

Research Article

Identifying the Moderating Effect of Hyperconnectivity on the Relationship between Job Demand Control Imbalance, Work-to-Family Conflict, and Health and Well-Being of Office Employees Working in the Oil and Gas Industry, Malaysia

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Received 11 January 2022; Accepted 9 April 2022; Published 23 May 2022

Academic Editor: Zheng Yan

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There is an increasing acknowledgment of the added value obtained by integrating technological efforts to engage employees round the clock for organizational productivity. Hyperconnectivity is the demand of time for competitive advantage in businesses, but studies on its impact on the health and well-being of the employees have been neglected in academic research. Hence, in this study, we investigated the effect of hyperconnectivity on health and well-being, and in moderating the effect of work-to-family conflict and job demand control imbalance on the health and well-being of the office employees. An online questionnaire survey was used to collect data from 410 office employees working in the oil and gas industry in Malaysia. Respondents were approached through the LinkedIn forum. Statistical tests, principal component analysis, structural equation modeling, and path analysis were conducted. It is found that hyperconnectivity has a negatively insignificant effect on health and well-being. In addition, hyperconnectivity significantly strengthens the negative effect of job demand control imbalance (22%) and work-to-family conflict (24%) on health and well-being. It is concluded that hyperconnectivity decreases health and expedites other psychosocial hazards related to the health and well-being of the employees. Urgent measures should be taken to reduce unnecessary and frequent online notifications, messages, emails, and phone calls, both during and off-working hours. In this way, the effect of job demand control imbalance and work-to-family conflict can be reduced on the health and well-being of the office employees. Considering the negative consequences of hyperconnectivity, this problem should be addressed in health and safety policies in organizations. Future studies can investigate the effect of hyperconnectivity on job demands and control separately.

1. Introduction

Organizations are rapidly adopting mobile and computer technology to enhance productivity through knowledge sharing and competitive advantage [1]. Technological advancements in organizations can lead to enhanced communication/hyperconnectivity between person-to-person through mobile applications/computers and between a machine (mobile application/computers) and person [2]. A Canadian social scientist coined the term, “hyperconnectivity” from studies on networked organizations and networked societies [3]. Therefore, hyperconnectivity refers

to increased connectivity [4]. Increased connectivity can result from multiple sources, such as emails, telephone, instant messaging, and Web 2.0. Information communication technological (ICT) tools facilitate increased communication between employers and employees during working hours and beyond working hours [5]. Organizations are therefore turning to hyperconnectivity to advance their businesses [6, 7]; to better engage employees [8]; for knowledge sharing [1]; and competitive advantage [9]. Besides its advantages, hyperconnectivity has some drawbacks in the domain of human resource planning, performance management, reward management, training and development, and

health and safety [10]. The aspect of health and safety from the perspective of hyperconnectivity has been rarely investigated. Zoonen et al. [5] investigated one aspect of hyperconnectivity, i.e., increased communication beyond working hours and termed this as technology-assisted supplemental work (TASW); they found that individuals are independent in contributing to TASW. Mansour et al. [11] identified a positive relationship between hyperconnectivity and work-family conflict mediated by work intensification (long-term changes in work-related demands). However, the effect of hyperconnectivity on employees' health and well-being has not been measured yet. Hyperconnectivity has brought about a change in work design through advanced and frequent communication between employers and employees. Risk factors affecting health and well-being arise through the changing nature of work design, and these factors are defined as psychosocial hazards. The health of the office employees is at greatest risk as their nature of work depends on computers/laptops/ICT. Badri et al. [12] argued that organizations employ technological interventions to protect and promote employees' health and well-being and organizational outcomes. The question of how these new changes (hyperconnectivity) affect the relationship between existing psychosocial hazards (such as job demand control imbalance and work-to-family conflicts) and health and well-being needs to be addressed.

Psychosocial hazards pose significant health and safety risks for employees and employers, causing substantial personal and productivity losses in the workplace. The role of health and well-being is critical for organizational productivity [13] and the sustainable development of a country. Recent global statistics show that 264 million people suffer from depression and anxiety which is the leading cause of disability and costs USD one trillion per year to the global economy [14]. The health and well-being of the employees has a fundamental impact on organizational performance [15, 16] through employee productivity.

Therefore, the problem of diminishing health and well-being of the employees due to increased hyperconnectivity in the organization is the main motivation for us to investigate the effect of hyperconnectivity on health and well-being. Before increasing hyperconnectivity for the benefit of the businesses, it must be determined whether or not these business benefits accrue at the cost of employees' health and well-being. It must not be forgotten that human beings are the greatest asset of an organization for sustainable development.

Hence, taking into consideration the challenges to the health and well-being of the employees, there has been a paradigm shift in the way to protect and promote the health and well-being of employees [14]. This research focused on two agendas; (1) identification of the effect of hyperconnectivity on the health and well-being of office employees and (2) the influence of hyperconnectivity in moderating the effect of work to work-life conflict and job demand control imbalance on the health and well-being of office employees.

