

Chapter 1

INTRODUCTION

Most people spend a considerable amount of time at work. A person spends one-third of his life in the workplace. It can be said that work-life and the workplace make a significant impact on the quality of life, and the experiences of the workplace shape the professional as well as the personal life of the person. So, it is important to ensure that work-life benefits the employees' overall well-being. However, modern work life is becoming hectic day by day due to various market forces and economic conditions. Thus, it takes a toll on the physical and mental health of employees. The work environment is becoming more hectic and competitive. Most people are constantly juggling workloads, managing relationships, family responsibilities, and social life. Work-life balance has become one of the most discussed issues at work that affect physical and psychological well-being. For an employee's well-being, occupational stress and Work-related musculoskeletal disorders (WMSDs) have become an ever-increasing focal point in the workplace. These are crucial issues affecting workers' health and the work environment (Jansen, 1986; Bhui et al., 2016; Singh et al., 2022). These issues also affect the work performance of the employees and productivity in organisations and relate to high consequential costs (Sonnetag and Frese, 2003; Ferreira et al., 2019). It is becoming essential to learn about different factors affecting the well-being of the employee, i.e., WMSDs and occupational stress.

1.1. OCCUPATIONAL STRESS

American Psychological Association defined stress as “*the physiological or psychological response to internal or external stressors.*” Stress affects every system of the body. It influences people’s feelings and behaviour and contributes directly to

psychological and physical disorders and diseases, thus affecting mental and physical health. Stress is a very individual experience that can be very different for different people. The same situation can make a person feel stressed or excited and challenged. Stress generally results from the challenges people face. Some people feel motivated by the occurrences of certain challenges, while others feel overwhelmed and stressed. For example, athletes and performers perform better under stress as they use stress to push themselves to give their best. However, when challenges do not match the capabilities and resources of an individual, it results in stress. This situation often arises in the workplace when the demands of work exceed the capabilities of the employee and thus results in stress. Stress at work is also referred to as work-related stress or occupational stress. Work-related or occupational stress is more strongly associated with health complaints than financial or family problems. 70% of working people in India reported suffering from workplace stress (Klein & Yimdirnaz, 2020; Singh et al., 2022).

Occupational stress refers to the stress individual experiences due to the workload, responsibilities, environmental conditions, or other work-related factors of the workplace. Stress at work is defined as “the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, responses, or needs of the worker” (National Institutes for Occupational Safety and Health, 1999).

The symptoms of stress can be behavioural, physical and psychological. So accordingly, stress can be behavioural, somatic, and cognitive. Figure 1.1 shows the symptoms of these types of stresses.

As occupational stress is a growing concern worldwide, organisations need to recognise occupational stress as a significant health and safety issue. The first step in this is to identify the factors associated with occupational stress. The factors that commonly cause occupational stress are shown in Table 1.1.

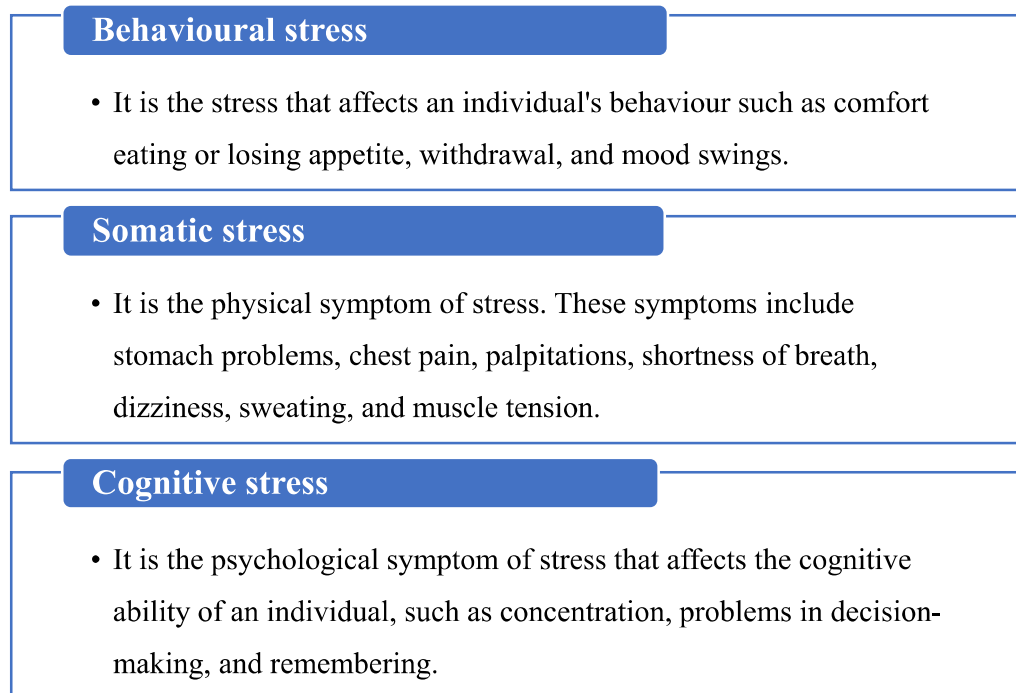


Figure 1.1: Types of stresses (Singh et al., 2022)

Table 1.1: Factors associated with occupational stress

1. Long hours	10. Over supervision
2. Heavy workload	11. Inadequate working environment
3. Changes within the organisation	12. Lack of proper resources
4. Tight deadlines	13. Lack of equipment
5. Changes to duties	14. Few promotional opportunities
6. Job insecurity	15. Harassment
7. Lack of autonomy	16. Discrimination
8. Boring work	17. Poor relationships at the workplace
9. Insufficient skills for the job	18. Crisis incidents

Work-related stress induces not only psychological stress but also WMSDs. While a high physical workload is a well-established risk factor for WMSDs, adverse psychosocial work conditions and physical work environment are also responsible for WMSDs.

1.2. WORK-RELATED MUSCULOSKELETAL DISORDERS (WMSDS)

Musculoskeletal Disorders (MSDs) are injuries or diseases that affect bones, tissues, nervous or circulatory system. These disorders are caused by repetitive strain or trauma to the musculoskeletal system. When these disorders occur due to the work or work environment, they are known as work-related musculoskeletal disorders (WMSDs). These can be caused by various risk factors at work. The factors associated with WMSDs are shown in Table 1.2.

Table 1.2: Factors associated with WMSDs

2. Awkward or improper work posture	6. High perceived workload
3. Heavy physical work	7. Lack of influence or control over work
4. Repetitive lifting or bending	8. Low social support
5. Poor work environment	9. High psychological stresses
6. Being subjected to verbal abuse, or sexual harassment, at work	10. Individual risk factors including smoking, high BMI, and the presence of co-morbidities

Factors shown in Tables 1.1 and 1.2 have different effects on different people in different settings. These can be classified accordingly.

1.3. FACTORS AFFECTING OCCUPATIONAL STRESS AND WMSDS

The factors that cause occupational stress and WMSDS are broadly classified into three categories as organisational factors, social factors and personal factors.

1.3.1. Organisational factors

These are the factors that are related to organisational work and work environment. These include elements within a workplace that impact the work or the employee.

1.3.2. Social factors

These are the factors that are related to how people relate to or are affected by one another in society.

