışlarımı kontrol ederim | | | | |
| 41 | Günde 15-20 dakika gevşeyebilmek, rahatlayabilmek için uygulamalar yaparım | | | | |
| 42 | Yaşamımda benim için önemli olan şeylerin farkındayım | | | | |
| 43 | Benzer sorunu olan kişilerden destek alırım | | | | |
| 44 | Gıda paketlerinin üzerindeki besin, yağ ve sodyum içeriklerini belirleyen etiketleri okurum | | | | |
| 45 | Bireysel sağlık bakımı ile ilgili eğitim programlarına katılırım | | | | |
| 46 | Kalp atımım hızlanana kadar egzersiz yaparım | | | | |
| 47 | Yorulmaktan kendimi korurum | | | | |
| 48 | İlahi bir gücün varlığına inanırım | | | | |
| 49 | Konuşarak ve uzlaşarak çatışmaları çözerim | | | | |
| 50 | Kahvaltı yaparım | | | | |
| 51 | Gereksinim duyduğumda başkalarından danışmanlık ve rehberlik alırım | | | | |
| 52 | Yeni deneyimlere ve durumlara açığım | | | | |

## Kronik Hastalıklar ve Risk Faktörleri Anketi

### Risk Faktörleri

**A.Sigara**

| | |
|---|---|
| A1. Sigara kullanıyor musunuz? | 1. Hayır kullanmıyorum **(A6'ya geçiniz)**<br>2. Evet düzenli olarak (günde en az 1 adet) kullanıyorum **(A3'e geçiniz)**<br>3. Evet, ara sıra kullanıyorum **(A3'e geçiniz)**<br>4. Kullanıyordum, .....ay,.....yıl önce bıraktım **(A2'ye geçiniz)** |
| A2. Sigara içtiğiniz yıllarda kaç adet içiyordunuz? | 1. Sigara..... adet/günde<br>2. Günde birden az (ara sıra) |
| A3.Sigaraya ilk kez kaç yaşında başladınız? | ..... yaşında |
| A4. Günde kaç adet sigara içiyorsunuz? | 1. Sigara..... adet/günde<br>2. Günde birden az (ara sıra) |
| A5. Sigarayı bırakmayı denediniz mi? | 1. Denedim, tekrar deneyeceğim.<br>2. Denedim, tekrar denemeyi düşünüyorum.<br>3. Denemedim, bırakmayı düşünüyorum.<br>4. Denemedim, bırakmayı düşünmüyorum. |
| A6. Puro, pipo, nargile kullanıyor musunuz ? | 1. Hayır kullanmıyorum<br>2. Evet düzenli olarak (günde en az 1 adet) kullanıyorum<br>3. Evet, ara sıra kullanıyorum<br>4. Düzenli olarak kullanıyordum, ..... ay önce bıraktım. |
| A7. Evinizin içinde sigara içiliyor mu? | 1. Hayır içilmiyor<br>2. Evet, her gün içiliyor<br>3. Evet, ara sıra içiliyor |
| A8. Çalıştığınız işyerinde (kapalı alanlarda) sigara içiliyor mu? | 1. Hayır içilmiyor<br>2. Evet, her gün içiliyor<br>3. Evet, ara sıra içiliyor |

## B.Alkol

| | |
|---|---|
| B1. Ne sıklıkla alkollü içecek kullanıyorsunuz? | 1. Hiç (Beslenme Bölümü'ne gidiniz)<br>2. Ayda bir veya daha az<br>3. Ayda 2-4 kez<br>4. Haftada 2-3 kez<br>5. Haftada 4 veya daha fazla |
| B2. Alkol aldığınız bir günde genellikle kaç standart içki içersiniz?<br>(1 standart içki = 1 küçük bira = 1 kadeh şarap =1 tek rakı = 1 tek votka)<br>(Bir büyük bira=1,5 standart içki) | 1. 1 veya 2<br>2. 3 veya 4<br>3. 5 veya 6<br>4. 7 veya 9<br>5. 10 ve üzeri |
| B3. Ne sıklıkla bir oturuşta 5 standart içki veya daha fazla içiyorsunuz? | 1. Hiç<br>2. Ayda birden az<br>3. Ayda bir<br>4. Haftada bir<br>5. Her gün veya hemen hemen her gün |

## C.Aile Öyküsü

| | |
|---|---|
| C1. Anne veya kız kardeşlerinizde 65 yaştan önce, geçirilmiş bypass ameliyatı, balon anjioplasti, kalp krizi, ani ölüm var mı? | 1. Evet, annede<br>2. Evet, kız kardeşlerden en az birinde<br>3. Hayır<br>4. Bilmiyorum/emin değilim<br>5. 1.ve 2.şıklar beraber |
| C2. Baba veya erkek kardeşlerinizde 55 yaştan önce geçirilmiş bypass ameliyatı, balon anjioplasti, kalp krizi, ani ölüm var mı? | 1. Evet, babada<br>2. Evet, erkek kardeşlerden en az birinde<br>3. Hayır<br>4. Bilmiyorum/emin değilim<br>5. 1.ve 2.şıklar beraber |
| C3. Ailenizde diyabeti olan var mı?<br>Birden fazla seçenek işaretlenebilir | 1. Evet, anne<br>2. Evet, baba<br>3. Evet, kardeş<br>4. Evet, çocuğumda<br>5. Hayır<br>6. Bilmiyorum/emin değilim |
| C4. Anne veya kız kardeşlerinizde 65 yaştan önce geçirilmiş inme (felç) var mı? | 1. Evet, annede<br>2. Evet, kız kardeşlerden en az birinde<br>3. Hayır<br>4. Bilmiyorum/emin değilim<br>5. 1.ve 2.şıklar beraber |
| C5. Baba veya erkek kardeşlerinizde 55 yaştan önce geçirilmiş inme (felç) var mı? | 1. Evet, babada<br>2. Evet, erkek kardeşlerden en az birinde<br>3. Hayır<br>4. Bilmiyorum/emin değilim<br>5. 1.ve 2.şıklar beraber |

## D. Kronik Sağlık Sorunları

| Anjina Pektoris (Kalpten kaynaklanan göğüs ağrısı) | | | |
|---|---|---|---|
| D1. Sizde anjina pektoris (Kalpten kaynaklanan göğüs ağrısı) olduğu söylendi mi? | 1. Evet<br>2. Hayır<br>3. Bilmiyorum | Cevabınız **evet** ise; tedavi verildi mi?<br>1. Evet<br>2. Hayır | |
| D2. Son 12 ayda göğüs ağrınız oldu mu? | 1. Evet<br>2. Hayır | Cevabınız **evet** ise; ağrının türü?<br>1. Batıcı bir ağrı<br>2. Sıkıştırıcı bir ağrı | |
| D3. Merdiven çıktığınızda ya da yokuş tırmandığınızda göğüs ağrınız olur mu? | 1. Evet<br>2. Hayır | | |
| D4. Kaldırımda acele etmeden, normal bir şekilde yürüdüğünüzde göğüs ağrınız olur mu? | 1. Evet<br>2. Hayır | | |
| Şu ana kadar D1'e yanıtınız Hayır veya bilmiyorum ise ve göğüs ağrısı yakınması olmadı ise (D2, D3 ve D4'e yanıt hayır ise) konjestif kalp yetmezliği sorularına (D11'e) geçiniz.<br>Şu ana kadar anjina pektoris tanısı varsa (D1'e yanıt evet ise) veya göğüs ağrısı yakınması oldu ise (D2, D3 veya D4'den en az birine yanıt evet ise) D5'e geçiniz | | | |
| D5. Yürürken göğüs ağrınız olduğunda ne yaparsınız? | 1. Dururum/yavaşlarım<br>2. Yürümeye devam ederim | Durunca ağrı ne olur?<br>1. Azalır ve rahatlarım<br>2. Azalmaz, devam eder | Ne kadar sürer?<br>1. On dakika ya da daha az<br>2. On dakikadan fazla |
| D6. Göğüs ağrınız nere/lerde oluyor? | 1. Göğüs kafesi (üst veya orta)<br>2. Göğüs kafesi (alt)<br>3. Göğüs kafesi sol taraf<br>4. Sol kol<br>5. Diğer (belirtiniz) | | |
| D7. Bu göğüs ağrısı nedeniyle herhangi bir doktora gittiniz mi? | 1. Evet<br>2. Hayır | Doktor tanısı;<br>1. Anjina<br>2. Kalp krizi<br>3. Diğer kalp hastalıkları<br>4.Koroner kalp hastalığı<br>5. Diğer (belirtiniz) | |
| D8. Bu ağrı nedeniyle hastane de yattınız mı?<br>1. Evet<br>2. Hayır | Bu ağrı ne kadar zaman önce başladı?<br>1. Bir ay önce<br>2. Altı ay önce<br>3. Bir yıl önce<br>4. İki yıl önce<br>5. İki yıldan fazla oldu | Göğüs ağrsını azaltmak için dil altı ilaç kullandınız mı?<br>1. Evet<br>2. Hayır | |

| İnfaktüs | | | |
|---|---|---|---|
| D9. Göğsünüzün ön kısmında yarım saat ya da daha fazla süren çok şiddetli ağrınız oldu mu? | 1. Evet<br>2. Hayır (F11'e geçiniz) | Bu ağrı nedeniyle doktora başvurdunuz mu?<br>1. Evet<br>2. Hayır (F11'e geçiniz) | Doktor tanısı;<br>1. Kalp krizi<br>2. Diğer |
| D10. Bu ağrı nedeniyle hastanede yattınız mı? | 1. Evet<br>2. Hayır (F11'e geçiniz) | Kaç kez kalp krizi geçirdiniz?<br>..... | |
| **Konjestif Yetmezliği (Nefes Darlığı)** | | | |
| D11. Nefes darlığınız var mı? | 1. Evet<br>2. Hayır (Tanılar Bölümü'ne geçiniz) | Aşağıdaki şikayetlerden hangileri var?<br>1. Nefes darlığı nedeniyle geceleri uykudan uyanma<br>2. İki ya da daha fazla yastık kullanma<br>3. Ayak bileklerinde ya da bacakta şişme | |

## E.TANILAR

| Tanı | Bu hastalık sizde var mı? | Ne zaman tanı kondu? (Son 12 ay içinde ise tanı tarihini belirtiniz) | Bu hastalık için düzenli ilaç kullanıyor musunuz? | Hangi tedavi/ler verildi? |
|---|---|---|---|---|
| E1. Diyabet (Şeker hastalığı) | 1. Evet (sağdaki sorulara devam ediniz)<br>2. Hayır (alttaki soruyla devam ediniz) | 1. Son 12 içinde ...../...../.....16<br>2. 12 aydan daha uzun süre önce | 1. Evet, raporum var<br>2. Evet, raporum yok ancak düzenli ilaç kullanmıyorum<br>3. Hayır | 1. Diyet<br>2. Şeker düşürücü haplar<br>3. İnsülin<br>4. Bitkisel ilaçlar |
| E2. Hipertansiyon (Yüksek kan basıncı) | 1. Evet (sağdaki sorulara devam ediniz)<br>2. Hayır (alttaki soruyla devam ediniz) | 1. Son 12 içinde ...../...../.....16<br>2. 12 aydan daha uzun süre önce | 1. Evet, raporum var<br>2. Evet, raporum yok ancak düzenli ilaç kullanmıyorum<br>3. Hayır | |
| E3. Lipid/veya kolesterol yüksekliği | 1. Evet (sağdaki sorulara devam ediniz)<br>2. Hayır (alttaki soruyla devam ediniz) | 1. Son 12 içinde ...../...../.....16<br>2. 12 aydan daha uzun süre önce | 1. Evet, raporum var<br>2. Evet, raporum yok ancak düzenli ilaç kullanmıyorum<br>3. Hayır | 1. Lipid/kolestrol düşürücü ilaçlar<br>2. Diyet<br>3. Bitkisel ilaçlar |
| E4. Böbrek yetmezliği | 1. Evet (sağdaki sorulara devam ediniz)<br>2. Hayır (alttaki soruyla devam ediniz) | 1. Son 12 içinde ...../...../.....16<br>2. 12 aydan daha uzun süre önce | 1. Evet, raporum var<br>2. Evet, raporum yok ancak düzenli ilaç kullanmıyorum<br>3. Hayır | 1. İlaç<br>2. Diyaliz<br>3. Transplantasyon |
| E5. Kalp krizi | 1. Evet (sağdaki sorulara devam ediniz)<br>2. Hayır (alttaki soruyla devam ediniz) | 1. Son 12 içinde ...../...../.....16<br>2. 12 aydan daha uzun süre önce | 1. Evet, raporum var<br>2. Evet, raporum yok ancak düzenli ilaç kullanmıyorum<br>3. Hayır | |
| E6. Koroner by-pass ameliyatı | 1. Evet (sağdaki sorulara devam ediniz)<br>2. Hayır (alttaki soruyla devam ediniz) | 1. Son 12 içinde ...../...../.....16<br>2. 12 aydan daha uzun süre önce | 1. Evet, raporum var<br>2. Evet, raporum yok ancak düzenli ilaç kullanmıyorum<br>3. Hayır | |
| E7. Koroner balon anjioplasti ya da stent uygulaması | 1. Evet (sağdaki sorulara devam ediniz)<br>2. Hayır (alttaki soruyla devam ediniz) | 1. Son 12 içinde ...../...../.....16<br>2. 12 aydan daha uzun süre önce | 1. Evet, raporum var<br>2. Evet, raporum yok ancak düzenli ilaç kullanmıyorum<br>3. Hayır | |
| E8. Felç/beyin kanaması/ inme (vücudunuzun bir tarafında 24 saatten **uzun süren** ani gelişen güçsüzlük, uyuşma, konuşma bozukluğu, görme bozukluğu, dengesizlik, göz hareketlerinde bozukluk) oldu mu? | 1. Evet (sağdaki sorulara devam ediniz)<br>2. Hayır (alttaki soruyla devam ediniz) | 1. Son 12 içinde ...../...../.....16<br>2. 12 aydan daha uzun süre önce | 1. Evet, raporum var<br>2. Evet, raporum yok ancak düzenli ilaç kullanmıyorum<br>3. Hayır | Ne tür tedavi yapıldı?<br>1. Damar açıcı<br>2. İlaç<br>3. Cerrahi<br>4. Karotid stent ya da endarterektonomi |

| | | | | |
|---|---|---|---|---|
| E9. Geçici İnme-felç (24 saatten kısa süren) (vücudunuzun bir tarafında 24 saatten **kısa süren** ani gelişen güçsüzlük, uyuşma, konuşma bozukluğu, görme bozukluğu, dengesizlik, göz hareketlerinde bozukluk) oldu mu? | 1. Evet (sağdaki sorulara devam ediniz)<br>2. Hayır (alttaki soruyla devam ediniz) | 1. Son 12 içinde ...../...../.....16<br>2. 12 aydan daha uzun süre önce | 1. Evet, raporum var<br>2. Evet, raporum yok ancak düzenli ilaç kullanmıyorum<br>3. Hayır | Ne tür tedavi yapıldı?<br>1. Damar açıcı<br>2. İlaç<br>3. Cerrahi<br>4. Karotid stent ya da endarterektonomi |
| E10. Demans/alzheimer | 1. Evet (sağdaki sorulara devam ediniz)<br>2. Hayır (alttaki soruyla devam ediniz) | 1. Son 12 içinde ...../...../.....16<br>2. 12 aydan daha uzun süre önce | 1. Evet, raporum var<br>2. Evet, raporum yok ancak düzenli ilaç kullanmıyorum<br>3. Hayır | |
| E11. Epilepsi | 1. Evet (sağdaki sorulara devam ediniz)<br>2. Hayır (alttaki soruyla devam ediniz) | 1. Son 12 içinde ...../...../.....16<br>2. 12 aydan daha uzun süre önce | 1. Evet, raporum var<br>2. Evet, raporum yok ancak düzenli ilaç kullanmıyorum<br>3. Hayır | |
| E12. Parkinson hastalığı | 1. Evet (sağdaki sorulara devam ediniz)<br>2. Hayır (alttaki soruyla devam ediniz) | 1. Son 12 içinde ...../...../.....16<br>2. 12 aydan daha uzun süre önce | 1. Evet, raporum var<br>2. Evet, raporum yok ancak düzenli ilaç kullanmıyorum<br>3. Hayır | |
| E13. Kronik bronşit, amfizem (KOAH) | 1. Evet (sağdaki sorulara devam ediniz)<br>2. Hayır (alttaki soruyla devam ediniz) | 1. Son 12 içinde ...../...../.....16<br>2. 12 aydan daha uzun süre önce | 1. Evet, raporum var<br>2. Evet, raporum yok ancak düzenli ilaç kullanmıyorum<br>3. Hayır | |
| E14. Depresyon | 1. Evet (sağdaki sorulara devam ediniz)<br>2. Hayır (alttaki soruyla devam ediniz) | 1. Son 12 içinde ...../...../.....16<br>2. 12 aydan daha uzun süre önce | 1. Evet, raporum var<br>2. Evet, raporum yok ancak düzenli ilaç kullanmıyorum<br>3. Hayır | |
| E15. Migren ve sık baş ağrısı | 1. Evet (sağdaki sorulara devam ediniz)<br>2. Hayır (alttaki soruyla devam ediniz) | 1. Son 12 içinde ...../...../.....16<br>2. 12 aydan daha uzun süre önce | 1. Evet, raporum var<br>2. Evet, raporum yok ancak düzenli ilaç kullanmıyorum<br>3. Hayır | |
| E16. Alerjik bir hastalık | 1. Evet (sağdaki sorulara devam ediniz)<br>2. Hayır (alttaki soruyla devam ediniz) | 1. Son 12 içinde ...../...../.....16<br>2. 12 aydan daha uzun süre önce | 1. Evet, raporum var<br>2. Evet, raporum yok ancak düzenli ilaç kullanmıyorum<br>3. Hayır | |

| | | | |
|---|---|---|---|
| E17. Reflü özofajit | 1. Evet (sağdaki sorulara devam ediniz)<br>2. Hayır (alttaki soruyla devam ediniz) | 1. Son 12 içinde ...../...../.....16<br>2. 12 aydan daha uzun süre önce | |
| E18. Tüberküloz | 1. Evet (sağdaki sorulara devam ediniz)<br>2. Hayır (alttaki soruyla devam ediniz) | 1. Son 12 içinde ...../...../.....16<br>2. 12 aydan daha uzun süre önce | |
| E19. Son 12 ayda herhangi bir kaza geçirdiniz mi? | 1. Evet (sağdaki sorulara devam ediniz)<br>2. Hayır (alttaki soruyla devam ediniz) | Son bir yılda geçirilen kaza tür/leri<br>1. Ev kazası<br>2. Trafik kazası<br>3. İş kazası | |
| E20. Size bir doktor yaşam biçiminizle ilgili değişiklikler önerdi mi? (Birden çok seçenek işaretleyebilirsiniz) | 1. Sigarayı bırakın<br>2. Kilo verin<br>3. Kırmızı eti azaltın<br>4. Meyve sebzeyi arttırın<br>5. Tuzu azaltın<br>6. Sıvı yağ kullanın<br>7. Fiziksel aktivite yapın (yürüyüş, jimnastik, koşu)<br>8. Önermedi | | |

## International Physical Activity Questionnaire (Short Form)

1. Geçen 7 gün içerisinde kaç gün ağır kaldırma, kazma, aerobik, basketbol, futbol

veya hızlı bisiklet çevirme gibi şiddetli fiziksel aktivitelerden yaptınız? (Son 7 günde yaptığınız şiddetli aktiviteleri düşünün. Şiddetli fiziksel aktiviteler; zor fiziksel efor yapıldığını ve nefes almanın normalden çok daha fazla olduğu aktiviteleri ifade eder. Sadece herhangi bir zamanda en az 10 dakika yaptığınız bu aktiviteleri düşünün.)

