

## Predicting the Sleep Health of Dual-Career Couples Based on Mindfulness and Work-Family Conflict

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### Abstract

**Background and Objective:** The purpose of the current study was to predict the sleep health of dual-career couples based on mindfulness and work-family conflict.

**Materials and Methods:** The research method in this study was descriptive and correlational. To achieve the objectives, 280 subjects were selected from the statistical population based on the available and simple random sampling method and the population included all dual-career couples of Tehran, Iran, who were living and working in this city in 2020-2021. Data collection was carried out by Sleep Health Scale (SHS) by Becker et al., Work-Family Conflict Scale (WFCS) by Carlson et al., and the Freiburg Mindfulness Inventory (FMI). Data were analyzed by Pearson statistical method to examine the correlation between the dependent variable and independent variables as well as the regression coefficient to predict the sleep health variable by mindfulness and work-family conflict.

**Results:** A significant negative relationship was found between the sleep health of dual-career couples and work-family conflict. Moreover, a significant positive relationship existed between the sleep health of dual-career couples and mindfulness. Furthermore, work-family conflict and mindfulness could predict the sleep health of couples. This means that decreased work-family conflict and increased mindfulness lead to better sleep health in dual-career couples.

**Conclusion:** According to the findings of this study, work-family conflict and mindfulness can predict the sleep health of dual-career couples.

**Keywords:** Sleep hygiene; Professional family relation; Couples; Work-life balance; Mindfulness

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### Introduction

Sleep is of the most basic needs of humans and we all spend almost one-third of our lives asleep. However, over 30% of people suffer from insomnia and sleep disorder is among the most important disorders (1). On the other hand, lack of sleep health is an unknown health challenge that is related to mortality and over 80% of people with sleep disorder report other mental and physical disorders (2). Indeed, sleep health is a multidimensional pat-

tern of sleep and wakefulness compatible with individual, social, and environmental demands that lead to increased mental and physical health and includes sleep quality, awakening in waking hours, appropriate sleep timing, high efficiency, and sufficient sleep time (3). Of course, this emphasis on sleep health does not mean ignoring the importance of paying attention to sleep disorders or sleep deficiencies, but the goal is combining appropriate strategies to remove sleep imbalance obstacles (4). The social model for sleep health states that individual characteristics such as age, gender, race, career, and transpersonal factors are interrelated (5).

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Although there are recommendations for improving sleep behavior at the individual level, recommendations are needed at other levels such as family, school, workplace, and media, and insufficient information about sleep health leads to mental disorders (6). In this regard, a study on different races showed that physical illness was significantly and inversely related to sleep duration and efficiency as important sleep health components (7). In another study, it was concluded that a direct relationship existed between insomnia and negative mood. Moreover, insomnia can isolate the person and affects negative and positive moods (8). Furthermore, it may increase sleep quality which is one of the components of sleep health, and is followed by a considerable impact on improving the performance of individuals in society. Indeed, the treatment of insomnia promotes mental health and reduces mental and physical disorders. In addition, it prevents financial problems caused by this condition and reduces unpleasant events (9).

Nowadays, the number of dual-career couples is increasing. The tendency of women toward receiving academic certificates has encouraged them to educate and work (10). In a dual-career lifestyle, men and women play roles parallel to their responsibilities at home (11). In this way, the meaning of traditional family where men work outside and women manage the house affairs is fading out and families are created where women work outside like men (12). For sure, dual-career couples suffer from problems such as cognitive negligence and cognitive vulnerability (13). In general, recent findings show that simultaneous occupation of couples may have a bilateral effect on their health that jeopardizes the physical, psychological, social, and spiritual health of couples (14). As stated, one of the most important health indices is sleep health (6).