This research adds to the existing literature on workplace health and safety, specifically the moderating effect of hyperconnectivity on the relationship between psychosocial haz-

ards (job demand control imbalance and work-to-family conflict) and health and well-being. It is hoped that this study can benefit employers. Considering the association between hyperconnectivity and psychosocial hazards and health and well-being, hyperconnectivity can be reduced and managed effectively in the best interests of employees' health and organizational performance in the long run.

The rest of the article is structured as follows: the second section provides a review of previous studies; the third section elaborates on the theoretical framework and research hypotheses related to psychosocial hazards (job demand control imbalance and work-to-family conflict), hyperconnectivity, and the health and well-being of the employees. In Section 4, the research methodology is presented, followed by results in Section 5. Discussion and conclusion are presented in Section 6.

2. Literature Review

Previous studies have found mixed results related to the advantage and disadvantages of hyperconnectivity. On the one hand, it is beneficial for business progression [7]; on the other hand, it can jeopardize health and well-being by causing psychosocial hazards at work. Mansour et al. [11] investigated the dark side of hyperconnectivity using a questionnaire survey and collecting data from 388 accounting professionals in Canada. They found that work intensification increases the use of smartphones/tablets outside of working hours and the use of smartphones increases the intensification of work-to-family conflict (WFC). Laudren [17] identified that hyperconnectivity can result in psychosocial risks to individuals, but it is caused by the reward circuit. Suggestions have been made to reduce hyperconnectivity through cognitive processes, like stepping back and taking a critical view of one's own connectivity. Cumulatively, these studies have identified the causes (work intensification and reward circuit) of hyperconnectivity from the employees' perspective.

Obushenkova et al. [18] concluded through a qualitative study that hyperconnectivity increases due to the provision of smartphones to the employees by the employers. Investigating the consequences of hyperconnectivity, Dery et al. [19] evinced that continuous electronic connection to work activities creates problems for work-life balance. They further concluded that reducing smartphone usage and disconnecting from work has become impossible for workers. Barley et al. [20] found that handling a large number of emails leads to stress and anxiety due to longer working hours needed.

Cumulatively, these studies have identified the causes (work intensification and reward circuit) of hyperconnectivity from the employees' perspective. It has been concluded that hyperconnectivity causes psychosocial hazards at work. Psychosocial hazards investigated in this context include disturbed work-life balance and long working hours. Hyperconnectivity affects job demand control imbalance which can also lead to extended work hours and work-to-family conflict later on. It shows that hyperconnectivity affects work-to-family conflict [11] and work-to-family conflict

leads to adverse health and well-being, whereas, the direct effect of hyperconnectivity on health and well-being has not been investigated so far. Adverse health reduces the capability to cope with psychosocial hazards related to work. In addition, the moderating effect of hyperconnectivity on the relationship between psychosocial hazards and employees' health and well-being has been ignored by previous researchers. Therefore, in this study, we fill the gap by measuring the effect of hyperconnectivity on health and well-being and by identifying the moderating effect of hyperconnectivity on the relationship between job demand control imbalance, work-family conflict, and health and well-being.

3. Theoretical Framework and Research Hypotheses

According to Karasek's job demand control model, when job demand exceeds job control, it creates stress and affects health and well-being [21]. Schlosberg's transitional theory (1995) posits that it changes the existing relationships when a transition occurs. However, the effect of change on existing relationships depends on four factors: situation, self, support, and strategy. Therefore, in this study, the effects of job demand control imbalance and WFC (psychosocial hazards) on health and well-being represent the existing relationships, while hyperconnectivity is the transition, which affects the relationship between psychosocial hazards and health and well-being. Hence, theoretical framework of the relationship between psychosocial hazards and health and well-being is as in Figure 1, underpinned by Schlossberg's transitional theory (1995) [22].

3.1. Psychosocial Hazards and Health and Well-Being. Organizations hire employees with good health and well-being. Protecting and promoting the health and well-being of the employees comes under the responsibility of the organization. Within an organization, job design, job content, work pace, working hours, physical environment, the behavior of the supervisors and peers, and effort and rewards determine the health and well-being of the employees. Karasek Jr [23] combined all work-related factors as job demand and control and developed a model where demands in excess of control determine the health and well-being of the employees. Job demands are subdivided into four categories: quantitative demands, work pace, emotional demands, and demands for hiding emotions. Job control, which is also referred to as decision latitude, has two dimensions: decision authority and skill discretion [24], and it has been found that job control exceeding job demands improves health and well-being [25]. Work-to-family conflict is another psychosocial hazard which refers to an employee's responsibilities at home conflicting with office tasks. Work-to-family conflict deteriorates the health and well-being of employees [26, 27]. Landsbergis et al. [28] and [29] considered these factors job stressors. There are several psychosocial hazards but job demand and control imbalance and work-to-family conflict strongly affect health and well-being [30]. Therefore, the following is hypothesized:

H₁: Work-to-family conflict has a significantly negative effect on health and well-being.