Haftada___gün

Şiddetli fiziksel aktivite yapmadım. □ ( 3.soruya gidin.)

2. Bu günlerin birinde şiddetli fiziksel aktivite yaparak genellikle ne kadar zaman

harcadınız?

Günde ___ saat

Günde ___ dakika

Bilmiyorum/Emin değilim

3.Geçen 7 gün içerisinde kaç gün hafif yük taşıma, normal hızda bisiklet çevirme,

halk oyunları, dans, bowling veya çiftler tenis oyunu gibi orta dereceli fiziksel

aktivitelerden yaptınız? (Yürüme hariç) (Geçen 7 günde yaptığınız orta dereceli fiziksel aktiviteleri düşünün. Orta dereceli aktivite orta derece fiziksel güç gerektiren ve normalden biraz sık nefes almaya neden olan aktivitelerdir. Yalnız bir seferde en az 10 dakika boyunca yaptığınız fiziksel aktiviteleri düşünün.)

Haftada___gün

Orta dereceli fiziksel aktivite yapmadım. □ (5.soruya gidin.)

4. Bu günlerin birinde orta dereceli fiziksel aktivite yaparak genellikle ne kadar

zaman harcadınız

Günde ___ saat

Günde ___ dakika

Bilmiyorum/Emin değilim

5. Geçen 7 gün, bir seferde en az 10 dakika yürüdüğünüz gün sayısı kaçtır? (Geçen 7 günde yürüyerek geçirdiğiniz zamanı düşünün. Bu işyerinde, evde, bir yerden bir yere ulaşım amacıyla veya sadece dinlenme, spor, egzersiz veya hobi amacıyla yaptığınız yürüyüş olabilir.)

Haftada___gün

Yürümedim. □ (7.soruya gidin.)

6. Bu günlerden birinde yürüyerek genellikle ne kadar zaman geçirdiniz?

Günde ___ saat

Günde ___ dakika

Bilmiyorum/Emin değilim

7. Geçen 7 gün içerisinde, günde oturarak ne kadar zaman harcadınız? (Geçen 7 günde hafta içinde oturarak geçirdiğiniz zamanlarla ilgilidir. İşte, evde, çalışırken ya da dinlenirken geçirdiğiniz zamanlar dahildir. Bu masanızda, arkadaşınızı ziyaret ederken, okurken, otururken veya yatarak televizyon seyrettiğinizde oturarak geçirdiğiniz zamanları kapsamaktadır.)

Günde ___ saat

Günde ___ dakika

Bilmiyorum/Emin değilim

## WHO Health and Work Performance Questionnaire

1. Son 7 gün içinde yaklaşık toplam kaç saat çalıştınız?

   _____

2. 7 günlük tipik bir çalışma haftasında işvereniniz sizden kaç saat çalışmanızı bekler?

   _____

3. Şimdi lütfen son 4 hafta boyunca yaşadığınız iş tecrübenizi göz önünde bulundurun. Bırakılan boşluklara, aşağıda belirtilmiş çalışma durumlarına kaç gün harcamış olduğunuzu yazın.

Son 4 haftada (28 gün), kaç gün...

| | |
|---|---|
| .....**fiziksel ya da zihinsel sağlık problemleri** sebebiyle **tam bir iş günü** kaçırdınız? (Lütfen başka bir kişinin sağlık problemleri nedeniyle değil kendi sağlık problemleriniz nedeniyle kaçırdığınız günleri sayınız.) | |
| ....**başka bir sebepten** dolayı tam bir iş günü kaçırdınız (tatil dahil)? | |
| ....fiziksel ya da zihinsel sağlık problemleri sebebiyle **bir iş gününün bir kısmını** kaçırdınız (Lütfen başka bir kişinin sağlık problemleri nedeniyle değil kendi sağlık problemleriniz nedeniyle kaçırdığınız günleri sayınız.) | |
| ....**başka bir sebepten** dolayı bir iş **gününün bir kısmını** kaçırdınız (tatil dahil)? | |
| ....işe erken geldiniz, eve geç gittiniz, ya da izin gününde çalıştınız? | |

4. Son 4 haftada (28 gün) yaklaşık toplam kaç saat çalıştınız?

   _____

5. 0'dan 10'a kadar olan bir ölçekte, 0'ın sizin işinizde bir kişinin gösterebileceği en kötü iş performansı ve 10'un ise en iyi iş performansı olduğu düşünülürse, sizin işinize benzer işte çalışanların çoğunun genel performansını nasıl değerlendirirsiniz?

| En Kötü | | | | | | | | | | En İyi |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

6. 0'dan 10'a kadar olan aynı ölçeği kullanarak, son 1 ya da 2 yıllık genel çalışma performansınızı nasıl değerlendirirsiniz?

| En Kötü | | | | | | | | | | En İyi |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

7. 0'dan 10'a kadar olan aynı ölçeği kullanarak, son 4 haftalık (28 gün) genel çalışma performansınızı nasıl değerlendirirsiniz?

| En Kötü | | | | | | | | | | En İyi |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

## Exercise Stages of Change Questionnaire

**FİZİKSEL AKTİVİTE KATILIM DURUMU**

Bu bölümdeki sorular genel olarak sizin orta düzeyde fiziksel aktiviteye katılım durumunuzla ilgilidir.

**Orta düzeyde** fiziksel aktiviteler nefes alımında ve kalp atımında biraz artış gözlenen aktivitelerdir. Ritimli yürüyüş, dans, bahçe işleri, düşük şiddette yüzme veya arazide bisiklet sürme gibi etkinlikler orta düzeyde aktivite olarak değerlendirilir.

Orta düzeyde fiziksel aktivitenin **düzenli sayılabilmesi** için, aktivitenin haftada 5 veya daha fazla günde 30 dakika veya daha fazla olması gerekir. Örneğin, 30 dakika süreyle yürüyüş yapabilir veya 10 dakikalık 3 farklı aktivite ile 30 dakikayı doldurabilirsiniz.

| ***Lütfen her soru için Evet veya Hayır seçeneğini işaretleyiniz.*** | Evet | Hayır |
|---|---|---|
| **1.** Şu anda orta düzeyde fiziksel aktiviteye katılmaktayım. | O | O |
| **2.** Gelecek 6 ayda orta düzeyde fiziksel aktiviteye katılımımı arttırmak niyetindeyim. | O | O |
| **3.** Şu anda düzenli olarak orta düzeyde fiziksel aktivite yapmaktayım. | O | O |
| **4.** Son 6 aydır düzenli olarak orta düzeyde fiziksel aktiviteye katılmaktayım. | O | O |

## International Physical Activity Questionnaire (Long Form)

İnsanların günlük hayatlarının bir parçası olarak yaptıkları fiziksel aktivite tiplerini bulmayla ilgileniyoruz. Sorular son 7 gün içerisinde fiziksel olarak harcanan zamanla ilgili olarak sorulacaktır. Lütfen yaptığınız aktiviteleri düşünün; işte, evde, bir yerden bir yere giderken, boş zamanlarınızda yaptığınız spor, egzersiz veya eğlence aktiviteleri.

**Son 7 günde yaptığınız şiddetli ve orta dereceli aktiviteleri düşünün. Şiddetli fiziksel aktiviteler zor fiziksel efor yapıldığını ve nefes almanın normalden çok daha zor olduğu aktiviteleri ifade eder. Orta dereceli aktivitelerde orta dereceli fiziksel efor yer alır ve nefes almada normalden biraz daha zor olduğu aktiviteleri ifade eder.**

### BÖLÜM 1: İŞLE İLGİLİ FİZİKSEL AKTİVİTE

İlk bölüm işinizle ilgilidir. İş tanımı ücretli işleri, tarım, gönüllü işler, akademik işler ve evinizin dışında yaptığınız ücretsiz diğer işleri kapsamaktadır. Ancak evinizin çevresinde yapmakta olduğunuz ev işleri, bahçe işleri, genel bakım ve ailenizle ilgilenme gibi ücretsiz işler bu kapsamda yer almamaktadır. Onlara ilişkin sorular 3. Bölümde bulunmaktadır.

1. Şu an bir işiniz var mı ya da evinizin dışında ücret karşılığı olmayan (gönüllü) herhangi bir iş yapıyor musunuz?
   ___ evet
   ___ hayır → (Bölüm 2: Ulaşım'a gidin.)
   Aşağıdaki sorular geçen 7 günde ücretli ya da ücretsiz işinizin parçası olarak yaptığınız tüm fiziksel aktivitelerle ilgilidir. İşe gidiş gelişiniz ise bu kapsamda yer almamaktadır.

2. Geçen 7 gün içerisinde işinizin bir parçası olarak ağır kaldırma, kazma, ağır inşaatveya merdiven çıkma gibi şiddetli fiziksel aktiviteler yaptığınız gün sayısı kaçtır?
   ___Haftada -----gün
   ___İşle ilgili şiddetli fiziksel aktivite yapmadım. → ( 4.soruya gidin.)

3. Bu günlerden birinde işinizin parçası olarak şiddetli fiziksel aktivite yaparak genellikle ne kadar zaman geçirdiniz?
   Günde___saat
   Günde___dakika

4. Yalnız bir seferde en az 10 dakika boyunca yaptığınız fiziksel aktiviteleri düşünün. Geçen 7 gün içerisinde hafif yük taşıma gibi orta derecede fiziksel aktiviteleri yaptığınız gün sayısı kaçtır? Lütfen yürümeyi hariç tutunuz.
   ___Haftada-----gün
   ___İşle ilgili orta derecede fiziksel aktivite yapmadım. → (6.soruya gidin.)

5. Bu günlerden birinde işinizin parçası olarak orta derecede fiziksel aktivite yaparak genellikle ne kadar zaman geçirdiniz?
   Günde___ saat
   Günde___dakika

6. Geçen 7 gün içerisinde işinizin parçası olarak bir seferde en az 10 dakika yürüdüğünüz gün sayısı kaçtır?
   ___Haftada----- gün
   ___İşle ilgili yürümedim. → (Bölüm 2:Ulaşım'a gidin.)

7. Bu günlerden birinde işinizin parçası olarak genellikle ne kadar yürüdünüz?
   Günde___ saat
   Günde___dakika

**BÖLÜM 2:ULAŞIM**

Bu bölümdeki sorular iş, mağaza, sinema gibi yerler dahil olmak üzere bir yerden bir yere nasıl yolculuk ettiğinizle ilgilidir.

8. Geçen 7 gün içerisinde tren, otobüs, araba gibi motorlu bir taşıtta yolculuk yaptığınız gün sayısı kaçtır?
   ___Haftada----gün
   ___Motorlu taşıtta yolculuk yapmadım. → (10.soruya gidin.)

9. Bu günlerden birinde tren, otobüs, araba veya diğer çeşit bir motorlu taşıtta yolculuk yaparak genellikle ne kadar zaman geçirdiniz?
   Günde___ saat
   Günde___dakika
   Şimdi işe gidip gelirken, gündelik işlerinizi yaparken veya bir yerden bir yere gidip gelirken sadece bisiklete bindiğiniz ve yürüdüğünüz zamanları düşünün.

10. Geçen 7 gün içerisinde, bir yerden bir yere gitmek için bir seferde en az 10 dakika bisiklete bindiğiniz gün sayısı kaçtır?
    ___Haftada -----gün
    ___Bir yerden bir yere bisikletle gitmedim. → (12.soruya gidin.)

11. Bu günlerden birinde bir yerden bir yere bisikletle giderken genellikle ne kadar zaman geçirdiniz?
    Günde___ saat
    Günde___dakika

12. Geçen 7 gün içerisinde, bir yerden bir yere gitmek için bir seferde en az 10 dakika yürüdüğünüz gün sayısı kaçtır?
    ___Haftada----gün
    ___Bir yerden bir yere giderken yürümedim.

**→ (Bölüm 3: Ev işleri, Evin Bakımı ve Ailenin Bakımı'na gidin.)**

13. Bu günlerden birinde bir yerden bir yere yürüyerek giderken genellikle ne kadar zaman geçirdiniz?
Günde___ saat
Günde___dakika

**BÖLÜM 3: EV İŞLERİ, EVİN BAKIMI VE AİLENİN BAKIMI**

Bu bölüm geçen 7 gün içerisinde ev işi, bahçe işleri, genel bakım, onarım işleri ve ailenin bakımı gibi evin içerisinde ve çevresinde yapmış olabileceğiniz fiziksel aktivitelerle ilgilidir.

14. Yalnız bir seferde en az 10 dakika boyunca yaptığınız fiziksel aktiviteleri düşünün. Geçen 7 gün içerisinde, ağır kaldırma, odun kesme, kar küreme veya bahçede çukur kazma gibi şiddetli fiziksel aktivite yaptığınız gün sayısı kaçtır?
___Haftada----gün
___Bahçede şiddetli aktivite yapmadım. → (16.soruya gidin)

15. Bu günlerden birinde bahçede şiddetli fiziksel aktivite yaparak genellikle ne kadar zaman geçirdiniz?
Günde___ saat
Günde___dakika

16. Yalnız bir seferde en az 10 dakika boyunca yaptığınız fiziksel aktiviteleri tekrar düşünün. geçen 7 gün içerisinde, hafif yük taşıma, süpürme, pencereleri silme veya bahçeyi tırmıklamak gibi bahçede orta derecede fiziksel aktivite yaptığınız gün sayısı kaçtır?
___Haftada-----gün
___Bahçede orta dereceli fiziksel aktivite yapmadım. → (18.soruya gidin.)

17. Bu günlerden birinde bahçede orta dereceli fiziksel aktivite yaparak genellikle ne kadar zaman geçirdiniz?
Günde___ saat
Günde___dakika
18. Yalnız bir seferde en az 10 dakika boyunca yaptığınız fiziksel aktiviteleri bir kez daha düşünün. Geçen 7 gün içerisinde, hafif yük taşıma, pencereleri silme, yerleri sürtme veya süpürme gibi evin içinde orta dereceli fiziksel aktiviteleri yaptığınız gün sayısı kaçtır?
___Haftada …… gün
___Evde orta dereceli fiziksel aktivite yapmadım. → (Bölüm 4: Dinlenme, Spor ve Boş Zaman Fiziksel Aktiviteleri'ne gidin)

19. Bu günlerden birinde evde orta dereceli fiziksel aktivite yaparak genellikle ne kadar zaman geçirdiniz?
Günde___ saat
Günde___dakika

**BÖLÜM 4: DİNLENME, SPOR VE BOŞ ZAMAN FİZİKSEL AKTİVİTELERİ**

Bu bölümdeki sorular sadece geçen 7 gün içerisinde yaptığınız dinlenme,spor ve boş zaman fiziksel aktiviteleri ile ilgilidir.Lütfen daha önce bahsettiğiniz aktiviteleri hariç tutunuz.

20. Daha önce bahsetmiş olduğunuz yürüyüşleri dahil etmeden, geçen 7 gün içerisinde, boş zamanınızda bir seferde en az 10 dakika yürüdüğünüz gün sayısı kaçtır?
___Haftada----gün
__Boş zamanımda yürümedim. → (22.soruya gidin.)

21. Bu günlerden birinde boş zamanınızda yürüyerek genellikle ne kadar zaman geçirdiniz?
Günde___ saat
Günde___dakika

22. Yalnız bir seferde en az 10 dakika boyunca yaptığınız fiziksel aktiviteleri düşünün. Geçen 7 gün içerisinde, boş zamanlarınızda basketbol, futbol, aerobik, koşu, hızlı bisiklet çevirme veya hızlı yüzme gibi şiddetli fiziksel aktiviteleri yaptığınız gün sayısı kaçtır?
___Haftada----gün
___Boş zamanımda şiddetli aktivite yapmadım. → (24.soruya gidin.)

23. Bu günlerden birinde boş zamanınızda şiddetli fiziksel aktivite yaparak genellikle ne kadar zaman geçirdiniz?
Günde___ saat
Günde___dakika

24. Yalnız bir seferde en az 10 dakika boyunca yaptığınız fiziksel aktiviteleri düşünün. Geçen 7 gün içerisinde, boş zamanlarınızda dans, halk oyunları, masa tenisi, bowling, düzenli tempoda bisiklet çevirme ve düzenli tempoda yüzme gibi orta dereceli fiziksel aktiviteleri yaptığınız gün sayısı kaçtır?
___Haftada----gün
___Boş zamanımda orta dereceli fiziksel aktivite yapmadım. → (Bölüm 5: Oturarak Geçen Zaman'a gidin)

25. Bu günlerden birinde boş zamanınızda orta dereceli fiziksel aktivite yaparak genellikle ne kadar zaman geçirdiniz?
Günde___ saat
Günde___dakika

**BÖLÜM 5: OTURARAK GEÇEN ZAMAN**

Bu bölüm işte, evde, ders çalışırken ve boş zamanlarınızda otururak geçirdiğiniz zamanla ilgilidir. Bu masada otururak, bir arkadaşı ziyaret ederken, okurken veya televizyon seyrederek otururken veya yatarken ki oturularak geçirilen zamanları kapsar. Ancak daha önce bahsetmiş olduğunuz bir motorlu taşıt içerisinde oturulan zamanlar buna dahil değildir.

