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Regular Article

Examining the structural effect of working time on well-being: Evidence from Abu Dhabi

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ABSTRACT

Does working time affect workers' wellbeing? We studied this question in the context of the Emirate of Abu Dhabi, drawing on the results its Quality-of-Life Survey conducted in 2019/2020. The empirical analysis examined the effect of working hours on various elements of wellbeing. Preliminary analysis and path analysis justified the significance of eight variables: work-life balance, frequency of meeting with friends, happiness, stress, time spent with family, self-assessment of health, satisfaction with income, and difficulty in fulfilling family responsibilities. The model became significantly less efficient when including variables such as job satisfaction, job security, time spent in sport, sleeping and leisure. The implications were discussed in the light of international research literature and post-COVID workplace arrangements and flexibilities.

1. Introduction

Work attributes including working hours have a significant impact on the wellbeing of workers. In the United Arab Emirates (UAE), public sector workers are commonly required to work seven to 8 h on ordinary weekdays. Private-sector workers, however, work significantly longer and sometimes in a few shifts during working days. Article 65 of the UAE Labor Law stipulates that regular working hours for private sector employees be 8 h or less per day and 48 h per week. In 2022, the working week has been reduced to four and a half days for public sector employees. Such a reduction of working days and hours has not been extended to the private sector, where employers have the flexibility to change work patterns as needed.

In the Emirate of Abu Dhabi, the Abu Dhabi Quality of Life Survey conducted in 2019/2020 showed that 22.2% of the respondents in employment worked 41–45 h a week and 36.8% worked more than 46 h a week. Initial correlation analysis revealed a significant negative impact of working hours: as working hours increase, the self-perceived health status of workers lowers. The health literature often highlights the negative relationships between prolonged working hours and health, occupational and subjective wellbeing (Nakata et al., 2006; Spurgeon et al., 1997; Wong et al., 2019). Research evidence consistently suggests that various physical reactions including fatigue and physiological activation can be attributed to excessive time and energy at work (Hsu et al., 2019). Relevant studies also tend to show a negative effect of excessive working time on workers' work-life balance and quality of life (Golden & Wiens-Tuers, 2008; Kinnunen et al., 2004; Yu, 2014). Nevertheless, research findings on the effect of working hours remain inconclusive in many domains due to the complex relationships between and among quality of life variables and the potential influence of multiple structural forces and contextual factors (Kodz et al., 2003; Roberts, 2007). Further research into the structural effects of working time on certain wellbeing factors could enhance our understanding of such complex relationships.

Although many studies use the terms wellbeing and quality of life interchangeably (Skevington & Böhnke, 2018; van Tubergen et al., 2018), this Abu Dhabi study adopts the term wellbeing more often, especially because the Abu Dhabi government has recently formed a Wellbeing Committee. The main objective of this research is to develop a path model of working hours to further our understanding of its structural effect on the various wellbeing variables. Drawing on the results of the Abu Dhabi Quality of Life Survey, which adopts a broad conception of wellbeing and thus allows conducting a systematic examination of the effect of working hours on wellbeing, this research seeks to understand the direct and indirect impact of working hours on a range of wellbeing dimensions including work-life balance, social connections, subjective

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wellbeing, health, and job and income. In addition, it aims to provide evidence on the effect of working hours and work-life imbalance across the general working population, rather than focusing on a particular cohort, to allow a broader generalization of results.

While contributing to the existing literature on work and wellbeing, this research has policy and practical implications. A better understanding of the structural effects of working time on wellbeing could inform Abu Dhabi policymakers to improve workplace policies and regulations for working people and the community at large. Given its unique characteristics, Abu Dhabi community could benefit from enriched policies and approaches towards better family connection, physical and mental health, leading to a happier community that is more productive both at work and at home.

2. Review of literature

The impact of working hours on the work-life balance and wellbeing of the working population has consistently received substantial research attention (Fein et al., 2017; Ganster et al., 2018; Gröpel & Kuhl, 2009; Spector et al., 2004). Various theoretical approaches posit that long working hours may have resulted from workload, work intensification, pay and career enhancement considerations, job insecurity, worker preference, and occupational commitment (Kodz et al., 2003). Neo-classical microeconomic theories articulate that in efficient labor markets, individuals choose their utility-maximizing labor time according to the demand and supply of labor at a market clearance wage (Altonji & Paxson, 1988; Golden, 1996). Thus, workers who want shorter hours will be matched with jobs offered by firms that consider short hours or flexitime work advantageous. Labor economists also argue that labor market institutions such as labor law and trade unions play an essential role in influencing hours, wage rates, and the standard hours-demand and hours-supply schedules between workers and firms (Oswald & Walker, 1993). Psychological theories, on the other hand, suggest working hours reveal people's meaning and joy attached to work (Isles, 2004; Seligman, 2002). People fulfill through work their essential needs of competence, autonomy, and relatedness, resulting in increased self-motivation and wellbeing (Ryan & Deci, 2000). From a management perspective, work-life balance practices are often linked with worker and organizational performance (Beauregard & Henry, 2009; Kelly et al., 2008). Social and cultural theories emphasize the critical role of broader social and cultural contexts in wellbeing including social capital and social connections at the workplace (Helliwell et al., 2018; Helliwell & Putnam, 2004), workplace culture, and national culture (Landers et al., 1996; McDonald et al., 2007; Spector et al., 2004).

