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**Impact of Workplace Risk on Employee Mental Health and
Wellbeing in the Saudi Arabian Government Sector**

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Abstract

This paper aimed to focus on workplace risk on employee mental health and wellbeing in the Saudi Arabian Government Sector. Workplace risks are serious risks to workers' emotional and physical well-being. These risks could lead to multiple health risks and work-related mishaps. The main purpose of the present study will be examined the complex relationships between workplace risks and mental health in Saudi Arabian government sector.

The researcher uses data from seven waves (2016–2021) of Understanding Society (US), a panel representative survey of workers within Saudi public sector. The researcher measures depressive symptoms using the General Questionnaire (GQ), which screens for general mental health problems and psychological morbidity and has been validated for Public Saudi sector and worldwide.

The results of researcher conclude that that the aggregate index of physical environment was linked to better mental health for older workers. The results suggest that workplace interventions that help improving workers' control over their tasks and their working time and the physical job environment can significantly reduce the risk of depression and might increase the societal benefits of policies promoting longer working.

Keywords: Workplace Risks- Mental Health- Wellbeing-

First Chapter

Introduction

Employment considers as an important social explanation of workers' health (Marmot et al., 2008). According to that, increasing interest has been emphasized by researchers to the arrangement between employment and workplace risk and common mental problems, such as depression and anxiety (Barnay, 2016). As the same context, the Mental Health Foundation (2021) has recently thought that workplace risks and the environment can significantly affect mental health.

The communication between workplace risks and mental health has been shown in the epidemiological, medical, and sociological literature. There are many papers focus on a communication between worse working conditions (for example higher physical or psychological work demands, and lower control in meeting these demands) and higher stress levels and worse mental health.

Additionally, studies have focused on the evidence of mental health benefits (particularly concerning anxiety and depression) following enhancements in employees' degree of job control and declines in job request (Bell et al., 2020).

However, the evidence of a traditional communication link between job quality and workers' mental health is rarely, and the identification of such a causal communication isn't easy due to opposite causality concerns and unobserved confounding elements. This paper shows the proper evidence on the traditional impact of workplace risks in Saudi Arabian government sector.

Understanding the communication between workplace risks and mental health has basic economic and social relevance. On these days, almost 1 billion individuals worldwide have a mental distress. The two most traditional disorders, depression and anxiety, are among the preliminary factors of disability worldwide, with an increasing influence on the number of years lived with disability, and on individuals' lives, from personal wellbeing to work and relationships. On the same context, lost productivity as the result of anxiety and depression costs the global economy US\$ 1 trillion each year, a cost projected to rise to \$6 trillion by 2030 (The Lancet Global Health, 2020).

In the last decade, the economic literature has examined the links between working conditions and workers' health. As summarized in an extensive review by Barnay (2016), the general result in this literature is that detrimental working conditions, such as irregular working hours, temporary contracts, and physically/psychosocially demanding tasks are associated with worse mental health. Focusing on the papers that more closely relate to our analysis, Cottini and Lucifora (2013) utilize three waves of the European Working Conditions Survey to show that adverse working conditions (defined in terms of job demands and job hazard) are strongly associated with a higher probability of reporting mental health problems at the workplace in 15 European countries. Cottini and Ghinetti (2017; 2018) use Danish data to document that physical risks and psychosocial working conditions (no support from colleagues, job worries and repetitive work) as well as employment insecurity (fear of

job loss, involuntary transfers, and reemployment risks) are necessary determinants of both mental and physical health.

The identification of the traditional impact of job quality on mental health is empirically challenging. As the result of health may limit the freedom of individuals to select specific jobs, and individuals can change (or lose) their job as a consequence of health changes, opposite causality is a major concern in this context (Ravesteijn et al., 2018). Furthermore, multiple confounding factors are likely to be communicated with both occupation and health, for example time-invariant factors such as education and genetic predisposition jobs, as well as preference for health and mortality (Barnay, 2016). Additionally, occupational health theories and evidence focus on that health status might affect job selection through the avoidance of potentially hazardous occupational exposure through an initial selection process ('hire effect'). Additionally, it may show a 'healthy worker survivor effect' that induces workers to decline their workplace exposures for health-related reasons, whether or not exposure affects their health (Dumas et al., 2013; Picciotto et al., 2013).

The direction of the induced bias is difficult to predict, while some selection mechanisms (for example better health and socioeconomic endowments allow for selection in better jobs) point to an overestimation of the true negative effect of hazardous conditions on health (Ravesteijn et al., 2018). Other mechanisms (for example the healthy worker effect) contribute to an attenuation of the true causal link (Picciotto et al., 2013).

Mental health in the workplace is explained as the psychological and social state that enables an employee to conduct their job effectively, deal with work-related stress and tensions, and keep positive relationships with colleagues and managers. It contains feeling satisfied with work, adapting to changes, controlling stress, and keeping a balance between professional and personal life. The necessity of mental health for employees is not limited to increasing productivity only, but extends to innovation, creativity, and loyalty to the organization.

In contrast, work environments featured by discrimination, inequality, and avoiding employee participation in decision-making, as well as job instability and loss of security, are toxic and dangerous work environments that affect the mental health of employees, limit their ability to enjoy their work and perform well, and cause employees to suffer from job burnout. It is considered one of the most important causes of the deterioration of employees' mental health, and one of the biggest challenges facing companies today. This stress not only influences the individual's performance, but also extends to his physical and mental health. Work burnout is a traditional problem in the workplace, as the result of a number of interrelated factors, including the increased workload assigned to employees, working long hours without adequate rest, in addition to ongoing conflicts with colleagues or superiors, as well as a work environment that lacks appreciation and support, and unclear goals and responsibilities.

Scientific research confirms that the continued neglect of employees' mental health has negative effects on the entire company;

employees who suffer from stress and depression are often less productive, more prone to mistakes, and absenteeism, which in turn leads to increased costs, loss of customers, and finally the deterioration of the company's reputation and collapse.

The World Health Organization also confirms in its report that providing safe and healthy work environments is not only a right for employees, but also a moral duty and legal responsibility that falls on companies (Jung and Chi, 2020)

In this context, the United Nations, represented by the World Health Organization and the International Labor Office, issued a set of new guidelines and policies aimed at focusing on the growing challenges related to mental health in the workplace. These guidelines emphasize on the requirements to take preventive measures to identify common risks that threaten employees' mental health that including the requirement to train managers to provide them with the necessary skills to create healthy and supportive work environments, deal effectively with employees' requirements, encourage open communication between management and employees, and create an organizational culture based on mutual respect, cooperation, and appreciation. It has become clear that employees' mental health is a fundamental factor in the strategy of companies seeking excellence and sustainable growth. Building a supportive work environment leads to attracting the best talent and strengthening the organization's reputation in the competitive labor market.

Studies confirm that investing in psychological care programs for employees is not just an option, but also an urgent necessity to reinforce productivity and innovation, and create a positive work environment that contributes to reducing absenteeism and frustration rates. Therefore, companies that pay attention to the mental health of their employees achieve a high return on investment in the long term, through increased job satisfaction and organizational loyalty, and reduced costs associated with training new employees (Shafiq and Afzal, 2020).

Organizational change explains to the process of companies or organizations changing their structures, strategies, procedures or cultures through measures such as downsizing, restructuring, outsourcing and mergers (Fløvik et al., 2019). While it can have positive results for the company, such as reinforced efficiency, performance and profitability, the international literature suggests that organizational change is often carried out at the cost of employees' working conditions and health.

In terms of working conditions, it is well known that in industrialized states, risks have changed from those predominantly containing on physical risks (for example physical working conditions) to those including psychosocial risks (for example psychosocial working conditions) such as time pressure, multitasking and work intensity, on the last years.

On the other hand, findings regarding factors and developments in psychosocial risks are often ambiguous, suggesting both an

improvement and a worsening of psychosocial risks at work. As such some studies show towards decreasing or stable trends. While other studies suggest a deterioration and reinforce psychosocial risks such as job strain, working intensity and working hours (Dragano et al., 2017).

Workplace risks are serious risks to workers' emotional and physical well-being. These risks could lead to multiple health risks and work-related mishaps. Low job satisfaction, health difficulties, accidents at work, stress at work, and burnout are all connected with mental risks. Depression and anxiety are more traditional, and there is a communication between work-related stress and a decrease in social contact and concentration on the job, as well as an enhancing in in physical pain and problems.

Anxiety at work is connected with several psychosocial risks (Giménez et al., 2020). The Job Demands-Resources (JD-R) Model shows a comprehensive framework for comprehending the communication between work features and the well-being of employees. Shortage of job management, organization, and social environments can lead to stress, despair, and other psychological, physiological, and social results. Mental risks forms multiple factors, such as organizational culture, workplace function, stress levels, work pace, and work relationships that can influence on performance and well-being in the workplace. An individual's emotional control, adaptability, and a healthy mind-body relationship are factors that lead to mental wellbeing, a constantly changing internal state of balance essential for declining their abilities in line with societal standards (Galderisi et al., 2015).