26. Geçen 7 gün içerisinde, hafta içinde oturarak ne kadar zaman harcadınız?
Günde___ saat
Günde___dakika

27. Geçen 7 gün içerisinde, hafta sonunda oturarak ne kadar zaman harcadınız?
Günde___ saat
Günde___dakika

**SORULARIMIZ SONA ERMİŞTİR. KATILIMINIZ İÇİN TEŞEKKÜRLER.**

**Diet Quality Index (DQI-I)**

**IV ) 24 SAATLİK BESİN TÜKETİM KAYDI FORMU**

| **Öğünler** | **Yemek veya Besin Adı ve İçindekiler** | **Net Miktar (Ev Ölçüsü, Ağırlık)** |
|---|---|---|
| Sabah | | |
| Kuşluk | | |
| Öğle | | |
| İkindi | | |
| Akşam | | |
| Gece | | |

**DİYET KALİTE İNDEKSİ-ULUSLARARASI (DQI-I) PUANLAMA SİSTEMİ**

| Besin Bileşeni Toplam Puan | Puan (0 - 100) | Puan Kategorileri (Günlük Tüketim) |
|---|---|---|
| **Çeşitlilik** | **0 - 20 puan** | |
| Besin Grubu Çeşitliliği (et/tavuk/balık/yumurta; süt ürünleri/baklagil; tahıl; sebze; meyve) | 0 - 15 | Her besin grubunun tüketilmesi = 15<br>1 besin grubunun eksik tüketilmesi = 12<br>2 besin grubunun eksik tüketilmesi = 9<br>3 besin grubunun eksik tüketilmesi = 6<br>≥ 4 besin grubundan eksik tüketilmesi = 3<br>Hiçbir besin grubundan tüketilmemesi = 0 |
| Protein Kaynakları İçin Çeşitlilik (et; tavuk; balık; süt ürünleri; baklagiller; yumurta) | 0 - 5 | ≥ 3 farklı kaynak = 5<br>2 farklı kaynak = 3<br>1 kaynak = 1<br>Hiç tüketilmemesi = 0 |
| **Yeterlilik** | **0 - 40 puan** | |
| Sebze grubu | 0 - 5 | ≥ 3 - 5 porsiyon = 5<br>1.5 - 2.99 porsiyon = 2.5<br>< 1.5 porsiyon = 0 |
| Meyve grubu | 0 - 5 | ≥ 2 - 4 porsiyon = 5<br>1 - 1.99 porsiyon = 2.5<br>< 1 porsiyon = 0 |
| Tahıl grubu | 0 - 5 | ≥ 6 - 11 porsiyon = 5<br>3 - 5.99 porsiyon = 2.5<br>< 3 porsiyon = 0 |
| Posa | 0 - 5 | ≥ 20 - 30 gr = 5<br>10 - 19.99 gr = 2.5<br>< 10 gr = 0 |
| Protein | 0 - 5 | ≥ %10 enerjinin = 5<br>%5 - 9.99 enerjinin = 2.5<br>< %5 enerjinin = 0 |
| Demir | 0 - 5 | ≥ 100 % RDA = 5<br>99.99 - 50 % RDA = 2.5<br>< 50 % RDA = 0 |
| Kalsiyum | 0 - 5 | ≥ 100 % RDA = 5<br>99.99 - 50 % RDA = 2.5<br>< 50 % RDA = 0 |
| C vitamini | 0 - 5 | ≥ 100 % RDA = 5<br>99.99 - 50 % RDA = 2.5<br>< 50 % RDA = 0 |

| | | |
|---|---|---|
| **Denge** | **0 - 30 puan** | |
| Toplam yağ | 0 - 6 | < %20 enerjinin = 6<br>%20 - 30 enerjinin = 3<br>> %30 enerjinin = 0 |
| Doymuş yağ | 0 - 6 | < %7 enerjinin = 6<br>%7 - 10 enerjinin = 3<br>> %10 enerjinin = 0 |
| Kolesterol | 0 - 6 | < 300 mg = 6<br>300 - 400 mg = 3<br>> 400 mg = 0 |
| Sodyum | 0 - 6 | < 2400 mg = 6<br>2400 - 3400 mg = 3<br>> 3400 mg = 0 |
| Boş kalorili besinler | 0 - 6 | < %3 enerjinin = 6<br>%3 - 10 enerjinin = 3<br>> %10 enerjinin = 0 |
| **Genel Denge** | **0 - 10 puan** | |
| Makro besin ögelerinin oranı<br>(karbonhidrat : protein : yağ) | 0 - 6 | 55 - 65 : 10 - 15 : 15 - 25 = 6<br>52 - 68 : 9 - 16 : 13 - 27 = 4<br>50 - 70 : 8 - 17 : 12 - 30 = 2<br>Bunların dışında = 0 |
| Yağ asitlerinin oranı<br>(ÇDYA : TDYA : DYA) | 0 - 4 | Ç / D = 1 - 1.5 ve T / D = 1 - 1.5 = 4<br>Ç / D = 0.8 - 1.7 ve T / D = 0.8 - 1.7 = 2<br>Bunların dışında = 0 |

## Stresle Başa Çıkma Ölçeği

Aşağıda günlük hayatta karşılaştığınız sorunlarla nasıl mücadele ettiğinize yönelik sorular yer almaktadır. Size uygun düşen ifadeleri X ile işaretleyiniz.

| No | BİR SORUNLA KARŞILAŞTIĞIM ZAMAN, | Hiçbir zaman (0) | Ara sıra (1) | Bazen (2) | Sık sık (3) | Genellikle (4) |
|---|---|---|---|---|---|---|
| 1 | Arkadaşlarım ve yakınlarımdan duygusal destek almaya çalışırım | | | | | |
| 2 | Asıl problemim üzerinde yoğunlaşır, gerekirse başka şeyleri bir kenara bırakırım | | | | | |
| 3 | Attığım her adımı ve yapacağım her hareketi çok iyi düşünürüm | | | | | |
| 4 | Başa gelenin çekileceğine inanırım | | | | | |
| 5 | Başıma gelenden bir şeyler öğrenmeye çalışırım | | | | | |
| 6 | Başıma gelenlere inanmak istemem | | | | | |
| 7 | Başka şeylerden ziyade o problem üzerinde daha çok odaklaşırım | | | | | |
| 8 | Başkalarından ne yapabileceğim konusunda tavsiyeler alırım | | | | | |
| 9 | Başkalarından şefkat ve anlayış beklerim | | | | | |
| 10 | Benden yaşlı birine danışırım | | | | | |
| 11 | Benzer şeyleri yaşayan insanların tecrübelerinden yararlanırım | | | | | |
| 12 | Dini aktivitelere katılırım | | | | | |
| 13 | Dini inançlarımdan güç alarak kendimi güvende hissederim | | | | | |
| 14 | Durum ile ilgili daha çok bilgi edinmek için başkalarına danışırım | | | | | |
| 15 | Duruma olduğu gibi alışmaya çalışırım | | | | | |
| 16 | Enerjimi yaptığım işler üzerinde yoğunlaştırırım | | | | | |
| 17 | Eskisinden daha fazla ibadet / dua ederim | | | | | |
| 18 | Gerginliğimi azaltmak için sigara içerim | | | | | |
| 19 | Her ne yapacaksam zamanında yaparım | | | | | |
| 20 | Her şeyimle ilahi bir güce sığınırım | | | | | |
| 21 | Huzuru dinimde bulmayı denerim | | | | | |
| 22 | Kendime bunun gerçek olmadığını söylerim | | | | | |
| 23 | Kendimi daha iyi hissedebilmek için uyuşturucu alırım | | | | | |
| 24 | Kendimi daha iyi hissetmek için ilaç alırım. | | | | | |
| 25 | Ne yapacağım konusunda bir plan hazırlarım | | | | | |
| 26 | Olanlara daha iyimser bir gözle bakmaya çalışırım | | | | | |
| 27 | Olayın daha olumlu gözükmesini sağlamak için farklı bir bakış açısı ile yaklaşırım | | | | | |
| 28 | Problem hakkında daha az düşünmek için içki içerim | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 29 | Problem hakkında hissettiklerimi başkaları ile tartışırım | | | | | |
| 30 | Problemi bütün geçekliğiyle olduğu gibi hissederim | | | | | |
| 31 | İlahi bir güçten yardım isterim | | | | | |
| 32 | Problemi çözmemi engelleyen diğer şeylerden kendimi alıkoymaya çalışırım | | | | | |
| 33 | Problemim hakkında somut bir şeyler yapabilecek birileri ile konuşurum | | | | | |
| 34 | Problemimden kurtulmak için değişik işlerle ilgilenirim | | | | | |
| 35 | Problemimden kurtulmak için üzerine direkt olarak giderim | | | | | |
| 36 | Problemimi daha az düşünmek için sinemaya giderim veya TV seyrederim | | | | | |
| 37 | Problemimi en iyi nasıl çözebileceğimi düşünürüm | | | | | |
| 38 | Problemim ile ilgili duygularımı başkalarıyla paylaşırım | | | | | |
| 39 | Problemimle yaşamayı öğrenirim | | | | | |
| 40 | Problemimi unutmak için ders çalışır veya başka farklı şeylerle ilgilenirim | | | | | |
| 41 | Rahatlamak için ağlarım | | | | | |
| 42 | Müzik dinleyerek birçok şeyi unuturum | | | | | |
| 43 | Sanki hiçbir şey olmamış gibi davranırım | | | | | |

## Avrupa Sağlik Okuryazarliği Ölçeği (Asoy-Tr)

**Açıklama:** Aşağıda sağlık, hastalık, ilaçlar gibi konularda bir dizi ifade verilmiştir. Lütfen her ifadede belirtilen konunun **sizin için** zorluk derecesini işaretleyiniz.

| | Çok kolaydan çok zora doğru derecelendirecek olursanız **aşağıdakileri yapmak** sizin için ne derece kolay/zordur? | 1.Çok Zor | 2.Zor | 3.Kolay | 4.Çok Kolay | 5.Bilmiyorum |
|---|---|---|---|---|---|---|
| 1. | Sizi ilgilendiren hastalıkların belirtileri ile ilgili bilgi bulmak | | | | | |
| 2. | Sizi ilgilendiren hastalıkların tedavileri ile ilgili bilgi bulmak | | | | | |
| 3. | Acil bir tıbbi durumda ne yapılması gerektiğini bulmak | | | | | |
| 4. | Hastalandığınız zaman profesyonel yardımı nereden alacağınızı bulmak | | | | | |
| 5. | Doktorunuzun size ne dediğini anlamak | | | | | |
| 6. | İlacınızın prospektüsünü anlamak | | | | | |
| 7. | Acil bir tıbbi durumda ne yapılması gerektiğini anlamak | | | | | |
| 8. | Doktorunuzun ya da eczacınızın reçeteli bir ilacı nasıl kullanmanız gerektiği ile ilgili talimatlarını anlamak | | | | | |
| 9. | Doktordan aldığınız bilginin size ne kadar uygun olduğunu değerlendirmek | | | | | |
| 10. | Farklı tedavi seçeneklerinin avantaj ve dezavantajlarını değerlendirmek | | | | | |
| 11. | Farklı bir doktordan ikinci bir görüş almaya ihtiyaç duyup duymadığınıza karar vermek | | | | | |
| 12. | Bir hastalıkla ilgili medyadaki bilginin güvenilirliğine karar vermek | | | | | |
| 13. | Hastalığınızla ilgili karar verirken doktorun verdiği bilgiyi kullanmak | | | | | |
| 14. | İlaç tedavisinde talimatları takip etmek | | | | | |
| 15. | Acil bir durumda ambulans çağırmak | | | | | |
| 16. | Doktorunuzun ya da eczacınızın talimatlarını takip etmek | | | | | |
| 17. | Sigara içme, yetersiz fiziksel aktivite ve aşırı alkol tüketimi gibi sağlıksız davranışlarla nasıl başa çıkılacağı hakkında bilgi bulmak | | | | | |
| 18. | Stres ve depresyon gibi ruh sağlığı sorunlarıyla nasıl başa çıkılacağı hakkında bilgiyi bulmak | | | | | |
| 19. | Olmanız gereken aşılar ve sağlık taramalarıyla ilgili bilgi bulmak | | | | | |
| 20. | Fazla kilolu olmak, yüksek tansiyon ve yüksek kolesterol gibi durumları önleme veya başa çıkma ile ilgili bilgi bulmak | | | | | |
| 21. | Sigara içmek, yetersiz fiziksel aktivite ve aşırı alkol tüketimi gibi davranışlar hakkındaki sağlık uyarılarını anlamak | | | | | |
| 22. | Aşıya neden ihtiyacınız olduğunu anlamak | | | | | |
| 23. | Sağlık taramasına neden ihtiyacınız olduğunu anlamak | | | | | |
| 24. | Sigara içmek, yetersiz fiziksel aktivite ve aşırı alkol tüketimi gibi konularla ilgili sağlık uyarılarının ne kadar güvenilir olduğuna karar vermek | | | | | |
| 25. | Genel sağlık kontrolü için doktora ne zaman gidilmesi gerektiğine karar vermek | | | | | |
| 26. | Hangi aşılara ihtiyacınız olduğuna karar vermek | | | | | |
| 27. | Hangi sağlık taramalarını yaptırmanız gerektiğine karar vermek | | | | | |
| 28. | Sağlık riskleri hakkında medyadaki bilgilerin güvenilirliğine karar vermek | | | | | |
| 29. | Grip aşısı olmanız gerektiğine karar vermek | | | | | |
| 30. | Aileniz ve arkadaşlarınızın tavsiyelerine dayanarak kendinizi hastalıklardan nasıl koruyacağınıza karar vermek | | | | | |
| 31. | Medyadaki bilgilere dayanarak kendinizi hastalıklardan nasıl koruyacağınıza karar vermek | | | | | |
| 32. | Egzersiz, sağlıklı yiyecekler ve beslenme gibi sağlıklı aktiviteler hakkında bilgi bulmak | | | | | |
| 33. | Ruh sağlığınız için iyi olan aktiviteleri bulmak | | | | | |
| 34. | Yaşadığınız çevrenin nasıl daha sağlık dostu bir yer haline gelebileceği hakkında bilgi bulmak | | | | | |
| 35. | Sağlığı etkileyebilecek politika değişikliklerini bulmak | | | | | |
| 36. | İşyerinde sağlığınızı geliştirme ile ilgili girişimleri bulmak | | | | | |
| 37. | Aile üyelerinin ya da arkadaşların sağlık konusundaki tavsiyelerini anlamak | | | | | |
| 38. | Gıda ambalajlarındaki bilgiyi anlamak | | | | | |
| 39. | Nasıl daha sağlıklı olunacağı ile ilgili medyadaki bilgiyi anlamak | | | | | |
| 40. | Akıl sağlığınızı nasıl koruyacağınızla ilgili bilgiyi anlamak | | | | | |
| 41. | Yaşantınızın sağlığınızı ve iyilik halinizi nasıl etkilediğine karar vermek | | | | | |
| 42. | Konut koşullarının sağlıklı kalmanıza nasıl yardımcı olduğuna karar vermek | | | | | |
| 43. | Gündelik davranışlarınızdan hangisinin sağlığınızla ilgili olduğuna karar vermek | | | | | |
| 44. | Sağlığınızı geliştirmek için kararlar almak | | | | | |
| 45. | İstediğiniz zaman bir spor kulübüne ya da spor salonuna katılmak | | | | | |
| 46. | Sağlığınızı ve iyilik halinizi etkileyen yaşam koşullarınızı kontrol etmek | | | | | |
| 47. | Sosyal çevrenizde sağlık ve iyilik halinizi geliştirecek aktivitelere katılmak | | | | | |

## C. INTERVIEW PROTOCOL FOR QUALITATIVE DATA

Bu görüşmede sizin Move For programına katılma gerekçelerinizi ve deneyimlerinizi öğrenmek istiyorum. Vereceğiniz bilgiler programın iyileştirilmesi için kullanılacaktır. Görüşme sırasında
İzin verirseniz ses kaydı almak istiyorum. Ses kaydı çözümlendikten sonra benim tarafımdan imha edilecektir. Veridiğiniz bilgiler Araştırma Amacı dışında hiç şekilde kullanılmayacaktır. Çözümlenmiş ses kaydında kimliğinizle ilgili herhangi bir bilgi olmayacatır.

Öncelikle programa katılarak verdiğiniz destek için teşekkür ediyorum. Şimdi size sırasıyla programa katılma nedenleriniz ve program sırasındaki deneyimleriniz hakkında sorular yönelteceğim.

**Programa katılma nedeniniz**

1. Programa katılmaya nasıl karar verdiniz?
2. Sizi katılmaya motive eden unsurlar nelerdi? Neden
3. Program amaçları hakkında başlangıçtaki düşünceleriniz nelerdi?

**Program sırasındaki deneyimleriniz**

4. Programı düzenli takip edebildiniz mi? Ne kadarını takip edebildiniz? Edemediyseniz neden?
5. Program sırasında sizi en çok motive eden unsurlar nelerdi?
6. Sizi en çok zorlayan unsurlar nelerdi? Bunları nasıl çözdünüz?
7. Videolar sizin için yararlı oldu mu? Ne kadarını izlediniz? En çok ilginizi çeken videolar hangileri oldu? Neden?
8. Sosyal medya paylaşımlarını takip edebildiniz mi? Size katkısı oldu mu? Nasıl?
9. Programa katılmaktan memnun kaldınız mı? Neden?
10. Program size nasıl fayda sağladı?

<u>Sağlıklı Yaşam Davranışları ile İlgili Sorular</u>

- Fiziksel aktivite konusunda program öncesine göre yaşamınızda değişiklikler oldu mu?

  Yanıt evet ise; ne gibi değişiklikler oldu, fiziksel aktivitelerinizi takip etmek için bir bileklik ya da uygulama kullanıyor muydunuz/kullanmaya başladınız mı?
  Yanıt hayır ise; sizce işlemeyen noktalar neler?

- Beslenme konusunda program öncesine göre yaşamınızda değişiklikler oldu mu?

  Yanıt evet ise; ne gibi değişiklikler oldu, yediklerinizi takip etmek için bir uygulama kullanıyor muydunuz/kullanmaya başladınız mı?
  Yanıt hayır ise; sizce işlemeyen noktalar neler?

- Stres yönetimi konusunda program öncesine göre yaşamınızda değişiklikler oldu mu?

  Yanıt evet ise; ne gibi değişiklikler oldu, stres yönetimi için neler yaptınız? Herhangi bir uygulama kullanıyor musunuz?
  Yanıt hayır ise; sizce işlemeyen noktalar neler?

- Ofis ve çalışma sağlığı konusunda program öncesine göre yaşamınızda değişiklikler oldu mu?

  Yanıt evet ise; ne gibi değişiklikler oldu, neler yaptınız? Çevrenizde ne gibi değişiklikler yaptınız?
  Yanıt hayır ise; sizce işlemeyen noktalar neler?

**Öneriler**

11. Programın geliştirilmesi için neler önerirsiniz? Neden?
12. Eklemek veya sormak istediğiniz her hangi bir şey var mı?

Benim sorularım burada bitti. Programa ve görüşmeye gönüllü olarak katılarak verdiğiniz destek için teşekkür ederim.