Many research views wellbeing as a multidimensional construct emerging from evaluating multiple needs on the individual, community, national, and global levels (Wooden et al., 2009). On the individual level, wellbeing is the physical, mental, social, and emotional wellness of an individual (Wunder & Heineck, 2013). It comprises mutually co-dependence dimensions that may reflect the emotional, occupational, physical, social, spiritual, environmental, and financial aspects of personal conditions (van Rijswijk et al., 2004). If any of these dimensions is neglected over time, it might adversely affect one's wellbeing and quality of life (Golden & Wiens-Tuers, 2006, 2008). On the workplace level, wellbeing relates to all aspects of working life including the quality and safety of the working environment, how workers feel about their work, and the climate at work and work organization (Greenhaus et al., 2003; Gröpel & Kuhl, 2009).

These different theoretical and methodological approaches, various level of analysis often lead to inconsistent cross-sectional findings in the literature on working time and wellbeing. In the following sections, we summarize the literature according to several dimensions: work-life balance, economic wellbeing, social connection, health, and happiness and life satisfaction.

2.1. Work-life balance

Work-life balance is one of the significant factors in working hours-related studies, as long working hours reduce the time allocated to other domains of life, causing work-life imbalance or conflict (Berniell & Bietenbeck, 2017; Carlson et al., 2000; Doble & Supriya, 2010; Eby et al., 2005). Considerable research interest is placed on the topic of work-life balance with a conventional focus on the interference between work and family responsibilities, indicating the significant association of work-life balance with factors such as time spent with family, role stressors, work pressure, burnout and stress, job insecurity, and overtime (Eby et al., 2005; Eikhof et al., 2007; Ford et al., 2007; Grzywacz & Carlson, 2007; Michel et al., 2011; Wise et al., 2003).

For example, Fein, Skinner and Machin's (2017) study of Australian workers indicated that longer work hours and work intensification lead to more significant work-life interference, tremendous stress, and reduced wellbeing. In addition to work intensification, Yu (2014) highlighted that job insecurity substantially affected working hours in Australia. Conflicts may also arise between work-life balance policies and high-performance practices often associated with work intensification over time (White et al., 2003). Focusing on employees in the high-tech and banking industries, Hsu et al. (2019) identified significant correlations between long working hours and three critical factors associated with job satisfaction and work-life balance, as well as the mediating role of occupational stress.

There is abundant research evidence of negative work, health, and wellbeing effects of work-life imbalance (Allen et al., 2000; Boxall & Macky, 2014; Burke et al., 2010; Byron, 2005; Kossek & Ozeki, 1998; van Rijswijk et al., 2004). Most workplaces, therefore, have stressed the importance of encouraging workers to lead a more balanced lifestyle that affects worker productivity and motivation, introducing and promoting family-friendly policies (Berniell & Bietenbeck, 2017; Brough & O'Driscoll, 2010; Holly & Mohnen, 2012; Russell et al., 2009).

However, the concept of work-life balance and its assumptions have been questioned (Eikhof et al., 2007; Lewis et al., 2007), as the assumed negative impact of work on life does not hold across genders, occupations, and other individual and workplace characteristics (McDonald et al., 2005; Rapoport et al., 2002). Lingard, Francis, and Turner (2010) found that while weekly work hours significantly predicted construction workers' capacity to complete tasks at work and home, they did not affect their satisfaction with work-life balance. Besides, while flexible working arrangements is an essential mean of balancing work and personal commitments, some studies stress that potential risks that flexible work involves may enhance harmful work-home interference (Felstead et al., 2003; Peters & van der Lippe, 2007). Moreover, critical discourse analysis illustrates that some flexible working practices phased as worker-friendly are more employer-friendly (Fleetwood, 2007), and therefore there is need for allowing workers to have better control over working hours (Heponiemi et al., 2008; Hsu et al., 2019), which works to reduce workers' perceptions of harmful work-home interference (Geurts et al., 2009; Peters et al., 2009).

2.2. Economic wellbeing

Research has emphasized the association between work demands and the financial or income levels of the working people. Despite positive relations between income and happiness, there may be a cost side since the more significant part of income depends on working for pay (Pouwels et al., 2008). An unequal income distribution leads to hours constraints (Bell & Freeman, 1995). Workers who are constrained might prefer working more rather than less to increase income (Reynolds, 2004). Sousa-Poza and Henneberger (2002) explained hours constraints from several perspectives surrounding the supply and demand of labor: long-term contracts, employer preference, asymmetric information, and job insecurity. Merz (2002) examined the impact of working time on economic wellbeing and provided empirical evidence to show that while

working time is connected with income, many further dimensions of life satisfaction are essential to describe individual wellbeing.

