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Do Employees Experience and Perceive Work Time Differently? – Examining the Effects of Working Hours on Well-Being in Abu Dhabi

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Abstract:
This study aims to investigate the association between working hours and well-being factors for full-time employees in Abu Dhabi. We specifically seek to analyze and confirm the relationship between work hours and well-being factors such as health, work-life balance, social connections, income satisfaction, and life satisfaction across different demographic groups of the working population. Data were drawn from the 3rd Cycle of the Abu Dhabi Quality-of-Life Survey, which included 40,016 full-time employees. Guided by the Job Strain Model and other theoretical frameworks, we performed correlation, ANOVA, and regression analyses to understand the interaction between job demands and job control and how this interaction impacts worker well-being outcomes. The results show that the three top factors most significantly associated with working hours are work– life balance, fulfilling family responsibility, and quality of time with family. For some segments, such as females, singles, non-Emiratis, and those of lower educational qualifications, working hours negatively affected their opportunity to socially meet with friends and opportunities to be more physically active. A negative relationship between working hours and mental stress is observed in many demographic segments. Overall, these findings emphasize that increased job demands without adequate job control lead to strain, but the manifestations and coping mechanisms can vary significantly based on gender, societal roles, and workplace dynamics. The present Abu Dhabi study extends current research by investigating the associations between working hours and different well-being factors among multiple segments of the working population that differ in demographic characteristics. The analyses offer clear and valuable insights to policymakers, researchers, and the public interested in understanding the influence of working time on well-being.

Keywords: working time, life satisfaction, health, work-life balance, Abu Dhabi.

员工对工作时间的体验和看法是否有所不同？ – 研究阿布扎比工作时间对幸福感的影响

摘要：
本研究旨在调查阿布扎比全职员工的工作时间与幸福因素之间的关联。我们特别寻求分析和确认工作时间与不同工作人口群体的健康、工作与生活平衡、社会关系、收入满意度和生活满意度等幸福因素之间的关系。数据取自阿布扎比生活质量调查第三轮，其中包括 40, 016 名全职员工。在工作压力模型和其他理论框架的指导下，我们进行了相关性、方差分析和回归分析，以了解工作要求和工作控制之间的相互作用以及这种相互作用如何影响工人的福祉结果。结果表明，与工作时间关系最密切的三个因素是工作与生活的平衡、履行家庭责任以及与家人在一起的时间质量。对于某些群体，例如女性、单身人士、非阿联酋人和教育程度较低的人来说，工作时间对他们与朋友进行社交聚会的机会以及进行更多身体活动的机会产生了负面影响。在许多人口群体中都观察到工作时间与精神压力之间存在负相关关系。总体而言，这些发现强调，工作要求的增加而没有足够的工作控制会导致压力，但其表现形式和应对机制可能因性别、社会角色和工作场所动态而有很大差异。目前的阿布扎比研究通过调查人口特征不同的多个工作人群中工作时间与不同幸福因素之间的关联，扩展了当前的研究。这些分析为政策制定者、研究人员和有兴趣了解工作时间对福祉影响的公众提供了清晰且有价值的见解。

关键词：工作时间，生活满意度，健康，工作与生活的平衡，阿布扎比.

1. Introduction

In an innovative move, the United Arab Emirates (UAE) has embarked on an experiment with shorter work weeks in the government sector starting from the 1st of January 2022, distinguishing itself as a forerunner in redefining the conventional work culture in the Gulf region. This transition has shifted the standard workweek from Sunday through Thursday to a more condensed model. By incorporating a 4.5-day working pattern with Friday afternoon, Saturday, and Sunday as the weekend, the UAE aims not only to align more closely with global markets and maintain its competitive edge, but also to improve employee work-life balance and boost productivity (Bostock, 2021). This change has been instrumental in improving work-life balance for the working population of the UAE, leading to a greater interest in understanding the correlates and impact of work-life balance on the happiness of individuals and their families. Policymakers are especially keen to further understand the phenomenon to drive similar policies. Thus, there is a demand for more research to analyze the effects of working time on the well-being of individuals and families.

In the context of the Emirate of Abu Dhabi, an earlier work by Badri et al. (2022), using path analysis, showed that working time negatively affects work-life balance, frequency of meeting with friends, happiness, and stress. While the results confirmed other empirical findings that a more balanced work-life lifestyle helps bring more positive feelings and motivation (Holly & Mohnen, 2012; Hsu et al., 2019), the path model did not incorporate individual-level demographic variables such as gender, age, nationality, and marital status, and therefore did not provide a full account of the effects of working hours on employees' well-being.

This study aims to bridge this literature gap and meet policy demand by factoring in many individual and family well-being aspects in the analysis. We employ descriptive and inferential statistical methods to examine the differences in the effects of varying working hours on full-time employees in Abu Dhabi. The main objective of this study was to use linear regression to model the relationship between working hours and each of the selected well-being indicators of various demographic cohorts. The analyses offer clear and valuable insights to policymakers, researchers, and the public interested in understanding the influence of working time on well-being.

2. Literature Review

2.1. Theoretical Framework

This study is guided by the job strain model (JSM), also known as the demand-control model (Karasek & Theorell, 1990; Theorell, 2020). The JSM is a widely recognized framework used to understand the interaction between job demands and job control and how this interaction impacts worker health outcomes (Alves et al., 2013).