Statement of Problem

Mental health considers as the most important aspects that must be taken care of in the work environment. Work is not just a place to earn money and acquire professional success, but rather an environment that forms a large part of an individual's life and directly affects his psychological state, as individuals spend most of their daily time at work. Additionally, the concept of mental health at work is more necessary than ever to keep the safety and health of workers and achieve maximum productivity and quality at work. In short, mental health in the work environment has a significant positive impact on the quality of work, employee satisfaction, and the success of the company as a whole.

Promoting mental health in the work environment is a wise investment that drives work towards excellence and prosperity and achieves balance and stability, but it demands joint efforts by employers and employees. This can be achieved by providing a supportive and stimulating environment that benefits all parties (Othman et al., 2020).

The explanation of the traditional influence of job quality on mental health is empirically difficult. As the result of health may limit the freedom of individuals to select specific jobs, and individuals can change (or lose) their job as the result of health changes, reverse causality is a main concern in this context. Additionally, multiple confounding elements are likely to be connected with both occupation and health, for example time-invariant elements such as education and genetic predisposition for certain jobs, as well as preference for health and mortality.

Additionally, occupational health theories and evidence emphasize that health status might impact on job selection through the avoidance of potentially hazardous occupational exposure through an initial selection operation ('hire effect'), or through a 'healthy worker survivor influence, which explains workers to decline their workplace exposures for health-related reasons, whether or not exposure affects their health. All this shows a selection effect of individuals into a definite occupation.

The direction of the induced bias is difficult to predict, while some selection mechanisms (for example better health and socioeconomic confirmations allow for selection in better jobs) point to an overestimation of the true negative effect of hazardous conditions on health (Ravesteijn et al., 2018), other mechanisms (for example the healthy worker effect) contribute to to an attenuation of the true causal link.

Questions

Throughout the statement of the problem, the questions of the study shall be the followings:

1. What is the impact of Workplace Risk on Employee Mental Health and Wellbeing in the Saudi Arabian Government Sector?
2. Does workplace effect on the productivity of employees?
3. Does mental health connect with the poor performance of employees at the Saudi Arabian Government Sector?

Importance of Study

Theoretical Importance:

- By emphasizing on mental health issues in the workplace, how employers can decline sector costs for their businesses and employees. Evaluation and intervention for psychosocial concerns must be undertaken in these settings. Poor mental health and stress negatively affect the employees by declining job performance, engagement in work communication with coworkers, and physical capabilities

Practical Importance

- Protecting and maintaining the mental well-being of public sector in KSA considered as a priority, so it is important not only to assess the mental health of workers but also connected factors or risk factors as these factors predict the probability of developing the condition. A risk factor is any attribute, characteristic, or exposure of an individual that increases the likelihood of developing a disease

Objectives of Study

Although an increasing interest in the effects of organizational change on psychosocial risks at work and employees' health, studies investigating trends of organizational change and their effect on psychosocial risks and health remain scarce. Furthermore, available research often investigates either the association between organizational change and health or the association between psychosocial working conditions and health but does not simultaneously look at the impact of organizational change on psychosocial risks and health. However, since

employees are increasingly confronted with organizational change and the upheavals of restructuring, downsizing and mergers (Bamberger et al., 2012), solid knowledge about the trends of organizational change and its association with psychosocial risks at work and health is needed to maintain a healthy work environment and to implement interventions that can buffer the potential adverse effects of organizational change.

This study aims to fill this challenge by focusing on the relationship between workplace risks and mental health in Saudi Arabian government sector, ultimately contributing essential insights for the improvement of effective strategies to increase the well-being. The main purpose of the present study will be examined the complex relationships between workplace risks and mental health in Saudi Arabian government sector.

The aim is to examine the complex relationships between psychosocial factors, work engagement, and mental health in Saudi Arabian government sector.

Hypothesis

Hypothesis 1: there is no statistically significant effect for single sub-components for any age group.

Hypothesis 2: there is lack of statistical significance of the single components lies in the correlation between ambient conditions and biochemical conditions.

Hypothesis 3: the joint effect of the three sub-indices of physical environment is statistically significant (at the 10% level) for the older age group.

Employee Mental Health

Employee mental health considers as a topic of growing concern for employers, employees, and researchers. Papers have examined that mental health problems can lead to unfavorable results such more absenteeism, lower productivity, and higher attrition rates. To explain this issue, researchers have carried out studies on the causes, consequences, and interventions connected to employee mental health. According to one research by Harvey, et al. (2017), work-related stress significantly enhances the likelihood of developing mental health issues.

Another study by Lee, et al., (2018) explained how job instability could harm an employee's mental health.

On the other hand, a study conducted in 2017 by Cooper & Nielsen explained that having high levels of job autonomy and peer support at work could be beneficial for mental health. The contribution of workplace interventions to reinforcing employee mental health has been studied by a number of researchers.

In a meta-analysis of workplace mental health interventions, LaMontagne et al. (2014) explained that they could significantly reinforce employee mental health outcomes. Lindsay made similar findings, et al. (2019), who reached that workplace adjustments can motivate individuals with mental health concerns to remain working and

be productive. The importance of organizational culture in fostering employee mental health has also been emphasized by research. According to a study by Aldamman, et al., (2019), factors of a supportive work environment, like a friendly team dynamic, are communicated to better mental health outcomes for employees.

Another study by Joo and Lee (2017) explained that an organizational culture that places a high priority on employee well-being could enhance employee engagement and decrease burnout . Individual-level features have also been explained to be significant indicators of employee mental health, in addition to organizational influences.

Second Chapter: Literature Review

Literature Review

Introduction

The importance of mental health in work has received considerable attention in recent years. Additionally, interest in mental health and learning has reinforced in the field of workplace studies. However, until a few decades ago, the workplace was seen initially as a rational domain that requested mental health neutral performance from employees and leaders. This paradigm is connected on the suggestion that human behavior in organizational settings follows rational rules, primarily guided by plans and calculations based on cognitive processes that has contributed to a paradigm transformation in understanding the necessity of mental health in organizational settings and elsewhere. Recent research has conclusively explained that mental health plays an important role in workplace, organizational behavior, and leadership (for example). There is also factors that grow under stress and well-being in the workplace and organizational psychology. Despite the greater emphasize on mental health in the workplace, only a few studies have examined aspects of mental health related to employees and leaders in work life. From this literature review, it appears that in the field of workplace learning, the mental health factor has been neglected. Therefore, this study will discuss mental health and the factors that affect the mental health of employees in the workplace in Saudi public sector.

Basic health research data in 2013 showed that the prevalence of severe mental disorders in Indonesia reached 1.7 per mile. In other words, 12 out of 1,000 people in Indonesia suffer from serious mental

health problems. Mental health and mental health difficulties have quite complex dimensions. Mental health is not only connected to medical or psychological problems, but also has a socio-cultural dimension in the spiritual and religious dimensions. Cultural elements can impact the onset and recurrence of mental disorders cultural factors also play vital role in the healing and recovery process of people with mental disorders. The results of intercultural research led by WHO show that the process of schizophrenia mental disorders in developing countries is much better than in developed countries, both short term and long term (Migas et al., 2019).

To consider what types of studies should be implemented in the future, it is necessary to review what has been done so far. Thus, the main objective of this research is to analyze the diversity of research in the field, describe trends and gaps, and suggest future directions for researching employee mental health and its possible issues. This paper describes the procedures used to select and analyze the previous research included in this review, and introduces what appear to be clear details of the selected articles. In particular, this research discusses the relationship between mental health and learning in the workplace. After that , present the literature findings and discuss their implications before concluding with recommendations for future theoretical and empirical studies.

Al Mater et al. (2020) prepared the study on the psychological health of ophthalmologists from different areas within KSA. They utilized the English version of PHQ-9, GAD-7, Insomnia Severity Index (ISI), and Perceived Stress Scale (PSS).

Alzaid et al (2020) conducted a survey in the Eastern Province of KSA in the English language to study anxiety in HCWs. The researchers prepared the survey with 34 questions, divided into four sections, and the last section contained the GAD-7 scale to measure anxiety.

Zaki et al. (2020) surveyed the Northern armed forces hospital in Arabic and English to focus on the stress and psychological consequences in HCWs. The authors established the instrument with four sections and the last section included the Impact of Events Scale-Revised (IES-R). Alenazi et al. (2020) surveyed the HCWs' in the Arabic language to study the prevalence and predictors of anxiety in 13 regions of KSA.

Alsulais et al.(2020) summarized the psychological impact of COVID 19 in physicians. The authors prepared a questionnaire in the English language from a previous Canadian study done on SARS (25). Tamsah et al. (2020) surveyed HCWs in King Khalid University Hospital Riyadh. The researchers prepared the survey and included the GAD-7 to evaluate anxiety.