1.3.3. Personal factors

These factors are related to the individual's life and living, such as age, gender, substance use, and health conditions.

A broad classification of factors for occupational stress and WMSDs has been shown in Table 1.3.

Table 1.3: Factors associated with occupational stress and WMSDs

Organisational factors	Social factors	Personal factors
Workload	Support from family	Age
Job control	Support from friends	Gender
Support at work	Socio-economic status	BMI
Resources at work		Substance use
Experience in the organisation		Workout habits
Experience in the current position		Health

Occupational stress and WMSDs are caused by several work-related, social, environmental and personal factors and result in poor psychological and physical well-being. Employees suffering from occupational stress and WMSDs are more prone to burnout and conflicts at the workplace. All these factors affect employees' job satisfaction and work performance.

1.4. JOB SATISFACTION

Job satisfaction is an employee's sense of achievement on the job. It is generally found to be directly linked to the personal well-being of an individual. Job satisfaction implies that the employee enjoys doing his job correctly and being rewarded for his

efforts. It further implies enthusiasm and happiness with the work. Hoppock defined job satisfaction as a “*combination of psychological, physiological and environmental circumstances that cause a person truthfully to say I am satisfied with my job*” (Hoppock, 1935). Hoppock also stressed that although job satisfaction depends on many external factors related to work and the workplace, it is something internal that has to do with how the employee feels. One of the most cited definitions of job satisfaction given by Spector (1985) is “*job satisfaction has to do with the way how people feel about their job and its various aspects. It has to do with the extent to which people like or dislike their job*”. It represents the extent to which the employees’ expectations match the real rewards for their effort and work. It is the feelings and beliefs that employees have about their current work and workplace. Job satisfaction in the employees can range from extreme satisfaction to extreme dissatisfaction. Employees can also have a different perception of various aspects of their jobs, such as their work content, co-workers, supervisors or subordinates, and salary (George et al., 2008).

Not only occupational stress and WMSDs but also job satisfaction affect the work performance of the employees.

1.5. WORK PERFORMANCE

In the workplace, performance is how well an individual performs his job, plays his role, or fulfils his responsibility. Mathis and Jackson (2000) defined work performance as a “*measure of the quantity and quality of work done considering the cost of the resource it took to do the work.*” They further added that an individual’s performance depends on three factors, 1) the ability to do the work, 2) the level of effort, and 3) the support given to that person. These three factors are of equal importance, and performance gets diminished if any of these factors are reduced or absent. An individual’s

job performance is also defined as actions people take or work they do that contribute to the organisation's goals.

Psychosocial and organisational factors are the main contributors to occupational stress, WMSDs, job satisfaction and work performance in the workplace. So, it is important to see how these factors are associated with occupational stress and WMSDs. For this purpose, several occupational stress models have been used in the literature.

1.6. THEORETICAL MODELS OF OCCUPATIONAL STRESS

Several theoretical models of occupational stress explain the association between psychological stress and organisational and psychosocial factors. The most prominent models are the person-environment fit theory (Harrison, 1978), the job demand-job control model (Karasek, 1979), the vitamin model (Warr, 1987) and the effort-reward imbalance model (Siegrist, 1996).

1.6.1. Person-environment fit theory

This theory states that stress occurs because of an incongruity between the individual and the environment. It states that it is neither person nor the environment alone that causes stress. It can be due to the fit between demands and the capabilities of a person or between the needs of the person and available resources. Personal characteristics can be physical or psychological needs, personality, abilities, values, or goals, while environmental characteristics can be rewards, demands of the workplace, support and control at work (Harrison, 1978; French et al., 1982).

1.6.2. Job demand-control model

This model explains how the characteristics of a job influence employees' psychological well-being (Karasek, 1979; Theorell & Karasek, 1990). This model differentiates between the two fundamental dimensions of work-related factors – job

demands and job control. It states that employees working in high demands and low control are at the most risk of having stress. However, the model also states that providing control to the employees at the workplace can decrease the negative effect of the high workload.

1.6.3. Vitamin model

This model proposes nine different attributes of work that affect employee job satisfaction, and employees require some minimum amount of each attribute to be satisfied with the job (Warr, 1987). For three attributes named money, security and social position, employees can have an overabundance of them with no negative effects. However, the remaining six named goals, variety, clarity, control, skill set and its use and interpersonal contacts can lead to problems if they exceed a limit.

1.6.4. Effort-reward imbalance model

This is a variant of the Person-Environment fit model. This model suggests that a lack of reciprocity between efforts and rewards results in stress. It states, “the degree to which an individual’s effort at work is rewarded or not is crucial for that person’s health and well-being” (Siegrist, 1996).

Figure 1.2 shows the number of citations for all four models of occupational stress. The number of citations from the proposed date of the models to 2022 has been recorded from the Google Scholar website. It is clear from Figure 1.2 that the job demand-control model has been the most cited model of occupational stress since its introduction. It can be inferred that the JDC model is prevalent and used for most of the research work. For further analysis, the present work focuses on the job demand-control model.

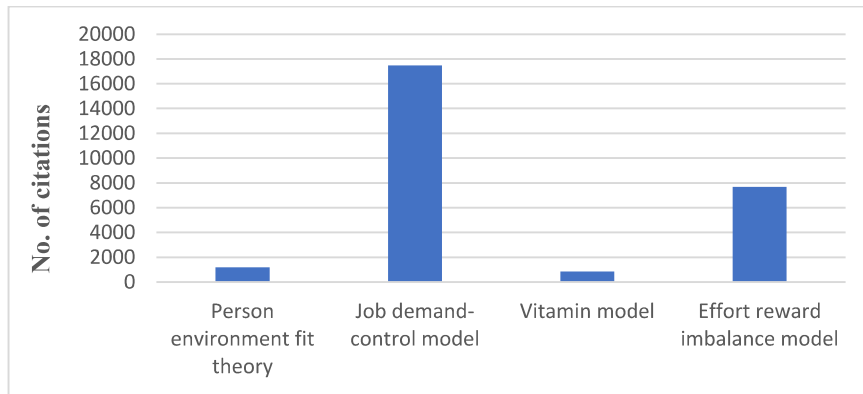


Figure 1.2: Citations of occupational stress models (Source: Google Scholar)

1.7. JOB DEMAND-CONTROL MODEL (JDC)

The Job Demand-Control (JCD) model of occupational stress was first introduced by Karasek in 1979. It has been one of the most used and cited theories in the research on work-related stress for more than four decades. The main idea of the model revolves around three main components: job demand, job control, and job stress (Karasek, 1979). Job demand refers to the workplace demands (e.g., mental and physical workload, overtime, etc.) (Singh et al., 2022). Job control refers to the control of an individual over the work process, work environment, and other decisions related to their work (Karasek, 1979). Job stress is the mental condition of an individual that results in poor psychological and physiological health. Karasek (1979) explained that employees with high work demands and low control were prone to a high risk of stress. His model showed that the negative effect of the high workload could be mitigated by providing control over work.