The components of the JSM are job demand, job control, and social support. Job demand refers to the aspects of a job that require sustained psychological effort. This includes workload, time pressures, and intellectual requirements of the work. High job demand, especially when it is constant and uncontrolled, can lead to significant stress (Kain & Jex, 2010). Job control, or decision latitude, refers to the degree of freedom, flexibility, and discretion an employee has in carrying out his/her work, including using and developing skills and making decisions. High job control can mitigate the negative effects of high job demands, whereas low job control can exacerbate stress (Schreurs et al., 2010). Although being not part of Karasek's original model,

social support was later incorporated as a critical buffer against job strain. Social support in the workplace can come from colleagues, supervisors, or the organization and influences the way employees perceive and cope with job demands and control. For example, supportive work environments can help mitigate the stress of high job demands, particularly when combined with high job control (Sargent & Terry, 2000). This addition recognizes that stress is not merely a function of the individual's job demand and control but is also influenced by the broader social environment in which they work. The interplay of these factors – job demands, job control, and social support – determines the level of job strain an individual might experience (Alves et al., 2013).

The JSM suggests that jobs with high demand and low control are the most harmful to health, potentially leading to issues such as anxiety, depression, and a range of physical health problems. Conversely, jobs with high control, regardless of demand, can lead to greater job satisfaction and better health outcomes. The JSM has been instrumental in workplace health interventions, guiding efforts to redesign jobs for reduced stress, improved well-being, and increased productivity. It underscores the importance of not only managing workloads but also enhancing employee autonomy and fostering a supportive work environment. Therefore, it is an adequate theoretical approach to explore the effectiveness of work-life balance policies. In this study, we attempt to apply the JSM by covering these factors by direct (working hours representing job demand) or proxy measures (satisfaction with work-life balance as a proxy of job control). The emphasis of the social support component distinguishes the JSM from other models, as it provides a better fit with the current dataset, in which a variety of social factors were investigated.

Empirically, various studies worldwide have investigated the effects of working time on many well-being indicators, including work-life balance (Kattenbach et al., 2010), life satisfaction or happiness (Golden & Wiens-Tuers, 2006; Okulicz-Kozaryn, 2011), job satisfaction (Booth & van Ours, 2008), subjective health and mental health (Amagasa & Nakayama, 2013), social interaction and connection (Heaphy & Dutton, 2008), and physical activity or inactivity (Sato et al., 2014). The findings of these relevant studies are briefly reviewed here.

2.2. Work Hours and Health

Through their empirical work, researchers have mostly indicated a negative relationship between working hours and health (de Lange et al., 2004). Some studies have indicated that higher incidents of illness are associated with increased working hours (Berg et al., 2003). Rau and Triemer (2004) showed that longer working hours lead to higher blood pressure and negative mood. D'Souza et al. (2003) and Stansfeld and Candy (2006) both provided evidence of negative associations between high job demands, such as long working hours, and mental and subjective health. Some studies have reported that excessive working hours could lead to specific health difficulties, including anxiety, depression, and sleep disturbances (Amagasa & Nakayama, 2013). The association between working hours and mental and physical fatigue among factory workers and care workers has been widely reported (Caruso, 2013).

On the other hand, work schedule control and associated improved well-being of working people have been reported by others (Kelly et al., 2011). Moen et al. (2011) stressed that corporate policies and practices that offer workers more flexible schedule control could positively impact their health behavior and well-being in general.

2.3. Work Hours and Subjective Well-Being

Life satisfaction is the subjective assessment of a person's quality of life that includes various life domains such as work, home, and social life. Pouwels et al. (2008) showed that work time is essential for determining happiness and life satisfaction. Booth and van Ours (2008) found that controlling working hours led to a substantial increase in the impact of income on subjective well-being. A study published by the New Zealand Department of Labor (2008) illustrated that the proportion of workers working longer hours increased as income increased. However, Knabe and Rätzel (2010) found no supportive evidence that the impact of income on happiness tends to be downward without the work time variable. Golden and Wiens-Tuers (2006) concluded that extra money from extra work does not add to a person's life satisfaction and happiness. Wu (2016) suggested that the association between income satisfaction and working hours varies across different occupations, which tends to be stronger for farmers and public servants with higher incomes than for industrial workers. Rudolf (2014) reported that fewer working hours did not yield the expected positive effects on workers' well-being.

Okulicz-Kozaryn (2011) found that Americans spent more time working, which made them happier than Europeans, indicating that cultural elements may be involved in this phenomenon. Schröder (2022) applied random and fixed effects regressions to data from Germany, the United Kingdom, Australia, South Korea, Russia, Switzerland, and the United States, showing that the life satisfaction of men, especially fathers, increases steeply with paid working hours. They also found that the life satisfaction of mothers hardly depended on working hours.

Some other studies also found differences between men and women when it comes to working hours, but they did not consider the effect of parenthood (Angrave & Charlwood, 2015; Dinh et al., 2017). In Germany, fathers seem to profit more from working hours than women, especially mothers (Schröder, 2018). Some researchers stressed that the effect of working hours on life satisfaction depends on whether there are incentives related to childcare quality and parental leave,

especially for women (Hamplová, 2019). Therefore, it would be beneficial if studies could test if the life satisfaction of men and women with or without children is influenced by working hours (Erdogan et al., 2012).