Another important variable in this study is work-family conflict which is defined as a conflict between roles in which demands and pressures originating from work and family areas are inconsistent, so that demands from both areas are very difficult to satisfy and this causes unpleasant feelings (15). This occurs when factors related to work interfere with family responsibilities. On the other hand, factors related to family interfere with responsibilities related to work (16). In this regard, many researchers believe that work-family conflict is related to many issues in individual,

family, and occupational areas such as increased health risk of employed parents (17) and low sleep quality where sleep quality is one of the components of sleep health (3). Moreover, according to the findings from around the world, work-family conflict among couples has reached a critical point (18, 19). Previous studies on work-family conflict among dual-career couples have focused on supporting family organization (20) and coping strategies (21).

Another variable in this study is mindfulness which is a state of consciousness defined through receiving attention and being aware of current events and experiences without cognitive filters (22) as well as paying attention to a specific procedure at the present without prejudice (23). Mindfulness influences psychological well-being and psychological well-being influences sleep quality which is a dimension of sleep health (24). Moreover, daily mindfulness results from sleep health (25). Therefore, it has been observed that a strong overlap between sleep problems and other physical and mental illnesses has led to the misconception that sleep problems result from other conditions. Nevertheless, over the past three decades, pieces of evidence showed that sleep problems not only were related to other illnesses, but also could have a causal role in creating these conditions. This change in the view of lack of sleep health as a vital health factor can cause important clinical and etiological consequences for general health (6). Moreover, one of the factors that influence physical and mental health is the simultaneous employment of couples (14). On the other hand, work-family conflict is very high among dual-career couples (19). This conflict can be reduced significantly through training in mindfulness (26).

According to what was stated, we all spend one-third of our lives asleep and despite this fact, only a few studies are conducted in Iran on sleep health and most of the studies have concentrated on sleep quality and have ignored the fact that sleep quality is one of the components of sleep health and the other four components that are awareness during waking hours, proper timing, high efficiency, and sufficient sleep have remained unknown in Iran, and due to the important role of sleep health in physical and mental health, further clarification and investigation about this variable and its related mechanisms is needed. Therefore, the main objective of this study was to predict the sleep health of dual-career couples

based on mindfulness and work-family conflict. Accordingly, the main research question was: Could mindfulness and work-family conflict predict the sleep health of dual-career couples?

### Materials and Methods

According to the research topic and purpose, the current study is descriptive and correlational in terms of purpose and data collection, respectively. In this study, investigation and prediction of the sleep health of dual-career couples were carried out based on work-family conflict and mindfulness. To achieve the objectives, 280 subjects were selected from the statistical population who completed online questionnaires for this research based on a simple and available random sampling method. The population of study included all dual-career couples who responded to the online questionnaire distributed online through "porsline" in the social media such as WhatsApp and were living and working in Tehran, Iran, in 2020-2021. The participants filled out the questionnaires online.

**Research questionnaires:** The questionnaires used for data collection from the sample group were as follows: Sleep Health Scale (SHS) by Becker et al., Work-Family Conflict Scale (WFCS) by Carlson et al., and the Freiburg Mindfulness Inventory (FMI).

**SHS:** To measure sleep health, SHS by Becker et al. was used. First of all, the 6-item scale was reviewed by Becker et al., and after confirmatory analysis, it was reduced to 5 items. It is scored based on a 6-point Likert scale (0 = absolutely disagree, 5 = absolutely agree) (27). In this study, the 5-item version of this scale was used. The score ranges from 0 to 25. Lower scores mean lower sleep health. Pordelan et al. obtained validity and reliability of this scale in an Iranian sample (28). Of the 5 items of the sleep health assessment tool, all items were properly translated with desirable quality and all questions of the Persian version of this tool showed acceptable content validity indicating that all questions had content validity. The construct validity was also examined and confirmed through exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) where the standard factor loading for each item varied between 0.77 and 0.80. As a result, the findings indicated that the 5-item scale showed acceptable reliability and validity in the Iranian sample (28).