The JDC model was further extended to add a new dimension, i.e. social support at the workplace, and the model became Job Demand-Control-Support (JDCS) model (Johnson and Hall, 1988). In addition to the previously made assumptions, the JDCS model suggests that social support can moderate the negative effect of job stress on a worker's physical and mental health. This model offers that the workers suffering or having more chances to have poor physical and mental health are those with high job

demands and low control jobs paired with low workplace support. Buffer hypothesis of the JDCS model states that “support at work” can moderate the negative effect of high demand and low control jobs, i.e., high strain jobs. It also suggests an interaction between job demand, job control, and “support at work” (Singh et al., 2022).

The following subsections explain various entities of JDC and JDCS models.

1.7.1. Job demand

Job demand or workload at the workplace refers to the intensity of work assignments (Nwinyokpugi, 2018). It can be the amount of physical or mental work, time pressure or pace, and decision-making. Schaufeli and Bakker (2004) defined job demand as *"all the physical, psychological, social or organisational aspects of a job that require continuous physical and psychological (i.e., cognitive or emotional) effort"*. It can lead to positive and negative outcomes depending on its nature and the individual employee's coping ability. The positive effects can be motivation, stimulation or job satisfaction, while adverse effects can be anxiety, depression, and burnout. It has been identified as one of the most common factors leading to work-related stress (Singh et al., 2022). It has been associated with various outcomes related to health, performance at work and even job satisfaction. Several studies indicate that workload at the workplace can have an impact on exhaustion (Portoghese et al., 2014; Gregory et al., 2017); psychological stress (Frankenhaeuser, 1991; Birhanu et al., 2018); WMSDs (Aittomäki et al., 2007); performance (Glaser et al., 1999; Sandrin et al., 2019); job satisfaction (Goetz et al., 2013) and turnover intention (Qureshi et al., 2013). However, several studies reported no effect of workload on the outcomes such as psychological and physical health, insomnia and job satisfaction. A study on the German blue-collar and white-collar population reported a significant effect of workload on WMSDs in blue-collar workers (Herr et al., 2015). However, the same study (Herr et al., 2015) found no effect in white-collar workers.

Table 1.4: Summary of literature on workload

Author (Year)	Study population (Country)	Outcome	Effect
Rydstedt et al. (1998)	35 Men and 17 Women (Sweden)	Mental well-being	√
Glaser et al. (1999)	37 employees (USA)	Stress Performance	√ √
Hobson and Beach (2000)	51 production managers (UK)	Psychological health	×
Dollard et al. (2000)	813 human service workers (Australia)	Emotional exhaustion Depersonalization Job dissatisfaction	√ √ ×
Beehr et al. (2001)	115 manufacturing company employees (USA)	Psychological stress Job dissatisfaction	×
Aittomäki et al. (2007)	3740 employees (Finland)	Musculoskeletal disorders	√
Kawada et al. (2010)	137 male pharmaceutical company employees (Japan)	Stress	√
Ramadoss, (2012)	774 IT HR managers (India)	Work-related stress	×
Goetz et al. (2013)	1027 General health practitioners (Germany)	Job satisfaction	√
Portoghese et al. (2014)	352 public hospital workers (Italy)	Exhaustion	×
Herr et al. (2015)	1634 employees of an aircraft manufacturing company (Germany)	MSD in white-collar workers MSD in blue-collar workers	×
O'Donnell et al. (2015)	60 female university students (Australia)	Heart Rate Variability (HRA) Salivary Alpha-Amylase (sAA)	×
Györfy et al. (2016)	2414 female physicians (Hungary)	Sleep disorders Burnout	√ √
Birhanu et al. (2018)	208 health professionals (Ethiopia)	Stress	√
Sandrin et al. (2019)	654 firefighters (France)	Perceived health Performance	√ √
Sjöberg et al. (2020)	1162 home care workers (Sweden)	Quality of life	√

√ - association between job demand and the outcome variable

× - no association between job demand and the outcome variable

Kawakami et al. (1992), Beehr et al. (2001), Ramados (2012), and O'Donnell et al. (2015) also reported that workload was not significantly related to emotional stress, mental health and psychological stress. Table 1.4 presents a literature review of the studies that focused on the effect of workload on various outcomes. It can be seen from Table 1.4 that different studies have differences in the findings related to workload.

1.7.2. Job control

Job control at the workplace refers to the amount of control/flexibility given to employees over their work and other related factors of their work. Karasek (1979) defined job control as “*the individual’s perceived ability to control their work environment, work activities, and the outcome of those work activities*” (Karasek, 1979). Job control is another factor out of the most important factors affecting the health and performance of employees at work and has been associated with the physical and psychological health of employees in several research studies (Daniels and Guppy, 1994; Bond and Bunce, 2001; Portoghese et al., 2014; Herr et al., 2015; Lee and Ravichandran, 2019, Singh et al., 2022). It has also been associated with various other outcomes such as work-family balance (Ramados, 2012), Turnover intention (Yeh et al., 2020), work engagement and performance (O'Donnell E et al., 2015; Lee and Ravichandran, 2019; Vassos et al., 2019) and job satisfaction (Dollard et al., 2000; Beehr et al., 2001). Several studies have focused on the effect of job control on the indicators of psychological stress, such as emotional exhaustion (Dollard et al., 2000; Vassos et al., 2019); however, very few studies have studied the effect of job control on WMSDs (Herr et al., 2015). Also, an experimental study by O'Donnell et al. (2015) reported that job control could increase stress and may not be desirable in all situations. These findings are very different from the general perception of job control that an increase in job control reduces stress. Table 1.5 shows the literature focusing on the effect of job control on various outcomes.

Table 1.5: Summary of literature on job control

Author	Study population (Country)	Outcome	Effect
Daniels and Guppy (1994)	244 accountants (UK)	Psychological well-being	√
Dollard et al. (2000)	813 human service workers (Australia)	Emotional exhaustion Depersonalization Job dissatisfaction	√ √ √
Beehr et al. (2001)	115 manufacturing company employees (USA)	Psychological stress Job dissatisfaction	× √
Boswell et al. (2004)	461 university staff employees (USA)	Challenge related Stress Hindrance related stress	× √
Love and Edwards (2005)	100 construction project managers (UK)	Psychological well-being	√
Chiang et al. (2010)	255 food service employees (China)	Job stress	√
Gadinger et al. (2010)	424 managers (Germany, Austria, Switzerland)	Psychosomatic complaints self-rated health	× ×
Ramadoss (2012)	774 IT HR managers (India)	Work-family balance	√
Portoghese et al. (2014)	352 public hospital workers (Italy)	Exhaustion	√
Herr et al. (2015)	1634 employees of an aircraft manufacturing company (Germany)	MSD in White-collar workers Blue-collar workers	√ √
O'Donnell et al. (2015)	60 female university students (Australia)	Heart Rate Variability (HRA) Salivary Alpha-Amylase (sAA)	× ×
Lee and Ravichandran (2019)	367 hospital workers (USA)	Commitment Well-being Performance	√ √ √
Too et al. (2019)	2106 middle-aged adults (Australia)	Mental disorders	√
Vassos et al. (2019)	235 disability support workers (Australia)	Emotional exhaustion Burnout Work engagement	√ √ √
Yeh et al. (2020)	198 clinical nurses (Taiwan)	Turnover intention	√
Colin-Chevalier et al. (2022)	8488 employees (France) 769 managers (France)	Job strain Job strain	√ √