2.4. Work Hours and Work-Life Balance

Several studies have reported that working long hours or overtime could negatively impact work-life balance (Golden & Wiens-Tuers, 2006). Some studies have focused specifically on the adverse effects of longer working hours on employee burnout (Berg et al., 2003; Kattenbach et al., 2010). Research evidence shows clear adverse effects on fulfilling family responsibilities due to engaging in excessive or unscheduled additional work (Berg et al., 2003). More frequent work-family conflict is likely to occur with more working hours (Thomas & Ganster, 1995). As demonstrated by Barck-Holst et al. (2022), shorter working hours in the Swedish social services sector could lead to improved relationships between employees and their children and spouses. Hsu et al. (2019) used path analysis that directly associated working hours with work-life balance and occupational stress, the latter of which played a mediating role in the relationships between working hours, work-life balance, and job satisfaction**.**

2.5. Work Hours and Job Satisfaction

Some studies have addressed working time and job satisfaction (Alameddine et al., 2018; Booth & van Ours, 2008). Using cross-sectional Australian data, Gray et al. (2004) suggested that fathers' satisfaction with work hours might decrease as the number of hours worked increases. In contrast, a study in Germany (Holly & Mohnen, 2012) showed a significant positive relationship between working hours and employee job satisfaction. The results suggest that employees, particularly male employees, can feel accomplished from their heavy workload. Booth and van Ours (2008) found that men have the highest work satisfaction if they work full-time without overtime hours. Rudolf's (2014) longitudinal findings in the Korean context confirmed that the job satisfaction of married female employees significantly decreases when they are required to work long hours, whereas reduced working hours for married males can increase their wives' job satisfaction.

2.6. Work Hours and Social Connections

Research evidence indicates that the number of hours worked significantly and immediately affects employees' social relationships (Heaphy & Dutton, 2008). Nahum-Shani and Bamberger (2009) and Major et al. (2002) suggested that long work hours may reduce workers' closeness to family members in terms of responsibilities and relations. Juneja and Malhotra (2016) investigated the relationship and impact of working hours on family and work conflict and social relations by focusing on the profession of doctors. Their results revealed significant conflicts in family relations. Nevertheless, a study by the National Bureau of Economic Research (NBER, 2008) focused on the effect of work hours on social interactions with family or friends and found that despite the relative reduction in work hours, there was no significant evidence to suggest increased social interactions. The potential moderating effects of age, education, and income need to be considered.

2.7. Work Hours and Physical Activity

Most research on the effect of working time has reported significant negative associations between working hours and the extent of regular physical activity (Schneider & Becker, 2005), as those in jobs demanding long working hours might encounter more time constraints to undertake physical activity than other workers. In Japan, Sato et al. (2014) attributed the prevalence of headache to long working hours and physical inactivity. However, drawing on longitudinal data from Australia, Angrave et al. (2015) did not find significant associations between longer working hours and physical activity.

2.8. Evidence from the Arab Gulf Region

Most existing relevant studies have been conducted in the United States, United Kingdom, or other Western countries. There have been calls for similar research to be conducted in other cultures to obtain a clearer picture of the relationships between work hours and well-being (Greenhaus & Powell, 2006; Williams et al., 2016). In the context of the Arab Gulf region, there have been several attempts to investigate the correlations between working hours and well-being factors. Alosaimi (2015) conducted a study on stress among residents in Saudi Arabia and found associations between stress and factors such as higher workload, sleep deprivation, and dissatisfaction with colleagues. Badri et al. (2022) examined the effect of working hours on various elements of quality of life in Abu Dhabi and found a direct effect of working hours on work-life balance, happiness, frequency of meeting with friends, and stress. A more recent study on the work environment in Arab industrial companies found differences in attitudes toward perceived stress, productivity, work environment, and workplace health among workers in different Arab countries (Wagdi & Sayed, 2023). In summary, these studies collectively suggest that work hours have an impact on stress levels in the Arab Gulf region, with factors such as work-life balance, social connections, workload, and job satisfaction all playing a role.

3. Research Design and Analysis

3.1. The 3rd Cycle Abu Dhabi Quality-of-Life Survey (2022)

The 3rd Cycle Abu Dhabi Quality-of-Life Survey included 82,761 respondents. The current study focused

on full-time employees, totaling 40,016. The survey consisted of fourteen modules, including housing, jobs and earnings, work-life balance, health, education and skills, personal safety and security, community and social connection, civic engagement and governance, environmental quality, social and cultural values, social and community services, and digital well-being. Each of the modules comprised various items with different response formats.

Based on a comprehensive literature review, the current study selected nine well-being indicators that appeared to be highly influenced by the working hours of employees in different cultures. Multiple statistical pre-analyses were performed to identify the final list of indicators used in the analysis. The pre-analysis included correlation analysis, factor analysis, and multiple t-statistics. The final indicators are summarized in Table 1. Since these items used varying scales, all data were standardized for further analysis. The demographic variables accounted for in this study included age, gender, level of education, marital status, nationality, place of work, and head of household.

Table 1. List of variables (Developed by the authors)

Variables	Explanations
Working hours	How many hours do you usually work every week? This question's response format included a sliding scale with a range of 10-80 hours.
Fulfilling family responsibility	In the past 12 months, how often has it been difficult to fulfill family responsibilities due to work demands? The question used a scale ranging from 1 (never) to 5 (all the time).
Satisfaction with income	How satisfied are you with your household income? The question used a 1-5 scale ranging from 'very dissatisfied' to 'very satisfied'.
Work-life balance	How satisfied are you with the current balance between your job and home life? The question used a 1-5 scale ranging from 'very dissatisfied' to 'very satisfied'.
Subjective health	How do you personally assess your current health status? The question used a 1-5 scale ranging from 'poor' to 'excellent'.
Emotional stress	This is a composite factor consisting of eight items, each with a 1-5 scale ranging from not at all to the time. The eight items were **'**During the past four weeks, how much of a problem did you have with feeling sad, worried, concentrating, sleeping, physical pain, fear, loneliness, boredom?' The composite variable produced a Cronbach's alpha of 0.908.
Physical exercise	How often have you performed physical exercise for at least 30 min in the last 4-6 months? The question used a scale 1-6, ranging from 'never' to 'daily'.
Social meeting with friends	In the last 12 months, how often have you met friends socially? The question used a scale 1-6, ranging from 'no recent contact' to 'every day'.
Quality time with family	How would you describe the amount of quality time you spend with your family? The question used a scale 1-5, ranging from 'a very short amount of quality time' to 'a large amount of quality time'.
Life satisfaction	From a scale of 0 to10, how satisfied are you with your life nowadays?