**WFCS:** To measure work-family conflict, the WFCS including 18 items by Carlson et al. was used. This questionnaire includes 18 items with 3 dimensions; the first three items evaluate work-family conflict based on time, the second three items evaluate family-work conflict based on time, the third three items evaluate work-family conflict based on exhaustion, the fourth three items evaluate family-work conflict based on exhaustion, the fifth three items evaluate work-family conflict based on behavior, and the sixth three items evaluate family-work conflict based on behavior. The respondents should answer the questions based on a 5-point Likert scale from "absolutely disagree" to "absolutely agree". Accordingly, the resulting score would be between 18 and 90 where 18 shows the lowest conflict and 90 shows the highest conflict. Carlson et al. reported the validity of this scale as 0.71 and its Cronbach's alpha between 0.78 and 0.87 (29). Moreover, its face validity and content validity were confirmed (30). The Cronbach's alpha of this scale is calculated to be 0.89 (31).

**FMI:** The short form of FMI has been widely studied and in many cultures, it has been evaluated in terms of psychometric properties (32). Walach et al. designed the initial form of this inventory that included 30 items (33). Later, the short form with 14 items that is more suitable for the general population was designed by them. The long form of this inventory is more suitable for groups that are familiar with Buddhist culture and meditation practices, but it can be said that the short form can be used in different cultures and can cover all aspects related to mindfulness (32, 33).

This scale has 14 items and the respondent answers the questions based on a 4-point Likert scale from "always" (4) to "rarely" (1). Item 13 is scored inversely and minimum and maximum scores are 14 and 56, respectively. Higher scores indicate higher mindfulness. To examine the validity and reliability of the short-form scale, 400 students were selected based on multi-stage cluster sampling. The reliability coefficient was obtained by Cronbach's alpha, sequential theta, and the test-retest method. Validity was also calculated through concurrent validity and CFA model. To check the concurrent validity of the short form, the Tangney's Self-Control Scale (SCS) and the Schutte Self-Report Emotional Intelligence Test (SSEIT) were used. In general, a significant corre-

lation was reported between FMI and self-control (0.69) and emotional regulation (0.68) scales (32).

The results of the CFA showed that the questionnaire structure had an acceptable goodness of fit with data and a desirable factor validity, and all goodness of fit indexes confirmed the general model for the subjects and the assumed general single-factor pattern was confirmed. Moreover, the results showed that the short form of FMI had acceptable reliability and the coefficients for Cronbach's alpha (0.92), sequential theta (0.92), and test-retest reliability (0.83) were obtained after four weeks. In general, the questionnaire, without any change and possible omission of some questions, kept its structure, and acceptable reliability and validity of this questionnaire, preciseness, and ease of administration provided conditions for researchers to make extensive use of this tool. Therefore, the short form of this inventory that evaluates mindfulness very well has acceptable reliability and validity in Iran and can be used in educational and research areas and can generate numerous studies in the field of psychology (32).

**Demographic questionnaire:** The demographic questionnaire included questions about age, career, gender, education, employment history, and number of children.

**Statistical Analysis**

Data were analyzed by SPSS software (version 24, IBM Corporation, Armonk, NY, USA) using descriptive statistics including mean and standard deviation (SD) and inferential statistics including Pearson correlation (for the relationship between research variables) and regression analysis (to predict sleep health based on predictive variables).

To observe ethical standards, the following points were mentioned in the questionnaire: 1) all data will remain confidential and 2) the participant can cancel his participation whenever he wants. Meanwhile, the code of ethics IR.IAU.SRB.REC.1401.080 was received from the Islamic Azad University, Science and Research Branch, Tehran.

**Results**

Of 280 subjects who participated in the study, 116 people (41.4%) were women and 164 people (58.6%) were men (Table 1). Forty two people (15.0%) were below 29 years old, 130 people (46.4%) were between 30 and 39 years old, 66 people (23.6%) were between 40 and 49 years old, and 42 people (15.0%) were above 50 years

old. In addition, 156 people (55.7%) were freelancers, 129 people (44.3%) were officially employed, 89 people (31.8%) had no children, 131 people (46.8%) had one child, and 60 people (21.4%) had two or more than two children. In terms of education, 109 people (38.9%) had diplomas, 123 people (43.9%) had Associate Degree (AD) and Bachelor of Arts (BA), 34 people (12.1%) had Master of Arts (MA), and 14 people (5.0%) had PhD. Regarding employment history, 40 people (14.3%) had less than 5 years, 105 people (37.5%) between 5 and 10 years, 87 people (31.1%) between 10 and 20 years, and 48 people (17.1%) had over 20 years of employment. Frequency distribution based on gender, age, career, number of children, education, and employment history of the subjects is illustrated in table 1.