H₂: Job demand control imbalance has a significantly negative effect on health and well-being.

3.2. Technological Advancement. Technology has created a huge revolution in organizations with positive outcomes for employers and employee [31]. Industrial revolution (IR) 4.0 has brought cyberphysical systems with the Internet of Things, robotics and artificial intelligence, big data, and cloud computing [32, 33]. Hyperconnectivity is an advanced form of the Internet of Things [34, 35], which explains what person-to-person, person-to-machine, and machine-to-machine communication, including emails, instant messaging, telephone, face-to-face, and Web 2.0, information service as communication sources means [3, 36]. An employee is hyperconnected with his supervisor and other employees, horizontally and vertically, and with customers and suppliers [37, 38]. This network of office affairs keeps employees engaged for 24 hours due to competitive advantage [39].

Technological advancement could be particularly related to work stressors [40]. Therefore, technological advancement in offices is troubling employees along with facilitating them [41]. Technological advancement, in terms of office setting, could be seen through hyperconnectivity [42], where employees are connected to their superiors and coworkers through the company intranet, emails and instant messaging, to accomplish organizational tasks in vertical and horizontal hierarchies to disseminate information and assign tasks [43]. During working hours in offices, instant messages in official and unofficial online groups mess up important information. It takes more time for the employees to search for required information and reduces the time to perform assigned tasks (situation) [44]. Consequently, the tasks pile up and increase job demands, creating an imbalance in job demand and control [21]. This generates stress in employees and affects their health and well-being. Therefore, the following is hypothesized:

H₃: Hyperconnectivity has a significantly negative effect on health and well-being.

H₄: Hyperconnectivity moderates the effect of job demand control imbalance on health and well-being.

Through small android devices, hyperconnectivity has removed the need for the traditional offices [45]. Nowadays, office tasks can be done outside of office premises, such as during traveling, enjoyment outside or at home while spending time with family members. Although hyperconnectivity has removed the difference of locations and relaxed employees at the same time intermixed the office, home, and enjoyment timings [43]. This ambiguous schedule (situation) [44] is not conducive for fulfilling work and family responsibilities appropriately and causes stress in employees. Conflicting work-life balance leads to adverse health (i.e., laziness, obesity, musculoskeletal disorders, and cardiovascular diseases) [46, 47] and poor well-being, such as employees not feeling happy and satisfied with their lives and not having adequate time to maintain their social relationships and paying attention to developing good character

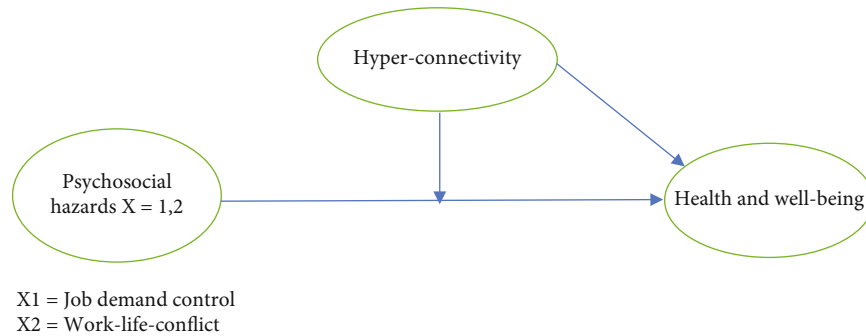


FIGURE 1: Conceptual model of hyperconnectivity moderating the effect of psychosocial hazards on health and well-being. X1 = job demand control. X2 = Work – life conflict.

and virtues. Therefore, hyperconnectivity can moderate the effect of work-to-family conflict on the health and well-being of the employees.

H₅: Hyperconnectivity moderates the relationship between work-to-family conflict and health and well-being.

4. Research Methodology

To verify the hypotheses developed in this study, the targeted respondents are office employees working in a hybrid mode, for example, from anywhere as well as from a fixed office, based on the schedule provided by the employer. Targeted respondents were approached through the LinkedIn application. To identify the potential respondents, office employees were asked about their work schedules. Then, the respondent's consent was obtained to collect data. To extract accurate responses, the respondents were assured that the collected data will be kept confidential and the results of the study will not affect their job. Data was collected through an online questionnaire survey from 410 office employees working in the oil and gas industry, Malaysia. A total of 399 responses were used for data analysis, with 11 responses being discarded due to missing value and outliers.

4.1. Measures. Several definitions have been used to describe health and well-being as the World Health Organization (WHO) defines health as a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity [48]. It is consistent with the biopsychosocial model of health that includes physiological, psychological, and social factors in health. Smith [49] criticized that it is unrealistic as it considers people being unhealthy most of the time [50]. Stoewen [51] distinguished between health from well-being, where health is a state of being and well-being is the state of living a healthy lifestyle. In the area of occupational health and safety, several researchers have tried to explain the subdimensions of health and well-being of employees. Based on their view, the most discussed categories in health and well-being are physical and mental health.