2.3. Social connections

Outside of the work and family sphere, individuals have multiple social roles for their interpersonal, community, and leisure needs (Frone, 2003). Such interpersonal relationships that form the basis of an individual's social connections matter significantly in a person's wellbeing (Helliwell et al., 2014). Usually, time is required to form and maintain social relationships beyond the work sphere within the larger social context of neighborhoods, communities, and societies. Relevant research usually points to the significant role of people's social connections in their wellbeing and various positive outcomes (Badri et al., 2021; Helliwell et al., 2018). As shown in Helliwell, Huang & Wang's (2014) study, one should not ignore the effect of social capital on reflecting aggregate wellbeing. In addition, they point out that the role of social capital is much more significant at the national level than health and economic factors.

2.4. Health

An increasing body of research shows that work and employment including working time are drivers of people's happiness by enhancing their physical and mental health (Bannai & Tamakoshi, 2014; Berniell & Bietenbeck, 2017; Li et al., 2019; Wong et al., 2019). More specifically, for working adults, excessive working hours could result in specific health issues such as sleep disturbances, fatigue, depression and anxiety (Afonso et al., 2017; Amagasa & Nakayama, 2013; Kleppa et al., 2008; Kotera & Vione, 2020; Lee et al., 2017; Virtanen et al., 2009). Similarly, some researchers argue that strenuous physical work leads to exhaustion and stress (Lindahl, 2005). Others posit that longer working hours reduce the time available for health production at home, including sleep, physical exercise, and leisure (Akerstedt et al., 2002; Sato et al., 2012).

However, the results of a study conducted in Denmark among senior medical consultants did not fully support the hypothesis that long working hours increase depression (Varma et al., 2012). The moderating role of some individual and workplace characteristics should also be noted. In a study in South Korea, Ahn (2018) examined how working hours influence depressive symptoms and found the moderating role of gender on the effect of depressive behavior.

2.5. Happiness and life satisfaction

In general, research findings show that having a meaningful job is a significant source of happiness. Empirical investigations into the relationship between working time and quality of life tend to report a negative effect, as longer working hours negatively affect work-life balance and happiness. For example, in the United Kingdom and Germany, a positive effect of reducing working hours on life satisfaction was found among employed women (Gash, Mertens & Romeu, 2010). Greenhaus, Collins and Shaw's (2003) study of public accounting professionals shows that those who spent more time on their combined work and family roles and spent more time on family than work experienced a higher quality of life than individuals who spent more time on work than family. Golden and Wiens-Tuers (2006) looked at the effect of happiness, psychological health, and economic satisfaction on a net of relationships with working extra hours. Apart from the negative impact of overtime on mental health, work stress, and work-family interference, there was also a positive side, as overtime might produce more income and more happiness.

Overall, despite some strong evidence to suggest the detrimental impact of long working hours on occupational and mental health, empirical studies looking into the effect of working hours on wellbeing have found mixed results (McDonald et al., 2005). Research findings on flexible working hours on work-life balance and organizational outcomes are also ambiguous (Kelliher & Anderson, 2010; Russell et al., 2009). Empirical research suggests that the mismatch between preferred and actual hours worked reduces wellbeing (Wooden et al., 2009; Wunder & Heineck, 2013).

3. Methodology

3.1. Instrument and data description

The Abu Dhabi Quality of Life Survey covered a variety of dimensions and factors that were believed to affect the wellbeing of residents of Abu Dhabi. Those dimensions ranged from housing, household income, jobs, and earnings, to health, education, safety, and social connections. The survey instrument was built on several international wellbeing frameworks, including the OECD's Better Life Index, the World Happiness Report, Gallup Global Wellbeing Survey, and European Quality of Life Surveys. The survey was administered online from September 2019 to March 2020. It covered residents aged 15 or above in all regions of the Emirate of Abu Dhabi, using databases obtained from government departments, public community associations, and some private sector corporations. For workers residing in residential worker cities, a team of trained enumerators from Statistics Center Abu Dhabi conducted face-to-face interviews to collect responses following a random sampling methodology. Both the Department of Community Development and the Abu Dhabi Statistics Center provided the ethical approval for this study.

More than 72,000 residents participated in the Abu Dhabi Quality of Life Survey, among whom 34,499 respondents were employed or self-employed and constituted the target of this study. Table 1 describes the sample in terms of distribution of respondents by gender, marital status, education attainment, age, and work hours per week. More males (61.4%) and more married respondents (79.9%) are represented in the

Table 1
Demographics of the participants.