**Table 1.** Frequency distribution based on gender, age, career, number of children, education, and employment history of the subjects

Variable		n (%)
Gender	Women	116 (41.4)
	Men	164 (58.6)
Age (year)	≤ 29	42 (15.0)
	30-39	130 (46.6)
	40-49	66 (23.6)
	≥ 50	42 (15.0)
Career	Freelancer	156 (55.7)
	Officially employed	124 (44.3)
Number of children	0	89 (31.8)
	1	131 (46.8)
	≥ 2	60 (21.4)
Education	Diploma	109 (38.9)
	AD or BA	123 (43.9)
	MA	34 (12.1)
	PhD	14 (5.0)
Employment history (year)	< 5	40 (14.3)
	5-10	105 (37.5)
	10-20	87 (31.1)
	> 20	48 (17.1)

AD: Associate degree; BA: Bachelor of arts; MA: Master of arts; PhD: Doctor of philosophy

In table 2, the results of one-way analysis of variance (ANOVA) is illustrated for demographic information and sleep health. For gender, age, career, and education, in column F, the significance level was smaller than 0.05; as a result, no average equality existed between them. In these variables, at least one of the groups was significantly different, but about the number of children and employment history, according to the value of F and the significance level that was larger than 0.05, the sleep health showed no significant difference among research groups.

As illustrated in table 3, the mean and SD values of sleep health, work-family conflict, and



mindfulness were  $18.63 \pm 4.83$ ,  $40.71 \pm 12.64$ , and  $38.17 \pm 6.86$ , respectively.

**Table 2.** One-way analysis of variance (ANOVA) between demographic information and sleep health

Variable	F	P-value
Gender	3.931	0.048
Age	2.864	0.037
Career	8.909	0.003
Number of children	0.996	0.395
Education	3.887	0.010
Employment history	1.534	0.206

On the other hand, the lowest sleep health was 5 and its highest level was 25.0 and the lowest work-family conflict was 18 and its highest level was 70. Moreover, the highest mindfulness was 54 and the lowest mindfulness was reported to be 19. Other descriptive data of variables are presented in table 3.

**Table 3.** The mean, standard deviation (SD), minimum, and maximum values of sleep health and work-family conflict and mindfulness

Variable	Minimum	Maximum	Mean $\pm$ SD
SH	5	25	$18.63 \pm 4.83$
WFC	18	70	$40.71 \pm 12.64$
Time WIF	3	14	$7.84 \pm 2.52$
Time FIW	3	13	$7.38 \pm 2.52$
Strain WIF	3	13	$7.10 \pm 2.39$
Strain FIW	3	13	$6.60 \pm 2.38$
Behavior WIF	3	11	$5.89 \pm 1.91$
Behavior FIW	3	11	$6.11 \pm 1.92$
Mindfulness	19	54	$38.17 \pm 6.86$

SH: Sleep health; WFC: Work-family conflict; Time WIF: Time-based work interference with family; Time FIW: Time-based family interference with work; Strain WIF: Strain-based work interference with family; Strain FIW: Strain-based family interference with work; Behavior WIF: Behavior-based work interference with family; Behavior FIW: Behavior-based family interference with work; SD: Standard deviation

According to the results of data analysis, there was a correlation coefficient of  $-0.324$  with a P-value smaller than 0.05 between sleep health and work-family conflict which means that a significant negative relationship existed between sleep health and work-family conflict. Furthermore, the results of data analysis showed that there was a correlation coefficient of  $0.389$  with a P-value smaller than 0.05 between sleep health and mindfulness which means that a significant positive relationship existed between sleep health and mindfulness (Table 4).