Physical health covers everything from diseases to the level of fitness [52], while mental health is related to psycho-

logical well-being [53]. According to [52], mental and physical health is interrelated and constitutes health in proximity [54]. Hence, health develops in an external environment (societal) [55]; therefore, social relationships and happiness and life satisfaction are termed as well-being [56]. Thus, to constitute a scale of health and well-being, we reviewed previous scales that have included the components of health and well-being together. Ryff and Keyes [57] introduced six factors of psychological well-being, i.e., self-acceptance, personal growth, purpose in life, environmental mastery, autonomy, and personal relations with others [58]. But these factors vary based on gender [59], age [60], and cultural background [61]. Veenstra-Vander Weele [62] combined the concept of health and well-being and constituted a flourishing index with six domains: happiness and life satisfaction, mental and physical health, meaning and purpose, character and virtue, close social relationships, and financial and material stability. These apply for a culturally diverse population [63].

Therefore, to measure health and well-being, a scale developed by Veenstra-Vander Weele [62] was adopted with its extended version by Kanwal and Isha [64]. In which four items related to mental health adopted from Copenhagen's Psychosocial Questionnaire (Version iii): (i) "If you have sleeping disorders, how would you rate it?"; (ii) "If you have difficulty with remembering, how would you rate it?"; (iii) "If you have concentration problems, how would you rate it?"; and (iv) "If you have experienced stomach disorder, how would you rate it?". Four items related to musculoskeletal health were adopted from a questionnaire from Cornell University (1994): (i) "If you have experienced neck/shoulder pain, how uncomfortable is this?"; (ii) "If you have experienced lower back pain, how uncomfortable is this?"; (iii) "If you have experienced eye strain (blurred vision/headache), how uncomfortable is this?"; and (iv) "If you have experienced leg pain, how uncomfortable is this?". All the items were measured on a scale ranging from 0 to 10.

Hyperconnectivity was measured on a 5-point Likert scale developed by Mansour et al. [11], ranging from "1" = strongly disagree to "5" = strongly agree, and modified according to our study's context. Four items were used to measure this scale, for example: "I receive information and instructions extensively during my office work"; "I receive

information on my smartphone or tablet intensively after working hours for work-related purposes”; and “I feel obliged to respond to work-related messages immediately”.

Work-to-family conflict was measured on a 5-point Likert scale ranging from “1” = strongly disagree to “5” = strongly agree, adopted from the study of Eshak and modified accordingly. The items included: “My job takes so much time; so, I cannot pay attention to home”; “My job reduces the amount of time which I can spend with family”; “My job requires a lot of online activities, which keeps me engaged during family time”; “Problems at work make me irritable at home”; “My job takes so much energy; so, I do not feel up to doing things that need attention at home”. Job demands (11 items) (quantitative demands, work pace, emotional demands, and demands for hiding emotions) were measured using a scale adapted from Copenhagen’s Psychosocial Questionnaire. Job control was measured by 16 items on a 5-point Likert scale adopted from the study of Khan. Job demand control imbalance was calculated by dividing the score of job demands by the score of job control and multiplied by the correction factor (11/16).

4.2. Statistical Analysis. For content validity, the questionnaire was sent to an expert evaluation committee consisting of three industry experts, two policy experts, and three academic experts. Based on the experts’ evaluation, item content validity (I-CVI) and scale content validity (S-CVI) were calculated and the results were favorable as each item was found to be valid, in that a score > 0.78 was obtained [65]. Content validity was 0.94 for relevancy and 0.98 for simplicity, i.e., greater than the standard criteria of 0.90 recommended by [65].

For content validity, the questionnaire was pilot-tested by collecting data from 70 office employees who were randomly selected. After removing responses with missing values, 66 responses were used to test for reliability of the questionnaire using Cronbach’s alpha via SPSS. The reliability of the questionnaire was confirmed through Cronbach’s alpha of ≥ 0.75 . After this, a stratified random sampling technique was used to collect data from 410 office employees in small, medium, and large companies, who carried out operations in exploration, production, and development.

Responses with missing values and the same responses (neutral for each question) were removed from the data set. The remaining 399 responses were used for further data analysis. The normality of the data was tested through skewness and kurtosis. Herman’s single-factor test was used for common method bias (CMB). CMB occurs in survey research when all data (independent variables, dependent variables, and mediating and moderating variables) are collected using the same method [66, 67]. Data free from CMB is essential for the accuracy of the results; it can also affect the reliability and validity of the measures [68], as well as the beta coefficients in regression [69].