3.2. Data Analysis

Initial analyses, including correlation, ANOVA, and regression, were performed to identify the final list of indicators that are significantly affected by the working hours variable. The magnitude and direction of the individual relationships between various factors were investigated. Linear regression was used to estimate the relationship and significance between working hours and other well-being variables. Given that we had nine well-being indicators and nineteen demographic segments (i.e., male/female, Emirati/non-Emirati, married/single), the total number of linear regressions to perform was 171. In each attempt, we produced the standardized beta value, the associated t value, and its significance. The beta coefficients compare the strength of the effect of working time on each dependent variable. The higher the absolute value of the beta coefficient, the stronger the effect. Generally, a t value higher than +2 or less than -2 is acceptable (Schneider et al., 2010). The higher the t-value, the greater our confidence in the coefficient as a valued predictor. On the other hand, a low t value indicates low reliability of the coefficient's predictive power.

Given that the objective of this research is not to account for all outcomes affected by working hours, the *r2* value will not be reported. If all variables are accounted for, we can explain a large percentage of the variances presented by the *r2* value. However, in this study, each simple linear regression considered only one dependent variable at a time, with the independent variable being working time in all cases. Therefore, lower *r2* was expected.

4. Results

Table 2 shows the number and percentage of each demographic segment. Approximately 59.1% were males and 40.9% were females. Approximately 57.4% were non-Emiratis, while Emiratis constituted approximately 42.6%. Regarding marital status, the married category constituted 78.7%, whereas the singles category was 15.8%. The remaining 5.5% were divorced, separated, or widowed and were excluded from further regression analysis. In total, 64.8% held a bachelor's degree or higher, while 35.2% held lower degrees (i.e., high school certificates or diplomas). The largest single age cohort was 36-45 years old, accounting for 41.2%, followed by the 26-35 cohort. Most respondents (65.7%) worked in the public sector, while 26.5% were private sector employees. Almost three quarters (74.3%) were heads of households.

Table 2. Profile of the respondents (Developed by the authors)

	Type	Number	Percentage
Gender	Male	23,665	59.1%
	Female	16,351	40.9%
Nationality	Emirati	17,047	42.6%
	Non-Emirati	22,972	57.4%

Continuation of Table 2

Marital status	Married	31,487	78.7%
	Single	6,332	15.8%
Education	BS or higher	25,914	64.8%
	Below BS	14,105	35.2%
Age	< 25 years	14,95	3.7%
	26-35 years	12,389	30.9%
	36-45 years	16,504	41.2%
	46-55 years	7,486	18.7%
	56-65 years	1,963	4.9%
	> 66 years	202	0.50%
Place of work	Public	26,013	65.7%
	Private	10,502	26.5%
Head of the household	Yes	27,422	74.3%
	No	9,465	25.7%

Table 3 shows the significance of the nine well-being determinants when taking working hours as the only independent variable across the two genders of full-time working adults. In general, longer working hours have adverse effects on all well-being indicators. For men, the most significant effects were on work-life balance, fulfilling family responsibilities, quality time with the family, and physical exercise (with t values -20.257, -17.447, -14.510, and -10.319, respectively). For females, the most significant effects were observed on physical exercise, fulfilling family responsibilities, socially meeting with friends, and quality time with the family (with t-values -21.492, -13,714, -13.043, and -13.040, respectively). For females, working hours have no significant correlation with life satisfaction. Other notable outcomes are that for females, working longer is associated with better subjective health (with a t-value of +7.808) and less frequent emotional stress.

Table 3. Gender - regression of working hours and well-being factors (Developed by the authors)

Well-being factors	**Male**			**Female**		
	(b)	**t-value**	**Sig.**	**(b)**	**t-value**	**Sig.**
Fulfilling family responsibility	-0.154	-17.447	0.001	-0.149	-13.714	0.001
Satisfaction with income	-0.064	-6.289	0.001	-0.072	-4.425	0.001
Work-life balance	-0.176	-20.257	0.001	-0.101	-9.713	0.001
Subjective health	-0.041	-4.596	0.001	+0.080	+7.808	0.001
Emotional stress	+0.050	+5.475	0.001	-0.031	-2.970	0.003
Physical exercise	-0.095	-10.319	0.001	-0.218	-21.492	0.001
Social meetings with friends	-0.066	-7.185	0.001	-0.135	-13.043	0.001
Quality time with family	-0.139	-14.510	0.001	-0.153	-13.040	0.001
Life satisfaction	-0.066	-7.152	0.001	-0.007	-0.653	0.514

Table 4 presents the regression results for those with a college degree or higher and those with lower educational qualifications. For those with college degrees or higher, the most challenging outcomes of working longer are work-life balance, quality of time with family, and fulfilling family responsibilities (with t-values -26.154, -19.001, and -18.968, respectively). The top negative effects of work hours for those below college degrees were physical exercise, social meetings with friends, and fulfilling family responsibilities (with t-values -20.116, -12.103, and -7.194, respectively). Compared with those with college degrees or higher, those with less than college degrees showed two positive effects of longer hours of work on subjective health and life satisfaction (with t-values +8.865 and +4.347, respectively).