√ - association between job demand and the outcome variable

× - no association between job demand and the outcome variable

1.7.3. Support at work

In the research related to occupational stress, “support at work” is more commonly conceptualised as social support provided by co-workers, supervisors and subordinates (Spielberger et al., 2003; Singh et al., 2022). Karasek and Theorell (1990) described “support at work” as “*helpful relationships at the workplace regarding work-related matters with supervisors and co-workers*” (Karasek & Theorell, 1990). In contrast to job control, it does not provide an ability to the employees to intervene directly in the alteration of tasks assigned at work or other aspects of the work environment. However, it can benefit an individual to reduce his/her burden on personal factors/resources (Singh et al., 2022). Several studies have found an association between the psychological health of employees and “support at work” (Love and Edwards, 2005; Gadinger et al., 2010; Yousaf et al., 2019; Xiao et al., 2020). The effect of “support at work” has also been studied on various other factors such as work-family balance (Ramadoss, 2012), Turnover intention (Yousaf et al., 2019), work engagement and performance (Glaser et al., 1999; O'Donnell E et al., 2015; Yousaf et al., 2019; Vassos et al., 2019; Sandrin et al., 2019) and job satisfaction (Dollard et al., 2000; Beehr et al., 2001). “Support at work” has also been associated with several other indicators of psychological stress, such as emotional exhaustion (Dollard et al., 2000; Vassos et al., 2019) and emotional distress (Fillion et al., 2007). In a study, Colin-Chevalier et al. (2022) reported that managers with high control and greater social support are less prone to stress at work than other types of employees. It suggested a significant relationship between social support and stress. Table 1.6 shows the literature focusing on the effect of “support at work” on various outcomes.

Table 1.6: Summary of literature on “support at work”

Author	Study population (Country)	Outcome	Effect
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Daniels and Guppy (1994)	244 accountants (UK)	Psychological well-being	√
Glaser et al. (1999)	37 employees (USA)	Stress	√
		Performance	√
Dollard et al. (2000)	813 human service workers (Australia)	Emotional exhaustion	√
		Depersonalization	√
		Job dissatisfaction	√
Noblet et al. (2001)	172 males and 49 female managers (Australia)	Psychological health	×
		Job satisfaction	×
Griva and Joeekes (2003)	166 teachers (UK)	Wellness	×
Love and Edwards (2005)	100 construction project managers (UK)	Psychological well-being	√
Fillion et al. (2007)	209 palliative-care nurses (Canada)	Job satisfaction	×
		Emotional distress	×
Hamdan-Mansour and Dawani (2008)	241 university students (Jordan)	Stress	√
Gadinger et al. (2010)	424 managers (Europe)	Psychosomatic complaints	√
		Self-rated health	√
Nishitani and Sakakibara (2010)	212 male workers (Japan)	Insomnia	×
Ramadoss (2012)	774 IT HR managers (India)	Work-family balance	√
Orgambídez-Ramos and de Almeida (2017)	215 nurses (Portugal)	Job satisfaction	√
Yousaf et al. (2019)	18 front-line restaurant employees (China)	Occupational stress	√
		Job engagement	√
		Turnover intentions	√
Vassos et al. (2019)	235 disability support workers (Australia)	Emotional exhaustion	√
		Burnout	√
		work engagement	√
Sandrin et al. (2019)	654 firefighters (France)	Perceived health	√
		Performance	√
Xiao et al. (2020)	180 medical staff (China)	Anxiety	√
		Stress	√
		Self-efficacy	√
		Sleep quality	√
Colin-Chevalier et al. (2022)	8488 employees (France)	Job strain	√
	769 managers (France)	Job strain	√

√ - association between job demand and the outcome variable

× - no association between job demand and the outcome variable

The JDC model suggests that job stress results from the interaction between job demand and job control. It states that workers experiencing high job demands at the workplace combined with low control are more prone to experience work-related stress and have more chances of having poor physical and mental health in the long term. A buffer hypothesis stating that a high level of job control reduces the negative effect of job demand was also given (Singh et al., 2022).

Karasek (1979) combined the dimensions of job demands and control in a two-by-two matrix and defined four job categories accordingly. These four job categories, i.e., 1) passive job, 2) active job, 3) low strain job, and 4) high strain job, are shown in Figure 1.3.

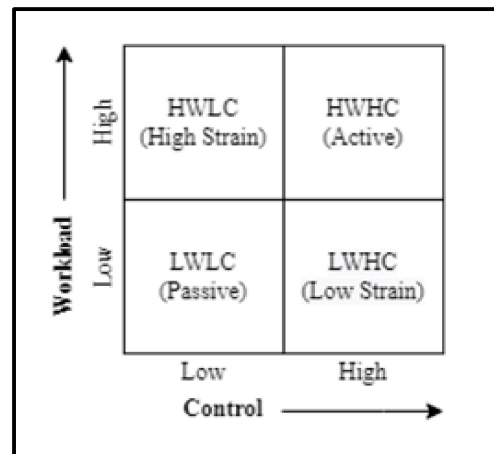


Figure 1.3: Job Demand-Control Model (Karasek,1979)

1.7.4. Categories of job

Figure 1.3 shows four categories of jobs as defined by Karasek (1979). These are explained in the following sub-sections.

1.7.4.1.Active job

These are high demand jobs combined with high control and are also referred to as High Workload High Control (HWHC) jobs. These jobs are defined as challenging and intense work; however, it involves a high level of freedom, control at work, learning

and growth. This kind of job is generally found in professional work such as managers, lawyers, and healthcare professionals.

1.7.4.2.Passive job

These are low demand jobs combined with low control and are also referred to as Low Workload Low Control (LWLC) jobs. These are the opposite of active or HWHC jobs. These jobs are not exposed to the stress of high demands but also have no control over work. These jobs are related to no challenges at work leading to dissatisfaction and loss of motivation and innovation at the workplace. Janitorial and clerical jobs are generally passive jobs.

1.7.4.3.High strain job

These are high demand jobs combined with low control and are also referred to as High Workload Low Control (HWLC) jobs. These jobs are defined as challenging and intense work with no control over work. Generally, blue-collar industrial jobs and some service industry jobs are identified as high strain jobs.

1.7.4.4.Low strain job

These are low demand jobs combined with high control and are also referred to as Low Workload High Control (LWHC) jobs. These are jobs with low work demands and high control at the workplace. This is the most undesirable job category from an organisation's perspective as the motivation of employees is very low in these types of jobs. These types of jobs are generally held by architects and scientists working in social and cultural research.

The JDC(S) model has been used to predict various outcomes in the research. An extensive literature review on the JDC(S) model and its application in different occupational and geographical settings was conducted to identify the research gaps. Keywords such as JDC, JDCS, JDC(S), job demand control, job demand control support,

workload, job control, “support at work”, psychological stress, stress, occupational stress, well-being, WMSDs, musculoskeletal disorder musculoskeletal pain, job satisfaction, performance, and work performance were used in this search process. Various databases of reputed publishers, including Science Direct, Taylor and Francis, Springer, Emerald, and Inderscience, were referred to identify the relevant research articles. The hierarchy of literature review is started with the workload, followed by job control and “support at work”.