## D. ASSUMPTIONS

Table D.1. *Normality and homogeneity of variance assumption for pre-test scores*

| | Normality | | | | Hom.of Var |
|---|---|---|---|---|---|
| | KS | SW | Skew | Kurt | Levene |
| RQ3. Physical Act. | | | | | .37 |
| Experimental | .00 | .000 | 1.65 | 1.74 | |
| Control | .00 | .000 | 2.33 | 5.79 | |
| RQ4.Stress Man. | | | | | .18 |
| Experimental | .20* | .69 | .33 | -.22 | |
| Control | .20* | .43 | .31 | .01 | |
| RQ5. Nutrition | | | | | .26 |
| Experimental | .20* | .29 | .24 | -.85 | |
| Control | .003 | .01 | -.76 | .70 | |
| RQ6. Health Lit. | | | | | .11 |
| Experimental | .05 | .10 | -.52 | -.62 | |
| Control | .20* | .62 | -.03 | .42 | |
| RQ7. W. Produc. Absenteeism | | | | | .64 |
| Experimental | .00 | .000 | -1.59 | 2.97 | |
| Control | .00 | .002 | -.14 | .48 | |
| Presenteeism | | | | | .53 |
| Experimental | .000 | .00 | -1.59 | 3.28 | |
| Control | .002 | .00 | -1.81 | 5.56 | |

Table D.2. *Normality &homogeneity of variance assumption for post-test scores*

| | Normality | | | | Hom.of Var |
|---|---|---|---|---|---|
| | KS | SW | Skew | Kurt | Levene |
| RQ3. Physical Activity | | | | | .06 |
| Experimental | .001 | .00 | 2.14 | 4.63 | |
| Control | .000 | .00 | 2.02 | 3.4 | |
| RQ4.Stress Man. | | | | | .06 |
| Experimental | .109* | .08 | .669 | -.40 | |
| Control | .164* | .62 | .370 | -.19 | |
| RQ5. Nutrition | | | | | .36 |
| Experimental | .200* | .34 | -156 | .22 | |
| Control | .003 | .01 | -1.18 | 1.62 | |
| RQ6. Health Literacy | | | | | .75 |
| Experimental | .200* | .44 | .13 | -.140 | |
| Control | .200* | .55 | -.21 | .324 | |
| RQ7. W. Productivity Absenteeism | | | | | .53 |
| Experimental | .000 | .003 | -.56 | .55 | |
| Control | .000 | .001 | -.09 | 1.8 | |
| Presenteeism | | | | | .03 |
| Experimental | .000 | .000 | -1.02 | 1.9 | |
| Control | .002 | .001 | -1.45 | 4.6 | |

# E. REVIEWED STUDIES

Table E. *The studies reviewed*

| | Article | Year | Sample | Study Design | Measurements | | | | SEM Levels | | | | Personalization | Instruments | Evaluation Period | Findings & Conclusions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Health Indicators | Biomarkers | Social Cognitive Variables | Work Performance | Individual | Social Env. | Physical Env. | Policy | | | | |
| 1 | Change in Health-Related Quality of Life Amongst Participants in a 4-Month Pedometer-Based Workplace Health Program | 2013 | 487 | | blood pressure<br>height<br>weight<br>waist and hip measurements | | | | goal setting (achieve 10,000 steps per day)<br>monthly motivational emails<br>access to an informative health and fitness website | total number of steps for each team is counted (team includes 7 participants) | | | | SF-12 Health Survey | 4 months | Participation in the program was associated with an increase of 1.5 Mental component summary (MCS) units. Greater improvements in MCS were observed in those reporting an increased level of PA during the program and a lower baseline MCS score. No change in Change in Physical was observed |
| 2 | A Computerized Lifestyle Application to Promote Multiple Health Behaviors at the Workplace: Testiltst's Behavioral and Psychological Effects | 2015 | 1269 | Randomized Trial | body weight<br>height | | Physical activity intention<br>Nutrition intention<br>Action Planning<br>Social Support | | risk awareness<br>outcome expectancies<br>goal setting<br>self-efficacy<br>action plans<br>coping plans | | | | | A simple method to assess exercise behaviour in the community | | Matching an intervention to the motivational readiness of employees can make a health promotion program effective. A stage-matched intervention that focuses on physical activity and healthy nutrition can support employees' motivation, planning, social support, and lifestyle. Occupational settings provide the potential to implement parsimonious computer-based health promotion programs and to facilitate multiple behaviour change |

Table E. *cont'd*

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **3** | A Field Test of a Web-Based Workplace Health Promotion Program to Improve Dietary Practices, Reduce Stress, and Increase Physical Activity: Randomized Controlled Trial | 2007 | | Randomized Controlled Trial | Weight | | Attitudes toward diet<br>Motivation for diet and exercise<br>Dietary and exercise behavioural intention<br>Dietary and exercise self-efficacy<br>Dietary and exercise stage of change<br>Weight stage of change | | Providing information<br>Guidance | | | | | Godin Leisure-Time Exercise Questionnaire<br>Godin sweat score<br>Brief COPE | 3 months | The Web-based program was more effective than print materials in producing improvements in diet and nutrition but was not more effective in reducing stress or increasing physical activity. The higher ratings given to the Web-based program suggest that workers preferred it to the print materials. Both groups showed numerous pretest-posttest improvements in all health topics, although such gains might be partly attributable to a Hawthorne effect |
| **4** | A physical fitness program during paid working hours – impact on health and work ability among women working in the social service sector: A three-year follow-up study | 2009 | 205 | Randomized Controlled Trial | General Health | | | Current work ability<br>Work ability in general<br>Workability related to mental demands<br>Future work expectations<br>Physical effort at work | Physical fitness program<br>Coaching | Special groups formed (obese) | | | | SF 36 Health Survey | 36 months | Well-structured physical fitness programs at the worksite can help contribute to individuals' experiences of improvements in their capacity and increased health and well-being. |

Table E. *cont'd*

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **5** | A Pilot Intervention to Promote Walking moreover, Wellness and to Improve the Healtri of College Faculty and Staff | 2007 | 125 | one-group pre-post study | Height<br>Weight<br>Blood Pressure | Total Blood Cholesterol<br>Blood Glucose | | | E-mail message (tips)<br>Educational Program | | | | | Health Insurance Portability and Accountability Act Forms<br>Physical Activity Readiness Questionnaire<br>Godin Leisure-Time Exercise Questionnaire<br>Pedometer | 3 months | A pedometer-monitored walking program is one way that a worksite health initiative can improve the health and wellness of its employees and simultaneously reduce healthcare costs. |
| **6** | A Randomized Prospective Trial of a Worksite Intervention Program to Increase Physical Activity | 2013 | 410 | cluster-randomized trial | Height<br>Weight | | Health Literacy<br>Self-assessed general health status<br>Confidence in exercise | | Education | | Gym Membership | Gym Membership Time (Paid Hours) | | 7-Day Physical Activity Recall | | Among sedentary adults who had access to indoor exercise facilities, addressing environmental and cognitive barriers simultaneously (i.e., time and education) did not encourage more activity than managing either barrier alone. |
| **7** | Act Healthy: promoting health behaviours and self-efficacy in the workplace | 2015 | 91 | randomized trial | | | | | Self-efficacy Modelling | Group sessions Buddy System | | | | The Self-Rated Abilities for Health Practices | | |
| **8** | Impact of a Health Promotion Program on Employee Health Risks and Work Productivity | 2007 | 618 | quasi-experimental | Weight | | | Job satisfaction Absenteeism Presenteeism | Health and wellbeing report<br>Wellness score<br>Advice<br>Newsletter | | | | | Health Risk Appraisal WHO-HPQ | 12 months | Multicomponent workplace health promotion programs can produce sizeable changes in health risks and productivity |

Table E. *cont'd*

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **9** | Promoting walking among office employees - evaluation of a randomized controlled intervention with pedometers moreover, e-mail messages | 2012 | 241 | cluster-randomized trial | | | | | Self-monitoring PA<br>Monthly e-mail | Meeting | | | | International Physical Activity Questionnaire | 12 months | The findings indicate the only modest impact on some indicators of walking. Future studies should invest in Reaching the employees, minimizing attrition rate and using objective walking assessment. |
| **10** | Effectiveness of a Worksite Telephone-Based Weight Management Program | 2011 | 1298 | quasi-experimental design | Weight<br>Height | | Barriers<br>Eating habits | | Setting goals<br>Action planning | Social support | | | | | 8 months | Participants who lost weight, along with the improvements in physical activity and nutrition practices, suggests that a telephone-based weight management program of modest intensity can have a positive impact on the health of<br>Obese or overweight worksite participants. |
| **11** | Delivering a Behavior-Change Weight Management Program to Teachers and State Employees in North Carolina | 2013 | 2374 | one-group pre-post test study | Blood Pressure<br>Waist circumference<br>Weight | | Confidence in physical activity<br>Confidence in nutrition | | Informing-lesson<br>Motivation<br>Increasing motivation | | | | | | 4 months | The FRIDOM program has the potential to provide evidence-based knowledge of the pain-reducing effect of a multi-component WHP among a female group of employees with a high prevalence of musculoskeletal disorders, and in a long term perspective, evaluate the impact on sickness presenteeism and absenteeism as well as<br>The risk of lifestyle diseases. |

Table E. *cont'd*

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **12** | Environmental Changes to Control Obesity: A Randomized Controlled Trial in Manufacturing Companies | 2011 | 600 | a randomized controlled trial | Weight<br>Height<br>Body fat<br>Blood pressure | Total cholesterol<br>HDL<br>Cholesterol<br>LDL<br>Triglycerides<br>Glucose<br>Insulin level | | | Information | | point-of-decision prompts<br>Walking paths<br>Vending Changes<br>Educational materials | | | Block Brief Food Frequency Questionnaire | | Findings indicate that subtle environmental changes alone may not impact employees' weight and health; however, such institutional-level approaches may be essential to support healthy lifestyle habits that are initiated by more intensive efforts. Academic researchers should continue to partner with employers and practitioners to develop, implement, and evaluate innovative health promotion strategies, including environmental interventions. |
| **13** | Worksite Opportunities for Wellness (WOW): Effects on cardiovascular disease riskfactors after one year | 2009 | 151 | cohort-randomized trial | WeightHeightWaist circumferenceBody compositionResting heart rateBlood Pressure | HDLLDLTriglyceridesGlucose | | | PedometersWeekly snack cartMonthly lunchtime seminarsMonthly newsletters | Group meetingsTeam competitions | | Participation rewards | | Health Fruit and Vegetable ScreenerKristal Fat and Fiber Behavior QuestionnaireInternational Physical Activity Questionnaire | 12 months | A multi-faceted worksite intervention promoted favourable changes in cardiovascular disease risk factors, but many of the improvements were achieved with worksite health assessments andpersonalized health reports in the absence of an intervention |
| **14** | Worksite Translation of the Diabetes Prevention Program: Formative Research and Pilot Study Results From FUEL Your Life | 2013 | 167 | | | | | | Self-study<br>Goal setting | | | | | | 6 months | The weight loss results achieved in the pilot test, although<br>Statistically significant, they were relatively small. The intervention as tested was largely self-directed and supplemented by peer coaches and the on-site nurse. |

Table E. *cont'd*

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **15** | Personal Health Technologies in Employee Health Promotion: Usage Activity, Usefulness, and Health-Related Outcomes in a 1-Year Randomized Controlled Trial | 2013 | 352 | Randomized Controlled Trial | Height<br>Weight<br>Waist circumference<br>Body fat<br>Blood pressure | Total cholesterol<br>Triglycerides | | | Mindfulness skills<br>Self-monitoring<br>Relaxation<br>Planning Future | | | | | | 2 months | Simple technologies, weight scales, and pedometer attracted the most users. The sustained users were slightly older 47 years versus 44 years and had poorer aerobic fitness at baseline than non-sustained users. They succeeded better in weight management: their weight decreased -1.2 kg versus +0.6 kg; body fat percentage -0.9%-units versus +0.3%; and waist circumference -1.4 cm versus +0.7 cm. |
| **16** | Do overweight workers profit by workplace Health promotion, more than their normal-weight peers? Evaluation of a worksite intervention | 2015 | 1573 | Controlled Trial | Weight<br>Height | | Physical activity during leisure time<br>Changes in eating behaviour<br>Attitude<br>Stages of readiness in eating<br>Perceived health status | | Coaching<br>Providing information | Group meetings | Free fruits and vegetables | Training sessions in paid time | NA | Questionnaire for the Assessment of Health Behaviour<br>Questionnaire for the Assessment of Eating-and Weight-Related Attitudes and Behaviors | 12 months | This 12-month intervention-control study suggests that a well-implemented multi-component workplace health promotion program may support substantial change in health behaviour (e.g. nutrition and Physical activity). It is indicated that overweight employees may especially profit from such worksite health promotion. An investigation of the long-term effects of this multi-component intervention is strongly recommended. |
| **17** | Promoting mental health in small-medium enterprises: An evaluation of the "Business in Mind" program | 2009 | 249 | Randomized Controlled Trial | | | Mental health | Job satisfaction<br>Absenteeism<br>Presenteeism<br>Job tension | Skill development | | | | NA | | 12 months | The intervention being trialled is expected to improve both primary and secondary outcomes. If proven efficacious, the intervention could be disseminated to reach a much larger proportion of the business community. |

Table E. *cont'd*

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **18** | Changes in Men's Physical Activity and Healthy Eating Knowledge and Behavior as a Result of Program Exposure: Findings From the Workplace POWERPLAY Program | 2016 | 103 | a quasi-experimental pre-post design | Weight<br>Height<br>Blood pressure<br>Heart rate | | | | Weekly toolbox tips<br>Tracking posters<br>Team logbooks<br>Self-monitoring<br>Consultation | Friendly competition<br>Pedometer competition | | | Gender | International Physical Activity Questionnaire-IPAQ | 6 months | POWERPLAY shows significant promise as a workplace health promotion approach and may have an even greater impact when program exposure is augmented with environmental and policy changes |
| **19** | Reanalysis of a tailored web-based exercise program for office workers with sub-acute low back pain: Assessing the stage of change in behaviour | 2013 | 100 | Randomized Controlled Trial | | | Stages of readiness to change | | Video demonstrations<br>Reminders | | | | | | 9 months | The present reanalysis of the trial suggests that the LBP-related exercise behaviour among physically untrained office workers with non-specific sub-acute LBP improved after the intervention period. Moderate to high correlation was found between behaviour respect to the Oswestry disability index and self-reported health status. |
| 20 | Initial efficacy of MI, TTM tailoring and HRI's with multiple behaviours for employee health promotion | 2008 | 6000 | Randomized Controlled Trial | Weight<br>Height | | Stage of change | | Providing feedback<br>Face-to-face coaching<br>Motivational ınterviewing | | | | TTM-tailored | | 6 months | Compared to the HRI only group, the MI and TTM groups had significantly more participants in the Action stage for exercise and Effective stress management and significantly fewer risk behaviours at six months. MI and TTM group outcomes were not different |

Table E. *cont'd*

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **21** | Get Moving: A Web Site That Increases Physical Activity of Sedentary Employees | 2011 | 221 | Randomized Controlled Trial | | | Depression<br>Anxiety<br>Attitudes and perceived knowledge<br>Behavioural Self-EfficacyBehaviourall Intention<br>Barriers to PA<br>Motivation | | Personalized text and video messages | Information and support (peer-to-peer)<br>Web site messaging | | | Preferred PA type | Exercise Status Scale<br>SF-36 Mental Health | 1 month | Compared to the control group, the treatment group showed significant improvement. The multivariate test was significant, with a large effect size. The treatment group differed significantly from the control participants on 11 outcomes, with large effect sizes for PA status, min/d, knowledge, attitudes, Behavioural intention. Medium effect sizes were measured for perceived barriers, depressive symptoms, motivation, and self-efficacy. Multiple visits significantly improved PA, motivation, self-efficacy, and intention compared with one-time visits. |
| 22 | The impact of two workplace-based health risk appraisal interventions on employee lifestyle parameters, mental health, and workability: results of a randomized controlled trial | 2014 | 180 | Randomized Controlled Trial | Weight<br>Height<br>Body fat<br>Grip strength<br>blood pressure<br>peak expiratory flow rate | Urinalysis<br>Cholesterol | Respect to work demands | Work ability | Education<br>Action plan<br>Coaching | | | | | WorkAbility Index<br>WHO-Five Well-being Index<br>GHQ-12<br>Mental Health Continuum-Short Form (MHCSF) | 12 months | participation in the HRA was associated with a higher likelihood of perceived lifestyle behaviour change which was further increased in the augmented HRA group, thereby providing preliminary evidence that HRA and expanded HRA, in particular, may help UK employees make positive, healthy lifestyle changes. |
| **23** | Smoking Cessation Intervention Using Stepwise Exercise Incentives for Male Workers in the Workplace | 2012 | 109 | one-group pre-post test study | | Urine nicotine | | Job stress | Education | Experience sharing | | | | | 3 months | a stepwise exercise-incentive-based smoking cessation program was highly effective when applied in a workplace. |

Table E. *cont'd*

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24 | The Potential for Mindfulness-Based Intervention in Workplace Mental Health Promotion: Results of a Randomized Controlled Trial | 2015 | 144 | Randomized Controlled Trial | | | Psychological distress<br>Prolonged fatigue<br>Perceived Stress Scale | Job strain | Mindfulness education | | | | | Chinese Health Questionnaire (CHQ-12)<br>Perceived Stress Scale (PSS-10)<br>The Checklist Individual Strength questionnaire | 2 months | As a workplace health promotion program, the MBI seems to have the potential in improving mental illness risks for employees with poor mental health. However, there was insufficient evidence to support its effect on mitigating job strain. Further research on maintaining the positive effects on mental health for the long term and on developing innovative MBI to suit job strain are recommended |
| **25** | The POWERPLAY workplace physical activity and nutrition intervention for men: Study protocol and baseline characteristics | 2015 | 139 | non-randomized quasi-experimental | Height<br>Weight | | Stage of change<br>Self-efficacy | | Tips for being active<br>Information on eating and PA<br>Self-monitoring<br>Tracking posters | 6-week pedometer-based walking challenge<br>6-week combined PA and healthy eating challenge | | Provide consultation with employers on strategies for adapting policies to better support PA and healthy eating | | Godin Leisure-Time Exercise Questionnaire—GLTEQ<br>International Physical Activity Questionnaire<br>The PerceivedWorkplace Environment Scale— | 6 months | current study protocol provides critical insights regarding the importance of considering specific masculine values when developing recruitment strategies and designing workplace interventions for men. |
| 26 | Impact of a Supervised Worksite Exercise Program on Back and Core Muscular Endurance in Firefighters | 2015 | 96 | cluster-randomized controlled trial | Isometric Back and Core Muscular Endurance. | | | | Exercise sessions with the coach | | | | | | 6 months | After 24 weeks, the exercise group had 12% greater (p= .021) back muscular endurance and 21 % greater (p= .0006) core muscular endurance than the control group. The exercise intervention did not disrupt operations or job performance. |

Table E. *cont'd*

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| **27** | Self-Efficacy and Planning as Predictors ofPhysical Activity in the Context of WorkplaceHealth Promotion | 2016 | 1063 | | | | Self-efficacyAction planning | | Mastery experiencesVerbal persuasionAction planning | | | | | Godin Leisure Time-Questionnaire | 6 months | Findings indicated an increase in self-efficacy, planning, and physicalActivity following the intervention. Planning was consistently linked to subsequent physical activity, whereas self-efficacy was not associated. Also, reciprocal interrelations among self-efficacy and planning were found across both measurement lags. |
| 28 | Nutrient intake in the GEICO multicenter trial: the effects of a multicomponent worksite intervention | 2013 | 183 | Randomized Controlled Trial | | | | | Educational classes Diet prescription | | | | | | 4 months | |
| **29** | A Minimal Contact Diet and Physical Activity Intervention for White-Collar Workers | 2016 | 131 | One-group Pretest–Posttest Design | Height Weight Blood Pressure | | Eating habits Physical activity habits Self-efficacy for exercise Self-efficacy for healthy eating Stress level | | a short 15-min counselling monthly newsletter | | | | It is tailored to the information from the screening. | Baecke Physical Activity Questionnaire 5-A-Day Food Frequency Questionnaire Self-efficacy for exercise question Pedometer | 8-month | Blood pressure and body mass index (BMI) did not significantly change between baseline and post-intervention measures increased servings of green salad, fruits, and vegetables |
| 30 | Cost-effectiveness of a long-term Internet-delivered worksite health promotion program on physical activity and nutrition: a cluster randomized controlled trial | 2012 | 924 | Cluster Randomized Controlled | Height and Weight Obesity Blood Pressure Maximum Oxygen Uptake | Total Cholesterol | Self-perceived Health Self-efficacy Intention to Change | | computer-tailored advice Online self-monitors Monthly newsletter | | | | age gender | International Physical Activity Questionnaire nine-item validated Dutch FFQ | 2 years | There was no consistent effect of the intervention on primary and secondary outcomes. |