Additionally, Rooby (2020) explained that employees with high emotional stability will perceive work pressure as a difficult, and have an influence on commitment to being participated in the organization.

Roos et al., (2020) emphasized the importance of the role of HR management practices in affecting employee performance results and contributing. HR management practices will assist shape the work climate. In line with Bronkhorst (2019) conveying research findings,

which show that enhance the physical and psychological health of employees. The work safety climate is even able to keep employee emotional stability in the midst of uncertainty and organizational change.

The second factor impacting on mental health is long working hours. Working hours or duration of work will trigger stress and negative emotional influence on employees. According to research by Sanda et.al (2020) long working hours can lead fatigue and a decrease in employee sleep quality which can affect mental health. For this cause, working hours affect the mental health of employees. This is also supported by research by

Marie and Mitchel (2019) found in his research that those who are grateful tend to have more positive emotions than their ungrateful friends, and those who are grateful are more satisfied in their lives. They tend to be less empathetic, tolerant, helpful, supportive, and less focused on materialistic endeavors than their less grateful peers. In this case, the community is encouraged to realize, be grateful, thank and thank everyone for having received a lot of for this reason, this study will examine more deeply the effect of gratitude on employee happiness and mental health based on a literature review.

Fletcher et al. (2011) estimate the health impact of 5-year exposure to physical and environmental conditions in the US. Controlling for first-observed health and five-period lagged health in their empirical model, they show that physical requirements and environmental conditions have a negative effect on self-reported health status, especially for women.

However, their models still suffer from the potential endogeneity of occupational change.

Finally, Ravesteijn et al. (2018) study the impact of occupational characteristics on health, employing a dynamic model on German longitudinal data and find that high physical occupational demands and low job control have negative effects on health, which increase with age. In their identification strategy, they assume that occupational stressors are constant over time for a given occupational title, which implies that the variation in working conditions derives solely from individuals changing occupations, which may be endogenous. Moreover, this approach ignores the changes in working conditions and job quality that occur within the same occupation over time, which is a restrictive assumption.

Theoretical Framework

The concept of Mental Health in the Workplace

The concept of mental health in the workplace refers to employees' sense of psychological, emotional and social well-being, a feeling that makes them respect themselves and others, and through which they can build positive relationships with co-workers, and gives them the ability to deal with the daily challenges and responsibilities involved in the workplace.

Human resource managers in various organizations must pay attention to supporting employees' mental health, given its prominent role in increasing their productivity.

Mental Risks in Workplace

In risk management, there are several factors affecting mental health at work, which are the factors that employees face that increase the risk of work-related stress and can lead to psychological harm. These risks include the following:

1. Low Job Control

Low job control is one of the most prominent psychological pressures in the workplace, and it means employees' inability to control aspects of work, i.e. how or when tasks are completed, their inability to participate in decisions that affect them or their customers, as well as their inability to refuse to deal with aggressive customer.

2. High and Low Work Demands

High work demands are tasks that require high physical, mental or emotional effort, while low demands are tasks that require low efforts.

Examples of high work demands include:

- Increased number of working hours.
- Work that exceeds the employee's capabilities or training.
- Doing a lot of work with a large number of customers.
- Time pressure or fast pace of work.
- Emotional efforts to respond to painful situations or when dealing with aggressive customers.
- Exposure to painful events or work-related violence.

- Working in hazardous conditions such as noise or dangerous equipment.

Examples of low work demands include:

- Few required tasks.
- Repetition or monotony of tasks that require low levels of thought processing and little variety.

3. Lack of Support

The most common cause of psychological disorders at work is the weak support employees receive from colleagues and supervisors, and the failure to remove any obstacles that hinder them from doing their work, in addition to not receiving the information or training necessary to develop their performance at work, as well as the lack of resources, tools and equipment to perform their tasks at work.

4. Poor Management of Organizational Change

Organizational change in the workplace means introducing new technology, transferring, or downsizing work. This change is managed incorrectly when management does not consider the potential impacts on health, safety and performance, as well as not adequately consulting with key employees about these changes, and not supporting them during their implementation.

5. Weak and Poor relationships in the workplace

Employees face psychological risks in the workplace if their relationships with each other, and between them and supervisors and

managers are weak or poor, as well as when they face bad behaviors from colleagues or managers such as bullying, assault, harassment, sexual harassment or discrimination (Eyiah et al., 2019).

6. Poor Environmental Conditions

Poor environmental conditions negatively affect the mental health of employees, and these conditions include: poor air quality, high noise levels, working near unsafe machines, and extreme temperatures.

10. Working in isolated places

One of the factors that negatively affect the mental health of employees is their work in isolated places where there are only a few people, which makes it difficult to get help in the event of any emergency.

11. Exposure to traumatic events

Traumatic events that employees are exposed to and negatively affect their mental health include: mistreatment, threats of harm, actual harm, physical or verbal assault, and theft.

Mental Health Survey in the Workplace

The mental health survey in the work environment is one of the strategies that organizations resort to to measure the levels of mental health of employees, as the questionnaire is distributed to employees, which includes a set of questions about the extent of their exposure to occupational stress and what psychological problems they suffer from in

the work environment, and their evaluation of employee assistance programs, and other questions.

Mental health of employees and its impact on work efficiency

Mental health of employees is one of the factors that directly affect work efficiency, through the following:

1. Employee Involvement and Job Satisfaction

Positive psychological factors lead to employee involvement in the organization's work and decisions, which makes them feel satisfied with their job, and thus their productivity increases, unlike employees who suffer from psychological problems such as anxiety and depression, as they are less likely to be satisfied with their work, and their productivity is negatively affected.

2. Absenteeism and attendance

The mental health of employees affects their attendance and absence rates from work, as the productivity of employees who suffer from psychological problems decreases and they are forced to be absent from work or attend while sick and perform their work but with poor performance (Okorie et al., 2016).

Factors that Negatively Affect Mental Health at Work

First: The spatial situation of work

Some companies do not pay any attention to the workplace of employees and provide things that help them work with high morale. What is meant by the spatial situation that positively or negatively affects

employees is the place where employees work during the working hours, especially with long working periods and continuous pressures, negative psychological problems may not appear on new employees, so there are things that business owners must provide in the work environment of employees in a manner that is consistent with the nature of their work, the most important of which are:

- Motivational phrases
- Continuous cleanliness of the place

Second: Poor Communication between Employees and Management

Poor communication skills may be a sufficient reason for the collapse of everything and create multiple problems between employees and management. This defect also causes a loss of trust between all parties and a weakness in the team's ability to cooperate. Good communication skills are essential at the present time to accept employees. Some companies no longer accept people who are technically proficient in their specializations due to their weak communication skills, and this will negatively affect them and the work environment surrounding the rest of the employees. Therefore, all human resources departments should pay attention to the following:

- Developing skills Communication between administrators and employees
- Setting limits in discussions during differences of opinion

- Holding accountable any employee who results in poor communication with his employees
- Developing written communication skills
- Not having any gangs or groups (gang) outside the framework of work

Third: Continuous work pressures

Pressure is a natural part of an employee's life, but if it starts to go beyond reasonable limits, it will turn into a major cause of poor psychological condition and will result in bad moral effects and also low work productivity, which causes an increase in the rate of absence and delay in attendance or completion of required tasks. The company has a responsibility towards the mental health and safety of its employees, so work pressure among employees must be dealt with clear steps such as:

- Identifying the sources of pressure and finding a solution to them
- Is the problem in the work or in one of the managers
- Is there justice in dividing work responsibilities?
- Continuous encouragement during stressful times
- Number of shifts and working hours
- Assigning the employee mandatory tasks that exceed his capabilities
- Employing the employee remotely even after the end of his working hours (Kjellstrom et al., 2016).

Solutions that HR can do to improve mental health in the workplace

The psychological and emotional state can be improved from the administrative side of the company through the following solutions:

- Encouraging employees who enjoy freedom feel more appreciated and are more likely to find meaning in their work.
- Open discussion about mental health, many employees suffer from stress, anxiety or other conditions, but they feel that they are the only ones who suffer from these problems and it is important to remind employees that these are normal feelings and that everyone has to deal with them.
- Create a calm and fun work environment, HR can create entertainment or increase green spaces within the office, or carve out small closed and quiet office areas for employees who need a little rest.

It is always promoted that professional fields need people who believe in their goals and that fatigue and high exhaustion during the journey is normal, but all people are not equal and each of them has special abilities and a certain level of tolerance, which means a difference in the nature of the soul and feelings, so all institutions must make the mental and psychological health of employees a priority, as employees are the main factor for the success of any project (Sehsah et al., 2020).

Mental Health Should Be a Priority for Public Sector Employees

Employees in the public sector are always willing to assist, but their workload can be overwhelming. If nothing is explained and their

symptoms worsen, public sector employees' mental health can negatively lead to the point where they are unable to contribute meaningfully in both their personal and professional lives. When left untreated, government initiatives and programs will suffer, also influencing on the lives of tax-paying citizens.

