Work environment characteristics as determinants of work to family conflict among working females, Egypt

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Abstract
Background Positive work environment is the corner stone for control and relief of work to family conflict (WFC).
Objectives To determine the prevalence work-family spillovers and to study the relations between them and work environment characteristics among full-time female employees at Tanta University Medical Campus.
Participants and methods A cross-sectional study was carried among female employees working in the five faculties that are present at Tanta University Medical Campus. A total of 442 female workers were recruited. Data were collected using a self-administered questionnaire including personal characteristics, work-related data, and home responsibilities. Job characteristics scales, work to family, and family to work spillovers scales were used to study their correlation.
Results Participants’ mean age was 39.87 ± 10.07 years. Approximately half of participants had moderate degrees of both positive and negative work to family and family to work spillovers. Significant positive correlation was detected between skills discretion and both of positive work to family and family to work spillovers (r = 0.361, r = 0.288, P = 0.001, respectively); similar relations were reported regarding decision authority, coworkers’ support, and supervisors’ support. The negative work to family and family to work spillovers significantly increased by increasing in work demands (r = 0.315, r = 0.218, P = 0.001, respectively). Significant and negative correlations were found between each of skills discretion and supervisors’ support scales and the negative impact of family to work spillover (r = −0.130; P = 0.006, r = −0.167; P = 0.001, respectively).
Conclusion The prevalence of both positive and negative work to family and family to work spillovers was relatively high. Significant relations were detected between work-family spillovers and work environment characteristics regarding skills discretion, work demands, decision authority, coworkers, and supervisors’ support.

Keywords Work environment characteristics · Work to family conflict · Female employees

Introduction
Family-friendly work environments help positive outcomes for workforces, motivating them at work and increasing positive mood at home too [Van Steenbergen and Ellemers 2009; Sanz-Vergel et al. 2015]. In contrast, non-motivating work atmospheres have been related to troubles in family that may lead to poor outcome of employee [Anand et al. 2014].
Roehling and her colleagues (Roehling et al. 2003) constructed three different models to describe the relationship between working and nonworking life spheres. These frameworks were the compensation theory states that dissatisfaction or failure in one area might be compensated for by satisfaction and success in another area; the segmentation theory focuses on keeping the emotions and stress factors of these two spheres independent from one another. These models also assume that there is no overlap or connection between work life and the private life. Contrary to this, spillover theory claims that experiences in one sphere influence the other sphere.
Work life and family life interact with each other; both positive and negative spillover can be present in people’s lives, and they interact in both directions (work-to-family
and family-to-work) (Roehling et al. 2003; Greenhaus and Powell 2006).

Spillover, however, means much more than a simple cause-and-effect influence from one sphere to the other, but rather the phenomenon that “activities in one role can benefit an individual’s activity in another role” (Grzywacz et al. 2007, p.561).

Supporting a positive spillover between work and family is consequently critical for health and welfare of employee [Carvalho and Chambel 2014; Russo 2015]. Role pressures from family and work fields are mutually incompatible and turn into stressors [Greenhaus and Beutell 1985].

Job stress is progressively pointed to as one of the most serious occupational hazards that could potentially decrease workers’ productivity, satisfaction, and increase turnover and absenteeism [Gianakos 2000]. Feeling insecure due to poor working environment may be leading to job stress. Work-family conflicts and work overload are a well-known cause of stress [Stamper and Johike 2003].

Stressors at work such as personal-professional conflicts and work overload are identified to generate boredom in work that spills over into the family [Fu and Shaffer 2001]. All over the world, women actively participate in work market to support their families’ economy and to achieve their professional career.

Nearly all women employed in full-time work are energetic contributors in labor force. However, still preserving their customary roles and principal accountability for housework, childcare, possibly the care of the elderly parents, or any family member with special needs adding to stresses of work demands. Conflicts appear once performance in one role generates an incapability to perform the other role sufficiently [Ajala 2017].