To predict the sleep health of dual-career couples based on mindfulness and work-family conflict, regression analysis was used. The coefficient of determination was 17.8 and since the significance level was smaller than 0.05, a significant relationship existed between mindfulness and work-family conflict with the sleep health of dual-career couples; therefore, the predictors of work-family conflict and mindfulness significantly explained changes in the sleep health of dual-career couples, so that 17.8% of sleep health variance of dual-career couples was explained by work-family conflict and mindfulness. On the other hand, the significance level was smaller than 0.05 and F was equal to 30.006, which means that F is significant. Therefore, the presented model describes sleep health as a dependent variable. The results of the regression are presented in table 5.

As can be seen, the parameters included the y-intercept that was equal to 13.317 and the regression coefficients of predicting mindfulness and work-family conflict were 0.214 and  $-0.071$ , respectively.

**Table 4.** Correlation between sleep health and work-family conflict and its components and mindfulness

Variable	SH	WFC	Time WIF	Time FIW	Strain WIF	Strain FIW	Behavior WIF	Behavior FIW	Mindfulness
SH	1								
WFC	$-0.324^*$	1							
Time WIF	$-0.324^*$	$0.935^*$	1						
Time FIW	$-0.319^*$	$0.931^*$	$0.981^*$	1					
Strain WIF	$-0.280^*$	$0.926^*$	$0.842^*$	$0.842^*$	1				
Strain FIW	$-0.271^*$	$0.924^*$	$0.843^*$	$0.847^*$	$0.979^*$	1			
Behavior WIF	$-0.218^*$	$0.825^*$	$0.715^*$	$0.713^*$	$0.770^*$	$0.764^*$	1		
Behavior FIW	$-0.273^*$	$0.843^*$	$0.741^*$	$0.738^*$	$0.758^*$	$0.752^*$	$0.787^*$	1	
Mindfulness	$0.389^*$	$-0.459^*$	$-0.446^*$	$-0.449^*$	$-0.425^*$	$-0.430^*$	$-0.400^*$	$-0.407^*$	1

\*  $P < 0.05$

SH: Sleep health; WFC: Work-family conflict; Time WIF: Time-based work interference with family; Time FIW: Time-based family interference with work; Strain WIF: Strain-based work interference with family; Strain FIW: Strain-based family interference with work; Behavior WIF: Behavior-based work interference with family; Behavior FIW: Behavior-based family interference with work

**Table 5.** The results of regression for predicting sleep health by mindfulness and work-family conflict

Source of change	SS	DF	MS	F	R	R <sup>2</sup>	P-value
Regression	1163.359	2	581.680	30.006	0.422	0.178	< 0.01
Leftover	5369.752	277	19.385				
Total	6533.111	279					

SS: Sum of squares; DF: Degree of freedom; MS: Mean squares

Therefore, this model indicated a positive relationship between mindfulness and sleep health and the negative effect of work-family conflict on sleep health, and since the significance level in the t-test was smaller than 0.05, it shows that mindfulness and work-family conflict had a significant impact on the sleep health of dual-career couples.

Accordingly, based on the beta value in the work-family conflict that was equal to -0.184, beta value in mindfulness that was equal to 0.304, and t-test value that was significant, it can be observed that mindfulness positively and work-family conflict negatively predicted the sleep health of dual-career couples. It means that decreased work-family conflict and increased mindfulness increase the sleep health of dual-career couples (Table 6).

### Discussion

Recent findings show that simultaneous employment of couples can have a bilateral impact on their health that on the negative side, it jeopardizes the physical, mental, social, and spiritual health of couples (14). As stated earlier, one of the most important health indices is the sleep health of people (6). According to previous studies and due to the importance of the sleep health of dual-career couples, it will be possible to create a logical relationship between this component and work-family conflict and mindfulness. Therefore, present study aimed to predict the sleep health of dual-career couples based on mindfulness and work-family conflict. Accordingly, this study tried to predict the sleep health of dual-career couples based on mindfulness and work-family conflict.