	Number	Percentage
Gender		
Male	21083	61.1%
Female	13416	38.9%
Marital status		
Married	27573	79.9%
Single	5300	15.4%
Divorced	1203	3.5%
Separated	251	0.7%
Widowed	172	0.5%
Education level		
Illiterate	63	0.2%
Below secondary school	1128	3.3%
Secondary school	4811	13.9%
Post high school training certificate	1397	4.0%
College diploma	3761	10.9%
Bachelor's degree	15605	45.2%
Master's degree	6762	19.6%
Doctorate degree	972	2.8%
Age		
24 or less	1339	3.9%
25–34	10412	30.2%
35–44	15294	44.3%
45–54	6151	17.8%
55–64	1303	3.8%
Hours of work per week		
35 h or less	3110	11.1%
36–40 h	8386	29.9%
41–45 h	6236	22.2%
46–50 h	5217	18.6%
More than 50 h	5093	18.2%
Nationality		
Emirati	14247	41.3%
Non-Emirati	20252	58.7%

sample. Concerning age, the most considerable portion is within the 35–44 age bracket (44.3%), followed by those in the 24–34 bracket (30.2%). About 45.2% are bachelor's degree holders. Emiratis constitute 41.3% of the sample, while non-Emiratis account for 58.7%.

Consistent with much of the working hour's literature (Booth & van Ours, 2008; Wooden et al., 2009), the hours categories adopted in the Abu Dhabi Quality of Life Survey are as follows: 35 h or less, 36–40 h, 41–45 h, 46–50 h, and more than 50 h, whereas 36–40 h category represents standard fulltime work hours, 41–45 h and 46–50 h stand for longer full-time work hours, and more than 50 h indicates highly long work hours. As revealed in Table 1, the highest proportion of respondents reportedly works 36–40 h per week (29.9%), followed by those with a 41–45 h scheme per week (22.2%). About 18.2% report weekly working hours of more than 50.

Table 2 shows the weekly working hours by sector of employment. More household workers work more than 50 h per week (37.2%), followed by private-sector workers (28.5%). Private-sector workers also represent the largest group in the 46–50 h per week category (26.9%). Workers working in semi-government organizations are more likely to have 41–45 or 36–40 weekly working hours. These working in the federal (38.8%) and local government sectors (42.0%) record the highest percentages in the 36–40 h category. A closer look shows that those working 35 h or less per week are more likely to work in the federal government and a private household.

3.2. Measurements and analysis

The primary purpose of this study was to examine the effect of working hours on wellbeing. According to the literature review, we selected relevant questions from the survey for the current analysis. These questions and constructs were assumed to be associated with working hours' impact and constitute various aspects of wellbeing. These questions and constructs included job satisfaction, job security, satisfaction with household income, difficulty in fulfilling family responsibilities, satisfaction with work-life balance, self-assessed health status, self-assessment of stress level, self-perception of obesity, frequency of doing exercise, frequency of eating healthy food, amount of leisure time, frequency of meeting with friends, frequency of feeling isolated from people around, amount of quality time spent with family, satisfaction with family life, and happiness and life satisfaction (Table 3).

Descriptive analysis was carried out to determine the distribution of the data. The raw data was examined before data analysis and it revealed that less than 2.2% of the data were missing. Normality tests of all dimensions included in the study were conducted. Natural logarithm transformation was performed in cases where the normality assumptions showed some deviations. The data were standardized for further analysis since the survey used different scales. Correlation analyses and linear regression analyses were also performed to investigate the relationships between the variables considered for inclusion in the model. As a result, some variables were excluded from further analysis. Table 4 shows the list of final variables considered for more integrative analysis.

For the current research, path analysis seems to be the most appropriate framework. Path analysis is theoretically useful because, unlike other techniques, it envisions specific relationships among all the independent variables (Edwards & Lambert, 2007). This results in a model showing associative mechanisms through which independent variables produce both direct and indirect effects on a dependent variable. For the current study, the objective is to combine moderation and mediation for the relevant variables of work-related wellbeing. This study presents a general analytical framework for such moderations and mediations using path analysis. This framework has the advantage that clarifies how moderator variables influence the paths that constitute the direct, indirect, and total effects of mediated models, which indicate the hypothesized relationships between the variables (Sharma et al., 2009).

A path analysis model determines the statistical significance, if any, of the path coefficients. IN this study, path analysis followed a step-by-step approach with working time as the primary focus of the research. Many fit statistics of LISREL helped develop the optimal path model for the study. These included the Degrees of Freedom, the Maximum Likelihood Ratio Chi-Square, the P-Value for Test of Close Fit, the Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), the Normed Fit Index (NFI), the Non-Normed Fit Index (NNFI), the Goodness of Fit Index (GFI), the Adjusted Goodness of Fit Index (AGFI), and the Root Mean Square Residual (RMR). Table 5 shows the covariance matrix of variables in the final path model.