Work-family-conflict (WFC) means the effect of work on the family, whereas family-work conflict (FWC) reports the effect of the family on the work activities [Fu and Shaffer 2001]. These conflicts have a serious negative effect on both women and work leading to decrease in work performance, job dissatisfaction, more psychological suffering, and high marital frustration [Ajala 2017]. Numerous studies stated that employed women have higher levels of family-work conflict than employed men, particularly women involved in management work [Apperson et al. 2002; Yavas et al. 2008].

Employed woman experiences contradicted role expectations between work and home. At work, she is anticipated to be energetic, dynamic, competitive, creative, and acts in a professional manner. At home, she is predicted to be sensitive, sweet, soft, and domesticated [Misra 1998]. These contradictions lead to family unhappiness and reduce the level of job performance among female employees. Consequently, loss at both sides will occur: the home and the workplace [Ajala 2017]. Correspondingly, as society is not isolated from any organizations and work place, this conflict will disturb the society in different ways: lower quality services and lower standards of performance.

In Egypt, between 1986 and 2014, the number of employed individuals increased from 11 million to about 24 million. Employed females increased about five times from million to five million in 2014 which represent about 21% of total employed individuals in Egypt [Alkitkat 2018].

Data about work to family conflict among working females is still insufficient in Egypt, so the objectives of this study were to determine the prevalence of work-family spillovers and to study the relations between them and work environment characteristics among full-time female employees at Tanta University Medical Campus.

The study hypothesis

If full-time female employees at Tanta University Medical Campus are exposed to work-related stressors, that will be correlated with work-family spillovers.

Subjects and methods

Type, time, and setting of the study

This cross-sectional study was conducted during September and October 2019 at Tanta University Medical Campus hosting five faculties: Medicine, Nursing, Dentistry, Pharmacy, and Faculty of Science. Communications were made with faculties’ Deans to get their approval and cooperation.

Study population and sampling

All female employees (n = 645) who were in service at Tanta University Medical Campus during the period of the study were our target population. Female employees with duration of work less than 1 year were excluded from the study. The sample size was calculated by utilizing the Epi Info software developed by CDC, Atlanta, Georgia, USA (Epi Info™ 7.2.2.6). 5. Criteria used for sample size calculation were 95% confidence limit, 5% margin of error, 80% power of the study, 50% expected prevalence of work-family spillovers among working females, and 1% design effect. The calculated sample size was 384 which was increased by 25% to compensate for nonresponse and incomplete data to be 480. The required sample was obtained from each faculty by convenience method. After the application of exclusion criteria (11 subjects) and formal consent from all subjects, the total number of study participants was 442 full-time female employees with a response rate of 94.24%. The main reason for non-participation was time constraints. The study was approved by Tanta Faculty of Medicine Research Ethics Committee (REC) and informed consent was obtained from all participants.
Data collection and tools of study

Data was collected from all participants through:

(1) A pre-designed self-administered questionnaire which included the basic demographic profile as age, qualifications, marital status, number of household members, duration of marriage, number of offspring, monthly income, experience in current job, caring for a person with special needs, and home responsibilities.

(2) Work to family and family to work spillover scales: to assess the work-family interface by evaluating 16 items adopted from psychosocial scales in the Midlife in the United States (MIDUS1) data sets, which is a national longitudinal study of health and well-being. Four distinct work-family spillover dimensions were assessed through the following scales [National Study of Health and Wellbeing 2004].

(a) Positive work to family spillover scale: included four questions (\(\alpha = 0.74\)): “How often have you experienced each of the following in the past year?” e.g., “The things you do at work help you deal with personal and practical issues at home,” and “The things you do at work make you a more interesting person at home.”

(b) Negative work to family spillover scale: was measured by responses to four questions (\(\alpha = 0.84\)): “How often have you experienced each of the following in the past year?” e.g., “Your job reduces the effort you can give to activities at home,” and “Stress at work makes your irritable at home.”

(c) Positive family to work spillover scale: included four questions (\(\alpha = 0.73\)): “How often have you experienced each of the following in the past year?” e.g., “Talking with someone at home helps you deal with problems at work,” and “Providing for what is needed at home makes you work harder at your job.”