From the literature review, it was found that the JDC(S) model has been used primarily to predict occupational stress or psychological stress (Daniels and Harris, 2005; Lin et al., 2009; Chiang et al., 2010; Wong et al., 2014; Bowen et al., 2014; Tuomi et al., 2016; Blanch, 2016; Ariza-Montesa et al., 2018; Jalilian et al., 2019; Vassos et al., 2019; Ricciardelli and Carleton, 2022). It has also been used to predict other outcomes related to employee health, such as burnout, emotional exhaustion and distress, and even other symptoms such as cardiovascular disease, insomnia, etc. (Rafferty et al., 2001, Rodriguez et al., 2001, Kristensen, 1996, Ota et al., 2005; Nomura et al., 2009, Pinto et al., 2014). Some studies have also used this to predict WMSDs and physical fatigue (Canjuga et al., 2010; Herr et al., 2015; Jalilian et al., 2019). Although the model is related to occupational stress and has found its application in predicting several other outcomes other than those related to physical and psychological health, it has also been used in predicting other variables such as job satisfaction, work engagement, work performance, motivation, workplace injury, safety behaviour, turnover intentions and even work-life conflict (Wong and Lin, 2007; Snyder et al., 2008; Chiu et al., 2009; Shih et al., 2011; Bronkhorst, 2015; Loi et al., 2016; Guenette and Smith, 2018; Jalilian et al., 2019; Vassos et al., 2019; Wu et al., 2022). However, there is a difference in the results of the study on the effect of demand, control and support on these variables. Some studies suggest that there is a

significant effect of these variables on outcome variables and thus support the direct theory of the JDC and JDCS model; however, there are also studies which do not support the direct theory of the model (Hausser et al., 2011; Padyab et al., 2014; O'Donnell et al., 2015; Herr et al., 2015). There are also studies where not all the variables had an effect on output variables, but some had and thus partially support the direct theory of the model (Dollard et al., 2000; Griva and Joekes, 2003; Snyder et al., 2008; Charoensukmongkol, 2014; Tuomi et al., 2016; Åhlin et al., 2018; Navajas-Romero et al., 2020). Tables 1.7 presents the literature survey on the cross-sectional studies carried out for the JDC and JDCS model showing the support of direct and buffer theory for the JDC and direct and buffer theory for the JDCS model. Also, Table 1.8 shows the literature survey for the same for longitudinal studies. It can be seen from Tables 1.7 and 1.8 that few studies support or partially support the buffer theories, and some do not. Also, several studies have not considered the interaction effects of the demand, control and support to see the effect of buffer theories. Studies have also reported the effect of job demand and control on stress and other variables but in the opposite direction as suggested by the JDC model. O'Donnell et al. (2015) reported that control affects stress but in the opposite direction. The results of their study reported that control is not a necessary resource but an additional stressor. Also, it can be seen from Tables 1.7 and 1.8 that the studies are focused on different occupations and from different geographical locations. In the case of healthcare employees, almost all the studies reported the results in support of the direct hypothesis of the JDC(S) model but for the buffer hypothesis. In all other cases, the results of the studies are different, and no conclusion can be made about a particular occupation.

Table 1.7: Summary of literature review on JDC and JDCS model for Cross-sectional studies

Author (Year)	Country	Sample size	Outcome	JDC		JDCS	
				DH	BH	DH	BH
Melamed et al. (1991)	Israel	267 female social workers	Job satisfaction Burnout	+ +	- -	+ +	- -
Amick and Celentano (1991)	USA	4,903 postal workers	Psychological health	+	+	#	#
Kawakami et al. (1992)	Japan	122 office workers	Depressive symptoms	-	-	#	#
Noor (1995)	Malaysia	180 male professional and secretarial employees	Psychological distress Happiness	- -	- -	# #	# #
Baker et al. (1996)	USA	1000 manufacturing employees	Depression	+	#	#	#
Bourbonnais et al. (1996)	Canada	2,889 male and female white-collar workers in public organizations	Psychological distress	+	#	#	#
Tyler and Cushway (1998)	UK	155 hospital staff	Job satisfaction Mental health	+ -	- -	# #	# #
Schreurs and Taris (1998)	Netherlands	336 software engineers and university staff	Job satisfaction Fatigue	+ -	- -	# #	# #
Munro et al. (1998)	Australia	60 nurses	Job satisfaction Mental health	- -	- -	- -	# #
de Rijk et al. (1998)	Netherlands	367 nurses	Emotional exhaustion	+	±	#	#
Bourbonnais et al. (1998)	Canada	1891 nurses	Psychological distress Emotional exhaustion	- -	- -	# #	# #

De Jonge et al. (1999)	Netherlands	212 healthcare professionals	Job satisfaction Emotional exhaustion	-	±	#	#
Pugliesi (1999)	USA	1114 university employees	Job satisfaction Psychological distress	+	-	#	#
Parker and Sprigg (1999)	UK	268 production employees	Psychological distress	+	±	#	#
Calnan et al. (2000)	UK	762 general medical staff	Job satisfaction Mental health	-	#	-	#
Mausner-Dorsch and Eaton (2000)	USA	905 multi-occupational	Depression	-	+	#	#
Dollard et al. (2000)	Australia	813 human service workers	Emotional exhaustion Depersonalization Job dissatisfaction	±	±	±	±
O'Connor et al. (2000)	UK	422 doctors	Depression Anxiety Job satisfaction	-	#	#	#
van der Doef et al. (2000)	Netherlands	4000 working individuals	Job dissatisfaction Psychological distress	+	±	+	±
Le Blanc et al. (2001)	Netherlands	816 oncology care providers	Emotional exhaustion	±	-	#	#
Beehr et al. (2001)	USA	115 manufacturing employees	Job satisfaction Mental health	-	-	#	#
Noblet et al. (2001)	Australia	221 managers	Job dissatisfaction Mental health	-	#	-	#
Rafferty et al. (2001)	USA	164 human service workers	Emotional exhaustion	±	-	-	-
de Croon et al. (2002)	Netherlands	1181 drivers	Job dissatisfaction Fatigue	+	±	#	#
Griva and Joeke (2003)	UK	166 teachers	Wellness	±	#	±	#

Fernet et al. (2004)	Canada	398 University professors	Emotional exhaustion Depersonalization Personal accomplishment	±	-	#	#
Calnan et al. (2004)	UK	4135 working individuals	Mental health	+	#	+	#
Ota et al. (2005)	Japan	1081 workers	Insomnia	+	-	±	-
Wong and Lin (2007)	Taiwan	380 tourism industry service employees	Work-to-leisure conflict	+	+	+	+
Fillion et al. (2007)	Canada	209 nurses	Job satisfaction Psychological distress	-	#	-	#
McClenahan et al. (2007)	UK	166 lecturers and senior lecturers	Psychological distress Job satisfaction	+	-	-	-
Brough and Williams (2007)	Australia	132 correctional officers	Job satisfaction	±	-	±	-
Snyder et al. (2008)	USA	253 Facilities Department employees (state university)	Workplace injuries	±	+	±	-
Nomura et al. (2009)	Japan	1209 male workers	Insomnia	+	+	+	+
Lin et al. (2009)	Taiwan	1243 intellectual disability institutions staff	Job strain	+	+	+	+
Chiu et al. (2009)	Taiwan	373 clinical nurses	Job turnover rate	+	+	+	+
Canjuga et al. (2010)	Switzerland	1040 working individuals	Neck pain Back pain	+	-	#	#
Chiang et al. (2010)	Hongkong	255 food service employees	Employee stress	+	+	+	+