Table E. *cont'd*

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| **31** | An internet-delivered exercise intervention for workplace health promotion in overweight, sedentary employees: A randomized trial | 2010 | 140 | Randomized Controlled Trial | Peak oxygen uptake<br>Peak ergometer performance<br>Heart rate ergometry<br>Waist circumference<br>Height and Weight<br>Body fat composition<br>Blood Pressure | Lactate Anaerobic Threshold<br>HDL<br>Triglycerides<br>Fasting Blood Glucose | | | Education sessions<br>Structured and unstructured internet-delivered exercise program<br>Advising | | | | | Bio-impedance-monitor<br>Standard bicycle ergometers | 3 months | The intervention group (n=50) improved significantly in PAT/kg, VO2peak, and waist circumference. The control group (n=27) improved significantly and waist circumference but not VO2peak. No significant between-group differences in these outcome measures were noted. |
| 33 | Efficacy of a workplace-based weight loss program for overweight male shift workers: The Workplace POWER (Preventing Obesity Without Eating like a Rabbit) randomized controlled trial | 2011 | 110 | Randomized Controlled Trial | Waist circumference<br>Weight and Height<br>Blood Pressure and Resting Heart Rate | | Self-efficacy<br>Pros and Cons for Physical Activity<br>Behavioural Intention<br>Dietary Attitudes<br>Stages of Change | | Information session<br>Handbook<br>Study website<br>Individualized dietary sheets | Group-based financial incentive<br>pedometer | | | | Godin Leisure-Time Exercise Questionnaire | 3 months | There was a significant treatment effect for change in weight at 14-Week follow-up Significant treatment effects were found for waist circumference, BMI, systolic blood pressure, resting heart rate and physical activity. Medium-to-large effect sizes were found |
| **34** | Initiation of health behaviour change among employees participating in a web-based health risk assessment with tailored feedback | 2011 | 2289 | One-group Pretest–Posttest Design | Height and Weight<br>Waist circumference<br>Blood pressure | Total Cholesterol<br>HDL<br>LDL<br>Triglycerides<br>Fasting Blood Glucose | Self-efficacy | | Health action plan | | | | a web-based electronic health questionnaire, biometric measurements, laboratory evaluation, | | 2 years | Employees at higher risk of CVD and high BMI levels more frequently reported initiation of health-behaviour change in general, increase in physical activity and improved diet. |

Table E. *cont'd*

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 35 | Mobile-Web App to Self-Manage Low Back Pain: Randomized Controlled Trial | 2015 | 597 | Randomized Controlled Trial | Back Pain | | Functionality and Quality of Life<br>Function, Well-Being, and Quality of Life<br>Worker Productivity<br>Presenteeism<br>Self-Efficacy<br>Behavioural Intentions<br>Knowledge | | Self-monitoring<br>Text and video messages<br>Weekly e-mails | | | | Self-tailoring | Wong-Baker pain scale<br>Multidimensional Pain Inventory<br>Interference Scale<br>Dartmouth CO-OP Work Limitations Questionnaire (WLQ)<br>The Patient Activation Measure | 2 months | Subjects in the control group were 1.7 times more likely to report current back pain than subjects in the intervention group; subjects in the alternative care group were 1.6 times more likely to report present back pain at 4-month follow-up. |
| **36** | Do overweight workers profit by workplace Health promotion, more than their normal-weight peers? Evaluation of a worksite intervention | 2015 | 1573 | Controlled Study | Height and Weight | | Satisfaction with training and trainer,<br>Attitudes<br>Stages of readiness to change<br>Perceived health status | | Individual coaching<br>Educational information<br>Advice | Group training | | | | Questionnaire for the Assessment of Health Behaviour<br>Stage to change Questionnaire for the Assessment of Eating and Weight-Related Attitudes and Behaviours<br>Copenhagen Psychosocial Questionnaire | 12 months | Results showed preliminary improvements in physical activity and eating behaviour among average weight and overweight/obesity weight groups. The reduction was larger in the overweight group. Workers considered overweight or obese showed significantly greater body weight loss and changes in eating behaviour than workers with average weight status. Workers with obesity/overweight scored their general health status significantly lower than their colleagues with normal weight status. |
| 39 | Effectiveness of a Worksite-Based Weight Loss Randomized Controlled Trial: The Worksite Study | 2015 | 1790 | Two-arm Cluster Randomized Controlled Trial | Height and Weight | | The primary outcome measure, body weight<br>Secondary outcomes of interest included PA and dietary behaviours | | | | | | | The Block Dietary Fat Screener<br>Block Fruit-Vegetable-Fiber Screener<br>RAPA<br>BRFSS | 12 months | Participants lost an average of 2.27 lbs with a BMI decrease of 0.36 kg/m2 and 1.30 lbs with a BMI decrease of 0.20 kg/m2 in INCENT and LMW, respectively. The differences between INCENT and LMW in weight loss and BMI reduction were not statistically significant. |

Table E. *cont'd*

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| **40** | Online Tailored Weight Management in Worksite: Does It Make a Difference in Biennial Health Risk Assessment Data? | 2012 | 238 | Cluster Randomized Controlled | Height and Weight<br>Blood Pressure<br>Hip circumference | Total Cholesterol<br>HDL<br>LDL<br>Blood Glucose | Self-efficacy<br>Motivation<br>Attitudes<br>Barriers<br>Social support<br>Subjective norms | | | | | | Health survey | | 2 years | Results show significant mean differences in systolic blood pressure, HDL cholesterol, and blood sugar levels, but each in a clinically undesirable direction. |
| 41 | The effectiveness of physical activity monitoring and distance counselling in an occupational setting – Results from a randomized controlled trial (CoAct) | 2012 | 544 | Randomized Controlled Trial | Height and Weight<br>Waist circumference<br>Blood pressure<br>Aerobic Fitness<br>Body Fat Percentage | | Work Productivity | | Activity monitoring<br>Distance counselling<br>Goal setting | | | | | International Physical Activity Questionnaire<br>QQ instrument | 12 months | At 12 months, there was no significant difference in physical activity levels between the intervention group (n = 264) and the control group (n = 257). The adjusted mean difference was −206 MET-min/week. There was also no significant difference in the QQ index or SA days. Of secondary outcomes, body weight and body fat percentage were slightly higher in the intervention group. An exploratory subgroup analysis revealed no subgroups in which the intervention affected physical activity. No adverse events were reported. |

Table E. *cont'd*

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| **42** | Demographic, Behavioral, and Psychosocial Correlates of Using the Website Component of a Worksite Physical Activity and Healthy Nutrition Promotion Program:A Longitudinal Study | 2010 | 726 | Cluster-Randomized Controlled Trial | Height and WeightWaist CircumferenceBlood PressureMaximum Oxygen Uptake | Total Cholesterol | Self-efficacyPerceived healthIntention to changeSocial SupportAttitude | | online self-monitoring of fruit andvegetable intake, physical activity, and weight to monitorprogress toward behaviour change and obtain tracking charts;and (3) the ability to ask questions of several professionals.motivating email message | | | | self-reported physical activity and nutrition behaviour on thequestionnaire | International Physical Activity QuestionnaireDutch Food Frequency Questionnaire | 2 years | Participants who were insufficiently physically active were less likely to visit the website, whereas individuals with an elevated total cholesterol level visited the website more often. The monthly emails in the intervention group resulted in higher website use during 3 months. Participants with a positive attitude toward increasing physical activity were less likely to visit the website or use the self-monitor and FFQ. Female workersvisited the website more often to monitor their behaviour and to receive advice on fat intake. |
| 43 | An economic evaluation of a weight control program with e-mail and telephone counselling among overweight employees: a randomized controlled trial | 2012 | 1386 | Randomized Controlled Trial | Weight | | Quality of Life | | self-help brochures information on nutrition and physical activity taught behaviour modification strategies an interactive an individualized program website and counselled Counselled by e-mail. | | | | | EuroQol-5D Dutch tariff | 6 months | At two years, the incremental cost-effectiveness ratio was €1009/kg weight loss in the phone group and €16/kg weight loss in the internet group. The cost-utility analysis resulted in 245,243/quality-adjusted life-year (QALY) and €1337/QALY, respectively. The results from a complete-case study were slightly more favourable. |

Table E. *cont'd*

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| **44** | Factors associated with high use of a workplace web-based stress management program in a randomized controlled intervention study | 2010 | 303 | Randomized Controlled Trial | Waist to hip ratio | S-prolactin<br>S-cortisol | Perceived Health<br>Level of stress<br>Social Support<br>Self-confidence at work<br>Self-ratings of Work Reward<br>Mood at work | | web-based program | | | | | | 12 months | group membership, being a woman, having secondary education, regular physical exercise habits and having positive expectations of the program were significant predictors of high use. |
| 45 | Initial and Sustained Participation in an Internet-delivered Long-term Worksite Health Promotion Program on Physical Activity and Nutrition | 2012 | 924 | ClusterRandomized Controlled Trial | Height and Weight<br>Blood Pressure<br>Maximum Oxygen Uptake | Total Blood Cholesterol | Attitude<br>Social Support<br>Self-efficacy<br>Intention to Change | | Web-based tools | | | | computer-tailored advice on their self-reported PA and nutrition behaviour | International Physical Activity Questionnaire<br>Dutch Food Frequency Questionnaire | 2 years | Workers with a bit of intention to increase their physical activity level were less likely to participate but more likely to sustain participation throughout the study period. Furthermore, it was found that smokers were less likely to maintain their involvement in the first and second years and to visit the website. Website use was highest in the periods immediately after the baseline (73%) and follow-up questionnaires (71% and 87%). Employees in the intervention were more likely to visit the website when they received monthly emails but less likely to visit the website in the subsequent period. |
| **46** | Stress management in the workplace: A comparison of a computer-based and an in-person stress-management intervention | 2008 | 121 | Randomized Controlled Trial | | | Anxiety<br>Depression<br>Social Support<br>Job Stress<br>Perceived ability to manage stress | | training in abbreviated progressive relaxation, discussion of time management techniques, and homework assignments | | | | | Health Care System<br>Insight + Health Risk Appraisal survey<br>Units of Distress | 2 months | Attrition was significantly higher in the computer-presentation format. Across both presentation formats, however, more frequent use of stress-reduction techniques was correlated significantly<br>With greater reductions in stress indices at follow-up. |

# F. TÜRKÇE ÖZET / TURKISH SUMMARY

## GİRİŞ

Giderek temposu artmakta olan iş dünyasında çalışanlar büyük zorluklarla karşı karşıya kalmakta ve artan üretkenlik talepleri, sağlıksız bir iş gücünün ortaya çıkmasına neden olmaktadır. Ayrıca teknolojideki ilerlemeler ve yeni iş yüklerinin ortaya çıkması çalışanların görevlerini artırmış ve her zamankinden daha yüksek derecede uzmanlık ve iş verimliliği gereksinimini getirmiştir (Appelbaum, 2000). Kurumlar ve işverenler artık çalışan verimliliğinin öneminin farkına varmışlardır.

Covid-19 pandemisi tehlikeli boyutlara ulaşırken devletler halkı korumak için çeşitli önlemler almıştır. Bununla başa çıkmak için en etkili stratejiler sokağa çıkma yasağı ve sosyal izolasyon olduğu için birçok çalışan uzun bir süre işyerleri yerine evlerinden çalışmaya devam etmiştir. Esnek çalışma modellerinden biri olan uzaktan çalışma yöntemi, çalışan sağlığının ve halk sağlığının korunması açısından önem kazanmıştır (Tuna & Türkmendağ, 2020). Bu nedenle pandemi döneminde özellikle teknokent çalışanları için öne çıkan konulardan biri, kişinin işlerini işyerinden bağımsız olarak yürütüp yürütemeyeceği olmuştur. Bu uygulama birçok esneklik sağlarken, çalışanlar arasında mesai zamanı algısının kaybolması, iş yükünün kısa sürede artması, psikolojik tükenmişlik ve iş stresinin artması gibi bazı kişisel ve mesleki kaygılara da yol açmıştır. Diğer konular arasında, çalışanlar arasındaki çatışmalar ve hareketsiz ve sağlıksız bir yaşam tarzı nedeniyle oluşan/ortaya çıkan fiziksel sorunlar yer almaktadır (Mutaf ve ark., 2021).

Hızla gelişen iş ortamı ve beraberinde getirdiği işlerin özellikleri, çalışanları sağlıksız yaşam davranışlarına iten ana faktörlerdir ve bu durum iş verimliliğinin düşmesine neden olur. İş verimliliği kaybı, iki kavramın sonucu olarak incelenebilir: işe devamsızlık ve işte var olmama. İşe devamsızlık, çalışanın hastalık, ailevi acil durum, bebek bakıcısı olmaması veya diğer benzer durumlar gibi çeşitli nedenlerle işte

fiziksel olarak var olmamasını ifade eder. İşte varolmama durumunda ise çalışan işte bulunur, ancak sorumlu olduğu işleri yeterli bir performansta gerçekleştiremez. İşe devamsızlık ve işte var olmamayı etkileyen bazı faktörler belirlenmiştir. Bu faktörler; iş özellikleri ve çalışma ortamı (stres, ergonomi, ofis mimarisi, vb.), kişisel faktörler (obezite, sigara, yetersiz beslenme, vb.) ve sağlık tehditleridir (kronik durumlar ve ruh sağlığı) (Hafner ve ark., 2015).

Sağlığı geliştirici davranışlar arasında sosyal destek, stres yönetimi, egzersiz davranışı, mental gelişim ve yaşamı takdir etme davranışları bulunmaktadır. Sağlığı geliştirici faaliyetlerin çeşitli türleri arasında sağlıkla ilgili ve sağlığa yönelik eylemler, öz bakım davranışları, sağlık hizmeti kullanım alışkanlıkları, beslenme davranışları, madde kullanım davranışları ve cinsel ilişki davranışları yer alır (Glanz ve ark, 2008). Kasl ve Cobb (1966) sağlığı geliştirici faaliyetleri amaçlarına göre üç gruba ayırmıştır: bisiklet sürerken kask takmak gibi önleyici sağlık davranışları, doğru tedaviye aramak gibi hastalık davranışları ve tedavi için terapi almak gibi hasta rolü faaliyetleri.

Chen (2003) sağlığın farklı yönlerini, beslenme, egzersiz, sağlık sorumluluğu, yaşamı değerlendirme, stres yönetimi ve sosyal destek olmak üzere altı farklı sağlığı geliştirici alt başlık altında incelemiştir. Beslenme davranışı altında iyi beslenme, besleyici öğünleri seçme, bol su içme gibi etkinlikler bulunur. Egzersiz davranışları, insanların fiziksel aktiviteye katılımından ve egzersiz rutinlerinden oluşmaktadır. Sağlık sorunları için doktora veya sağlık profesyoneline gitmek ve kişisel temizliği korumak sağlık sorumluluğu faaliyetlerine örnek olurken, iyimser olmak ve iyi bir algı için faaliyetlerde bulunmak yaşamı takdir etme davranışlarını oluşturmaktadır. Stres yönetimi, kişinin duygusal durumunun farkında olmasını, hayatındaki stres kaynaklarını değerlendirmesini, önceliklerini belirlemesini ve stres yaratan sorumlulukları yönetmesini içermektedir. Son olarak, sosyal destek, duyguları aşkalarıyla paylaşmayı ve başkalarıyla ilişki kurmayı içermektedir (Chen ve ark., 2003).

İşe devamsızlık ve işte var olmama ve dolayısıyla verimlilik düzeyindeki kayıplara ilişkin sonuçlar, meslek gruplarına ve bunlara özgü özelliklerine göre değişmektedir. Bu nedenle konuyu bu açıdan incelemek yerinde olacaktır. İş verimliliği kaybının ekonomik yansımalarının beyaz yaka meslekler arasında en yüksek olduğu açıktır. Bunun temel nedeni beyaz yaka çalışanlarının diğer meslek

grupları çalışanlarına göre daha yüksek maaşlar almasıdır. Beyaz yaka çalışan, ofis ya da idari bir ortamda profesyonel yönetim işlerini ya da idari işleri yürütür (Van Horn & Schaffner, 2003).

Beyaz yakalılar üzerinde yapılan araştırmalarda yaşam kaliteleri ile ilişkili bir dizi sorun tespit edilmiştir (Doi ve ark., 2003; Lynch ve ark., 1997). Bu sorunlar, bilgi teknolojisi endüstrisinde çalışan beyaz yakalılar arasında iş kaybına neden olan ve en yaygın olarak bildirilen semptomlar olarak tanımlanan yorgunluk, boyun ağrısı, omuz ağrısı, baş ağrısı, mide sorunları, bel ağrısı ve uyku sorunlarını içerir (Hemingway ve ark., 1997). Düşük düzeydeki sağlıklı yaşam davranışları, daha düşük zindelik ve daha yüksek sağlık riski sorunlarına da katkıda bulunur. Ayrıca düşük düzeydeki sağlıklı yaşam davranışları, aylık ortalama 6,7 günlük iş verimliliği kaybına ve ölçülemeyen düzeyde ekonomik kayba neden olduğu gözlemlenen psikolojik sorunlara yol açmaktadır (Kessler ve diğerleri, 2001).

Sağlıklı yaşam davranışlarında en önemli faktör sağlık okuryazarlığıdır (Stormacq ve ark., 2019; Uysal ve ark., 2020). Sağlık okuryazarlığı, kişinin daha sağlıklı yaşamlar için stratejiler kullanma yeteneğini geliştiren çok çeşitli becerileri içerir. Bu beceriler okuma, yazma, dinleme, konuşma, aritmetik, eleştirel analiz, iletişim ve etkileşim becerileridir (Nutbeam, 2008). Son on yılda yapılan araştırmalar, sağlık okuryazarlığı becerilerinin sağlık durumunu yaş, maaş, iş durumu, eğitim düzeyi ve ırk veya etnik kökenden daha güçlü bir şekilde öngördüğünü göstermiştir (Kickbusch, 2008; Speros, 2005; Wilson, 2003). Bu nedenle sağlıklı yaşam davranışlarını geliştirme programlarının tasarımı sağlık okuryazarlığı esas alınarak yapılmalıdır. Sağlık okuryazarlığına dayalı sağlığı geliştirme girişimlerinin daha sağlıklı yetişkinler oluşturduğu ortaya konmuştur (Manganello, 2008).

Sağlık okuryazarlığının geliştirilmesi için mevcut birçok model arasında Urie Bronfenbrenner (1994) tarafından inşa edilen sosyal-ekolojik model oldukça etkilidir. Bronfenbrenner insanların fiziksel ve sosyal çevrelerle bağlantılı dış etkilerin iç içe geçmesinden etkilendiğinin altını çizer. Bu nedenle sağlık okuryazarlığını geliştirmeyi amaçlayan herhangi bir model bu çevresel etkileri dikkate almalıdır. Sağlığı geliştirme girişimlerinin çoğu tarafından benimsenen sosyal-ekolojik model, sağlık müdahalelerinin olumlu eylem ve iyileştirmeyi teşvik etmek için çeşitli katmanlara hitap etmesi gerektiği fikrini desteklemiştir (Marshall & Altpeter, 2005; McCormack ve ark., 2017). Sağlık ve refahı geliştirmek için tasarlanan

müdahalelerin içsel (bireysel), kişiler arası (sosyal çevre), örgütsel (fiziksel çevre) ve makro-politika katmanlarını dikkate alması ve tartışması gerekir. Sosyal-ekolojik perspektif tarafından önerilen çok seviyeli müdahaleler etkilidir çünkü modelin etkileşimli doğası, her bir katmanın karşılıklı olarak geliştirilmesine olanak tanır ve sadece bir etki katmanını hedefleyen müdahalelerden daha önemli ve daha sürdürülebilir sonuçlara yol açar.