Training and support consider as the two of the most influential strategic initiatives that employers can carry out to enhance the mental health and well-being of public sector employees. According to that, because they give their all every day to serve their country, these employees deserve the best possible care and support for their mental health and wellbeing.

Mental Health for Public Service Professionals

Good mental health and wellbeing practices begin with management initiatives. Accordingly, employers are beginning to recognize that taking care of employees' mental health and wellbeing is more necessary than ever when working in high-stress public-sector jobs. In order to launch a mental health and well-being initiative, employers are stressed to advise their employees to take a break from work to re-energize in order to help them in enhancing their mental health. This will revitalize not only the worker but also those they serve.

Keeping Public Service Employees Healthy

Work-related mental health conditions have appeared as a main concern in the public sector. Employees in these industries are constantly confronted with life-threatening emergencies and situations, and their

exposure to these hazards can result in job-related stress. When stress levels are extremely high or prolonged, they can eventually result in depression and anxiety, seriously influencing on mental health and wellbeing.

Preparing sound management practices entails allocating funds to programs that show employees' mental health and well-being. Employees in the public sector face constant difficulties on the job. Employers require to encourage their employees to take time away from work to recharge their batteries in order to aid in their mental health and wellbeing.

Public sector employees should remember to look after themselves by taking breaks, eating healthy, staying fit, having a support system, and seeking professional help. Work in the public sector can be draining, and this is one of the main reasons why mental health and wellbeing initiatives are the walls that stand between your employees and future mental health problems (Karim et al., 2022).

Third Chapter Research Methodology

Introduction

This paper aims to identify the impact of working risks on mental health in Saudi public sector. The researcher uses data from seven waves (2016–2021) of Understanding Society (US), a panel representative survey of workers within Saudi public sector. The researcher measures depressive symptoms using the General Questionnaire (GQ), which screens for general mental health problems and psychological morbidity and has been validated for Public Saudi sector and worldwide (Goldberg et al., 1997). Respondents' occupation is reported at a highly detailed level utilizing the International Standard Classification of Occupations classification (ISCO-88, 4 digits). The researcher links to each ISCO reported in the US survey, several indicators of working conditions measured at the ISCO level from the 2016- 2021 waves of the European Working Conditions Survey (EWCS). The utilization of external data on working conditions allows avoiding possible endogeneity matters related to justification bias arising when health and working conditions come from the same source (Barnay, 2016). Additionally, the EWCS allows to characterize occupations according to multiple independent dimensions and to compute synthetic indices that are comparable over waves, such as physical environment; work intensity; working time quality; skills and discretion; job prospects. The empirical strategy accounts for the endogenous sorting of individuals into occupations through the inclusion of individual fixed effects that remove time-invariant unobserved heterogeneity. By doing this, the researcher

identifies the effect of working conditions, relying on their variation over time.

Changes in some dimensions of work related to technological change – such as in the physical environment (exposure to pollutants, noise, and contact with chemical or biological material) – may be more likely detected in the longer run. However, other dimensions – such as increased demands (tight deadlines or work at high speed, for instance) or factors (career advancements within the firm, the possibility of losing one's job, becoming unemployed) – may rapidly transfer, as the result of adjustments in workplace and safety regulations or due to altered macroeconomic conditions.

Data

Understanding Society

The researcher uses data from seven waves (2016–2021) of Understanding Society (US), a panel survey representative of workers at Saudi Public sector. The survey collects yearly data on health, work, education, income, from members aged 23+ living in approximately 40,000 workers within Saudi Arabia (Lynn, 2009).

The longitudinal dimension of the survey enables to follow individuals over time, which is a feature that exploiting in identification strategy, as explain below. The survey shows rich and detailed information on respondents' employment, health and socio-demographic status. Respondents' occupation is prepared in great depth utilizing the International Standard Classification of Occupations

classification (ISCO-88) at 4-digit level. The researcher will use this variable to link our individual data in the understanding society to job quality measures computed at the occupation level from an external database.

The advantage of using an external dataset (European Working Conditions Survey) to prepare occupation-specific indicators of working conditions is that these measures are evaluate and computed independently of personal experiences and unobservable personal factors of understanding society respondents. This assist to overcome the endogeneity that would arise if health results and working conditions were subjective assessments by the same person, simultaneously affected by individual unobservable situations and personalities. Furthermore, this strategy secures that the estimates are not affected by ‘justification bias’ (Blundell et al. (2021)) whereby more depressed individuals may tend to report worse working conditions partly to justify their mental health status.

In the analysis, the researcher includes various additional variables provided by the survey. First, the researcher uses socio-demographic characteristics, such as age, living arrangements and marital status, and the number of children and grandchildren. The researcher also exploits additional information about the current main job, such as the number of hours typically worked per week, and the job sector, classified according to the Standard Industrial Classification of economic activities (SIC). The researcher further includes data on respondents’ monthly income (at

the household level), net of tax, national insurance contributions and council tax liability.

Indicator of Mental Health

The researcher assesses depressive symptoms through the General Questionnaire index (GQ). The GQ is a tool for the detection and measurement of psychopathology. The overall GQ index considers as a measure of psychological (dys) function and has been repeatedly validated as a screening instrument for general mental health problems and psychological morbidity in the community and among primary care patients in several studies.

The reliability and validity of the instrument have increased a wide utilization of the GQ index in the economics literature as a generic measure of mental health (Carrino et al., 2020). The GQ gathers self-reported information on respondents' loss of concentration, loss of sleep, feeling of playing useful roles, incapability of making decisions, feeling of being under strain, ability to overcome difficulties, enjoyment of day-to-day activities, inability to face up to difficulties, feeling of unhappiness/depression, loss of confidence, feeling of worthlessness, and general happiness.

The rescale the GQ scores to range between 0 and 100, so that each regression coefficient can be interpreted as the percentage point effect of the corresponding variable on mental distress.

Table 1. Items in General Health Questionnaire

Components and Questions	Answer
Anxiety and depression “Have you recently”... lost much sleep over worry? felt constantly under strain? felt you couldn't overcome your difficulties? been feeling unhappy or depressed?	0 Not at all; 1 No more than usual; 2 Rather more than usual; 3 Much more than usual
Social dysfunction been able to concentrate on whatever you're doing? felt that you were playing a useful part in things? felt capable of making decisions about things? been able to enjoy your normal day-to-day activities? been able to face up to problems? been feeling reasonably happy, all things considered?	0 Better than usual; 1 Same as usual; 2 Less than usual; 3 Much less than usual
Loss of Confidence been losing confidence in yourself? been thinking of yourself as a worthless person?	0 Not at all; 1 No more than usual; 2 Rather more than usual; 3 Much more than usual

The researcher uses two waves of the European Working Conditions Survey (EWCS), 2010 and 2015, to compute time-varying indicators of

working conditions at the occupation level. EWCS data, based on face-to-face interviews, contain rich information on the working conditions of more than 43,000 workers in Saudi public sector. The survey asks questions on topics such as employment status, working conditions, work-life balance, working time duration and organization. Information on workers' occupation is consistently available from 2016 to 2021 at the 4-digit level, which allows us to compute measures of working conditions at a very detailed occupation level.

Repeated waves of the EWCS enable to analyze how working conditions and job quality change over time for each occupation category. For each occupation and each wave, the researcher computes the average value of the different indicators of working conditions and then link the information to the same occupational titles in Understanding Society. Given the rather limited sample size in the EWCS when restricted to Saudi public sector, the researcher decided to compute the job quality measures at the ISCO88 3-digit level (rather than 4) in order to increase the sample size in each cell. The researcher drop the occupations for which have fewer than 10 individuals per wave, leaving us with 47 codes.

In order to measure working conditions, the researcher makes use of five indices of job quality developed by Eurofound in its report on job quality (Eurofound, 2017). The development of the indices reflects the multidimensional nature of the concept of job quality and the fact that each dimension – as captured in the respective index – has an independent impact on the health and wellbeing of workers. These

indicators reflect job resources (physical, psychological, social or organisational aspects) and job demands. More specifically, the job quality indices are as follows: physical environment; work intensity; working time quality; skills and discretion; prospects.

The physical environment index captures the physical hazards and physical conditions under which work is conducted. It contains measures of ambient risks (such as vibrations from machinery, loud noise and high temperatures), posture-related risks (ergonomic) and biochemical risks.

The work intensity index covers quantitative demands, pace determinants (such as working at high speed and working to tight deadlines) and interdependency.

Skills and discretion is the dimension of job quality dealing with whether or not work allows workers to utilize their skills and to develop and grow through their experience of work. It includes the skills content of the job (the cognitive dimension of work), workers' development through training, the latitude of workers to make decisions and worker participation in organizational decision-making. The working time quality index includes duration (long working hours), atypical working time, working time arrangements and flexibility.