Schmidt and Diestel (2011)	Germany	379 nursing staff	Job satisfaction Psychosomatic complaints Emotional exhaustion	+	+	#	#
Hausser et al. (2011)	Germany	77 men and women	Salivary cortisol Subjective well-being	+	+	#	#
Shih et al. (2011)	Taiwan	306 IT employees	Work exhaustion Turnover intentions	+	+	#	#
Sakurai et al. (2013)	Japan	36,688 full-time workers	Occupational injury	+	+	#	#
Çiçek (2013)	Turkey	345 blue-collar employees	Organization's mission Organization's vision	+	+	#	#
Charoensukmongkol (2014)	Thailand	170 employees	Social media use intensity	±	-	±	-
Wong et al. (2014)	Taiwan	420 firemen	Job stress	+	+	+	+
Bowen et al. (2014)	South Africa	676 architects, civil engineers, and project and construction managers	Occupational stress	±	±	±	±
O'Donnell et al. (2015)	Australia	60 female university students	Heart Rate Variability (HRA) Salivary Alpha-Amylase (sAA)	-	-	#	#
Bronkhorst (2015)	Netherlands	6230 health care employees	Physical safety behaviour Psychosocial safety behaviour	+	+	+	+
Preston (2015)	USA	349 public child welfare case managers	Job strain	+	-	#	#

Sigurdardottir et al. (2015)	Iceland	479 nurses and midwives	Perception of administrative support	+	+	#	#
Herr et al. (2015)	Germany	1634 aircraft manufacturing	Musculoskeletal symptoms in Blue-collar workers	+	#	#	#
			White-collar workers	-	#	#	#
Loi et al. (2016)	China	258 hotel employees	Intention to quit job	+	+		
Kim (2016)	Korea	163 music therapists	Burnout	+	+	+	+
			Turnover intention	+	+	+	+
Blanch (2016)	Spain	281 administrative and technical workers	Job strain	±	±	±	±
Hessels et al. (2017)	Australia	15,834 working individuals	Work-related stress	+	+	#	#
Guenette and Smith (2018)	USA	314 radiology residents	Burnout	+	+	+	+
			Personal accomplishment	+	+	+	+
Wang et al. (2018)	Taiwan	214 caregivers	Caregiver health outcomes	+	+	#	#
Preston (2018)	USA	349 public child welfare case managers	Well being	+	+	#	#
Leitãoa et al. (2018)	Ireland and UK	879 Health and Safety Practitioners	General health	+	+	+	+
			Mental wellbeing	+	+	+	+
			Efficacy	+	+	+	+
Ariza-Montesa et al. (2018)	Europe	221 hospitality managers, 1306 personal services workers, 324 cleaners and assistants	Psychological well-being	+	±	+	±

Jalilian et al. (2019)	Iran	522 nurses	General fatigue	±	#	±	#
			Physical fatigue	±	#	±	#
			Mental fatigue	-	#	-	#
			Reduced motivation	±	#	±	#
			Reduced activity	±	#	±	#
Vassos et al. (2019)	Australia	235 disability support workers	Emotional exhaustion	+	+	+	+
			Burnout	+	+	+	+
			work engagement	+	+	+	+
Navajas-Romero et al. (2020)	Europe	991 nursing professionals	Work-life balance	±	±	±	±
Clinchamps et al. (2021)	USA	3142 university workers	Burnout	±	#	±	#
Abadi et al. (2021)	Iran	730 nurses	Job satisfaction	+	#	+	#
Ricciardelli and Carleton (2022)	Canada	89 correctional workers	Mental health	±	±	±	±
Wu et al. (2022)	China	297 restaurant employees	Burnout	+	+	+	+
			Work engagement	+	±	+	±

DH- Direct Hypothesis, BH- Buffer Hypothesis
+ Supported the theory, - Did not support the theory, # Theory not tested

Table 1.8: Summary of literature review on JDC and JDCS model for longitudinal studies

Author (Year)	Country	Sample size	Outcome	JDC		JDCS	
				DH	BH	DH	BH
Stansfeld et al. (1999)	UK	7978 civil servants	Mental health	±	-	±	#
Sargent and Terry (2000)	Australia	80 university staff	Job satisfaction	-	-	-	±
Stewart et al. (2001)	USA	7691 working male and female	Lost work time	+	-	#	#
Pisanti et al. (2003)	Netherlands	2646 multi-occupational individuals	Emotional exhaustion	+	-	-	-
			Job satisfaction	-	-	-	-

Daniels and Harris (2005)	UK	29 hospital employees of HRD	Psychological well being	+	#	+	#
Ota et al. (2009)	Japan	1022 middle-aged workers	Insomnia	+	#	+	#
Padyab et al. (2014)	Sweden	36668 men and 38320 women	Cardiovascular mortality	-	-	#	#
Tuomi et al. (2016)	Finland	135 nursing students	Stress	±	±	±	±
Hessels et al. (2017)	Australia	15,834 working individuals	Work-related stress	+	+	#	#
Åhlna et al. (2018)	Sweden	6679 individuals	Depressive symptoms	±	±	±	±

DH- Direct Hypothesis, BH- Buffer Hypothesis

+ Supported the theory, - Did not support the theory, # Theory not tested

The present work focuses on middle-level managers. So, it is necessary to understand occupational stress and WMSDs and the applications of JDC(S) in predicting occupational stress and WMSDs in the context of middle-level managers.

1.8. OCCUPATIONAL STRESS AND WMSDS IN MIDDLE-LEVEL MANAGERS

While almost all working individuals experience psychosocial risk factors at work, individuals working in managerial positions are not an exception. Due to the high workload and the responsibilities associated with their position, they experience high stress at the workplace (Hambrick et al., 2005; Singh et al., 2022). In today's time, managers are working in an environment where they have to manage resources, cost-cutting, and constantly changing technology (Chase, 2000; Jaffe, 1995; Kinicki et al., 1996; Murphy, 2002; Singh et al., 2022). Organisations are restructuring, downsizing, and demanding greater flexibility in employees' work schedules to adapt to the market changes (Sparks et al., 2001). Employees in managerial positions are at the forefront of these changes as implementing these organisational policies increases their workload and

lack of control over such policies or programs (Singh et al., 2022). Such situations lead to high work stress. Managers responsible for delivering layoff notices and those involved in direct and indirect downsizing experienced a significant increase in health problems such as headaches, high blood pressure, depression, and job insecurity (Murphy and Pepper, 2002; Singh et al., 2022). Studies also reported that managers experiencing high workload and low control at the workplace suffer from occupational stress and deteriorating psychological well-being (Ramadoss, 2012; Bowen et al., 2014; Ariza-Montesa et al., 2018; Preston, 2018).