Then, structural equation modeling was used to identify the relationship between latent variables and their indicators. Initially, confirmatory factor analysis (CFA) was applied to confirm the previously identified factors in the context of this study. CFA is a statistical technique that is

used to validate the factor structure of a set of observed variables [70]. CFA was carried out using smart PLS. According to [71], construct validity comprises convergent and discriminant validity. So, convergent validity was evaluated using average variance extracted (AVE), i.e., the total of all standardized factor loadings divided by the number of items in each factor [72]. Discriminant validity was measured using the heterotrait-monotrait (HTMT) ratio as suggested by [73]. Finally, through path analysis, the effects of job demand control imbalance and work-to-family conflict on health and well-being were measured. Further, the moderating effects of hyperconnectivity on the relationship between job demand control imbalance, work-to-family conflict, and health and well-being were tested.

5. Results

5.1. Demographic Results. The sample of this study comprises 399 office employees working in the oil and gas industry in Malaysia. Their demographic profile is presented in Table 1. Male respondents constitute 66.7% and female respondents comprise 33.3%. About 97.5% of the respondents are Malaysian nationals and the remaining (2.5%) are from other countries. As for the age group, more than 70% of the respondents are 31 to 50 years. Of this, 42.9% are from the age group of 31 to 40 years; 30.1% are in the 41 to 50 years age group; 16.8% are in the 21 to 30 years age group; and 10.3% are from the age group of 51 to 60 years. Statistics of education show that respondents with bachelor’s degree constitute 70.2% and 22.3% have a master’s level of education, while 5% have a Ph.D. degree, 0.5% are diploma holders, and 2% have different levels of education, such as foundation and professional qualifications. In terms of job experience, more than 70.9% of the respondents have more than eight years, 11.5% have job experience of two to four years, 8.3% experienced four to six years, 8% have job experience of six to eight years, and 1.3% have job experience of less than two years. Based on the designation, executives account for 40.9% of the study sample; 36.3% are middle managers; 20.8% are top managers; and nonexecutives comprise 2%. About 89.7% of the respondents are permanent employees and 10.3% work on a contract basis.

5.2. Confirmatory Factor Analysis

5.2.1. Reflective Measurement Model. The results of the reflective measurement model presented in Table 2 exhibit the values of outer loadings ranging from 0.61 to 0.92 for all the indicators of latent constructs. The outer loading values greater than 0.70 indicate the reliability of the items in the latent construct [74]. However, the values between 0.40 and below 0.70 are also considered reliable if the deletion does not lead to an increase in composite reliability and AVE [74]. Therefore, the items with outer loadings ranging from 0.61 to below 0.70 were not eliminated from the model because the removal caused a reduction in the overall reliability of the model. The value of standardized root mean square residual (SRMR) of 0.065 is less than the threshold value of 0.08, confirming model fitness [73, 75].

TABLE 1: Respondent's demographic characteristics.

Demographic	Frequency	Percentage
<i>Gender</i>		
Male	266	66.7
Female	133	33.3
<i>Nationality</i>		
Malaysian	389	97.5
Others	10	2.5
<i>Age</i>		
21–30 years	67	16.8
31–40 years	171	42.9
41–50 years	120	30.1
51–60 years	41	10.3
<i>Education</i>		
Diploma	2	0.5
Bachelor degree	280	70.2
Master degree	89	22.3
PhD	20	5.0
Others	08	2.0
<i>Job experience</i>		
Less than 2 years	5	1.3
<2 to 4 years	46	11.5
<4 to 6 years	33	8.3
<6 to 8 years	32	8.0
<8 years	283	70.9
<i>Designation</i>		
Top manager	83	20.8
Middle manager	145	36.3
Executive	163	40.9
Nonexecutive	8	2.0
<i>Job status</i>		
Permanent	358	89.7
Contract	41	10.3

5.3. Reliability and Validity of the Constructs. Assessment of reflective constructs' reliability and validity involves determining internal consistency, discriminant validity, and convergent validity [72–74]. For internal consistency, Cronbach's alpha values should be higher than 0.70 [76, 77], Table 2 shows Cronbach's alpha values for all the constructs are greater than 0.70. Composite reliability measures a set of items shared in a construct and the threshold value should be greater than or equal to 0.70 [78]. The value of composite reliability for all the constructs in this study ranges from 0.81 to 0.90. Convergent validity can be measured through discriminant validity. [73] proposed a new HTMT ratio to measure discriminant validity. Table 3 shows that all HTMT values are lower than the threshold value of 0.90 [79].

5.4. Moderating Effect. Figure 2 represents the moderating effect of hyperconnectivity on the relationship between

health and well-being and work-to-family conflict. The graph depicts hyperconnectivity strengthens the negative effect of work-to-family conflict on health and well-being by 24%. Similarly, hyperconnectivity increases the negative relationship between job demand control imbalance and health and well-being by 22% (Figure 3).

5.5. Common Method Bias. Common method bias occurs when data for all the variables used in the study are collected through the same method [67, 69], which can affect the robustness of the results. As in this study, we used a questionnaire survey to collect all the data. Therefore, through Herman's single-factor analysis, we found that one factor accounted for 17% of the variance, which is less than 50% [80]. Hence, it is confirmed that the data used in this study was not suffered from common method bias.