(d) Negative family to work spillover scale: was measured by responses to four questions (\(\alpha = 0.81\)): “How often have you experienced each of the following in the past year?” e.g., “Responsibilities at home reduce the effort you can devote to your job,” and “Personal or family worries and problems distract you when you are at work.”

Response categories for each of these questions were rated on 5-point Likert scale: 1 = all the time; 2 = most of the time; 3 = sometimes; 4 = rarely; 5 = never.

Response time needed to completely fill-in the used questionnaire was 15 ± 3.53 min.

Data management

Data analysis was performed using Statistical Package for Social Sciences (SPSS) version 21. Qualitative data were presented as number and percent. Quantitative data were presented as mean and standard deviation (SD). Pearson’s correlation was used to measure the strength and direction of the relationship between quantitative variables and the level of significance was adopted at \(p \leq 0.05\).

Results

Four hundred forty-two full-time female employees (442) were recruited in this study with a mean age of 39.87 ± 10.07 years and a mean duration of work was 11.77 ± 9.6 years. Most of the participants (78%) had bachelor and diploma degrees and 79.2% were married. Approximately two thirds of them (64.6%) had 2 or 3 offspring aged less than 20 years. The monthly income was not enough for more than
one half of participants (53.8%). Among participants, 82.4% were responsible for all home responsibilities and 33.7% had support for these responsibilities while 29.9% took care for a person with special needs (Tables 1 and 2).

According to the degree and impact of spillover of one role identity over the other, approximately half of participants had either moderate positive (52.9% and 51.6%) or moderate negative (50.5% and 48.0%) degree of work to family and family spillovers, respectively. Approximately one third of female employees (34.6%) had high degree of positive family to work spillover while only 14% had high positive work to family spillover. Regarding job characteristics scales, more

| Table 1  | Sociodemographic characteristics of participants |
|----------|-----------------------------------------------|
| Variables | Number (n = 442) | % |
| Age in years | | |
| 20-       | 68            | 15.4 |
| 30-       | 174           | 39.4 |
| 40-       | 95            | 21.5 |
| 50-60     | 105           | 23.8 |
| Qualifications | | |
| Diploma   | 148           | 33.5 |
| Bachelor  | 197           | 44.6 |
| Master degree | 38     | 8.6 |
| Doctorate degree | 23     | 5.2 |
| Others    | 36            | 8.1 |
| Marital status | | |
| Single    | 49            | 11.1 |
| Married   | 350           | 79.2 |
| Divorced  | 18            | 4.1 |
| Widow     | 25            | 5.7 |
| Number of household members | | |
| < 3       | 47            | 10.6 |
| 3         | 93            | 21.0 |
| 4         | 129           | 29.2 |
| 5         | 109           | 24.7 |
| 6+        | 64            | 14.5 |
| Duration of marriage in years (n = 393) | | |
| < 5       | 28            | 7.1 |
| 5-        | 93            | 23.7 |
| 10-       | 61            | 15.5 |
| 15+       | 211           | 53.7 |
| Number of offspring (n = 393) | | |
| 0         | 25            | 6.4 |
| 1         | 51            | 13.0 |
| 2         | 151           | 38.4 |
| 3         | 103           | 26.2 |
| 4+        | 63            | 16.0 |
| Age of youngest sibling in years (n = 362) | | |
| ≤ 2       | 67            | 18.5 |
| 3–5       | 69            | 19.1 |
| 6–12      | 97            | 26.8 |
| 13–19     | 61            | 16.9 |
| 20+       | 68            | 18.8 |