Table 2
Working hours by sector.

	35 h or less	36–40 h	41–45 h	46–50 h	More than 50 h
Federal government	23.1%	38.8%	16.9%	9.8%	11.4%
Local government	12.9%	42.0%	22.7%	12.5%	9.9%
Semi-government	4.7%	28.9%	30.6%	20.8%	15.0%
Private sector	5.8%	17.5%	21.3%	26.9%	28.5%
Household as employer	16.8%	16.8%	15.0%	14.2%	37.2%

Table 3
Specific variables chosen from the Abu Dhabi Quality of Life survey.

	Variables
1	How many hours do you usually work every week?
2	How satisfied are you with the current balance between your job and home life?
3	How many hours do you usually spent on leisure and personal care every day?
4	How do you rate your stress level during the past 4 weeks?
5	How would you describe your average level of happiness as an Abu Dhabi resident?
6	How satisfied are you with your household income?
7	How secure is your job or main business?
8	Are you satisfied with your current job?
9	In the last 12 months, how often has it been difficult to fulfill family responsibilities?
10	In general, how do you assess your current health status?
11	How often do you eat healthy food?
12	How often do you do physical exercises?
13	In your opinion, to what extent do you consider yourself obese?
14	How would you describe the amount of quality time you spend with your family?
15	In general, how satisfied are you with your family life?
16	How often do you meet socially with friends?
17	How satisfied are you with your life as a whole?

Table 4
Final list variables staying in the path model.

		Mean	Standard deviation	Type of scale
WRKB	Work-life balance	2.998	1.134	Scale (1–5)
DPRSS	Stress level	5.315	2.513	Scale (1–10)
FRNDS	Time with friends	2.234	1.207	Scale (1–5)
HPNS	Happiness	6.965	2.452	Scale (0–10)
INCOME	Household income	2.886	1.106	Scale (1–5)
WHRS	Working hours	Median of 3.0	n.a.	Scale (1–5)
FRESPN	Family responsibilities	3.202	1.043	Scale (1–5)
HEALTH	Health perception	3.137	1.016	Scale (1–5)
TMFMLY	Time with family	2.654	1.207	Scale (1–5)

4. Results

Fig. 1 portrays the final path model. Out of a list of 17 variables initially considered, only nine are in the final model. The variables that

Table 5
Covariance matrix (lower half).

	WRKB	DPRSS	FRNDS	HPNS	INCOME	WHRS	FRESPN	HEALTH	TMFMLY
WRKB	0.991								
DPRSS	−0.041	0.834							
FRNDS	0.101	−0.024	0.711						
HPNS	0.268	−0.031	0.098	0.711					
INCOME	−0.004	0.009	0.029	0.048	0.772				
WHRS	−0.168	0.023	−0.061	−0.112	−0.084	0.985			
FRESPN	−0.400	0.018	−0.056	−0.148	0.010	0.088	0.988		
HEALTH	0.307	−0.037	0.138	0.220	0.032	−0.100	−0.157	0.963	
TMFMLY	0.289	−0.044	0.108	0.128	−0.019	−0.051	−0.177	0.148	0.733