5.6. Path Analysis. Table 4 showing the results of the structural model evinces that work-to-family conflict significantly decreases (26%) health and well-being. Hyperconnectivity significantly increases the negative effect of work-to-family conflict on health and well-being. Job demand control imbalance has a significantly negative effect (47%) on health and well-being. The moderating effect of hyperconnectivity on the relationship between job demand control imbalance and health and well-being is significantly negative. The value of the correlation coefficient (R^2) shows that the independent variables account for 50% variation in the dependent variable (health and well-being). Furthermore, the indirect effect of exogenous variables on the dimensions of health and well-being in this reference shows that work-to-family conflict has a significantly negative effect on health and well-being (26%) and on its subdomains, i.e., happiness and life satisfaction (19.6%); character and virtue (16%); close social relationships (19.6%); mental health (18.9%); and 19.5% on musculoskeletal health. Similarly, the effect of job demand control imbalance on health and well-being and its subdomains is found to be significantly negative. The effect of hyperconnectivity is insignificant on health and well-being but it significantly negatively affects the subdomains of health and well-being. The interaction effect of work-to-family conflict and hyperconnectivity on subdomains of health and well-being is significantly negative as 13% (happiness and life satisfaction); 12% (close social relationship); 12% (mental health and musculoskeletal health distinctly); and 11% (character and virtue). Similarly, the interaction effect of job demand control imbalance and hyperconnectivity is also significantly negative on subdomains of health and well-being as 16% (happiness and life satisfaction); 16.6% (close social relationship); 16% (mental health and musculoskeletal health separately); and 14% (character and virtue). Work-to-family conflict, job demand control imbalance and the interaction effect between hyperconnectivity and work-to-family conflict and job demand control imbalance and hyperconnectivity, account for 50% variation in health and well-being; 55% in happiness and life satisfaction; 40% in character and virtue; 55% in close social relationships; 51% in mental health; and 52% in musculoskeletal health.

TABLE 2: Results of the reflective measurement model.

Latent variables	Item indicators	Outer loadings	VIF	Cronbach's α	CR	AVE
Hyperconnectivity	Hyp1	0.828	2.063	0.833	0.876	0.588
	Hyp2	0.795	2.329			
	Hyp3	0.631	1.491			
	Hyp4	0.823	1.741			
Work-to-family conflict	WFC1	0.870	2.510	0.874	0.908	0.664
	WFC2	0.826	1.928			
	WFC3	0.801	1.939			
	WFC4	0.781	1.871			
	WFC5	0.795	1.867			
Job demand control imbalance	JDCI	1	1	1	1	1
Health and well-being	HW			0.889	0.905	0.519
Happiness and life satisfaction	HW1HLS1	0.865	1.529	0.741	0.884	0.792
	HW2HLS2	0.914	2.648			
Character and virtue	HW3CV1	0.911	1.503	0.733	0.881	0.788
	HW4CV2	0.863	1.697			
Close social relationships	HW5CSR1	0.887	1.872	0.764	0.864	0.680
	HW6CSR2	0.791	1.977			
	HW7CSR3	0.793	1.771			
Mental health	HW12MH1	0.762	2.016	0.819	0.880	0.649
	HW13MH2	0.724	1.768			
	HW14MH3	0.887	2.511			
	HW15MH4	0.839	2.249			
Musculoskeletal health	HW16MsH1	0.859	2.181	0.792	0.867	0.622
	HW18MsH2	0.833	1.924			
	HW19MsH3	0.803	1.731			
	HW19MsH4	0.641	1.25			

TABLE 3: Heterotrait-monotrait ratio (HTMT).

	CSR	CV	FMS	HLS	HP_	MH	MSD	HP*WFC	HP*JDCI	WFC	JDCI
CSR											
CV	0.848										
FMS	0.676	0.594									
HLS	0.832	0.632	0.718								
HP	0.071	0.125	0.18	0.088							
MH	0.378	0.313	0.411	0.481	0.1						
MSH	0.398	0.323	0.466	0.548	0.161	0.781					
HP*WLB	0.21	0.158	0.209	0.242	0.237	0.179	0.231				
HP*JDCI	0.099	0.134	0.081	0.055	0.137	0.058	0.065	0.112			
WLB	0.366	0.288	0.528	0.464	0.091	0.658	0.588	0.161	0.041		
JDCI	0.129	0.155	0.159	0.171	0.109	0.269	0.299	0.019	0.203	0.161	0.268

6. Discussion and Conclusion

Hyperconnectivity is an advanced form of technology applied by organizations to engage employees for the maximum time to enhance organizational productivity (Afriza Hani Mohd Sinon, 2020; [81]). However, the effects of hyperconnectivity on health and well-being and to moderate

psychosocial hazards have never been investigated. This study measured the effects of hyperconnectivity in the context of the health and well-being of office employees. This study hypothesized that hyperconnectivity has a moderating effect on psychosocial hazards (work-to-family conflict and job demand control imbalance) in affecting the health and well-being of the office employees.