Table 1.9: Summary of literature on JDC(S) for managers

Author (year)	Sample size (Country)	Outcome	JCD		JDCS	
			DH	BH	DH	BH
Noblet et al. (2001)	221 Managers (Australia)	Job dissatisfaction	-	#	-	#
		Mental health	-	#	-	#
Bowen et al. (2014)	Construction managers (South Africa)	Occupational stress	±	±	±	±
Preston (2015)	349 public child welfare case managers (USA)	Job strain	+	-	#	#
Preston (2018)	349 public child welfare case managers (USA)	Well being	+	+	#	#
Ariza-Montesa et al. (2018)	221 hospitality managers (Europe)	Psychological well-being	+	±	+	±
Ramadoss (2012)	774 IT HR managers	Work-related stress	±	#	±	#

DH- Direct Hypothesis, BH- Buffer Hypothesis
+ Supported the theory, - Did not support the theory, / Theory not tested

The effect of the high work demands on physical and psychological health has been reported in many studies (Aittomäki et al., 2007; Portoghese et al., 2014; Gregory et al., 2017; Birhanu et al., 2018). However, managers who reported having high control in the workplace suggested that it could reduce the negative effect of high demands

(Ruotsalainen et al., 2008; Blom et al., 2016). The effect of demand, control and support on stress can be studied using JDC(S) model. Also, the interaction effect of these variables can be analysed. However, only a few studies have used the JDC(S) model to study occupational stress in managers (Ramadoss, 2012; Bowen et al., 2014; Ariza-Montesa et al., 2018; Preston, 2015; 2018). Table 1.9 summarises the literature on JDC(S) for managers.

The literature review on the JDC(S) model suggests that the geographical location of the sample population is important as the relationship between organisational factors and outcome variables may vary from one part of the world to the other. So, it is important to understand occupational stress and WMSDs in the Indian context and the studies based on the JDC(S) model focusing on the Indian working population.

1.9. OCCUPATIONAL STRESS AND WMSDS IN THE INDIAN CONTEXT

As psychological and physical health problems in the working population are increasing public health concerns around the world, the Indian working population is also experiencing the same. According to the latest Census of 2011, India has a working population of 474 million. In the last 11 years working population of India has increased significantly, but there is no official data regarding that. According to a report by the Confederation of Indian Industry (CII), the working population of India was 900 million in 2020, which is expected to be 1000 million by 2030. The report also suggested that 24.3% of the total global workforce over the next decade will be from India.

Work-related stress and musculoskeletal disorders are a growing issue in the Indian working population and affect millions of people. There are no population-based prevalence studies for the working population in India, but there are estimates of work-related physical and psychological issues. The Global Burden of Disease Study (2020)

reported that 197 million people are experiencing mental illnesses in India. WMSDs are the second-highest work-related issue reported in the world. Kumar et al. (2019) reported the prevalence of WMSD between 6.92% - 76.8% among the Indian adult population. These suggest that occupational stress, WMSDs and other factors indicative of physical and psychological health and their association with organisational and other factors are the issues of immediate attention in Indian organisations. There are some studies that have focused on finding the prevalence of occupational stress, psychological stress, well-being, and WMSDs in the Indian population.

However, there are only a few studies that focus on the JDC or JDCS model to predict occupational stress in Indian occupational settings. Table 1.10 shows a summary of the literature review on the JDC and JDCS model focused on the Indian population. It can be seen from the Table 1.10 that the work focused on the Indian population has been from very different occupational settings. The results of the different studies are also different and similar to those discussed in the literature review of the JDCS model in section 1.7. Most studies completely or partially support the direct effects of demand and control on the various outcomes in different occupational settings. However, Jaiswal (2012) and Devi and Nagini (2013) reported no direct effect of demand or control on workplace injuries in male blue colour workers and on job satisfaction in private bank employees. The findings for the buffer theory or the effect of the interaction of demand and control were similar to the direct effect in almost all studies analysing the interaction effect. Only two studies focused on the inclusion of support in their model, reporting the direct effect of “support at work” on work stress. However, both the studies did not include the interaction effect. Thus no study confirmed the effect of the interaction of demand, control and support on any outcome variable for the Indian working population of any occupational setting.

Table 1.10: Summary of literature on JDC and JDCS model in the Indian context

Author (Year)	Sample size	Outcome	JDC		JDCS	
			DH	BH	DH	BH
Duraisingam and Dollard (2005)	194 rural development workers	Burnout	+	+	#	#
Bhugra et al. (2008)	80 doctors from north India	Burnout	±	±	#	#
Dhar and Dhar (2010)	26 IT professionals	Job stress Intention to leave	+	+	#	#
Ramadoss (2012)	774 IT HR managers	Work-related stress	±	#	±	#
Jaiswal (2012)	278 blue-collar workers in a manufacturing factory	Workplace injury Male Female	- +	- +	# #	# #
Mehta and Parijat (2012)	77 IT professionals	Musculoskeletal pain Psychological stress	+	±	#	#
Kumar and Madhu (2012)	75 Engineers, 110 Supervisors and 675 Workers from chemical industries	Work stress	+	#	+	#
Devi and Nagini (2013)	103 private sector banks employees	Job satisfaction	-	-	#	#
Prasad et al. (2018)	756 employees of agricultural research sector	Performance at work	+	+	#	#
Bhowmick and Mulla (2021)	152 police officers from Kolkata	Burnout	+	±	#	#
Padmanabhan (2021)	65 private sector employees	Workplace stress Job satisfaction	+	#	#	#

DH- Direct Hypothesis, BH- Buffer Hypothesis

+ Supported the theory, - Did not support the theory, # Theory not tested

1.10. BIBLIOMETRIC ANALYSIS

A bibliometric mapping of the research publications related to the JDC and JDCS model has been done to analyse the available literature. For this purpose, data was taken

control, stress, job demands and burnout. These identified keywords are helpful in understanding the fields in which JDC and JDCS have most often used and the variables that are predicted by these models. For example, the co-occurred keywords are depression, cardiovascular mortality, hypertension, coronary heart disease, psychosocial work environment etc., for job strain.

Similarly, the job demand-control model keyword co-occurred with demand, control, workload, burnout, job satisfaction, work-family conflict, psychological distress, work stress, job stress, depression, emotional exhaustion etc. It can be seen from Figure 1.4 that the job demand-control model has not occurred with organisational, social and personal factors. Also, musculoskeletal disorder and work performance were not co-occurred with the keyword job demand-control model. It specifies that there is a need to understand the effect of these keywords on employees for work performance and other outcomes.

A density visualization mapping of the countries of the authors and co-authors of the 1932 documents has been shown in Figure 1.5. Countries with a minimum of two documents were included in the analysis. Accordingly, 63 countries were identified. This was used to identify the geographical location of studies to understand where most of the research on the JDC and JDCS model has been focused and also to identify the countries where there is a lack of research. It can be seen from Figure 1.5 that most of the research is from the USA and European countries, followed by Australia. Asian countries like China and Japan also have some significant research but are very few compared to the USA and European countries. It is also clearly visible that India's research is very scarce in this field.