| Table 2  | Work-related characteristics of participants |
|----------|-----------------------------------------------|
| Variables | Number (n = 442) | % |
| Monthly income | | |
| Not enough | 238 | 53.8 |
| Just enough | 180 | 40.7 |
| Enough and saving | 24 | 5.5 |
| Total experience in years | | |
| < 5 | 53 | 12.0 |
| 5- | 115 | 26.0 |
| 10- | 100 | 22.6 |
| 15- | 46 | 10.4 |
| 20+ | 128 | 29.0 |
| Experience in current job | | |
| < 5 | 101 | 22.9 |
| 5- | 147 | 33.3 |
| 10- | 72 | 16.3 |
| 15- | 33 | 7.5 |
| 20+ | 89 | 20.1 |
| Have house responsibilities | | |
| None | 15 | 3.4 |
| Some | 63 | 14.3 |
| All | 364 | 82.4 |
| Caring for a person with special needs | | |
| 132 | 29.9 |
| Having support of house responsibilities | | |
| 149 | 33.7 |
| Having supportive family member in hard days | | |
| 337 | 76.2 |
| Need vacation to care for family member | | |
| Many days | 105 | 23.8 |
| Sometimes | 259 | 58.6 |
| Rarely | 78 | 17.6 |

| Table 3  | Distribution of participants by work-family-work conflict severity and work characteristics |
|----------|---------------------------------------------------------------|
| Variable | Low | Moderate | High |
| Positive work to family spillover | 146 | 33.0 | 234 | 52.9 | 62 | 14.0 |
| Negative work to family spillover | 147 | 33.3 | 223 | 50.5 | 72 | 16.3 |
| Positive family to work spillover | 61 | 13.8 | 228 | 51.6 | 153 | 34.6 |
| Negative family to work spillover | 196 | 44.3 | 212 | 48.0 | 34 | 7.7 |
| Skills discretion | 113 | 25.6 | 247 | 55.9 | 82 | 18.6 |
| Decision authority | 192 | 43.4 | 207 | 46.8 | 43 | 9.7 |
| Work demands | 90 | 20.4 | 307 | 69.5 | 45 | 10.2 |
| Coworker support | 86 | 19.5 | 265 | 60.0 | 91 | 20.6 |
| Supervisor support | 100 | 22.6 | 235 | 53.2 | 107 | 24.2 |
than half of participants (55.9%) had moderate degree of skills
discretion and 43.4% reported to have low degree of decision
authority in planning their work environment. Moderate level
of work demands was reported by 69.5% and 60% reported
moderate degree of coworkers and colleague support while
53.2% of female employees reported moderate supervisors
and management support (Table 3).

A significant positive correlation was detected between
positive work to family spillover and number of children of
participants ($r = 0.103, P = 0.041$). A significant negative
correlation was shown between negative work to family spill-
over and monthly income of participants ($r = −0.102, P = 0.032^*$).
Negative family to work spillover was significantly
decreased as the age of participants increased ($r = −0.095, P = 0.045$).
Significant positive correlation was found between
decision authority at work and monthly income ($r = 0.169, P = 0.001^*$) (Table 4).

A significant good positive correlation was observed be-
tween positive work to family spillover and skills discretion ($r = 0.361$) and decision authority ($r = 0.362$). On the other hand, there was a weak significant positive correlation between work to family spillover and coworker support and supervisor support ($r = 0.163$ and 0.157, respectively). Negative work to
family spillover significantly correlated with work demand ($r = 0.315, P = 0.001$). Positive family to work spillover showed a
good positive significant correlation with all work charac-
teristics except for work load. Negative family to work spill-
over showed a significant negative correlation with both skills
discretion ($r = −130$) and supervisor support ($r = −0.167$).
The correlation between negative family to work spillover was
significantly positive for work demands ($r = 0.218$) (Table 5).

### Discussion

The present study reported that negative family to work spill-
over was significantly decreased as the age of female em-
ployees increased. This result was concurrent with a study
conducted by Winslow (2005) who found that older parents
suffer less work-family conflict than younger ones. This may
be because older parents usually possess more resources as
experience and financial support to deal with various duties
of both work and family. Another explanation could be due to
their established and more stable positions in their lives and
are economically more independent than younger parents are.