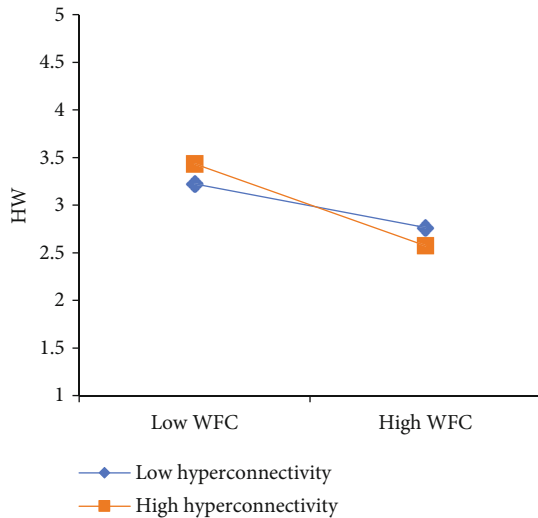


FIGURE 2: Hyperconnectivity moderating the effect of WFC on HW.

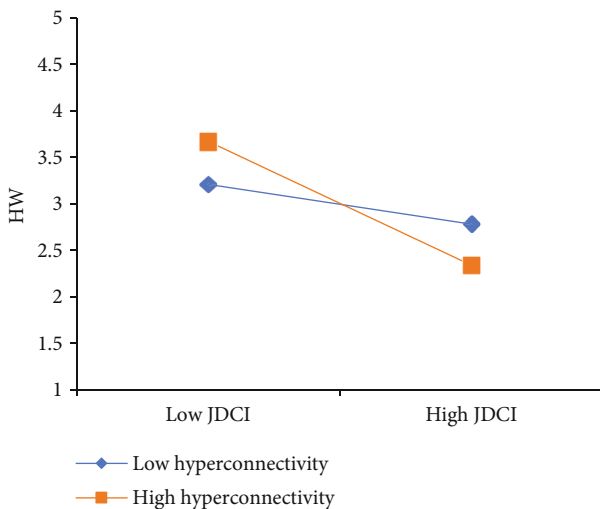


FIGURE 3: Hyperconnectivity moderating the effect of JDCI on HW.

The results of first hypothesis show the negative effect of work-to-family conflict on health and well-being, which are in line with the results of previous studies by Miller et al. [82] and Kayaalp et al. [83]. However, Miller et al. [82] analyzed work-to-family conflict as a mediator and health and well-being was measured through negative indicators only as depression and anxiety, whereas, Kayaalp et al. [83] investigated the effect of work-to-family conflict on mental health only and the study was conducted in context of caregivers. In this study, we have investigated office employees; however, the results are in line with the previous findings.

The results of the 2nd hypothesis, the negative relationships between job demand control imbalance and health and well-being are consistent with Fan et al. [84] and Radic et al. [85]. However, Fan et al. [84] identified the effect of job demand control imbalance on well-being only. Similarly, Radic et al. [85] also measured the effect of job demands

on employees' well-being only. Hence, they investigated the effect of job demand and job control separately, whereas according to Van Dick et al. [86] health and well-being are interrelated. Therefore, in this study, we have measured the effect of job demand control imbalance on health and well-being of the employees.

The results of the third hypothesis represent negative relationship between hyperconnectivity and health and well-being but insignificantly. It evinces that the negative relationship between hyperconnectivity and health and well-being is not clear. It supports previous study of Hoonakker in which hyperconnectivity has mixed effects on work and nonwork life. However, future studies can consider employee's personality factors in this regard to identify the employees who get negative influence and those get positive effect.

The results of the fourth hypothesis show hyperconnectivity strengthens the negative relationship between work-to-family conflict and health and well-being. Previous studies [11, 87–89] those supported the current findings are different. As in those studies, hyperconnectivity causes work-to-family conflict; we extended the studies further by identifying; how hyperconnectivity moderates the effect of work-to-family conflict on health and well-being. Therefore, findings illustrate that too much online communication between employers and employees [90] after office hours can worsen the employee's work-to-family conflict. This is because individuals do not get enough time to settle their preexisting conflicts at home. Consequently, their social relationships, happiness and life satisfaction, and mental health (i.e., sleeping disorders, short-term memory loss, and impulsiveness), as well as musculoskeletal health (i.e., blurred eye vision and neck and shoulder pain due to looking at laptop/android most of the times), are all affected negatively.