Table 4. Education - regression of working hours and well-being factors (Developed by the authors)

Well-being factors	**BS or higher**			**Below BS**		
	(b)	**t-value**	**Sig.**	**(b)**	**t-value**	**Sig.**
Fulfilling family responsibility	-0.153	-18.968	0.001	-0.103	-7.914	0.001
Satisfaction with income	-0.076	-7.462	0.001	-0.032	-1.917	0.055
Work-life balance	-0.208	-26.154	0.001	-0.059	-4.943	0.001
Subjective health	-0.084	-8.903	0.001	+0.096	+8.865	0.001
Emotional stress	+0.060	+6.978	0.001	-0.033	-2.880	0.004
Physical exercise	-0.012	-1.384	0.167	-0.233	-20.116	0.001
Social meetings with friends	-0.059	-6.765	0.001	-0.138	-12.103	0.001
Quality time with family	-0.166	-19.001	0.001	-0.088	-6.216	0.001
Life satisfaction	-0.119	-13.923	0.001	+0.056	+4.347	0.001

For the married, all well-being indicators were negatively affected by work hours, except for subjective health (Table 5). Working time had no significant effect on subjective health (with a t-value -0.965). Work–life balance, quality of time with family, fulfilling family responsibilities, emotional stress, and social meetings with friends were the most significantly affected indicators (with t-values -19.607, -16.748, -16.307, and -8.836, respectively). For the singles, physical exercise, social meeting with friends, fulfilling family responsibility, and quality of time with family were significantly affected (t-values -17.853, -11.184, -10.616, and -7.616, respectively). Working time has no significant effect on life satisfaction (with a t-value of +1.919). Working for a longer time positively affects the subjective health of singles (with a t-value of +4.064).

Table 5. Marital status - regression of working hours and well-being factors (Developed by the authors)

Well-being factors	Married			Single		
	(b)	t-value	Sig.	(b)	t-value	Sig.
Fulfilling family responsibility	-0.128	-16.307	0.001	-0.189	-10.616	0.001
Satisfaction with income	-0.054	-6.713	0.001	-0.198	-6.946	0.001
Work-life balance	-0.148	-19.607	0.001	-0.091	-5.377	0.001
Subjective health	-0.007	-0.965	0.339	+0.067	+4.064	0.001
Emotional stress	+0.033	+4.193	0.001	-0.083	-4.862	0.001
Physical exercise	-0.110	-14.037	0.001	-0.285	-17.853	0.001
Social meeting with friends	-0.070	-8.836	0.001	-0.186	-11.184	0.001
Quality time with family	-0.139	-16.748	0.001	-0.154	-7.616	0.001
Life satisfaction	-0.058	-7.376	0.001	+0.032	+1.919	0.055

As presented in Table 6, the well-being indicators most significantly affected by working hours for Emiratis are work-life balance (with a t-value -13.384), fulfilling family responsibilities (with a t-value -11.501), and life satisfaction (with a t-value -8.184). The effect of working hours on social meetings with friends is insignificant. A positive effect on physical exercise was recorded. For non-Emiratis, several well-being factors are significantly affected by work time, including physical exercise (with a t-value -28.877), work-life balance (with a t-value -21.402), fulfilling family responsibilities (with a t-value -20.616), quality of time with family (with a t-value -16.247), social meetings with friends (with a t-value -13.054), and satisfaction with income (with a t-value -8.287). For non-Emiratis, working longer hours positively impacts their subjective health (with a t-value of +7.613).

Table 6. Nationality - regression of working hours and well-being factors (Developed by the authors)

Well-being factors	Emiratis			Non-Emiratis		
	(b)	t-value	Sig.	(b)	t-value	Sig.
Fulfilling family responsibility	-0.118	-11.501	0.001	-0.192	-20.616	0.001
Satisfaction with income	-0.067	-4.881	0.001	-0.092	-8.287	0.001
Work-life balance	-0.140	-13.384	0.001	-0.190	-21.402	0.001
Subjective health	-0.039	-3.837	0.039	+0.068	+7.613	0.001
Emotional stress	+0.022	+3.037	0.022	+0.022	+2.489	0.013
Physical exercise	+0.037	+3.472	0.001	-0.236	-28.877	0.001
Social meetings with friends	+0.013	+1.214	0.225	-0.117	-13.054	0.001
Quality time with family	-0.082	-7.505	0.001	-0.167	-16.247	0.001
Life satisfaction	-0.087	-8.184	0.001	-0.018	-2.017	0.044

Public sector employees observed the highest significant b-coefficients for work-life balance, fulfilling family responsibilities, and quality of time with the family (with t-values -9.928, -7.374, and -6.197, respectively). For private sector employees, the highest significant b-coefficients are for the same indicators but with higher significance or t-values.