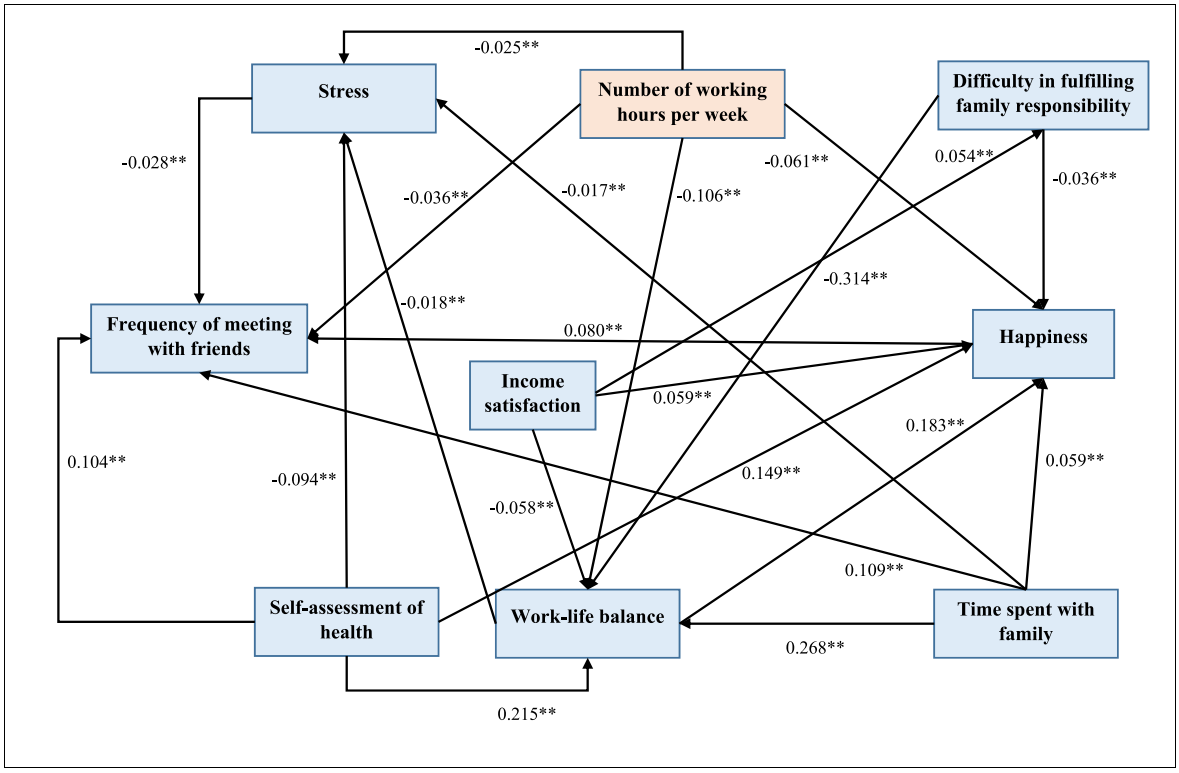

Fig. 1. The path model.

did not fit the measurement include the amount of leisure time, job satisfaction, job security, self-perception of obesity, frequency of exercising, frequency of eating healthy food, frequency of feeling isolated from people around, and life satisfaction. In addition, several health-related variables dropped out of the model.

All goodness-of-fit statistics are favorable for the model. The Degrees of Freedom (8) is with the Maximum Likelihood Ratio Chi-Square of 8.142, with a P-Value for Test of Close Fit of 0.097. The RMSEA is 0.016, the NFI is 0.999, the NNFI is 0.998, the CFI is 0.999, the RMR is 0.002, the GFI is 0.999, and the AGFI is 0.998. All measures are well above the recommended levels (Jöreskog & Sörbom, 1996).

Table 6 summarizes path estimates, their t-values, and their significance level. All paths are significant at a 0.001 level. As expected, working hours has one of the highest effects on satisfaction with work-life balance, with a pessimistic estimate of −0.107 and a t-value of −22.712. Working hours also affects happiness negatively, with an estimate of −0.061. Furthermore, it negatively affects the frequency of meeting with friends (−0.036) and the level of stress (−0.025). Finally, it is worth noticing that working hours indirectly affects some variables through mediators. In addition to its direct effect on the frequency of meeting with friends, it also has an indirect effect through the variable of happiness. The same holds for the variable of the level of stress, as working hours affect it directly and indirectly through satisfaction with work-life balance (Fig. 1).

Fig. 1 shows that the variable with the most significant number of arrows coming out of it and going into it is work-life balance. The path model thus portrays work-life balance as the most sensitive variable with the most significant number of interactions and reactions. Working hours have no connection with self-assessment of health directly or indirectly. The variable “difficulty in fulfilling family responsibilities” has direct effects on two variables: “happiness” and “work-life balance”, while it is also directly affected by income satisfaction. The variable “time spent with family” directly affects four variables: happiness, stress, frequency of meeting with friends, and work-life balance. Work-life balance meanwhile affects happiness and feeling of depression. Self-assessment of health affects four variables: work-life balance, stress, happiness, and frequency of meeting with friends.

5. Discussions

The path model provided an overall view of the various interactions between wellbeing variables. In addition, the model was able to test the fit of a hypothetical model with the empirical data from the Abu Dhabi Quality of Life Survey. The path model enables researchers and

Table 6
The final path model and the standardized estimates.

Path from	Path to	estimate	t-value	Sig.
Working hours/week	Work-life balance	−0.107	−22.712	0.001
Working hours/week	Frequency of meeting with friends	−0.036	−7.796	0.001
Working hours/week	Happiness	−0.061	−13.935	0.001
Working hours/week	Stress	−0.025	−3.001	0.003
Difficulty in fulfilling family responsibilities	Happiness	−0.036	−7.609	0.001
Difficulty in fulfilling family responsibilities	Work-life balance	−0.315	−65.581	0.001
Time spent with family	Happiness	0.059	11.051	0.001
Time spent with family	Stress	−0.018	−3.358	0.001
Time spent with family	Frequency of meeting with friends	0.110	20.202	0.001
Time spent with family	Work-life balance	0.268	48.208	0.001
Work-life balance	Happiness	0.183	35.821	0.001
Work-life balance	Stress	−0.018	−3.131	0.002
Self-assessment of health	Work-life balance	0.216	44.641	0.001
Self-assessment of health	Stress	−0.094	−4.461	0.001
Self-assessment of health	Happiness	0.149	32.188	0.001
Self-assessment of health	Frequency of meeting with friends	0.105	21.508	0.001
Happiness	Frequency of meeting with friends	0.080	14.231	0.001
Stress	Frequency of meeting with friends	−0.028	−5.336	0.003
Income satisfaction	Work-life balance	−0.058	−2.902	0.013
Income satisfaction	Happiness	0.059	5.742	0.001
Income satisfaction	Difficulty in fulfilling family responsibilities	0.054	5.342	0.001

policymakers to understand better the complex relationships between working time and the wellbeing variables, especially the mediating roles and different pathways through which wellbeing variables affect each other. The two most relevant work-related variables in the current path model are number of working hours and work-life balance. In summary, many of the associations of the Abu Dhabi path model results are supported by relevant international research.