Sağlık okuryazarlığına odaklanan çok katmanlı müdahaleleri uygulamanın bir yolu çalışan zindeliği programlarıdır. Kurumların ve işverenlerin zindelik programlarına giderek daha fazla öncelik vermesiyle birlikte zindelik programların planlanması konusu daha da kritik hale gelmiştir (Ryan ve ark., 2008). Kişiselleştirilmiş, ulaşılması kolay ve esnek zamanlı bir yaklaşımın, çalışan zindeliği ve sağlığı konusunda gelecekteki araştırmalara yardımcı olacağı önerilmektedir (Ammendolia ve ark., 2016).

O'Mara (2013) tarafından yürütülen bir meta-analizde zindeliğin ve sağlığın geliştirilmesine yönelik girişimlerde ve kampanyalarda tercih edilen sağlık iletişimi yöntemlerinin, popülasyonların kendilerine özgü kültürlerini, dillerini ve sağlık okuryazarlığı gibi özelliklerini göz ardı ettikleri için etkilerinin belirli bir düzeyde kaldığını ortaya koymuştur. O'Mara (2013) sağlıklı yaşamın teşvik edilmesi ve geliştirilmesi için bazı temel sağlık okuryazarlığı kavramlarınının uygulanmasını önermektedir. Bunlar hedef kitleyi anlamak, sağlık mesajlarının amacını anlamak ve farklı kitleleri hedefleyen yeni medya mesajları tasarlamaktır.

Çalışan zindeliği programları iş memnuniyetini artırır, ilgili sağlık harcamalarını azaltır ve iş verimliliğini artırır (Baicker ve ark., 2010; Parks & Steelman, 2008). Çalışanlar için zindeliği geliştirme girişimlerinde kullanılan teknikler, sosyal normları etkileyebilmekte, sağlığı geliştirici faaliyetler için teşvikleri artırabilmekte, sağlığı geliştirici politikalar oluşturabilmekte, beslenme ve fiziksel aktivite davranışlarını geliştirebilmekte, ayrıca sağlık okuryazarlığını ve motivasyonu artırabilmektedir (Malik ve diğerleri, 2014). Etkili bir çalışan zindeliği programı geliştirmek iş verimliliği kaybına neden olan problemlerin araştırılmasını ve programın belirlenen hususlara göre tasarlanmasını gerektirmektedir.

Berry, Mirabito ve Baun (2010) çalışan zindeliği ve sağlığı programlarını, çalışanların ve ailelerinin sağlık risklerini azaltan ve yaşam kalitelerini artıran davranışları benimsemelerine ve sürdürmelerine yardımcı olmak için tasarlanmış

işveren destekli girişimler olarak tanımlamaktadır. Bu programlar çalışanların zihinsel, fiziksel ve duygusal sağlığını desteklemek için kullanılan tüm yöntemleri içerir ve böylece üretken bir iş gücü sağlar (Anderzén & Arnetz, 2005). Dünya çapında çalışan zindeliği ve sağlığı programlarını benimseyen kuruluşların sayısı arttıkça, bu tür programların iş verimliliği (işveren perspektifi) ve zindelik ve sağlık konularındaki gelişimler (çalışan perspektifi) üzerindeki etkisinin kesin olarak ölçülmesi önem arz etmiştir (Blake & Lloyd, 2008). Bu tezin konusu olan çalışmanın önemi, sonuçların hem işveren bakış açısına (çalışan iş verimliliği) hem de çalışan bakış açısına (sağlık okuryazarlığı ve sağlıklı yaşam davranışları) göre araştırılmasıdır.

Etkili bir çalışan zindeliği programı, bütüncül bir yaklaşımla çeşitli sağlıklı yaşam davranışlarını hedeflemelidir (Silcox, 2016). Program çalışanların fiziksel, duygusal, sosyal, ruhsal, finansal ve entelektüel zindelik durumlarını ele almalıdır. Çeşitli çalışmalar bütünsel bir yaklaşımın etkinliğini göstermiştir. Mevcut çalışmanın güçlü yönlerinden biri, fiziksel aktivite, beslenme ve stres yönetimi davranışlarına odaklanması ve çalışan sağlığını sağlık okuryazarlığı ile birlikte artırmayı hedeflemesidir.

Çalışan zindeliği programlarının önündeki engelleri ve kolaylaştırıcıları anlamak, araştırmacının saha uygulamalarında neyin işe yarayıp neyin yaramadığını belirlemesine olanak tanımaktadır. Çalışan zindelik programlarının önündeki en zorlu engellerden biri değişken temposu ve zaman yönetimi ile ilgili sorunlara dair evrensel bir kaygı olan çalışanların zaman kısıtlarıdır. Mevcut çalışma, yeni medya aracılığıyla çalışanların sağlık okuryazarlığına müdahale ederek sağlıklı yaşam davranışlarını ve iş verimliliklerini ele almaktadır. Yeni medya, içeriğindeki YouTube videoları ve Instagram infografikleri gibi asenkron medyayı kullanır, çalışana bunlara erişme zamanını belirleme konusunda esneklik sağlar.

Mevcut çalışmanın kapsamı, sosyal-ekolojik bağlama odaklanarak yeni medyayı bütünleştiren, ihtiyaca dayalı bir çalışan zindeliği programı tasarlamak ve değerlendirmektir. Üç ana araştırma konusu vardır: (i) teknokent çalışanlarının sağlıklı yaşam davranışları ve iş verimliliği ihtiyaçlarının incelenmesi, (ii) ihtiyaca dayalı çalışan zindeliği programının sağlık okuryazarlığı ve iş verimliliği üzerindeki etkisinin ölçülmesi, (iii) teknokent çalışanlarının ihtiyaç temelli çalışan sağlık programındaki deneyimlerinin incelenmesi. Çalışma aşağıdaki araştırma sorularına cevap vermektedir:

(i) teknokent çalışanlarının sağlıklı yaşam davranışlarını ve iş verimliliği ihtiyaçlarını incelemek (Birinci çalışma)

Araştırma Sorusu 1: Teknokent çalışanlarının sağlıklı yaşam davranışları ile iş verimlilikleri arasında bir ilişki var mıdır?

Araştırma Sorusu 2: Teknokent çalışanlarının sağlıklı yaşam davranışlarına ilişkin istatistiksel olarak gözlemlenen alt kümeler var mıdır? Evet ise kümeler egzersiz değişim basamakları açısından keşfedilen basamaklardan istatistiksel olarak farklı mıdır?

(ii) ihtiyaca dayalı çalışan zindelik programının sağlık okuryazarlığı ve teknokent çalışanlarının iş verimliliği üzerindeki etkisinin ölçülmesi (İkinci çalışma)

Araştırma Sorusu 3: Çalışan zindeliği programı teknokent çalışanlarının fiziksel aktivite davranışlarını etkilemiş midir? Evet ise fiziksel aktivite davranışlarında ne tür değişiklikler olmuştur?

Araştırma Sorusu 4: Çalışan zindeliği programı teknokent çalışanlarının stres yönetimi davranışlarını etkilemiş midir? Evet ise stres yönetimi davranışlarında ne tür değişiklikler olmuştur?

Araştırma Sorusu 5: Çalışan zindeliği programı teknokent çalışanlarının beslenme davranışlarını etkilemiş midir? Evet ise beslenme davranışlarında ne tür değişiklikler olmuştur?

Araştırma Sorusu 6: Çalışan zindeliği programı teknokent çalışanlarının sağlık okuryazarlığını etkilemiş midir?

Araştırma Sorusu 7: Çalışan zindeliği programı teknokent çalışanlarının iş verimliliğini etkilemiş midir?

Araştırma Sorusu 8: Çalışan zindeliği programı teknokent çalışanlarının iş ve ofis sağlığı davranışlarını nasıl etkilemiştir?

(iii) ihtiyaç temelli çalışan zindeliği programına katılan teknokent çalışanlarının deneyimlerinin incelenmesi (İkinci çalışma)

Araştırma Sorusu 9: Katılımcılar programla ilgili deneyimlerini nasıl anlatmaktadırlar?

Araştırma Sorusu 10: İşveren açısından bu çalışan zindeliği programının katılımcıların iş verimliliğine ekonomik katkısı nedir?

## YÖNTEM

Bu çalışma bir ihtiyaç analizi (Çalışma 1) ve müdahale çalışması (Çalışma 2) içeren iki farklı çalışmadan oluşmaktadır. Her iki çalışmada çeşitli yöntemler uygulanmıştır. İhtiyaç analizi (Çalışma 1) için, araştırma popülasyonunun özelliklerini keşfetmek amacıyla tanımlayıcı bir araştırma tasarımı kullanılmıştır. Tanımlayıcı araştırma, popülasyon örneğinin istatistiksel analizi için ölçülebilir bilgiler toplamaya çalışır (Thomlison, 2001). Ayrıca tanımlayıcı araştırma tasarımında, ortak özelliklere sahip veri örneklerinin alt kümelerini tanımlamak için kümeleme gibi keşifsel veri analizi teknikleri kullanılabilmektedir. Bu yöntem kullanıcıların özellikle müdahale veya eğitim programları tasarlamak için yararlı olan, büyük veri kümelerinin temel alt kümelerine odaklanmasına olanak tanımaktadır.

Çalışmanın müdahale bölümü (Çalışma 2) için gömülü deneysel model kullanıldı (Creswell ve ark., 2009). Bu modelin özelliği nitel verilerin destekleyici olduğu nitel deneysel metodolojide kullanılmasıdır. Bu çalışmada, müdahalenin etkilerini araştırmak için tek aşamalı bir yaklaşım kullanılmıştır. Tek aşamalı toplanan nitel veriler çalışmanın nicel sonuçlarını yorumlamak için kullanılmıştır.

Müdahale çalışması mayıs ve temmuz ayları arasında 7 haftalık bir süreçte gerçekleştirilmiştir. Deney grubundaki katılımcıların sağlık okur yazarlıklarını artırmak amacıyla katılımcılar YouTube videolarına, bilgiler ve ölçüm araçları bulunan bir web sitesine, Instagram gönderilerine sahip bir sayfaya ve kendisiyle bire bir çalışma imkânı bulunan bir uzmanın desteğine (isteğe bağlı) maruz bırakılmıştır. Müdahale araçları ve katılımcılar arasındaki etkileşim hakkında daha fazla bilgi sağlamak için saha notları alınmıştır.

Müdahale çalışmasının başarısını ve etkinliğini en üst düzeye çıkarmak için tekrarlanabilir ve güvenilir bir eylem planı gerekmektedir. Müdahale çalışmalarının nasıl çalıştığını anlamak ve doğru yaklaşımı belirlemek için Abraham ve Michie (2008) farklı sağlık davranışı teorilerini inceleyerek kendi sınıflandırmalarında birkaç

davranış değiştirme tekniği geliştirmişlerdir. Mevcut müdahale çalışması, Abraham ve Michie (2008) tarafından tanımlanan davranış değiştirme teknikleri aracılığıyla sosyal-ekolojik bağlamdaki sağlık okuryazarlığını geliştirmeyi amaçlamıştır. Müdahalede kullanılan davranış değiştirme teknikleri şunlardır; performans hakkında geri bildirim sağlanması, hedef belirleme, talimatlar verilmesi, sosyal destek veya sosyal değişimin planlanması, davranışın kişi tarafından anında izlenmesi, davranışın modellenmesi veya gösterilmesi, davranışsal hedeflerin hızlıca gözden geçirilmesi. Bu müdahalede kullanılan bu yedi davranış değişikliği tekniği, sağlığın ve zindeliğin teşviki ve geliştirilmesi için tasarlanan müdahalelerdeki en etkili tekniklerdir (Howlett ve ark., 2015; Michie ve ark., 2018; Samdal ve ark., 2017).

YouTube videoları müdahale çalışmasında merkezi bir role sahipken, diğer yeni medya araçları tamamlayıcı araçlar olarak işlev görmüştür. YouTube kanalı, haftalık olarak yayınlanan yedi videodan oluşmuştur. Videolardaki tüm içerikler Çalışma 1'in sonuçlarına göre belirlenmiştir. Videoların konuları ve süreleri şu şekildedir:

1. Hafta: Zindelik ve Sağlık (Süre: 13 dakika 22 saniye)

2. Hafta: Fiziksel Aktivite (Süre: 11 dakika 47 saniye)

3. Hafta: Fiziksel Uygunluk (Süre: 10 dakika 37 saniye)

4. Hafta: Beslenmenin Temelleri (Süre: 16 dakika 23 saniye)

5. Hafta: Neyi ve Ne Kadar Yemeliyim (Süre: 6 dakika 10 saniye)

6. Hafta: Stres Yönetimi (Süre: 10 dakika 12 saniye)

7. Hafta: Ofis ve İş Sağlığı (Süre: 7 dakika 02 saniye)

www.movefor.net adresine sahip web sitesi YouTube videolarındaki içeriklere destek olarak oluşturulmuştur. Web sitesi, ilgili haftanın içerikleri hakkında bilgiler ve videonun yanısıra katılımcıların haftanın konusuna dair kendilerini değerlendirmelerini sağlayan çeşitli öz değerlendirme araçları içermektedir.

“Move For tr” adına sahip Instagram sayfasında ise haftada ortalama altı Instagram gönderisi yayınlanmıştır. Web sayfasına benzer şekilde Instagram sayfası da YouTube videoları için destekleyici bir unsur olarak rol almıştır. Altı gönderinin her biri farklı bir amaca hizmet etmiştir; bilgilendirme, karşılaştırmalı bilgilendirme, motive etme, yanlış bilgileri düzeltme ve hatırlatma (haftanın videosu için). Instagram sayfası, YouTube videolarını desteklemenin yanı sıra sosyal bir ortam yaratarak katılımcıların tek soruluk anketlerle oy kullanmalarına ve Instagram’ın soru cevap özelliği ile deneyimlerini paylaşmalarına olanak sağlamıştır.

Birebir desteği sağlayan uzman Gıda Mühendisliği alanında lisans ve Beden Eğitimi ve Spor alanında yüksek lisans derecelerine sahip ve Beden Eğitimi ve Spor alanında doktora adayı olan araştırmacıdır. Ayrıca yüzme öğretmenliği ve antrenörlüğü konusunda on yıllık deneyime sahiptir. Uzman desteği mekanizması katılımcılar için isteğe bağlı olarak planlanmıştır. Uzman gerekirse sorular için bir e-posta adresi ve telefon numarası paylaşmıştır. Uzman desteği için danışmak isteyen katılımcılar, e-posta (en çok tercih edilen seçenek), WhatsApp veya telefon aracılığıyla rezervasyon talebinde bulunmuş, görüşmeler Google Meet veya Zoom üzerinden çevrimiçi olarak yapılmıştır.

## BULGULAR

Araştırma Sorusu 1: Teknokent çalışanlarının sağlıklı yaşam davranışları ile iş verimlilikleri arasında bir ilişki var mıdır?

Birinci araştırma sorusu Türkiye'nin altı farklı şehrinde (Ankara, İstanbul, Bursa, İzmir, Eskişehir ve Bolu) yerleşik 405 teknokent çalışanının (174 kadın ve 231 erkek) oluşturduğu veri setinin betimleyici ve çıkarımsal istatistikleri analiz edilerek cevaplandırılmıştır. Fiziksel aktivite, beslenme, stres yönetimi, kişilerarası ilişkiler, sağlık sorumluluğu ve zihinsel gelişim davranışlarından iş performansını tahmin etmek için çoklu doğrusal regresyon tekniği uygulanmıştır. Sonuçlar, fiziksel aktivite, beslenme ve stres yönetimi davranışlarının istatistiksel olarak iş performansını etkilediğini ortaya koymuştur. Kişilerarası ilişkiler, sağlık sorumluluğu ve zihinsel gelişimin ise iş performansını istatistiksel olarak etkilemediği tespit edilmiştir.

2) Teknokent çalışanlarının sağlıklı yaşam davranışlarına ilişkin istatistiksel olarak gözlemlenen alt kümeler var mıdır? Evet ise kümeler egzersiz değişim basamakları açısından keşfedilen basamaklardan istatistiksel olarak farklı mıdır?

Örneklemdeki alt kümeleri belirlemek için iki aşamalı kümeleme analizi uygulanmıştır. Birinci adımda sürekli değişkenler olarak fiziksel aktivite, beslenme ve stres yönetimi, kategorik değişken olarak da cinsiyet eklenmiştir. İlk adımda, sonuçlar adil küme kalitesine sahip dört küme olduğunu göstermiştir. İkinci adımda cinsiyet değişkeni analizden çıkarılarak analiz tekrar yapılmıştır. İki aşamalı kümeleme analizinin ikinci aşamasının sonuçları dört kümeyi göstermiştir ancak bu adımdaki sonuçlarda kümeleme analizinin kalitesinin arttığı tespit edilmiştir. Küme yapısını doğrulamak için tek yönlü varyans analizi (ANOVA) uygulanmıştır. Tek yönlü varyans analizi (ANOVA) sonuçları gruplar arasında istatistiksel olarak anlamlı bir fark olduğunu göstermiştir.

Tablo 1. *İki aşamalı kümeleme analizinde elde edilen kümelerin tanımlayıcı istatistikleri*

| | Küme 1 (*n*=98) | Küme 2 (*n*=102) | Küme 3 (*n*=106) | Küme 4 (*n*=69) |
|---|---|---|---|---|
| Fiziksel Aktivite | 12.74 | 14.55 | 18.62 | 26.42 |
| Stres Yönetimi | 16.80 | 17.26 | 23.35 | 18.38 |
| Beslenme | 15.32 | 20.78 | 2129 | 21.51 |

Kümeler ve egzersiz değişim basamaklarına göre incelenen gruplar arasında istatistiksel bir fark olup olmadığını netleştirmek için yapılan egzersiz değişim basamaklarına göre grup bazında tanımlayıcı istatistikler aşağıda verilmiştir.

Tablo 2. *Egzersiz değişim basamaklarına göre oluşan grupların tanımlayıcı istatistikleri*

| | Basamak 1 (*n*=102) | Basamak 2 (*n*=135) | Basamak 3 (*n*=34) | Basamak 4 (*n*=35) | Basamak 5 (*n*=72) |
|---|---|---|---|---|---|
| Fiziksel Aktivite | 13.73 | 16.17 | 18.62 | 21,94 | 22.36 |
| Stres Yönetimi | 18.78 | 18.59 | 19.32 | 19.49 | 20.38 |
| Beslenme | 17.62 | 19.68 | 20.28 | 20.38 | 21.12 |

Tanımlayıcı istatistik sonuçları, iki aşamalı kümeleme analizi ile elde edilen kümeler ve egzersiz değişim basamakları arasında bir benzerlik olduğunu hem kümelerde hem de gruplarda değişkenlerin puanlarının arttığını göstermiştir. Kümeleme analizinde en önemli belirleyici değişken fiziksel aktivite olduğundan, fiziksel aktivite üzerinde daha ileri istatistiksel testler uygulanmıştır. Kümeler için tek yönlü varyans analizi (ANOVA) fiziksel aktivite skorlarının kümeler arasında istatistiksel olarak farklılık gösterdiğini zaten belirlenmiş olduğu için egzersiz değişim basamakları için fiziksel aktivite davranışı üzerine tek yönlü varyans analizi (ANOVA) yapılmıştır. Tek yönlü varyans analizi (ANOVA) ile belirlenen gruplar arasında istatistiksel olarak anlamlı bir fark ortaya çıkmıştır. Bonferroni testi, fiziksel aktivite puanları açısından Basamak 2 ve Basamak 3 arasında istatistiksel olarak anlamlı bir fark olmadığını ortaya koymuştur. Bu analizin sonucu, kümeler ve egzersiz değişim basamaklarının istatistiksel olarak farklı dört grup oluşturduğunu göstermiştir. Kümelerin ve egzersiz değişim basamaklarının istatistiksel olarak farklılaşıp farklılaşmadığını anlamak için Küme 1 ve Basamak 1, Küme 2 ve Basamak 2-3, Küme 3 ve Basamak 4, Küme 4 ve Basamak 5 ile bağımlı örneklem t-testi yapılmıştır. Analiz sonuçları Küme 3 ve Basamak 4'ün ve Küme 4 ve Basamak 5'in birbirinden istatistiksel olarak farklı olduğunu göstermiştir. Ancak Küme 1 ve Basamak 1 ile Küme 2 ve Basamak 2-3 arasında istatistiksel olarak önemli bir fark olmadığı tespit edilmiştir. Sonuç olarak aşağıdaki tablodaki verilen şekilde eşleşen Küme 1 ve Basamak 1, Küme 2 ve Basamak 2-3 eşleşen kümeler ve basamaklardır.