The prospects index consists of measurements of perceived job security and career prospects. The correlation between these indices is weak, as documented by Eurofound (2017). All indices are measured on a scale from 0 to 100. Except for work intensity, the higher the index score, the better the job quality. Table 2 summarizes the dimensions

captured by the five indices, and lists the specific items included in the construction of each index.

Table 2. Job Quality indices in the EWCS

Index	Dimensions	Components
Physical Environment (higher Values, better quality)	Ambient Posture related Biological, chemical conditions	Exposure to vibrations from hand tools, machinery. Exposure to noise so loud that you would have to raise your voice to talk to people. Exposure to high temperatures that make you perspire even when not working. Exposure to low temperatures whether indoors or outdoors. Exposure to breathing in smoke, fumes, powder or dust. Posture-related painful or tiring positions Carrying or moving heavy loads Repetitive hand or arm movements Handling or being in direct contact with dangerous substances such as chemicals or infectious materials
Working time quality	Duration	Long working hours (48 hours or more a week) Long working days (10 hours or more a day) Night work

(higher values, worse quality)	Non- atypical working time Control over working Time arrangements	Saturday work Sunday work Shift work Control over working time arrangements: Set by the company; Can choose between different schedules; Can adapt working hours; Entirely determined by self. Change in working time arrangements: No regular change; Change the same day; Change the day before; Change several days in advance; Change several weeks in advance
Work intensity (higher values, worse quality)	Quantitative demands Pace determinants and interdependency	Working at very high speed (three- quarters of the time or more). Working to tight deadlines (three- quarters of the time or more) Enough time to get the job done (never or rarely) Frequent disruptive interruptions Interdependency: three or more pace determinants Work pace dependent on: the work done by colleagues Work pace dependent on: direct demands from people such as customers, passengers, pupils, patients, etc. Work pace dependent on: numerical production targets or performance targets Work pace dependent on: automatic speed of a machine or movement of a product Work pace dependent on: the direct control of your boss

Skills and discretion (higher values, better quality)	Cognitive dimensions Decision latitude Training	Solving unforeseen problems Carrying out complex tasks Learning new things Working with computers, smartphones and laptops, etc. (at least a quarter of the time) Ability to apply your own ideas in work Ability to choose or change order of tasks Ability to choose or change speed or rate of work Ability to choose or change methods of work Having a say in choice of work colleagues Training paid for or provided by employer over the past 12 months (or paid by oneself if self-employed) On-the-job training over the past 12 months
Prospects (higher values, better quality)	Employment status career prospects Job security	Kind of employment contract in main job Job offers good prospects for career advancement Might lose job in the next six months

Table 3 reports the initial and the final level of the five indices in the sample period (2016-2021). While all dimensions of job quality have transferred between 2016 and 2021, the most pronounced increase is explained in skills and discretion (+9.4%) and prospects (+8.9%), which propose that jobs in 2021 required more skills, offered more autonomy and provided better prospects than in 2010. Physical environment and work intensity have remained relatively stable over this period, while the

index of working time quality slightly decreased (-2%), implying that workers have on average experienced worse working time arrangement

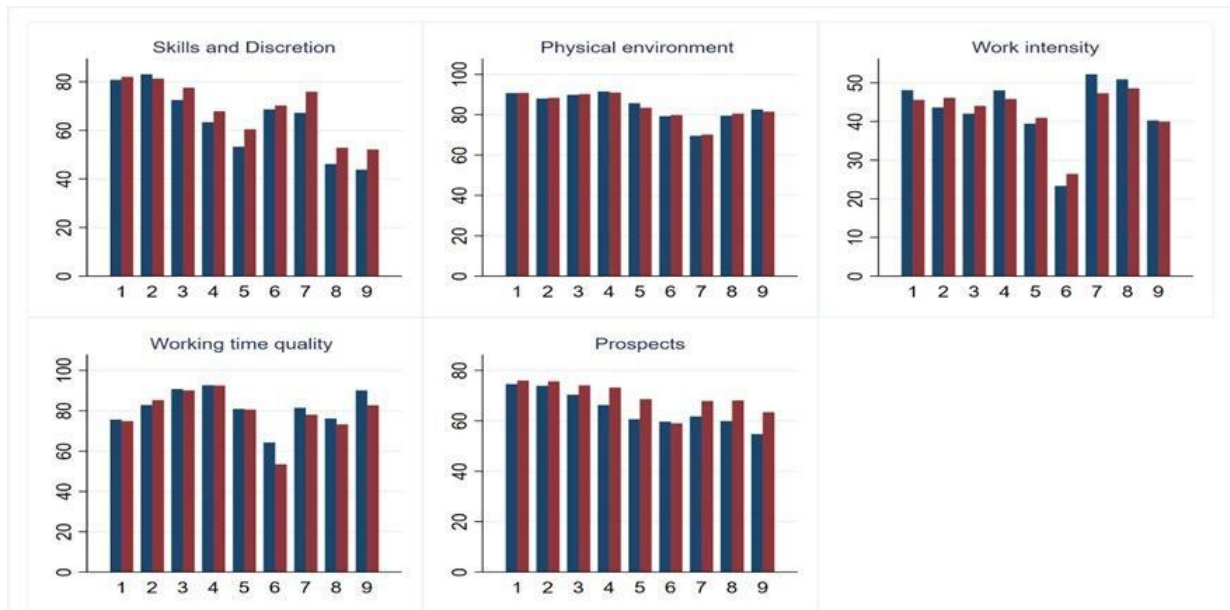
Table 3. Indices of Job Quantity: Mean values in 2016 and 2021 and changed over time

	2016	2021	Change	% Change
Skills and Discretion	64.22	70.28	6.06	9.43
Physical environment	85.61	85.35	-02.25	-0.29
Work Intensity	43.66	43.83	0.17	0.40
Working Time Quality	83.26	81.34	-1.92	-2.30
Prospect	65.40	71.25	5.84	8.93

On the same context, these overall trends can be the result of changes in the distribution of occupations (for instance, if high quality occupations have decreased in relative terms in recent years), and/or of changes in the quality within each occupation. Therefore, in Figure 1, the researcher reports the average scores explained in each job quality index in 2016 and 2021, for each ISCO 1-digit category, while in Figure 2 the researcher shows the percentage changes of the five indices of job quality within each ISCO 1-digit category. Figure 1 allows to grasp the observed differences in job quality across occupations: for example, there is a 10-point divide in skills and discretion between professionals and technicians, clerks, service workers, and operators. Physical environment and work intensity are less differentiated across occupations, although there is approximately a 10-point difference in intensity between craft workers or plant operators and most of the

professionals, service workers and elementary occupations. Finally, working time quality is relatively higher (by over 10 points) for associate professionals and officers with respect to both managers, craft workers and plant operators. Against this background, Figure 2 explains that the positive variation in skill and discretion and prospects indices is primarily driven by a large increase in the indices for low-skilled occupations, in particular for elementary occupations. At the same time, for these groups of occupations there has been a worsening of working time quality. Interestingly, the limited variation in work intensity observed in Table 3 masks significant heterogeneity across ISCO categories. For example, work intensity increased for professionals, technicians and service workers, while it decreased for managers, clerks and elementary occupations. The physical environment index remained stable in almost all occupations. This last finding is not surprising, given the short period under analysis.

Figure 1: Job Quality indices score in 2016 and 2021



Note: ISCO 1-digit codes on the horizontal axis: 1= Legislators, senior officials and managers; 2= Professionals; 3= Technicians and associate professionals; 4= Clerks; 5= Service workers and shop and market sales workers; 6= Skilled agricultural and fishery workers; 7= Craft and related trades workers; 8= Plant and machine operators and assemblers; 9= Elementary occupations. Source: EWCS data.

Changes in working risks within occupations may result from changes in each occupation's sector composition, rather than a consequence of genuine changes in working quality in the same occupation-industry cell. The researchers therefore used the 2016 and 2021 waves of the Saudi Sector Survey to determine whether the distribution of employment across sectors evolved differently nine ISCO 1-digit categories. The data suggest that the sectoral composition of each ISCO group has remained almost stable over the period under analysis,

suggesting that the trends in working conditions reflect changes in working quality in the same occupation-industry cell.

Figure 2. Changes (%) in job quality indices between 2016 and 2021



Note: ISCO 1 digit codes on the vertical axis: 1= Legislators, senior officials and managers; 2= Professionals; 3= Technicians and associate professionals; 4= Clerks; 5= Service workers and shop and market sales workers; 6= Skilled agricultural and fishery workers; 7= Craft and related trades workers; 8= Plant and machine operators and assemblers; 9= Elementary occupations. Source: EWCS data.