The length of working hours significantly affects satisfaction with people's work-life balance in employment. The results presented in this research confirm other empirical findings that a more balanced work-life lifestyle helps bring more positive feelings and motivation (Holly & Mohnen, 2012). Results also demonstrate that longer working hours might exert an unnatural amount of pressure, leading to more dissatisfaction with work-life balance (Hsu et al., 2019).

The results of this present study are also consistent with other research that found that working time has a significantly negative effect on mental and emotional health (Berniell & Bietenbeck, 2017; Kotera & Vione, 2020). However, this present study has found no significant impact of working time on self-perceived physical health, which is not consistent with other research findings (Berniell & Bietenbeck, 2017; Jung et al., 2017). Workers with self-reported difficulties in managing work-life balance presented a significantly higher risk for poor self-rated health (Hämmig & Bauer, 2009). The path model of this study dropped some health and sport-related variables as they did not produce a significant effect. Hence, we may infer from this study that longer working hours do not necessarily play an important role in reducing the time for leisure or physical exercise. This result supports the findings of other studies performed under certain conditions (Cook & Gazmararian, 2018). Cook and Gazmararian (2018) also tried to include variables dealing with obesity, leisure, and physical activities but yielded poor models of measurement fits. The self-rated health variable may likely capture the effects of these variables abstractly. Future research should attempt to isolate those variables and other wellbeing variables.

Working time has a direct negative influence on happiness. The results are consistent with other empirical studies (Galea et al., 2014; Gash, Mertens & Romeu, 2010; Golden & Wiens-Tuers, 2006; Helliwell et al., 2018; Pouwels et al., 2008). However, it is also clear from the path model that the presence of some other variables may enforce the effect of working hours on happiness. Those variables that influence happiness include difficulty in fulfilling family responsibilities, time spent with family, self-assessment of health, satisfaction with income, and frequency of meeting with friends. The social connection dimension is worthy of particular attention. Working hours has significant association with social connection (Geurts et al., 2009; Heponiemi et al., 2008) and it affects young people's mental health in Abu Dhabi (Badri et al., 2021).

The path model did not incorporate any GDP or economic growth-related variable, which negatively affects working hours in a cross-national dataset (Sousa-Poza & Henneberger, 2002). The variable 'satisfaction with income' as a proxy may, to some extent, reflect the effect of economic growth on wellbeing. This study has revealed no direct or indirect linkage between satisfaction with income and working hours. However, satisfaction with income affected three other variables: work-life balance, difficulty in fulfilling family responsibilities, and happiness. In many industries and organizations, overtime is motivated by pay, particularly applicable to manual workers. For example, construction workers in the UAE were keen to work overtime as overtime pay constituted a substantial portion of their pay (Yang, 2008). Thus, workers of different income groups, social statuses, and workplace and family circumstances have diverging views regarding overworking hour schemes. Several studies investigating satisfaction with income also had life satisfaction as a significant determining variable (Valente & Berry, 2015). However, in the current study, life satisfaction dropped out from the path model since it showed relatively high correlation with happiness. As happiness reflects a shorter time domain than life satisfaction, it implies that the impact of economic variables on subjective wellbeing tends to be short-term framed.

Work-life balance has demonstrated its central place in incorporating various linkages between many wellbeing variables. The findings of the Abu Dhabi model are in agreement with the results of other studies that show work-life balance has significant association with social connection (Roberts, 2007; Titopoulou et al., 2017), physical health (Jung et al., 2017), income satisfaction (Holly & Mohnen, 2012; Pouwels et al., 2008), mental feelings (Li et al., 2019; Varma et al., 2012; Virtanen et al., 2009), and happiness (Valente & Berry, 2015; Wise et al., 2003; Wooden et al., 2009; Wunder & Heineck, 2013). In addition, the path model reveals that although some variables have no direct connection with working hours, they are worthy of consideration through their links to work-life balance. Two variables, 'difficulty in fulfilling family responsibilities' and 'time spent with family', have a significant effect on work-life balance, suggesting family stressors are meaningful and relevant in the context of Abu Dhabi. The results confirm those from other studies that attach substantial concerns about the struggles to meet both work and family obligations and responsibilities in the light of prolonged working hours (Blair-Loy, 2003; Haas et al., 2000; Jacobs & Gerson, 2004).