The study of Bordi et al. [88] and Lister and Harnish [91] supports the result of fifth hypothesis. However, the supported studies demonstrate that hyperconnectivity increases job demands and decreases job control/resources. In this study, we have extended the work of previous studies by including health and well-being in the model, it was empirically proved that hyperconnectivity increases the negative effect of job demand control imbalance on health and well-being. Because addressing changes and updates in previously assigned tasks takes extra time for the employees. Further, several interruptions during working hours in the form of calls, instant messages, emails, and official and unofficial online groups can prevent employees from concentrating on their job tasks [92]. On the other hand, getting numerous dictations on the tasks assigned to the employees shows their lack of control in performing office tasks [93]. Therefore, hyperconnectivity helps in decreasing job control and increasing job demands. Extended working hours reduce family time and staying connected with employers beyond working hours can further decrease family and personal time. Therefore, employees cannot allocate proper time for themselves, their families, and social circles. Thus, hyperconnectivity intensifies job demands and control imbalance, which then diminishes health and well-being [94] of the employees in each domain, such as happiness

TABLE 4: Results of the structural model.

Hypothesis	Health and well-being Model 1		Happiness and life satisfaction Model 2		Character and virtue Model 3		Close social relationships Model 4		Mental health Model 5		Musculoskeletal health Model 6		
	STD coefficient (β)	SE	Results	STD coefficient (β)	SE	STD coefficient (β)	SE	STD coefficient (β)	SE	STD coefficient (β)	SE	STD coefficient (β)	SE
H ₁ : WFC	-0.26*	0.051	Accepted	-0.196*	0.038	-0.166*	0.034	-0.196*	0.038	-0.189*	0.038	-0.195*	0.039
H ₂ : JDCI	-0.47*	0.046	Accepted	-0.353*	0.038	-0.3*	0.038	-0.352*	0.04	-0.341*	0.036	-0.351*	0.036
H ₃ : Hyp	-0.040	0.038	Rejected	-0.03	0.029	-0.025	0.025	-0.03	0.029	-0.029	0.028	-0.03	0.029
H ₄ : Hyp*WFC (moderating effect)	-0.24*	0.043	Accepted	-0.13*	0.032	-0.11*	0.028	-0.129*	0.033	-0.125*	0.031	-0.129*	0.032
H ₅ : Hyp*JDCI (moderating effect)	-0.22*	0.058	Accepted	-0.166*	0.044	-0.141*	0.039	-0.166*	0.044	-0.16*	0.042	-0.165*	0.043
R ²		0.50		0.55		0.40		0.55		0.51		0.52	

*1% level of significant.

and life satisfaction, character and virtue, close social relationships, and mental and musculoskeletal health. Conclusively, the health and well-being of the employees is being affected negatively. This study advances the theory of the job demand control model [23] by integrating Schlossberg's transitional theory (1995).

7. Practical Implications

This study investigated the current practices of hyperconnectivity between employers and employees, which are destructive to the health and well-being of the employees. The results of this study have practical implications for employers and policymakers. The negative moderating effects of hyperconnectivity and work-to-family conflict on health and well-being of the employees need the employers to restrict job activities and job-related communication within the office to reduce the negative effects of work-to-family conflicts on health and well-being of the employees. Within the workplace, the negatively moderating effect of hyperconnectivity on the relationship between job demand control imbalance and health and well-being clearly indicates that job tasks should be well-defined and clear for the employees so that there will not be any ambiguity, which can lead to hyperconnectivity between employers and employees. Therefore, management can play its role by reducing frequent changes in chronological official tasks assigned to the employees. To manage variation in the health and well-being of the employees, it is necessary to manage hyperconnectivity issues of the employees. In this regard, employers can identify and manage the impact of hyperconnectivity so as to manage variations in the health and well-being of the office employees due to psychosocial hazards.

Hyperconnectivity can be addressed in health and safety policies in the organization. Further, policy formulation is required to keep apart work activities and family time. Managers and employers need to play their role in implementing health and safety policies effectively.

8. Limitations and Future Research Directions

This study identified the role of hyperconnectivity in shaping the relationships of psychosocial hazards on the health and well-being of the employees. Occupational health is being influenced by several psychosocial hazards, but we investigated only two due to their stronger impact on health and well-being [30]: job demand control imbalance and work-to-family conflict in the context of office employees.

Future studies can enhance this study in several ways. Firstly, by incorporating other psychosocial hazards, such as effort-reward imbalance and interpersonal conflicts, moderated by hyperconnectivity and its effects on health and well-being. Secondly, by investigating the moderating effect of hyperconnectivity on job demands and job control separately. Thirdly, in this study, self-reported health of the employees was examined. In the future, health biomarkers can be used to measure the health of the employees. Fourthly, the sample can be drawn from a diversified population based on different industries and geographical

regions. This is because this study is conducted only on office employees related to the oil and gas sector in Malaysia. Fifthly, this study is cross-sectional; hence, its results can be validated through a longitudinal study in the future.

Data Availability

Data is saved in the custody of authors and will be available on request to the corresponding author.

Conflicts of Interest

The authors declare no conflict of interest.

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