SAMPLE SELECTION AND DESCRIPTIVE STATISTICS

The researcher starts with an overall sample of approximately 300,000 observations from 45,420 individuals interviewed between 2012 and 2021. The researcher restricts it to focus on respondents of working age, for example, those below the State Pension age at the time of interview (227,140 obs.). This corresponds to selecting males younger than 65 years old, and women younger than 60 to 65 years old (depending on their birth date). The researcher excludes 42,758 observations of respondents who report being out of paid work (working zero hours per week) at the time of interview. Additionally, in order to conduct a data linkage with the information from the EWCS survey, the researcher excludes observations for respondents who work in occupations (ISCO 3 digit) for which there is no valid information in the EWCS: specifically, we drop 5,625 observations because the respondents' occupation codes are missing from the EWCS, and 21,253 observations for which the corresponding occupation information in the EWCS (waves 5 and 6) is based on fewer than 10 interviews (in either wave).

Since the final sample is selected according to a number of variables as explained above, the researcher checked whether the distribution of occupations in the sample is representative and comparable to the national data for the same period. Therefore, we draw on the 2016 and 2021 waves of the Saudi public sector and compare the distribution of employment across 2-digit occupations¹ in the LFS and in our

Understanding Society sample. Figure 3 shows this comparison and reveals that they are very similar.

Figure 3. Distribution (%) of 2-digit occupations in our final sample of Understanding Society and in the LFS

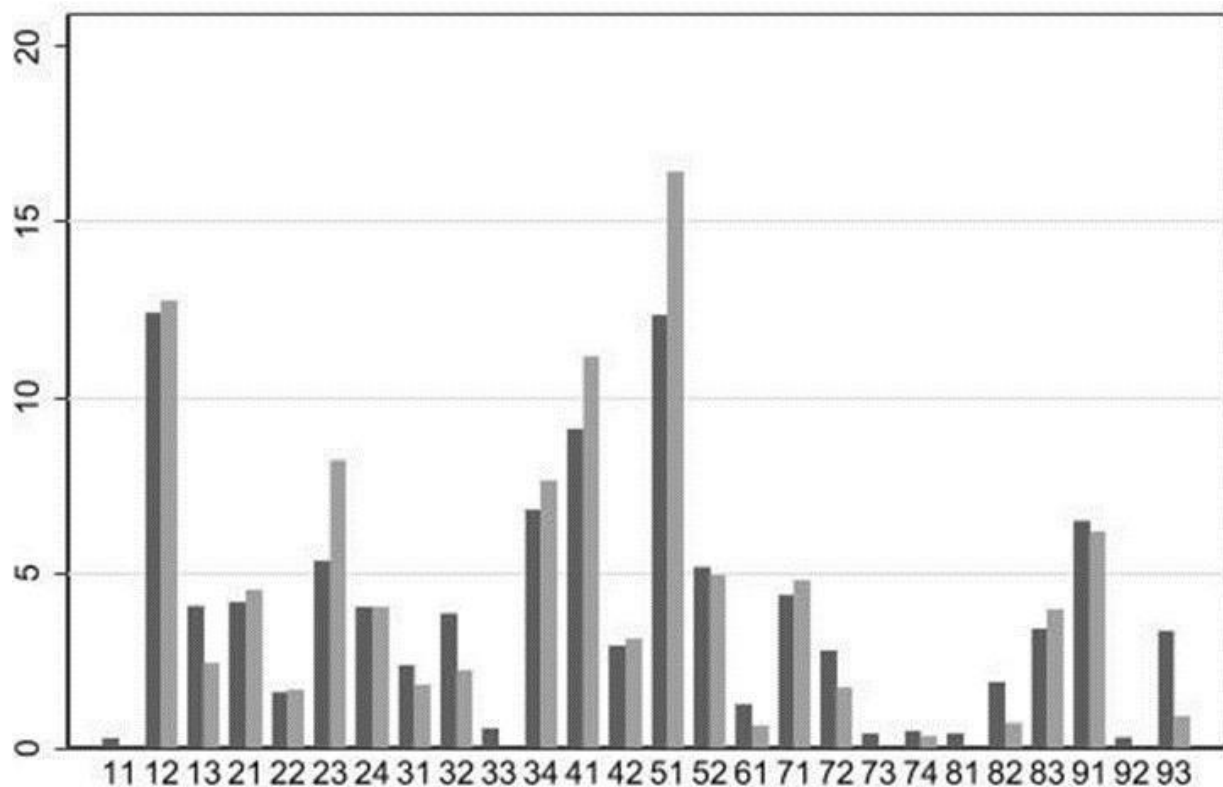


Table 4 reports summary descriptive statistics by gender of all the variables included in the analysis. Descriptive statistics computed by age and gender are recorded. Focusing on the main variables of interest, the table shows that mental distress is more common among female workers, who have a higher average level of the GQ index (30.81 against 28.14 for males). Women also have a higher probability of being at risk of depression than men, as captured by the GQ caseness indicator, in line with previous evidence that, among full-time employed workers, women

are more likely to have a common mental health problem than men. When focusing on the GQ components, the researcher sees that gender differences in mental distress are primarily a result of females having on average higher levels of confidence loss and anxiety and depression compared to males, while the measure of social dysfunction is similar across the genders. In terms of working conditions, males tend to work in jobs characterised by poorer physical environment, higher intensity and worse working time quality. On the other hand, they tend to score higher values on the skill and discretion index.

Finally, the researcher notes that, although the respondents in the sample remain engaged in the same type of occupation as measured by the ISCO 3-digit classification between the two selected time periods, they still report having changed the firm where they are employed, or having changed job within the same firm. For example, 8% of women in our sample changed job within the same firm between the two time periods, while remaining in the same ISCO 3-digit group.

Table 4. Summary descriptive statistics, understanding society sample

	Males		Females	
	Mean	sd	Mean	Sd
GHQ scores	28.14	12.45	30.81	14.03
GHQ caseness	0.20	0.40	0.26	0.44
GHQ component: Anxiety and depression	26.21	18.83	29.89	20.41
GHQ component: social dysfunction	34.05	10.25	35.43	11.22
GHQ component: loss of confidence	14.26	19.46	18.78	21.77

Skills and discretion	71.21	13.94	69.41	12.72
Physical environment	85.26	8.60	88.52	4.59
Work intensity	45.85	6.86	41.67	8.48
Working time quality	81.83	8.71	86.11	6.86
Prospect	69.04	7.55	69.85	6.52
Weekly working hours	38.59	9.06	29.85	10.56
Age	43.73	10.71	42.76	10.41
Number of children	1.06	1.26	1.15	1.26
Number of grandchildren	0.12	0.32	0.14	0.35
In couple	0.80	0.40	0.73	0.44
Log (net family income)	8.79	0.50	8.76	0.50
Changed firm (yes- no)	0.14	0.34	0.12	0.33
Changes job within same sector (yes- No)	0.07	0.26	0.08	0.27
No obs	8,048		9,274	

Note: The sample includes 4,637 women and 4,024 men interviewed in Understanding Society, aged between 16 and 65 years old, who continued to work in the same ISCO 3-digit occupation between 2016 and 2021.

Chapter Four: Results and Recommendations

Results

The researcher reports the coefficients of the five indices of working conditions on the continuous GQ score (Panel A) and on the caseness GQ index (Panel B). All working conditions indices are standardized to have mean zero and standard deviation one in the sample, so that each coefficient can be interpreted as the impact of one standard deviation increase in the various indices on GQ score. The models are estimated separately on a sample of men and women who did not transfer job type (ISCO 3-digit) in the selected time interval, controlling for a set of time-varying confounders and including individual fixed effects. Columns 1 and 2 refer to the whole female and male sample, respectively, while columns 3–5 and 6–8 report results stratified by gender and age (three groups: 25–35, 36–50, 50 years old or older). The results show that, on average, developments in ISCO-specific working conditions have a beneficial, statistically significant, and clinically relevant impact on depressive symptoms for women. A one standard deviation reinforce in jobs' skills and discretion, which roughly parallels the difference between the average index values for officers and for sales workers, contributes to a lower depression score by 2.84 points (Panel A, (1)), which corresponds to approximately 20% of the GQ score standard deviation (14) – a meaningful effect by the *Cohen-d* standards (Cohen, 2013). Looking at the binary GQ index. Therefore, the researcher finds that a standard deviation increase in skills and discretion declines the risk of clinical depression by 7.8 percentage points (Panel B, (1)). This is a large effect compared to an average depression prevalence of 26%

(among women). The influence of working time quality is also statistically significant, although smaller in magnitude: a one standard deviation increase in jobs' working time quality reduces depression score by 0.97 points. For the male sample, the researcher finds a limited reaction of depressive symptoms to changes in working conditions. In particular, the researcher estimates a statistically significant but small decline in the GHQ score (by 0.57 units) and risk of depression (1.7 probability points) to a one standard deviation improvement in the job prospects index.