In summary, working hours in Abu Dhabi was associated with five significant wellbeing determinants. Policymakers in Abu Dhabi need to pay more attention to such results when designing their policies and strategies. They need to explore the impact of promoting happiness and wellbeing in the workplace and develop new methods for doing so. Some countries introduced common policies to boost employee happiness and wellbeing in the workplace include flexible working hours, parental and compassionate leave, options to work remotely, as well as clear promotion procedures. There are varieties of working time approaches where each offers different advantages and disadvantages for employers, workers, and the community. Titopoulou et al. (2017) summarize the benefits and drawbacks of these approaches including overtime, shift work, part-time, floating working hours, compressed

workweeks, and annualized hours arrangements. Public and private organizations need to investigate all available approaches to working time that affect wellbeing and health (Ganster et al., 2018), especially during difficult times such as the COVID-19 Pandemic.

It should be stressed that Abu Dhabi has one of the highest working hour systems especially in the private sector. The recent move of the UAE to implement a shorter work schedule in the public sector is intended to create more flexible working environment, expecting the private sector to follow suit. Such policy change is also expected to better position the country as an attractive place for work-life balance. Policy changes in the UAE regarding work arrangements could affect many aspects of wellbeing of the working people. For example, it now has the same workweek as the Western world, making the UAE even more appealing to the global workforce and entrepreneurs wanting to set up businesses in the country. The initiative could also support a better work-life balance for UAE-based employees that work for and with global organizations.

6. Conclusions and future directions

The empirical research explored the effect of working hours on a range of wellbeing, including health, job and income, life satisfaction and happiness, social connections, mental feelings, and income satisfaction. Path analysis justified the significance of eight specific variables: work-life balance, frequency of meeting with friends, happiness, stress, time spent with family, self-assessment of health, difficulty fulfilling family responsibilities, and satisfaction with income. Working hours directly affected four: work-life balance, happiness, frequency of meeting with friends, and stress.

One advantage of this research is the availability of a relatively large sample and multiple-dimensional data. The data allows the exploration of how the effect of the working hour into a broader system of direct, indirect, and moderating effects of different wellbeing factors in the empirical context of Abu Dhabi. The results suggest that longer working hours lead to lower satisfaction with work-life balance, happiness, and frequency of meeting with friends. The result is consistent with evidence that people perceive that working long hours leads to a poor work-life balance.

This research enriches our understanding of working people's wellbeing, which is perhaps the most critical outcome of policies. The current research addressed working hours by shedding light on its associations with mental health, social connections, work-life balance, income, family responsibilities, and happiness, thus informing the scope of policy reviews and analyses. The consequences of current policies and programs should be reviewed extensively and new policy proposals be recommended to accommodate the dynamics of working hours and work-life balance determinants.

While excessive working hours should be controlled for the benefit of workers, it is essential to understand when, to what extent, and how long working hours will impact on work and family life of different individuals. Results call for a better understanding of the effectiveness of work-time flexibility and worker-friendly practices. Greater worker autonomy to control and organize work time may be a valuable tool to help workers maintain a good work-family balance. Some flexible labor market policies such as 'working time banks' implemented in Finland and the Netherlands are worthy of further exploration.

It is worth noticing that a portion of the data was collected during the COVID-19 pandemic. Further analysis of the influence of such significant disruption in work and life through examining the impact of working time on the wellbeing of working people is critical and therefore highly recommended. Noticeably also, many public and private entities in Abu Dhabi adjusted their post-COVID work arrangements, aiming to provide more flexible working environment and arrangements. Such changes could result in better wellbeing outcomes for employees in terms of work-life balance, mental health, and happiness.

There are several limitations to this study. First, the current path model did not consider individual-level demographic variables such as gender, age, nationality, type of family, and the number of dependents. Including these variables in a more comprehensive model may provide a better overall picture of the effects of working hours on the wellbeing variables. Other limitations include using some single-item variables and the cross-sectional design of the survey. Future studies could consider longitudinal data design and more complex measures of workers' responses to work-family conflict. In addition, future studies could stress greater clarity of antecedents and outcomes of work-family conflict at multivariate levels.

Conflict of interest

All authors have participated in (a) conception and design, or analysis and interpretation of the data; (b) drafting the article or revising it critically for important intellectual content; and (c) approval of the final version.

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CRediT authorship contribution statement

Masood Badri: Conceptualization, Methodology, Writing – original draft. **Mugheer Al Khaili:** Data curation, Writing – original draft. **Hamad Aldhaheri:** Visualization, Investigation. **Guang Yang:** Supervision, Writing – review & editing, Methodology. **Muna Al Bahar:** Validation, Writing – review & editing. **Asma Al Rashdi:** Software, Validation, Writing – review & editing.

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