Tablo 3. *Eşleşen kümeler ve egzersiz değişim basamakları*

| | Küme 1 | Küme 2 | Küme 3* | Küme 4* |
|---|---|---|---|---|
| Fiziksel Aktivite (Kümeleme analizine göre) | 12.74 | 14.55 | 18.62 | 26.42 |
| | Basamak 1 | Basamak 2-3 | Basamak 4* | Basamak 5* |
| Fiziksel Aktivite (Egzersiz değişim basamaklarına göre) | 13.87 | 15.00 | 21.94 | 22.29 |

Araştırma Sorusu 3: Çalışan zindeliği programı teknokent çalışanlarının fiziksel aktivite davranışlarını etkilemiş midir? Evet ise fiziksel aktivite davranışlarında ne tür değişiklikler olmuştur?

Ortalama fiziksel aktivite skorları göz önünde bulundurulduğunda, deney grubunun fiziksel aktivite skorlarının ön testten son teste istatistiksel olarak anlamlı bir şekilde arttığı gözlemlenmiştir. Bununla beraber kontrol grubunun fiziksel aktivite skorlarında artış gözlemlenmiştir ancak bu artış istatistiksel olarak anlamlı değildir. Sonuçlar müdahale çalışmasının deney grubu üzerinde fiziksel aktivite davranışı açısından istatistiksel olarak anlamlı bir etkisi olduğunu göstermiştir.

Fiziksel aktivite davranışındaki değişiklikleri anlamak için katılımcılarla görüşmeler yapılmıştır. Görüşülen on kişinin tamamı bireysel ve fiziksel çevre katmanlarında, sekizi ise sosyal çevre katmanındaki fiziksel aktivite davranışı ile ilgili değişiklikleri belirtmiştir.

Sosyal-ekolojik modelin bireysel katmanındaki değişiklikler temel olarak fiziksel aktivite olarak rapor edilmiştir. Fiziksel aktivitedeki değişikliklerin başında boş zaman fiziksel aktivitesi, işle ilgili fiziksel aktivite ve ulaşım aktivitesi bulunmaktadır. Katılımcılara boş zamandaki fiziksel aktivitenin detayları sorulduğunda temel değişimin egzersizlerin süresi ve yoğunluğunda artış olarak gözlemlendiği belirtilmiştir. Beş katılımcı haftada üç gün en az 30 dakika yürümeye başladıklarını belirtmiş ve altısı işyerinde fiziksel aktivitelerini artırdıklarını söylemiştir. Altısı da iş yerindeki fiziksel aktiviteyi artırmak için telefon konuşmaları sırasında yürümeyi alışkanlık haline getirdiklerini beyan etmişlerdir. Bunlardan ikisi oturma süresini azaltmak için mobil uygulamalardan gelen ve ayağa kalkmalarını ve hareket etmelerini hatırlatan bildirimleri takip etmeye başladıklarını belirtmiş ve bir katılımcı da artık haftada en az iki gün araba kullanmak yerine işe yürüyerek gittiğini belirtmiştir.

Sosyal çevre katmanında, katılımcılar fiziksel aktiviteyi bir refakatçi eşliğinde yapma, içerik videolarını aile üyeleriyle birlikte izleme ve fiziksel aktivite odaklı sosyal medya uygulama kullanmaya başlama şeklindeki değişiklikleri bildirmişlerdir. Bu durum aile bireyleri veya iş arkadaşlarıyla birlikte yürüyüş yapmak, kardeşle

birlikte yüzmeye gitmek, bir yakınıyla fiziksel aktiviteye başlamak olarak açıklanmıştır. Katılımcılar tarafından fiziksel aktivite takibi için sosyal medya uygulaması olarak "Strava" uygulaması kullanılmaya başlamıştır.

Fiziksel çevre katmanında, katılımcıların egzersizlerini yaptıkları ortamdaki değişiklikler veya kullanmaya başladıkları ekipmanlar gibi değişiklikler bulunmaktadır. Katılımcılardaki değişiklikler bir spor kulübüne üye olmak, iç ve dış mekân spor ekipmanları satın almak ve aktiviteleri takip etmek ve oturma süresi ile ilgili bildirimleri almak için mobil uygulama veya akıllı saat kullanmaya başlamak olarak tespit edilmiştir.

Araştırma Sorusu 4: Çalışan zindeliği programı teknokent çalışanlarının stres yönetimi davranışlarını etkilemiş midir? Evet ise stres yönetimi davranışlarında ne tür değişiklikler olmuştur?

Yapılan analiz sonucunda zaman farklarından bağımsız olarak gruplara, zamana ve gruplara göre stres yönetimi açısından deney grubu ve kontrol grubu arasında anlamlı bir farklılık bulunmamıştır. Sonuç olarak müdahale çalışmasının deney grubundaki katılımcıların stres yönetimi davranışına istatistiksel olarak anlamlı bir katkıda bulunmadığı ortaya çıkmıştır.

Araştırma Sorusu 5: Çalışan zindeliği programı teknokent çalışanlarının beslenme davranışlarını etkilemiş midir? Evet ise katılımcıların beslenme davranışında ne tür değişiklikler olmuştur?

Analiz sonuçları ortalama puanlarda deney grubunda ön testten son teste beslenme puanlarında istatistiksel olarak anlamlı bir artış olduğunu ve kontrol grubunda ön testten son teste beslenme puanlarında ise azalma olduğunu göstermiştir. Sonuçlar müdahale çalışmasının deney grubundaki beslenme davranışını istatistiksel olarak etkilediğini göstermiştir.

Sosyal-ekolojik modelin bireysel katmanındaki değişiklikler, artan farkındalık, uyum sağlama becerisi, yeterlilik ve çeşitlilik açısından ortaya çıkmıştır. Artan farkındalık katılımcılar tarafından makro besinler ve mikro besinler hakkında okuryazarlığın gelişmesi ve besin çeşitliliği adına farklı örnek gıdaların tüketimi ile ilgili olarak tanımlanmıştır. Ek olarak, katılımcılar makro besinlerini düzenleyerek günlük kalori alımlarını takip etmeye başladıklarını bildirmişlerdir. Bazı katılımcılar

günlük ihtiyaçtan daha az protein alımı nedeniyle yetersiz beslendiklerini fark ettiklerini ve buna göre beslenmelerinde ayarlamalar yaptıklarını belirtmişlerdir.

Sosyal çevre katmanında, katılımcılar kafein alımını azalttıklarını ve aile üyelerini akşamları kafein alımını azaltmaya ikna ettiklerini bildirmişlerdir. Bir katılımcı, arkadaşlarıyla beslenmelerini takip etmek için bir mobil uygulama kullanmaya başladıklarını, kendisinin ve çevresindeki kişilerin birbirlerinin besin alımını görüntüleyebildiğini ve sağlıklı beslenme alışkanlıkları konusunda birbirlerine sosyal destek sağladıklarını belirtmiştir. Bir diğer katılımcı ise aile bireyleri ile birlikte beslenme konulu içerik videolarını izlediklerini, video ve Instagram paylaşımlarındaki bilgi ve önerilere göre aile yemek planlarını birlikte yönettiklerini açıklamıştır.

Fiziksel çevre katmanında, katılımcıların çoğu beslenmelerini farklı mobil uygulamalar üzerinden takip etmeye başladıklarını, en sık kullandıkları uygulamaların ise MyFitnessPal ve Yazio olduğunu söylemişlerdir.

Araştırma Sorusu 6: Çalışan zindeliği programı teknokent çalışanlarının sağlık okuryazarlığını etkilemiş midir?

Grup için zaman etkileşimi etkisine göre ikili karşılaştırmalar sağlık okuryazarlığı ile ilgili olarak ön testten son teste kadar deney grubunda önemli zaman farklılıkları göstermiştir. Deney grubunda ön testten son teste sağlık okuryazarlığı puanlarında istatistiksel olarak anlamlı bir artış görülürken, kontrol grubunda ön testten son teste beslenme puanlarında düşüş gözlemlenmiştir. Sonuçlar müdahale çalışmasının deney grubu üzerinde sağlık okuryazarlığı açısından önemli bir etkiye sahip olduğunu göstermiştir.

Araştırma Sorusu 7: Çalışan zindeliği programının teknokent çalışanlarının iş verimliliğini etkilemiş midir?

Ortalama skorlara bakıldığında deney grubunda ön testten son teste işe devamsızlık skorlarında azalma olduğu, kontrol grubunda ise ön testten son teste işe devamsızlık skorlarında artış olduğu gözlemlenmektedir. Ancak sonuçlar müdahale çalışmasının deney grubunda işe devamsızlık açısından istatistiksel olarak anlamlı bir etkisi olmadığını göstermiştir.

İşte varolmama açısından, grup için zaman etkileşimi etkisine göre ikili karşılaştırmalarda deney grubunda ön testten son teste istatistiksel olarak anlamlı zaman farklılıkları tespit edilmiştir. Sonuçlar müdahalenin işte varolmama açısından deney grubunu istatistiksel olarak anlamlı şekilde etkilediğini ve işte varolmama sorununda düşüş gözlemlendiğini ortaya koymuştur.

Araştırma Sorusu 8: Çalışan zindeliği programı teknokent çalışanlarının iş ve ofis sağlığı davranışlarını nasıl etkilemiştir?

Bu araştırma sorusunun sonuçları nitel analiz ile analiz edilmiştir. Analizin sonuçları ise sosyal-ekolojik perspektif açısından incelenerek sunulmuştur. Görüşülen kişilerden üçü ofis ve iş sağlığı davranışlarında herhangi bir değişiklik olmadığını bildirmiştir. Bunun nedeni olarak ise özellikle iş ve ofis ortamlarının herhangi bir değişikliğe uygun olmadığını açıklamışlardır. Ayrıca içlerinden biri, bir uzmanın ofis ve çalışma ortamının bir fotoğrafını inceleyerek geri bildirimde bulunabileceğini önermiştir.

Görüşülen kişilerden yedisi işyerlerinde iş ve ofis sağlığı davranışlarında bazı değişiklikler olduğunu bildirmiştir. Bireysel katmandaki değişiklikler içinde oturma ve yürüme sırasında duruşa dikkat etmek yer almıştır. Ayrıca diğer iki katılımcı, Instagram gönderilerinde önerildiği gibi iş aralarında göz egzersizleri yapma alışkanlığı kazandıklarını söylemişlerdir.

Sosyal çevre katmanında görüşme yapılan dört kişi, ilgili video ve gönderileri meslektaşlarıyla paylaştıklarını ve çalışma sırasında doğru oturma duruşu hakkında birbirlerini uyarmaya başladıklarını açıklamıştır.

Fiziksel çevre katmanında, görüşülen kişi ofis koltuklarında ve bilgisayarlarında ayarlamalar yaptığını belirtmiştir. Görüşülen bir kişi, videolarda ve paylaşımlardaki ergonomi ile ilgili önerileri dikkate aldığını ve yeni bir ofis sandalyesi aldığını belirtmiştir. Bilgisayarlarıyla ilgili bildirilen değişiklikler arasında bilgisayar ekranı için mavi bir filtre sağlayan bir uygulamayı kullanmak ve bilgisayar ekranının açısını ve yüksekliğini göz hizasında olacak şekilde ayarlamak yer almaktadır.

Araştırma Sorusu 9: Katılımcılar programla ilgili deneyimlerini nasıl anlatmaktadırlar?

Deney grubu katılımcılarından müdahale ile ilgili deneyimlerini açıklamaları istendiğinde katılımcılar genel olarak programa dahil olmaktan memnun olduklarını belirtmişlerdir. Ortak memnuniyet noktaları ise artan farkındalıkları, müdahale çalışmasının içeriklerine kolay erişebilmeleri ve web sitesinde öz değerlendirme yapabilmelerini sağlayan ölçme araçlarının bulunması olarak belirlenmiştir.

Araştırma Sorusu 10: İşveren açısından bu çalışan zindeliği programının katılımcıların iş verimliliğine ekonomik katkısı nedir?

Cooliver 2021 Yazılım Geliştirici Raporuna göre 2020 yılında Türkiye'de bir yazılımcının aylık ortalama geliri 12.157 Türk Lirasıdır (TL). İş performansında %14,7'lik bir artışın aylık etkisi 1.787 TL'ye eşittir. 50 çalışanı olan bir şirket için bu iş performansı artışı incelendiğinde yıllık 1.072.200 TL ekonomik etkisi olduğu tespit edilmiştir.

## TARTIŞMA

Araştırma Sorusu 1: Sonuçlar fiziksel aktivite, beslenme ve stres yönetiminin iş performansının istatistiksel olarak etkilediğini ortaya koymuştur. Literatür çalışmanın bulgularını desteklemektedir. Yapılmış olan korelasyonel araştırmaları fiziksel aktivitenin (Pronk ve Kottke, 2009), beslenmenin (Grimani ve ark., 2019) ve stres yönetimi davranışlarının (Halkos ve Bousinakis, 2010) iş verimliliğini olumlu yönde etkilediğini göstermektedir. İşverenin bu tür programları finanse etmesi ve çalışanların katılmaya istekliliği işyeri zindeliği programlarının etkili bir şekilde uygulanmasındaki temel faktörlerdir. Bu nedenle zindeliğin ve sağlığın teşviki ve geliştirilmesinin olumlu etkileri konusunda işverenleri ikna eden araştırmaları ortaya koymak ve çalışanlar için kabul edilebilir kılmak için stratejiler belirlemek gereklidir.

Bir başka tartışma noktası da zindeliğin boyutlarına dayandırılabilir. Fiziksel aktivite, beslenme ve stres yönetimi davranışları, fiziksel ve zihinsel sağlığı geliştirmeyi doğrudan etkiler (Edlin ve Golanty, 2015). Ayrıca fiziksel aktivite, beslenme ve stres yönetimi davranışları birincil yaşam biçimi davranışları; kişiler arası ilişkiler, sağlık sorumluluğu ve zihinsel gelişim davranışları ise ikincil yaşam biçimi davranışları olarak kabul edilebilir. Bu yaklaşımda ikincil sağlığı geliştirici davranışların, birincil sağlığı geliştirici davranışları tamamladığı varsayılabilir. Bu

nedenle birincil yaşam tarzı davranışlarının sağlık üzerinde ikincil yaşam tarzı davranışlarına göre daha önemli bir etkisi vardır.

Araştırma Sorusu 2: Analiz sonuçları Küme 3 ile Basamak 4'ün ve Küme 4 ile Basamak 5'in istatistiksel olarak birbirinden farklı olduğunu göstermiştir. Ancak Küme 1 ile Basamak 1 ve Küme 2 ile Basamak 2-3 arasında önemli bir istatistiksel farklılık olmadığı tespit edilmiştir. Sonuç olarak aşağıdaki tablodaki verilen şekilde eşleşen kümeler ve basamaklar ortaya çıkmıştır.

Geçmişteki çalışmalar egzersiz değişim basamakları ile fiziksel aktivite, beslenme ve stres yönetimi davranışları arasında pozitif bir ilişki olduğunu göstermiştir (Ingledew & ark., 1998; McKee & ark., 2007). Bu pozitif ilişki egzersiz değişim başmaklarında üst basamağa geçtikçe beslenme ve stres yönetimi davranışlarında da olumlu artış gözlenebileceğini göstermektedir. Aynı gözlem bu tezin konusu olan çalışmada kümeler ve değişim aşamaları bağlamında tekrarlanmıştır.

Söz konusu kümelerin ve basamakların örtüşmesi Çalışma 2'nin temelini oluşturan en kritik bulgudur. Bu eşleşme örneklemin özelliklerinin literatürdeki bulgularla örtüştüğünü ortaya koymaktadır. Popülasyondan örneklem seçilirken, fiziksel aktivite, beslenme ve stres yönetimi davranışları ile ilgili kapsamlı taramalar yapmak yerine popülasyondan örneklerin belirlenmesi için egzersiz değişim basamakları uygulanabilir.

Araştırma Sorusu 3: Çalışan zindeliği programı teknokent çalışanlarının fiziksel aktivitelerini etkiler mi? Evet ise, fiziksel aktivite davranışlarında ne tür değişiklikler oldu?

Sonuçlar müdahale çalışmasının deney grubu üzerinde istatistiksel olarak anlamlı bir etkisi olduğunu göstermiştir. Cavill ve Bauman (2004) fiziksel aktivite geliştirme girişimlerini değerlendirirken öncül faktörlerin ve davranış değişikliğinin dikkate alınması gerektiğini önermektedir.

Fiziksel aktivite ile ilgili bu müdahale çalışmasının tüm bileşenleri davranış değişikliği ve sağlıkla ilgili etkiler yarattı. Bu olumlu sonuçlar program geliştirmede

kullanılan tasarımın bir yansıması olabilmektedir. Çalışma katılımcıları fiziksel aktiviteye katılımlarını artırmak, zorlu fiziksel aktivite hedeflerine ulaşmak için kendilerini güçlendirmek ve fiziksel aktiviteyi günlük rutinlerine dahil etmek için ihtiyaç duydukları bilgi ve becerilerle donatmak için oluşturulmuştur. Tüm bu değişkenler günlük yaşamlarında alışılmış bir fiziksel aktivite örüntüsünün oluşumuyla bağlantılıdır.

Mevcut müdahale çalışmasında katılanların çoğunluğu bunu gönüllü olarak yapmıştır. Programa gönüllü olan çalışanların sağlık alışkanlıklarını değiştirme konusunda diğer çalışanlara oranla daha yüksek motivasyonlu oldukları gerçeği de göz önünde bulundurulmalıdır.

Araştırma Sorusu 4: Sonuçlar stres yönetimi davranışı açısından deney grubu ve kontrol grubu arasında anlamlı bir farklılık göstermemiştir. Geçmişteki çalışmalar, sağlık okuryazarlığını geliştirmenin stres yönetme yeteneğini geliştirdiğini gösterse de beklenmedik bir şekilde mevcut çalışmanın sonuçlarında stres yönetimine ilişkin olumlu bir gelişme gözlemlenmemiştir. Ayrıca fiziksel aktivite ve beslenme gibi sağlıklı yaşam davranışlarındaki olumlu gelişmelerin stres yönetimi davranışını (olumlu yönde) etkileyeceği tahmin edilmiş olmasına rağmen, stres yönetimi davranışı araştırma dönemi boyunca istatistiksel olarak anlamlı bir şekilde gelişmemiştir. Bunun nedeni pandemi kısıtlamaları sonrası ofis ortamına dönüşün hızlanması olabilir. Ofis ortamında çalışmanın ev ortamında çalışmaktan daha stresli olduğu kanıtlanmıştır. Katılımcılar, stres yönetimi becerilerinin ofis işyerine geçiş nedeniyle artan stres seviyelerine ayak uyduramadığını varsayabilecekleri için değişikliği algılayamamış olmaları da muhtemel bir sebeptir.