Although this reinforces existing evidence proposing that providing incentives to workers for career advancements or reducing temporary contracts can improve workers' mental wellbeing (Moscone et al., 2016), we note that the prospect index (although computed externally from the European Working Conditions Survey) is the one most characterized by inherently subjective evaluations. Therefore, the researcher prudently refrains from placing emphasis on the results from this index and depend on future research instead to emphasize on this topic. In the remainder of this paper, the researcher will not comment on its coefficients; nevertheless, the researcher will still include the prospect index among the controls to avoid omitted variable bias.

The main results show that the coefficients of the five indices of working conditions on the continuous GQ score (Panel A) and on the caseness GQ index (Panel B). All working conditions indices are standardised to have mean zero and standard deviation one in the sample, so that each coefficient can be interpreted as the influence of one

standard deviation increase in the various indices on GQ score. The models are assessed separately on a sample of men and women who did not change job type (ISCO 3-digit) in the selected time interval, controlling for a set of time-varying confounders and including individual fixed effects.

The results show that, on average, enhancements in ISCO-specific working conditions have a beneficial, statistically significant, and clinically relevant influence on depressive symptoms for women. A one standard deviation enhance in jobs' skills and discretion, which roughly parallels the difference between the average index values for employees and for sales workers, contributes to a lower depression score by 2.84 points (Panel A, (1)), which corresponds to approximately 20% of the GQ score standard deviation, a meaningful effect by the *Cohen-d* standards (Cohen, 2013). Looking at the binary GQ index, the researcher finds that a standard deviation increase in skills and discretion declines the risk of clinical depression by 7.8 percentage points (Panel B, (1)). This is a large impact compared to an average depression prevalence of 26% (among women). The influence of working time quality is also statistically significant, although smaller in magnitude: an one standard deviation reinforce in jobs' working time quality declines depression score by 0.97 points.

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To appreciate the size of these influences, the researcher can compare them with the estimated correlations between mental health and income.

When disaggregating by age, the researcher finds that the effects of working conditions on psychological wellbeing are concentrated among younger and older female workers. In both the younger and the older group, for an improvement in skills and discretion by one standard deviation, the depression score would drop by 4.2 points (younger workers) and 5.6 points (older workers); similarly, the risk of clinical depression would drop by 12 and 15.6 probability points, for younger and older workers respectively. Furthermore, improvements in working time quality reduce the GQ depression score for both groups, with a larger influence among older workers (-3.18 points versus -1.77 for younger workers). Still, the researcher does not find a corresponding statistically significant impact on the risk of depression.

Table 5. Main Results: effect of changes in working conditions on GQ depression score

Variable	(1) Women	(2) Men	(3) Age 25-35	(4) Women Age 35-50	(5) Age more than 50	(6) Age 25-35	(7) Women Age 35-50	(8) Age more than 50
Panel A: GHQ score								
Skills and discretion	-2.845*** (0.983)	0.546 (0.571)	-4.238** (1.631)	-1.419 (1.278)	-5.580*** (2.038)	0.195 (0.948)	0.862 (1.034)	0.039 (0.728)
Physical environment	-0.909 (0.569)	0.556 (0.745)	-0.316 (0.747)	-0.667 (1.068)	-4.371*** (1.230)	1.644 (1.096)	0.279 (1.083)	0.163 (0.702)
Intensity	0.534 (0.447)	0.184 (0.282)	1.406*** (0.484)	0.186 (0.517)	-0.499 (0.794)	0.197 (0.508)	0.202 (0.411)	-0.164 (0.550)
Working Time Quality	-0.974* (0.579)	0.125 (0.283)	-1.767** (0.716)	0.198 (0.774)	-3.179** (1.280)	0.279 (0.411)	-0.225 (0.616)	0.474 (0.410)
Prospects	0.736 (0.461)	-0.564* (0.288)	1.240 (0.827)	0.429 (0.651)	1.019 (1.050)	-0.438 (0.339)	-0.408 (0.491)	-0.839 (0.413)
Average Outcome	30.81	28.14	29.91	31.21	31.28	27.26	28.86	27.67
Panel B: GHQ caseness								
Skills and discretion	-0.078* (0.0242)	0.015 (0.019)	-0.120**	-0.031 (0.051)	-0.156** (0.070)	-0.001 (0.033)	0.0 (0.030)	-0.032 (0.035)
Physical environment	-0.032 (0.020)	0.007 (0.023)	-0.051* (0.026)	-0.011 (0.035)	-0.114** (0.050)	-0.028 (0.038)	0.011 (0.037)	0.035 (0.032)
Intensity	0.009 (0.011)	0.000 (0.009)	0.029** (0.014)	-0.007 (0.016)	0.004 (0.027)	0.018 (0.017)	-0.015 (0.015)	0.001 (0.018)
Working Time Quality	-0.016 (0.024)	-0.002 (0.011)	-0.036 (0.031)	0.012 (0.027)	-0.071 (0.046)	0.001 (0.017)	-0.008 (0.017)	0.003 (0.014)
Prospects	0.003 (0.019)	-0.017* (0.010)	-0.006 (0.024)	-0.009 (0.023)	0.047 (0.038)	0.006 (0.016)	-0.025* (0.014)	-0.023 (0.019)
Average Outcome	0.265	0.198	0.253	0.271	0.280	0.184	0.211	0.187
Observation	9.274	8.084	2.946	4.642	1.686	2.338	3.966	1.744
No of Individuals	4.637	4.637	4.024	1.473	2.321	843	1.983	872
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The sample contains 4,637 women and 4,024 men interviewed in understanding society, aged between 16 and 65 years old, who continued to work in the same ISCO 3-digit occupation between 2010 and 2015.

All regressions contain individual and sector fixed effects, controls for respondents' age, age squared, weekly working hours, number of children, household income (in log), as well as binary indicators for living as a couple and having any grandchildren. Working conditions indices are standardized to have mean 0 and standard deviation 1 in our sample. Robust standard errors (adjusted for clustering at the ISCO 3-digit level) in parentheses: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

The results also highlight age-specific effects of physical environment and intensity. In particular, the estimates explain that improvements in physical environment are beneficial, especially for older workers: for a standard deviation increase in the index, the GQ score of older workers would drop by 4.37 points, and 11.4 probability points would decline the depression risk. As expected, the effect on younger workers is weaker and not statistically significant. On the other hand, changes in job intensity affect mainly younger workers: a change in the intensity index by one standard deviation would lead to a lower GQ score by 1.4 points and a lower risk of depression by 2.9 probability points. No similar effect is found for older workers.

Age-stratified analyses do not reveal any further underlying kind for men. The findings are consistent with previous literature that provided some evidence that job characteristics are more detrimental to the health of females and older workers.

Mental Health Factors

Table 6 reports the results for models that employ as findings the three main components of the GQ depression score, namely anxiety (Panel A), social dysfunction (Panel B) and loss of confidence (Panel C). The three-factor structure of the GQ index has been replicated in multiple confirmatory analyses and is now widely utilized in academic research on mental health across different disciplines, including economics. In the context, such disaggregation allows to better disentangle the mechanisms through which changes in working conditions influence the psychological wellbeing of workers.

For the whole sample of women, the researcher finds that improvements in skills and discretion have a statistically significant and beneficial effect on workers' anxiety, social dysfunction and loss of confidence. Additionally, the researcher finds that developments in jobs' physical environment, work-intensity and working time quality improve female workers' wellbeing by declining their feelings of social dysfunction. For male workers, improvements in the index of job prospects contribute to reductions in anxiety and increases in confidence.

When looking at age-stratified models, the results in Table 6 provide valuable insights that extend upon the findings in Table 6. Improvements in skills and discretion have a strong positive influence on the anxiety and social dysfunction levels of younger and older employees, while also increasing feelings of confidence for all age groups. Developments in the physical environment increase the wellbeing of older workers, with large effects on anxiety and confidence, and somewhat smaller effects on social dysfunction, while other age groups do not explain any effect.

Changes in jobs' intensity levels reinforce younger workers' feelings of anxiety and social dysfunction, with no influences found for other age groups. Developments in working time quality have a huge beneficial effect on older workers' feelings of anxiety, social dysfunction and confidence, while also declining (to a lesser extent) younger workers' levels of anxiety and social dysfunction.