Table 7. Sector - regression of working hours and well-being factors (Developed by the authors)

Well-being factors	Public			Private		
	(b)	t-value	Sig.	(b)	t-value	Sig.
Fulfilling family responsibility	-0.110	-7.374	0.001	-0.193	-14.111	0.001
Satisfaction with income	-0.075	-4.374	0.001	-0.083	-5.013	0.001
Work-life balance	-0.134	-9.928	0.001	-0.254	-19.371	0.001
Subjective health	-0.045	-3.133	0.002	-0.071	-4.892	0.001
Emotional stress	+0.031	+2.177	0.030	+0.068	+4.667	0.001
Physical exercise	+0.034	+2.334	0.020	-0.042	-2.662	0.004
Social meeting with friends	-0.036	-2.474	0.013	-0.056	-3.442	0.001
Quality time with family	-0.091	-6.197	0.001	-0.172	-11.594	0.001
Life satisfaction	-0.156	-3.928	0.001	-0.100	-6.884	0.001

In Table 8, the most significant challenges associated with long working hours for the head of household are work-life balance, fulfilling family responsibility, and quality of time with the family (with t-values -23.191, -17.125, and -15.186, respectively). For those who are not the head of household, again the effects are most significant on those three indicators but with smaller t-values (-14.512, -10.419, and -10.212, respectively). For both groups, the only non-significant outcome was the frequency of physical exercise.

Table 8. Head of household - regression of working hours and well-being factors (Developed by the authors)

Well-being factors	Yes, the head of household			No, not the head of household		
	(b)	t-value	Sig.	(b)	t-value	Sig.
Fulfilling family responsibility	-0.137	-17.125	0.001	-0.139	-10.419	0.001
Satisfaction with income	-0.056	-6.305	0.001	-0.188	-5.009	0.001
Work-life balance	-0.185	-23.191	0.001	-0.192	-14.512	0.001
Subjective health	-0.053	-6.669	0.001	-0.107	-6.657	0.001
Emotional stress	+0.047	+5.474	0.001	+0.047	+3.325	0.001

Continuation of Table 8

Physical exercise	-0.013	-1.540	0.124	+0.019	+1.368	0.171
Social meetings with friends	-0.048	-5.581	0.001	-0.028	-1.961	0.050
Quality time with family	-0.132	-15.186	0.001	-0.147	-10.212	0.001
Life satisfaction	-0.084	-9.784	0.001	-0.139	-9.778	0.001

For the youngest age group (25 or less), the effects of working hours on life satisfaction and work-life balance were insignificant (Table 9). This group could be labeled as fresh college graduates who have recently started to enter the job market. For them, working hours have most significantly affected their frequency of physical exercise and social meetings with friends (with t-values of -13.076 and -8.076, respectively). It is interesting to note that working longer hours positively affects subjective physical health and reduces emotional stress. The most significant affected factors for those aged 26-35 were physical exercise, quality time with family, fulfilling family responsibilities, and social meetings with friends (with t-values of -14.337, -10.499, -9.424, and -9.291, respectively). The effects on emotional stress and life satisfaction were not significant. Similar to the youngest group, working longer hours positively affects their subjective physical health (with a t-value of +2.091). Like those 26-35, the older bracket (36-45 years) also recorded a significant negative effect of working hours on fulfilling family responsibility, work-life balance, and quality of time with family (with t-values -13.244, -12.571, and -10.407, respectively). The effects on subjective health and emotional stress were not significant. For the 46-55 age group, all effects were significant. Work-life balance, fulfilling family responsibilities, and quality time with family were the top three most significantly affected factors (with t-values of -12.947, -9.686, and -8.798, respectively). Considering the 56-65 age group, the three top factors negatively affected were work-life balance, quality of time with family, and fulfilling family responsibility (t-values -8.157, -5.777, and -4.128, respectively). The effects on satisfaction with income, subjective health, and emotional stress were insignificant. Lastly, none of the effects of working hours are significant for those older than 65 years.

In terms of the significance of associations with working hours, the indicator of fulfilling family responsibility consistently ranked in the top three for all demographic segments in the analysis, except for those with qualifications below the bachelor's degree and those below 25 years of age (Table 10).

Table 9. Age category I - regression of working hours and well-being factors (Developed by the authors)

Well-being factors	**25 or less**			**26-35**			**36-45**		
	(b)	**t-value**	**Sig.**	**(b)**	**t-value**	**Sig.**	**(b)**	**t-value**	**Sig.**
Fulfilling family responsibility	-0.190	-4.261	0.001	-0.123	-9.424	0.001	-0.140	-13.244	0.001
Satisfaction with income	-0.362	-4.387	0.001	-0.076	-4.188	0.001	-0.060	-4.615	0.001
Work-life balance	+0.052	+1.373	0.170	-0.116	-4.231	0.001	-0.131	-12.571	0.001
Subjective health	+0.116	+3.514	0.001	+0.026	+2.091	0.037	-0.012	-1.131	0.258
Emotional stress	-0.156	-4.635	0.001	-0.008	-0.598	0.551	-0.006	-0.555	0.579
Physical exercise	-0.404	-13.076	0.001	-0.179	-14.337	0.001	-0.094	-4.636	0.001
Social meetings with friends	-0.267	-8.076	0.001	-0.119	-9.291	0.001	+0.081	-5.623	0.001
Quality time with family	-0.169	-3.444	0.001	-0.149	-10.499	0.001	-0.120	-10.407	0.001
Life satisfaction	+0.036	-1.193	0.275	-0.022	-1.792	0.073	-0.042	-3.875	0.001