Araştırma Sorusu 5: Sonuçlar müdahale çalışmasının deney grubundaki beslenme davranışını istatistiksel olarak anlamlı bir şekilde etkilediğini göstermiştir. Deneysel tasarım ve teorik temelli/odaklı bir çalışma çerçevesinin kullanılması bu çalışmanın iki önemli güçlü noktasıdır. Hedeflenen sağlık okuryazarlığı kümesinden yola çıkılarak oluşturulan içeriğe beslenmenin boyutları da dahil edilmiştir. Bu özellikle önemlidir çünkü yeni medya temelli/odaklı beslenme davranışı müdahaleleri için teorik metodolojilerin kullanımı şu anda sınırlıdır.

Yeni medya temelli sağlık okuryazarlığı, kişinin günlük aktivitelere aktif olarak katılmasını ve beslenmede sağlıklı tüketim kalıplarını teşvik etmesini sağlayan daha gelişmiş okuryazarlık becerileri gerektirir. Yeni medya temelli sağlık okuryazarlığının artırılması teknopark çalışanlarının dengeli ve sağlıklı beslenme davranışlarını benimsemelerine yardımcı olabileceği anlamına gelmektedir.

Araştırma Sorusu 6: Sonuçlar müdahalenin deney grubu üzerinde sağlık okuryazarlığı açısından istatistiksel olarak anlamlı bir etkiye sahip olduğunu göstermiştir. Sağlık okuryazarlığı üzerine yapılan araştırmalar kişiler sağlık bilgilerini ne kadar sık sorgular ve yorumlarsa o kadar çok özgüvene sahip olduğunu göstermiştir. Daha genel bir sonuç olarak ise sağlıklı yaşam davranışını benimsemenin önemli bir göstergesi olan öz yeterliğin, yaşam deneyimiyle doğrudan ilgili olduğu, sağlık okuryazarlığı beceri setleriyle de ilgili olabileceği belirtilmiştir (Bandura & Walters, 1977). Daha önce rapor edilen verilerden de anlaşılacağı gibi birçok kişinin medya kaynaklarından sağlık bilgilerine ulaşması için sosyal desteğin kritik öneme sahip olduğu açıktır. Sağlık okuryazarlığı hem hastalıkları önlemenin hem de etkili sağlığı geliştirmenin iyi bilinen ve temel bir bileşenidir.

Araştırma Sorusu 7: Ortalama skorlara bakıldığında, deney grubunda ön testten son teste işe devamsızlık skorlarında azalma olduğunu, kontrol grubunda ise ön testten son teste işe devamsızlık skorlarında artış olduğunu görülmüştür. Ancak sonuçlar müdahalenin deney ve kontrol gruplarını devamsızlık açısından önemli ölçüde etkilemediğini göstermiştir. Mevcut çalışmada, işe devamsızlık oranlarının istatistiksel olarak anlamlı bir şekilde azaltılamamasının temel nedeni Türk işyeri kültüründe işe devamsızlığın yaygın olmamasıdır. 2019 yılı İktisadi İşbirliği ve Kalkınma Teşkilatı (OECD) verilerine göre Türkiye'de bir çalışan yılda ortalama sadece 2,9 gün işe gelmemektedir. Öte yandan en yüksek iş performansına sahip ülkelerden Litvanya'da bu rakam yılda ortalama 26,2 gün olarak hesaplanmıştır. Böyle bir kültürel anlayış, çalışanların tam performans göstermeseler bile yaşadıkları sağlık sorunundan bağımsız kendilerini işyerinde bulunmak zorunda hissettiğini göstermektedir. Dolayısıyla Türk işyeri ortamına özgü bu alışkanlık araştırmadaki devamsızlık puanlarında herhangi bir değişikliğe yol açmamış olabilir.

İşte varolmama açısından müdahale çalışmasının deney grubunu istatistiksel olarak anlamlı bir şekilde etkilediği gözlemlenmiştir. Çalışmanın sonuçları ve önerileri, işyerinde sağlığın teşviki ve geliştirilmesi programlarının işte var olmayı azaltmadaki etkinliğinin sistematik bir analiziyle uyumlu görünmektedir (Cancelliere & ark., 2011). Bu analize göre başarılı çalışan zindeliği programları, sağlık okuryazarlığı, çok katmanlı bir yaklaşım, kişiselleştirme ve destekleyici bir yeni medya ortamı sağlanmasından geçmektedir. Fiziksel aktivitenin ruh halini de iyileştirdiği ve bu durumun iş performansına olumlu olarak yansıdığı da gösterilmiştir (Hogan ve diğerleri, 2013). Ayrıca teknopark çalışma ortamı, iş performansının iyileştirilmesi için kişiler arası ilişkilerin geliştirilmesini ve ortaklıkların teşvik edilmesini zorunlu kılmaktadır. Fiziksel aktivitedeki artışın iş performansı seviyesini doğrudan etkilediği görülmüştür.

"Glikoz seviyeleri" halk arasında "kan şekeri" olarak bilinmektedir. Yanlış beslenmenin neden olduğu sersemlik ve düşük kan şekeri hissi, duygu ve davranışları etkiler. Aslında beyin süreçleri enerji için glikoz gerektirir ve karmaşık beyin aktivitesi açısından çok maliyetli bir işlem olan kendi kendini kontrol etme eyleminin yüksek oranda kandaki glikoz seviyelerine bağlı olması mümkündür. Başka bir deyişle, düşük kan şekeri, irade kaybına ve aynı zamanda sağlıklı beslenme ile düzenlenebilecek olan görevde kalma ve kaliteli görevleri tamamlamada yetersizliğe neden olur.

Yemek yemenin uyku üzerinde güçlü bir etkisi vardır, bu nedenle beslenme davranışının sirkadiyen ritimler üzerinde dramatik bir etkisi olabilir (Quick ve diğerleri, 2015). Vücudun doğal bir iç saati vardır ve çalışanlar yiyecekleri iç saatleriyle eşleştirirse, gün boyunca verimlilikleri en üst düzeye çıkabilir. Uzmanlar akşamları az miktarda yiyecek tüketmeyi, çok fazla zihinsel stres altındayken yağlı yemeklerden kaçınmayı ve sabahları ilk iş olarak en büyük öğünü yemeyi savunmaktadırlar (Arundell ve diğerleri, 2018; Pawaskar ve diğerleri, 2017). Sağlıklı beslenme alışkanlıkları beynin ve vücudun verimli çalışmaya hazır olma durumunu düzenler.

Araştırma Sorusu 8: Bu araştırma sorusunun sonuçları nitel analiz yöntemleriyle analiz edilmiştir ve sonuçlar sosyal-ekolojik perspektif açısından sunulmuştur. Görüşülen kişilerden üçü ofis ve iş sağlığı davranışlarında herhangi bir değişiklik olmadığını

bildirmiştir. 10 görüşmeciden 7'si ofis ortamında yaptıkları düzenlemelerin faydalı olduğunu belirtse de 3 kişi araştırmanın bu bölümünde verilen önerileri uygulamaya geçirmeyi zor buldukları için değişiklik yapmadıklarını belirtmişlerdir. Sosyal-ekolojik model doğrultusunda yakından bakıldığında yapılan değişikliklerin oldukça pratik ve erişilebilir olduğu görülmektedir, örneğin çalışma arkadaşlarına postür hakkında geri bildirim sağlamak veya bilgisayar ekranının konumunu ve yüksekliğini değiştirmek gibi. Katılımcılardan bir kişi dışında hepsinin bu tür değişiklikleri yapmaya istekli oldukları ancak masrafların kendileri tarafından değil şirket tarafından karşılanmasını istedikleri sonucuna varılabilir. İşyerinde yapılan değişikliklerin iş performansı üzerindeki faydaları ortaya konduğunda, bu tarz çalışmaların işverenler tarafından desteklenmesi gerektiği anlaşılmıştır.

Araştırma Sorusu 9: Olumlu ve olumsuz duygulara ve bireylerin bir durumu yönetme kapasitelerine ilişkin değerlendirmelerine öz yeterlik denir (Bandura, 2006). Bilişsel süreçler aracılığıyla öz yeterlilik inançlarının davranışsal yetkinlik ve duygusal yetenek üzerinde önemli bir etkisi vardır.

Mevcut çalışmanın güçlü yönlerinden biri olan yeni medya kullanımının, sağlığı geliştirme amaçlı müdahale çalışmalarında etkili olduğu görülmüştür. YouTube videoları sağlık okuryazarlığının artırılmasında arabulucu bir rol üstlenmiş ve Instagram ipuçları ise verilmiş olan bilgiyi destekleyerek çalışmayı desteklemiştir. Bulguların teknopark çalışanlarının kişisel deneyimlerine dayandıkları ve bu nedenle yeterince genellenemeyecekleri için çalışma sonuçlarının diğer meslek grupları için genellenebileceği yönünde bir öneride bulunulmamaktadır.

Yakın dönemde yapılan araştırmalarda sağlıkla ilgili web sitelerinin oluşturulmasını geliştirmek için öz değerlendirme araçlarının hayati önem taşıdığı vurgulanmıştır (Schneider ve diğerleri, 2012). Ayrıca katılımcıların öz değerlendirmelerinin sonuçları hakkında anında geri bildirim alabilmesi önemlidir. Bu gözlem aynı zamanda kendini izleme bileşenlerinin performans geri bildirimi ile desteklendiğinde en etkili olduğunu saptayan sistematik bir çalışmanın bulgularıyla da uyumludur (Michie ve diğerleri, 2009).

Araştırma Sorusu 10: Müdahale sonuçları, yazılım geliştiricisi veya uzman düzeyinde bir çalışan için iş performansında aylık 1.787 TL'na eşit olan %14,7'lik bir artış olduğunu göstermiştir. Bu rakam yıllık bazda bakıldığında 21.444 TL'lik bir katkı sunmuştur. Araştırmalar davranış değişikliğine, çalışan hedefli iletişimlere ve yüksek riskli kişiler için kişiselleştirilmiş danışmanlığa odaklanan programların, muhtemelen olumlu bir yatırım getirisi sağladığını göstermektedir (Chapman, 2012; Pelletier, 2005). Başka bir araştırma çalışması, işyeri sağlığını geliştirme programlarının devamsızlık üzerindeki etkisini araştırmış ve kullanılan çalışma yaklaşımından bağımsız olarak, analiz edilen 14 çalışmanın tümünde çalışan devamsızlığında düşüşler görüldüğünü ve yatırılan her ABD Doları için 2,50 ila 10,10 ABD Doları arasında değişen yatırım oranı ürettiğini ortaya koymuştur (Aldana, 2001).

İş performansını etkileyen sağlıklı yaşam davranışlarının başında fiziksel aktivite, beslenme ve stres yönetimi davranışlarının olduğunu göstermiştir. Bu davranışlar teknopark çalışanları örneğinde incelendiğinde ise tespit edilen dört egzersiz değişim basamağı ile birlikte dört farklı alt kümeyi oluşturan gruplar gözlemlenmiştir. Egzersiz değişim basamakları ile bu dört alt kümenin kısmen eşleştiği tespit edilmiştir. Ayrıca müdahale çalışmasının fiziksel aktivite, beslenme, iş ve ofis sağlığı davranışları, sağlık okuryazarlığı ve işte var olmama üzerinde olumlu bir etkisi olduğu görülmüştür. Görüşmelerde katılımcıların müdahaleden genel olarak memnun olduğu ve müdahale çalışmasının ekonomik katkısının çalışan başına aylık 1.787 TL olduğu belirlenmiştir.

## SONUÇ

Bulgular iş performansının fiziksel aktivite, beslenme ve stres yönetimi ile pozitif bir ilişkisi olduğunu göstermiştir. Fiziksel aktivite, beslenme ve stres yönetimi davranışları, teknopark çalışanlarının iş verimliliğini artırmak için değiştirilmesi gereken başlıca davranışlar olarak ortaya çıkmıştır. Bu sonuç sağlık nedenli iş kaybını azaltmak için oluşturulacak müdahale programı (Çalışma 2) tasarımı için yol gösterici olmuştur. Fiziksel aktivite, beslenme ve stres yönetimi davranışlarındaki eksiklikler, Türkiye bağlamında teknopark çalışanlarında sağlık nedenli iş kaybını kısmen açıklayabilmektedir.

Örneklemdeki alt kümeleri belirlemeye yönelik yapılan analizler, üç ana yapısal sonucu göstermiştir. İlk olarak, iki aşamalı kümeleme analizi, fiziksel aktivite, beslenme ve stres yönetimi davranışları ile ilgili dört kümeyi işaret etmiştir. İkinci olarak, egzersiz değişimi basamağını oluşturan beş aşamanın, teknokent çalışanları için dört aşamalı bir model olarak uygulanabileceği ortaya çıkmıştır. Üçüncü olarak, alt kümeler ve basamaklar kısmi bir eşleşme göstermiştir. Küme 1 ile Basamak 1 ve Küme 2 ile Basamak 2-3. Bu modelleme Çalışma 2'yi oluşturan müdahale tasarımına ışık tutmuştur.

Çalışma 2'nin bir sonucu ise müdahalenin deney grubundaki katılımcıların fiziksel aktivite davranışları üzerinde önemli bir etkiye sahip olmuş olmasıdır. Ayrıca katılımcıların boş zaman, iş ve ulaşım esnasındaki fiziksel aktivite davranışlarında değişiklikler gözlemlenmiştir. Bulgular sağlık okuryazarlığına dayalı müdahalenin sosyal-ekolojik bağlamının katılımcıların davranışları üzerinde olumlu bir etkisi olduğunu göstermiştir. Nitel bulgular katılımcıların öğrendikleri sağlık okuryazarlığı becerilerini günlük yaşamlarına üç alanda uyguladıklarını göstermiştir. Sonuçlar müdahalenin fiziksel aktivite davranışına yönelik amaçlarına ulaşıldığını ortaya koymuştur. Sağlık eğitimi hedefi için yeni medya kullanımının güçlü bir araç olduğu kanıtlanmıştır. YouTube videolarında sunulan bilgilerin ve Instagram içeriklerinde paylaşılan ipuçlarının, katılımcılara günlük yaşamlarında değişiklik yapmaları için pratik yollar sağladığı görülmüştür.

Çalışma 2'nin sonuçları, müdahale çalışmasının stres yönetimi davranışı üzerinde istatiksel olarak anlamlı bir etkisi olmadığını göstermiştir. Stres yönetimini ölçmek için öz değerlendirme yönteminin kullanılması, stres yönetimi davranışını anlamak için bir önyargıya neden olmuş olabilir. Öte yandan, stres yönetimi davranışını değiştirmek için yeni medya temelli bir sağlık okuryazarlığı tasarımı yerine farklı bir yaklaşım uygulanabilir. Örneğin profesyonel bir psikolog desteği sunmak katılımcıların stres yönetimi davranışlarını geliştirmenin daha etkili bir yolu olabilir.

Sonuçların bir başka göstergesi, müdahale çalışmasının deney grubundaki katılımcıların beslenme davranışları üzerinde istatistiksel olarak anlamlı bir etkisinin olmuş olmasıdır. Sağlık okuryazarlığındaki artış beklendiği gibi beslenme davranışı

üzerinde etkili olmuştur. Ayrıca kişiselleştirilmiş yeni medya kullanımı, günlük aktivitelere uyarlanabilen ve beslenmede sağlıklı tüketim kalıplarını teşvik eden okuryazarlık becerilerinin geliştirilmesinde olumlu bir etki göstermiştir. Sonuçlar yeni medya temelli sağlık okuryazarlığı becerileri kullanmanın katılımcılara dengeli ve sağlıklı beslenme davranışlarını benimsemeleri için gerekli araçları sağladığını ortaya koymuştur.

Müdahale çalışması deney grubundaki katılımcıların sağlık okuryazarlığı üzerinde önemli bir etki göstermiştir. Sağlık okuryazarlığı sağlık konularının bilgisinden daha fazlasını kapsamaktadır. Gün geçtikçe sağlık okuryazarlığının tanımları daha geniş ve daha kapsamlı hale gelmektedir. Odak gruplu sağlık eğitimi müdahale çalışmalarını geliştirmek ve sağlık eğitimini daha etkili kılmak için geliştirilmiş sağlık okuryazarlığı tanımları ve kavramsal modelleri, daha karmaşık, kapsamlı, sosyal yönelimli, kültüre duyarlı ve katılımcı bir eğitim tasarımını gerektirmektedir.

İş performansı açısından müdahale çalışmasının işte var olmama üzerinde istatistiksel olarak anlamlı bir etkisi olmuş, ancak işe devamsızlık üzerinde bir etkisi olmamıştır. Türk işyeri kültüründe işe devamsızlık yaygın olmadığı için gelecekteki çalışmalarda işe devamsızlık konusu üzerine çaba harcamak yerine işte varolmama sorununa odaklanmak mantıklı görünmektedir.

Araştırmanın bir diğer odak noktası ise teknopark çalışanlarının ofis ve iş davranışları olmuştur. Nitel sonuçlar, görüşülen on kişiden üçünün herhangi bir değişiklik bildirmediğini, ancak yedi kişinin ofis ve çalışma davranışlarında değişiklikler olduğunu göstermiştir. Sağlık okuryazarlığındaki artış, katılımcıların davranışlarını bireysel, sosyal çevre ve fiziksel çevre düzeyleri açısından da etkilemiştir. Bu çok seviyeli sonuçlar, sağlık okuryazarlığının sosyal-ekolojik bağlamının teknopark çalışanları için işe yaradığını göstermiştir.

Katılımcılar müdahale çalışmasına katılmaktan genel olarak memnun olduklarını ve mutlu olduklarını bildirmişlerdir. Ortak memnuniyet noktalarının, artan farkındalık, kolay erişilebilir içerikler ve öz değerlendirme imkanlarının olması olduğu tespit edilmiştir. Günlük aktivitelerinin bir parçası olarak sağlık okuryazarlığı

içeriklerini YouTube ve Instagram üzerinden kolaylıkla takip edebilmişlerdir. Ayrıca web sitesindeki ölçme araçlarını kullanarak kendilerini değerlendirebilmişlerdir.

Müdahale sonuçları, yazılım geliştiricisi veya uzman düzeyinde bir çalışan için iş performansında %14,7'lik bir artış olduğunu göstermiştir. Bu rakam Türkiye'de teknopark çalışanı başına yıllık 21.444 TL'ye denk gelmektedir. Bu durum iş verimliliğini artırmak için sağlık okuryazarlığı odaklı müdahalelerin yatırım oranı dahilinde ekonomik sonuçlar sağladığını ve bu tarz programlara yatırım yapılması gerektiğini göstermiştir.

Sonuç olarak bulgular sosyal-ekolojik bağlamda tasarlanmış sağlık okuryazarlığı odaklı bir müdahalenin fiziksel aktivite, beslenme, iş ve ofis davranışları, sağlık okuryazarlığı ve iş yerinde bulunmayı teşvik etmede etkili olduğunu göstermiştir. Sağlık okuryazarlığı odaklı tasarımlarda, hedef kitle odaklı yeni medya dikkatli bir şekilde araştırılmalı ve tasarımlar kişilerin ihtiyaçlarına göre şekillendirilmelidir.

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