Table 6. Effect of Changes in working conditions on GHQ components

Variable	(1) Women	(2) Men	(3) Age 25-35	(4) Women Age 35-50	(5) Age more than 50	(6) Age 25- 35	(7) Women Age 35- 50	(8) Age more than 50
Panel A: GHQ anxiety								
Skills and discretion	-3.687** (1.510)	1.163* (0.644)	-5.597** (2.476)	-1.813 (1.971)	-6.583** (2.770)	1.032 (1.054)	1.446 (1.222)	0.724 (1.300)
Physical environment	-1.127 (0.863)	0.864 (0.766)	-0.602 (1.327)	-0.134 (1.287)	-6.408*** (1.737)	1.726 (1.296)	0.377 (1.119)	1.155 (1.257)
Intensity	0.597 (0.679)	0.488 (0.429)	1.926*** (0.696)	0.130 (0.724)	-0.939 (1.347)	0.329 (0.705)	0.453 (0.594)	0.102 (0.865)
Working Time Quality	-1.148 (0.876)	0.119 (0.493)	-1.906* (1.053)	0.043 (1.099)	-3.358** (1.580)	0.267 (0.469)	-0.309 (10.034)	0.690 (0.738)
Average Outcome	29.89	26.21	28.87	30.50	29.97	25.978	27.18	24.33
Panel B: GHQ social dysfunction								
Skills and discretion	-1.747** (0.743)	0.260 (0.598)	-2.997** (1.058)	-0.457 (1.149)	-4.127** (1.569)	-0.035 (1.110)	0.682 (0.932)	-0.739 (0.780)
Physical environment	-0.855* (0.443)	0.249 (0.778)	-0.316 (0.518)	-1.088 (0.946)	-2.644** (1.195)	1.207 (1.265)	0.277 (0.994)	-0.831 (0.716)
Intensity	0.653** (0.313)	-0.107 (0.282)	1.642*** (0.421)	0.065 (0.946)	0.054 (1.195)	0.146 (1.265)	-0.027 (0.994)	-0.738 (0.716)
Working Time Quality	-0.777* (0.440)	-0.046 (0.298)	-1.777*** (0.577)	0.438 (0.754)	-2.637** (1.130)	0.269 (0.466)	-0.304 (0.486) (0.298)	(0.558) 0.013
Average Outcome	35.43	34.05	34.41	35.76	36.30	32.50	34.67	34.70
Panel C: GHQ loss of Confidence								
Skills and discretion	-4.455*** (1.239)	0.170 (0.862)	-5.238** (2.402)	-2.973** (1.559)	-8.122* (4.033)	-0.793 (1.550)	0.199 (1.377)	1.176 (1.165)

Physical environment	-0.633 (0.949)	0.864 (0.960)	0.332 (1.064)	-0.074 (1.610)	-5.583** (2.326)	2.774* (1.563)	-0.044 (1.623)	1.161 (1.298)
Intensity	0.049 (0.545)	0.448 (0.365)	-0.378 (0.634)	0.559 (0.686)	-1.192 (1.143)	0.086 (0.770)	0.273 (0.600)	1.180 (0.921)
Working Time Quality	-1.217 (0.860)	0.653** (0.247)	-1.364 (0.91079)	-0.129 (1.249)	-4.656* (2.382)	0.327 (0.792)	0.227 (0.432)	1.590* (0.941)
Average Outcome	18.78	14.26	18.45	18.95	18.86	14.09	14.79	13.26
Observation	9.274	8.084	2.946	4.642	1.686	2.338	3.966	1.774
No of Individuals	4,637	4,024	1,473	2,321	843	1,169	1,983	872
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The sample contains 4,637 women and 4,024 men, interviewed in Understanding Society, aged between 25 and 65, who continued to work in the same ISCO 3-digit occupation between 2016 and 2021. All regressions contain on individual and sector fixed influences, controls for prospect index and for respondents' age, age squared, weekly working hours, number of children, household income (in log), as well as binary indicators for living as a couple and having any grandchildren. Working conditions indices are standardized to have mean 0 and standard deviation 1 in our sample. Robust standard errors (adjusted for clustering at the ISCO 3- digit level) in parentheses: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

In-depth Analysis of Working Quality Components

Until now, the researcher has employed as explanatory variables of interest the five indices of working quality developed by Eurofound (2017), which are aggregates of several sub-factors, as described in Table 2. In order to extend the main results presented above, the

researcher re-estimated the model (1–2) by substituting each of the four aggregate indices of working conditions with their sub-indices. The researcher performs this substitution for one index at a time, for example the researcher replaces the aggregate index of skills and discretion with the 4 sub-indices (decision latitude, cognitive dimension, organizational role, training), and the researcher leaves the remaining four aggregate indices as regressors (working time quality, intensity, physical environment, and prospect).

Skills and discretion appeared as a crucial determinant of mental health in main analysis. By looking at its components, the researcher finds that (1) improvements in decision latitude contribute to significant declines in depression scores for both younger and older workers; moreover, (2) older workers' mental health benefits greatly from developments in the job's cognitive dimension, while (3) younger workers benefit from increased training components.

In the main results, the researcher found that the aggregate index of physical environment was linked to better mental health for older workers. Here, the researcher found no evidence that this influence is driven by a specific channel, as the researcher finds no statistically significant effect for single sub-components for any age group. Although a possible reason for the lack of statistical significance of the single components lies in the correlation between them, we found that the highest correlation score is 0.6 (between ambient conditions and biochemical conditions). Moreover, the joint effect of the three sub-

indices of physical environment is statistically significant (at the 10% level) for the older age group.

On the same context, while the researcher previously found that the mental health of younger female workers suffers from higher work intensity, the researcher do not find a statistically significant effect for the single sub-components. Additionally, the researcher found that their effect on mental health is jointly statistically significant, which highlights the importance of using multidimensional indices of job quality.

Working time quality emerged as an important driver of younger and older female workers' mental health in our main model. The researcher finds that this result is most likely driven by developments in working time arrangements, for example a reduction in the number of night or weekend shifts, which are important for younger, but especially older, workers. This is consistent with the existing literature, which explained that long hours are connected to mental health concerns, particularly in women, who used Understanding Society data to find that working extra-long hours and weekends is connected with higher depressive symptoms among females.

In this paper, the researcher has combined information on working conditions from the EWCS survey in 2016 and 2021 with longitudinal microdata from Understanding Society to assess the influence of job quality on workers' mental health. In general, the approach builds and improves upon previous studies that focus on expressing a causal

relationship between working conditions and mental health by carrying out a novel empirical strategy which focuses on workers who remain in the same type of job throughout the study term . This approach, in turn, allows to express the effect of working conditions on health by exploiting changes in job quality over time (controlling for individual fixed effects), rather than depending on the (most likely endogenous) decision of workers to change occupation. We exploit new detailed indicators of working conditions, which better represent the multidimensionality of job quality and allow to study changes in working conditions over time, together with rich and validated tools measuring mental health and its components.

The results are also in line with the conceptual framework of Shultz et al. (2010): they hypothesize that older workers, who may be experiencing more age-related declines in both cognitive and physical resources, are more exposed to worse physical environments and benefit largely from higher job controls to buffer the stress resulting from the physical requirements. Additionally, older workers' higher sensitivity to working time arrangements is likely to depend on their more prominent involvement in informal social support activities (grandchild care, long-term care) than younger workers, which translates into a higher likelihood of work-family conflict. The researcher provides new insights on the mixed evidence on the link between on-the-job training and mental health, supporting the hypothesis that training might improve mental health through its positive impact on job satisfaction.

The result that working conditions are less impactful on men than they are on women. These studies found that the psychological wellbeing of women is more greatly influenced than that of men by working schedules and commuting time, physical demands, and environmental conditions. Conversely, our results found that temporary work arrangements and part-time employment were not associated with long-lasting negative health among male and female workers. While the result can be partially explained by women's greater responsibility for day-to-day household tasks (including childcare and housework) that makes them more sensitive to the work-family conflicts induced by employment characteristics. The researcher hopes that the findings, which employ an alternative empirical strategy aimed at causal identification and a more detailed dashboard of working condition indices, will stimulate new research on the gender heterogeneity of the link between work and health.

Recommendations

The researcher provides new evidence that improving the quality of specific aspects of work could be a valuable mechanism for showing and preventing the mental health difficulties of workers, especially for older and younger groups. These groups have been recently affected by significant transformations in the labor market. For example, older workers in the Saudi public sector face a longer working horizon due to policies aimed at prolonging working lives (for example through the postponement of State Pension age). Basically, recent evidence has shown that workers in high-strain occupations, and especially women in

the Saudi public sector, suffer from worse mental health and higher depression as a consequence of having to work longer before reaching the pension age (Carrino et al., 2020), which declines the welfare gains from increasing employment in older age. The results suggest that workplace interventions that help improving workers' control over their tasks and their working time and the physical job environment can significantly reduce the risk of depression and might increase the societal benefits of policies promoting longer working. On the other hand, younger workers are at risk of facing poorer working conditions and precarious unemployment, especially in the transition from education to work, as the result of their fewer political, economic, social, and cultural resources.

Workplace interventions aiming at enhancing decision latitude, training, work schedules, and career prospects can enhance and improve the mental health of younger and older workers, contributing to better wellbeing throughout and after the recovery. Furthermore, mental health support interventions have been explained to be highly cost-effective and productivity-enhancing for firms. Finally, while depressive symptoms are now a leading reason of disability worldwide, with significant repercussions on social wellbeing and public finances, critical gaps exist in the treatment procedures, as fewer than half of those influenced in the world receive effective treatments . The researcher hopes this study will prompt further research on understanding how to integrate better job quality with existing mental health treatments.

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