Age category II - regression of working hours and well-being factors

Well-being factors	**46-55**			**56-65**			**More than 65**		
	(b)	**t-value**	**Sig.**	**(b)**	**t-value**	**Sig.**	**(b)**	**t-value**	**Sig.**
Fulfilling family responsibility	-0.144	-9.686	0.001	-0.114	-4.128	0.001	-0.083	-0.892	0.374
Satisfaction with income	-0.042	-2.402	0.001	-0.017	-0.554	0.431	+0.041	+0.392	0.698
Work-life balance	-0.189	-12.947	0.001	-0.220	-8.157	0.001	-0.106	-1.144	0.252
Subjective health	-0.038	-2.447	0.014	-0.037	-1.295	0.196	+0.028	+0.284	0.777
Emotional stress	+0.044	+2.823	0.005	+0.041	+1.442	0.149	+0.014	+0.145	0.885
Physical exercise	-0.065	-4.228	0.001	-0.057	-2.013	0.044	-0.032	-0.321	0.748
Social meetings with friends	-0.065	-4.262	0.001	-0.039	-1.360	0.121	-0.072	-0.737	0.463
Quality time with family	-0.141	-8.798	0.001	-0.170	-5.777	0.001	-0.142	-1.372	0.173
Life satisfaction	-0.041	-2.650	0.008	-0.090	-3.191	0.001	-0.089	-0.907	0.366

Table 10. Ranking of well-being factors affected by working hours (Developed by the authors)

	Gender		**Marital status**		**Nationality**		**Education**		**Work sector**		**Head of the household**		**Age**					
	Male	**Female**	**Married**	**Single**	**UAE**	**Non-UAE**	**BS+**	**BS-**	**Public**	**Private**	**Head HS**	**Not Head HS**	**25 -**	**26-35**	**36-45**	**46-55**	**56-65**	**66+**
Fulfilling family responsibility	2	2	3	3	2	3	3	4	2	2	2	2	5	3	1	2	2	---
Satisfaction with income	7	7	7	5	5	6	6	---	4	5	6	6	4	6	6	8	---	---
Work-life balance	1	5	1	6	1	2	1	6	1	1	1	1	---	5	2	1	1	---
Subjective health	9	6	---	8	6	7	5	3	5	6	5	5	6	7	---	7	---	---

Continuation of Table 10

Emotional stress	8	8	8	7	8	8	7	8	9	7	7	7	3	---	---	5	---	---
Physical exercise	4	1	4	1	7	1	---	1	8	9	---	---	1	1	5	4	5	---
Social meetings with friends	5	3	5	2	---	5	8	2	7	8	8	8	2	4	4	3	---	---
Quality time with family	3	4	2	4	4	4	2	5	3	3	3	3	7	2	3	3	3	---
Life satisfaction	6	---	6	---	3	9	4	7	6	4	4	4	---	---	7	6	4	---

5. Discussion

Research studies that directly deal with working hours, well-being, and various segments of the working population are rare. As the literature review suggests, cultural realities may play a significant role in shaping the results. This present Abu Dhabi study attempts to investigate the associations between working hours and different well-being factors among multiple segments of the working population that differ in demographic characteristics. Overall, our results show that working hours have a greater significant effect on certain well-being factors depending on the specific segment of full-time working adults. The significance of the effects of work time on well-being factors varies across different segments of working people. In summary, the three well-being factors that are most significantly affected by working hours are work-life balance, fulfilling family responsibilities, and quality time with the family, which are evident for the following segments: males, those having a college degree or above, the married, and age groups 36-45, 46-55 and 56-65, but irrespective of nationality, sector of work, and position within a household.

Consistent with other research, our results show significant negative effects of longer work hours on workers' life satisfaction in general (Badri et al., 2022; Holly & Mohnen, 2012; Okulicz-Kozaryn, 2011; Pouwels et al., 2008; Schrödes, 2020), but not for singles, females, and those of lower education in Abu Dhabi. In this Abu Dhabi study, working hours had a negative effect on two income-related indicators: satisfaction with income and fulfilling family responsibility. Longer working hours could bring additional income, enhancing a working person's life satisfaction (Golden & Wiens-Tuers, 2006). Meanwhile, some studies have reported that fewer working hours did not yield the expected positive effects on worker's well-being (Rudolf, 2014). In the UAE, it is customary to believe that extra working hours do not necessarily mean more economic returns, especially in the public sector. However, in the private sector, employees are entitled to receive 25% to 50% of their salary for overtime work (Edenred, 2023). Nevertheless, the negative effect of working hours on satisfaction with income and fulfilling family responsibility applies to both the public and private sector. We should bear in mind that private sector employees in Abu Dhabi usually work for long hours, 48 hours a week, as per Article 65 of the UAE Labor Law. This is not always the case when overtime pay is guaranteed. Echoing other relevant studies, fulfilling family responsibilities or family roles must be placed at the center of working time regulations and arrangements (Berg et al., 2003).

This study confirms that work-life balance proves to be a significant adverse outcome of working longer. This result is consistent with the results of studies conducted in other countries (Golden & Wiens-Tuers, 2006; Holly & Mohnen, 2019; Hsu et al., 2019). The negative effect of work hours on work-life balance could influence workers' family roles and responsibilities (Berg et al., 2003). In addition, our findings generally point to the adverse effects of working more hours on mental stress, in line with the findings of other international studies (Caruso, 2013). In the UAE, it used to be a tradition that the whole family enjoyed having lunch together. This has changed because of the combination of longer working hours for parents, work responsibilities, the distance between the workplace and home, and longer school hours for children. This could cause more negative mental feelings, especially for parents (Badri et al., 2018).

One of the exciting results from this Abu Dhabi study is its identification that longer working time could be a significant constraint that limits employees' opportunity to spend time doing daily sports and exercising, especially for females, non-Emiratis, and those with lower educational attainment. This finding is consistent with several studies that suggest working longer hours could significantly negatively affect people's ability to perform regular physical activities (Schneider & Becker, 2005), but not with the evidence provided by a longitudinal Australian study (Angrave et al., 2015). Similarly, the association between working longer and meeting friends socially was also seen to be more significant for the younger cohorts, females, singles, and those with lower educational attainment.