Since no study with the same topic has been conducted so far, studies with similar topics that have examined the relationship between sleep health or sleep health components with variables such as independent variables existing in this study in different situations were used. Accordingly, these findings are consistent with Pordelan and Vakili who stated that sleep health played a key role in improving career adaptability (34). From this perspective, career adaptability has a

reductive role in work-family conflict (35). Moreover, it is consistent with Liu et al. who showed that work-family conflict and mindfulness predicted sleep quality, which is one of the components of health, and work-family conflict had a significant negative relationship with sleep quality and a significant positive relationship with mindfulness (36). In explaining this consistency, it can be said that sleep health promotion interventions should be at individual levels as well as different contextual levels such as family and workplace (6). Many researchers believe that work-family conflict is related to individual issues and the health status of employed parents (17) and mindfulness influences individual factors such as sleep quality (i.e., sleep health dimension) (24). Furthermore, these findings are consistent with Barkhordary et al. (18), Hwang and Yu (37), Bet-tac and Probst (38), Cheng et al. (39), and Silva-Costa et al. (40) findings showing that work-family conflict had a significant negative relationship with sleep health components. In explaining this finding, it can be said that work-family conflict means that the person may have incompatible demands between work and family roles and this complicates participation in both roles and the imbalance causes conflicts in work and life relations (16). A large number of researchers believe that work-family conflict is related to issues such as increased risk for employed parents' health (17). As mentioned, one of the most important health indexes is the sleep health of people (6).

The findings of this study are consistent with Lee et al. who concluded that a significant positive relationship existed between mindfulness and sleep health (41). Jiang et al. who showed that mindfulness had a significant positive relationship with one of the sleep health components (sleep quality) (42), and Perini et al. (43) and Brewer et al. (44) who concluded that mindfulness had a negative relationship with the sleep health (sleep disorders).

In explaining this finding, it can be said that clinical psychology and psychiatry have expanded some therapies based on mindfulness since the 1970s (45).

**Table 6.** The results of regression analysis for predicting sleep health by mindfulness and work-family conflict

Predictor variables	B	SEE	Beta	T-test	P-value
Constant value	13.317	2.268		5.871	< 0.001
Work-family conflict	-0.710	0.023	-0.184	-3.008	0.003
Mindfulness	0.214	0.043	0.304	4.964	< 0.001

SEE: Standard error of estimate

Moreover, mindfulness helps the person to understand how to discover peace and satisfaction from the depth of the soul and change it to his daily model of living and gradually escape from concerns, dissatisfactions, and sufferings (46). Over 30% of people around the world suffer from insomnia (1).

This study had the following limitations. In this study, questionnaires and self-reports were used and as a result, some people might have refused to provide a real answer. The results of this study could not be generalized to other cities' dual-career couples. Therefore, the generalization for other cities and populations should be done with care. According to the results, the following suggestions are proposed for future studies: carrying out this study in larger samples and societies with different cultures to obtain more generalizable results and predicting sleep health through other related predictor variables. According to the results of this study and the predictability and impact of work-family conflict and mindfulness on the sleep health of dual-career couples, it should be attempted to improve their sleep health, and to achieve this, improvement of mindfulness and reducing work-family conflict should be taken into consideration by organizations, companies, and guidelines.

### Conclusion

The findings showed that a significant negative relationship existed between the sleep health of dual-career couples and work-family conflict. Moreover, a significant positive relationship was witnessed between the sleep health of dual-career couples and mindfulness. Furthermore, the findings indicated that work-family conflict and mindfulness negatively and positively predicted the sleep health of dual-career couples, respectively. Therefore, it can be concluded that work-family conflict and mindfulness are associated with the sleep health of dual-career couples.

### Conflict of Interests

Authors have no conflict of interests.

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