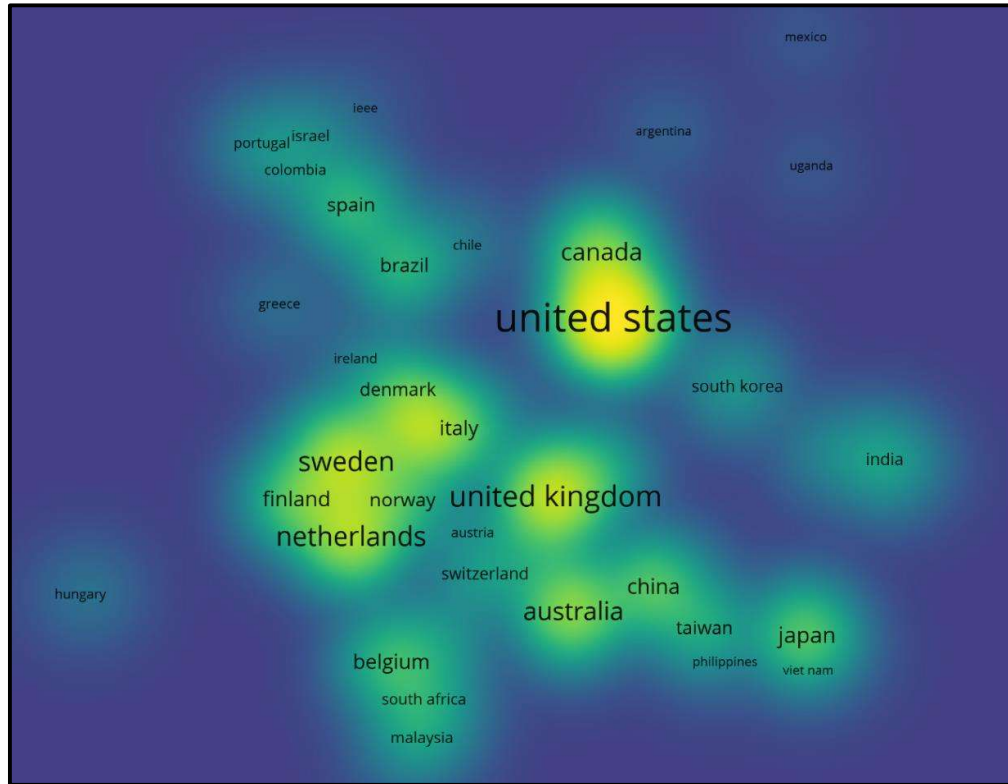


Figure 1.5: Density visualisation of the countries of authors

1.11. RESEARCH GAPS

From the literature, it has been identified that the JDC and JDCS model has been used extensively to analyse occupational stress and various other outcome variables. However, there are still some areas where further research is required. From the literature following research gaps have been identified:

- Literature review presented in Tables 1.7 and 1.8 shows that the JDC and JDCS models predict different relationships between organizational factors and outcomes related to well-being of a person in different occupations over various sectors. Very scarce literature on such relationships is visible in the telecommunication sector. So, the telecommunication sector is selected for the current work.
- It can also be seen from Table 1.9 that there is a lack of research on the stress and performance of middle-level managers. So, efforts have been made in relation to middle level managers.

- The geographical location of the sample population in studies can also yield different results for the same occupations. It can be seen from Figure 1.5 that most of the previous work has focused mainly on populations from the USA or European countries. There is a difference in the social, cultural, economic and occupational environment of these countries and Asian countries. So, the findings of these studies cannot hold for developing countries of Asia and especially India.
- There is also a lack of research on the stress and performance of Indian middle-level managers, especially those working in Telecom organizations.

Based on the above gaps identified from the literature survey, this work focuses on the effects of various factors on well-being of middle level managers working in one of the large telecom organization.

1.12. SCOPE OF THE RESEARCH

The Indian workforce is the second largest in the world. According to a report, India's employment rate for 2021 is 42.3% (Balachandar et al., 2022). Almost half of the population in India is working. Work and the workplace are an important part of life for these people, and their effect on physical and mental health is an issue of major concern. A survey of 509 working people across metro cities and from diverse sectors in India by the 7th Fold (2020) reported that 36% of employees were suffering from mental health issues (Wadhvani et al., 2020). Another survey by Deloitte (2021) ranked India as the highest among 18 countries in terms of anxiety.

Organisations are focusing more and more on the psychological and physical well-being of employees, and so Indian organisations are supposed to do. Indian organisations are working significantly to provide a safer physical work environment as they are bound by several national and international labour laws (Secki, 2015; Roychowdhury, 2018). However, psychological well-being remains one of the most

neglected issues in Indian organisations. A report by Hush (2019) showed that 42.5% of respondents suffered from stress at work, and 22% reported that their productivity was suffering due to overwork and stress (Verma, 2019). However, mental health issues are still largely stigmatised in Indian society, which is also reflected in the work culture. Anxiety, depression, substance abuse disorders, and trauma are some of the most commonly cited psychological health issues in India.

There are several research studies focusing on work-related stress and musculoskeletal disorders in the Indian workforce; however, most of them are limited to finding the prevalence of these issues. Most of the work is focused on healthcare workers, IT workers and blue-collar workers. Such studies are rare for Indian middle-level managers. Middle-level managers are placed very uniquely in the organisational hierarchy, and their roles and responsibility are very different from other employees. Also, the type of occupation is very important in these studies as organisational factors vary among the occupations and organisations. Indian public telecom organisation has a very different organisational structure and environment. There is a lack of research on the effect of organisational, social and personal factors on work-related stress and musculoskeletal disorders in middle-level managers working in Indian telecom organisations, specifically in the public sector.

This research aims to study these relationships for the middle-level managers working in a major Indian telecom organisation. This study also explores the relationship between work-related stress, WMSDs and work performance. The main objective of this study is to find the validity of the JDC model and expand the existing model by including other organisational, social and personal factors to predict work-related stress and WMSDs and work performance in Indian middle-level managers working in public telecom organisations. Indian organisations, private as well as public, need to focus their

attention on the physical and psychological well-being of employees. This research focuses on understanding the effect of organisational and other factors on the well-being of employees. This will help the current organisation and policymakers to decide which dimensions of work and the workplace need to be focused more for the well-being of the employees.

1.13. OBJECTIVE OF THE THESIS

From the literature, the research gaps were identified and discussed in section 1.12 of the chapter. An effort has been made to bridge these research gaps under this work. For this purpose, a case study of an Indian major telecom organisation was considered. The organisation is the largest telecom organisation in India. Data related to all the factors considered in the study is collected from the middle-level managers working in the case organisation. For this case, the following research objectives were identified.

1. To check the validity of the job demand-control (support) model.
2. To analyse the effect of control dimensions on psychological stress.
3. To analyse the effect of organizational factors on psychological stress and WMSDs.
4. To analyse the direct and indirect effects of organizational, social, and personal factors and physical and psychological stress on work performance.

1.14. THESIS ORGANISATION

Chapter 1 presents an overview of the research and discusses the literature review. It also presents the research gaps and the objectives. **Chapter 2** details the questionnaire used for the study, data collection, analysis of the questionnaire and methods used in this research. **Chapter 3** describes the case study to check the validity of the JDC and JDCS

models for the Indian Middle-Level Managers (MLMs). **Chapter 4** discusses the analysis of the effect of job control dimensions on psychological stress. **Chapter 5** presents the analysis of the effect of the dimensions of the JDC model on Work-Related Musculoskeletal Disorders (WMSDs). **Chapter 6** discusses the analysis of the effect of all organisational, social and personal factors, psychological stress and WMSDs on the work performance for the present case organisation. The last **Chapter 7** discusses the conclusions, managerial implications, limitations and future scope of the present research work.