It should be noted that working longer produced a positive association with several indicators of certain segments. For example, working longer was positively associated with the frequency of physical exercise for Emiratis, public sector employees, and non-head of household. It also had a positive association with work-life balance for those aged 25 or younger and social meetings with friends for those aged 36-45. In addition, working longer hours tended to have positive associations with subjective health for several segments. While we must be careful in addressing the differences in results between the Abu Dhabi study and those of other international studies dealing with the working population of various characteristics, these results support the importance and implications of studying the impact of working hours on different

categories of the working people (Hamplová, 2019; Juneja & Malhotra, 2016; Major et al., 2002; Nahum-Shani & Bamberger, 2009; Schröder, 2022).

Consequently, we interpret the adverse effects of longer working hours on the well-being of men and women in Abu Dhabi from the perspectives of the JSM. For men, longer hours significantly impact their work-life balance, fulfilling family responsibilities, quality family time, and physical exercise, especially for those working in the private sector. This outcome suggests that high job demands are potentially coupled with low control over time management, fitting the model's definition of high-strain jobs where stress results from an imbalance between workload and autonomy. Extended working hours also negatively affect female employees' physical exercise, fulfilling family responsibilities, quality family time, social interactions with friends, and work-life balance. However, for female employees, working hours do not affect life satisfaction, are positively associated with subjective health, and are negatively associated with the frequency of emotional stress. These results seem to corroborate the gender differences in JSM found by Grönlund (2007), but suggest a potentially more complex scenario (Blanch, 2016). This could imply that women might perceive greater job control, exhibit different coping strategies, or benefit from stronger support systems, which align with the demand-control-support model's perspective, where social support can buffer job strain. Additionally, the difference in the impact of working hours between men and women might be influenced by societal and cultural norms around gender roles, particularly in how work and family responsibilities are managed and perceived. For example, in Germany, fathers profit more from working hours than mothers (Schröder, 2018). In the UAE, while women take care of most family tasks, men are usually responsible for the family's economic well-being, as they have the central role of fulfilling family responsibility.

Overall, these findings emphasize that increased job demands without adequate job control lead to strain, but the manifestations and coping mechanisms can vary significantly based on gender, societal roles, and workplace dynamics. These findings resonate with other studies that explored various social factors through the JSM (Love et al., 2007; Muntaner & O'Campo, 1993). These findings highlight the critical need to consider both the professional and broader personal contexts in addressing the impact of long working hours on employees in Abu Dhabi.

Many policies have been implemented by workplaces in Abu Dhabi to address work well-being (Al Ghailani et al., 2019). Given the progress in the digitalization of work, flexible working-from-home schemes and more opportunities for online work have been implemented. Some organizations in Abu Dhabi have provided regulatory incentives for parent-friendly workplaces, including the availability of childcare facilities and more flexible working hours (Early Childhood Authority, 2022). Others have established policies for active workplaces within their entities (Nashar, 2023). Many public entities have also created walking venues inside their organizations, especially walking areas and spaces (Kashef, 2022). However, policymakers should be extra careful in designing working systems that fit the characteristics of the working people, given Abu Dhabi's diverse cultural and community makeup.

6. Conclusions

This Abu Dhabi study extends research on the association between working time and variant well-being determinants and life satisfaction. Our study focuses on an area that considers multiple well-being indicators given the unique circumstances in Abu Dhabi. The results could aid in providing insights for policymakers to introduce more actionable contributions to improve working time and balance with other significant well-being determinants. In particular, the results could be used to design and predict future work systems in Abu Dhabi that enhance workers' well-being and productivity. Such a general grasp of working hours offered by this study allows for designing changes in public policy to increase workers' life satisfaction. Public policymakers and employers may use the results to design more effective policies and practices to retain employees and create a better working environment.

The findings of this study offer policymakers useful insights in designing policies that accommodate the different segments of working adults. Policymakers need to be more vigilant in proposing working hours and work design-related policies while protecting various dimensions of employees' well-being, from both the workplace and home angles. Working time policies should reflect the essence of enhancing work-balance. Employers should enrich the work environment to provide opportunities for a healthier and more active workplace. The necessary infrastructure should idealize sports, activities, and health as part of the work agenda.

The differences in the effects of working hours on well-being across different segments of the working people observed in this study should be highlighted and factored in when designing social policies. This study reinforces prior research findings that men and women, younger and older, married and single, have different priorities and attitudes toward their preferred working hours and working systems, and have been differently affected by working hours. Policymakers may look closely at many aspects of work that affect the well-being of all segments of society.

Since many work policies are adopted in Abu Dhabi, longitudinal studies have become necessary and ideal to examine potentially positive and negative impact of working time on workers' well-being. Future research should employ more effective and sophisticated strategies that capture multiple well-being factors and

cover multiple demographic segments of society. The worktime-well-being nexus could be further explored across various job categories in the public and private sectors. Future studies could also utilize more sophisticated analysis, such as path analysis, to analyze proposed and reflective models that are more complex than simple regression.

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Authors' Contributions

MB, HA, and MKA participated in Conceptualization. MA, GY, and MB participated in the methodology. MB, GY, and AA used the software. MB, MA, SY, and GY participated in the validation. MB, SY, MA, and GY participated in the formal analysis. MB and GY participated in the formal investigation. SY and AA participated in data curation. MB and MA participated in writing the original draft. MA, GY, SY, and HA participated in writing reviews and editing. MB, MKA, MAB, and AA participated in visualization. MA and HA participated in supervision. GY, HA, MKA, and AA participated in project administration. All authors have read and agreed to the published version of the manuscript.

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