### Table 4 Correlation of age, number of children, and income
with work-family conflicts and work characteristics among
participants

| Variables                        | Age in years |
|----------------------------------|--------------|
|                                  | $r$  | $p$  | $r$  | $p$  |
| Positive work to family spillover | 0.076  | 0.112  | 0.103  | 0.041*  | 0.042  | 0.384  |
| Negative work to family spillover | $−0.081$  | 0.088  | 0.003  | 0.954  | $−0.102$  | 0.032*  |
| Positive family to work spillover | $−0.034$  | 0.477  | 0.030  | 0.551  | 0.046  | 0.335  |
| Negative family to work spillover | $−0.095$  | 0.045*  | 0.045  | 0.378  | 0.020  | 0.671  |
| Skills discretion                | $−0.037$  | 0.438  | 0.036  | 0.482  | 0.040  | 0.399  |
| Decision authority               | $−0.003$  | 0.955  | 0.052  | 0.301  | 0.169  | 0.001*  |
| Work demands                     | $−0.093$  | 0.051  | 0.025  | 0.624  | $−0.075$  | 0.114  |
| Coworker support                 | 0.001  | 0.992  | 0.024  | 0.632  | 0.015  | 0.758  |
| Supervisor support               | $−0.046$  | 0.336  | $−0.029$  | 0.563  | 0.007  | 0.889  |

*Statistically significant

### Table 5 Correlation between work characteristics and family-
work conflict among studied female employees

| Variables                        | Positive work to family spillover | Negative work to family spillover | Positive family to work spillover | Negative family to work spillover |
|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
|                                  | $r$  | $p$  | $r$  | $p$  | $r$  | $p$  | $r$  | $p$  |
| Skills discretion                | 0.361  | 0.001*  | 0.007  | 0.883  | 0.288  | 0.001*  | $−0.130$  | 0.006*  |
| Decision authority               | 0.362  | 0.001*  | $−0.019$  | 0.692  | 0.249  | 0.001*  | 0.086  | 0.071  |
| Work demands                     | 0.023  | 0.631  | 0.315  | 0.001*  | 0.046  | 0.330  | 0.218  | 0.001*  |
| Coworker support                 | 0.163  | 0.001*  | 0.010  | 0.841  | 0.238  | 0.001*  | 0.059  | 0.212  |
| Supervisor support               | 0.157  | 0.001*  | $−0.072$  | 0.133  | 0.207  | 0.001*  | $−0.167$  | 0.001*  |

*Statistically significant
Consequently, the increase in the age of parents may be associated with a decrease in work-family conflict.

In the present study, a significant positive correlation was detected between skills discretion and both of positive work to family and family to work spillovers. Similar relations were also reported regarding other job characteristics scales that included decision authority, coworker support, and supervisor support. We stated that the negative work to family and family to work spillovers significantly increased by increasing work demands. Significant and negative correlations were found between each of skills discretion and supervisor support scales and the negative family to work spillover. These findings were supported by Taylor et al. (2009) who found that supervisor support, climate of work, and job characteristics impact work-family conflict.

Establishments can aid employees to recognize a positive spillover between work and family. They can provide job resources such as sense of control, job autonomy, coworker, and supervisor support [Barnett and Hyde 2001; Odle-Dusseau et al. 2012]. In the current study, a significant positive correlation was detected between decision authority scale items as (e.g., control the amount of time you spend on tasks) and positive work to family and family to work spillovers.

The negative work to family spillover significantly increased by an increase in work demands. These results were in line with other studies that indicated that employees applying such work arrangements as malleable schedules found to be more satisfied in their work and experienced less work-family conflict and that their time and relations with their children had improved [Lee et al. 2002].

Demands of work and resources, for example, the number of worked hours and time limitations, are important causes connecting to work-family conflict. It is consequently important for establishments to not only encourage flexibility as work hours and schedules, but also promote other forms of employee autonomy (employees have to decide how, when, and where they do their work with self-control on the job) that would assist employees to manage their work-family conflict [Voydanoff 2004].

A study by Voydanoff (2004) reported that work demands are predictable to be salient in influencing work-family conflict principally the work interference with the family dimensions because they accompanied by processes that hinder the performance of family roles needed for contribution in family activities [Voydanoff 2004].

This study showed a significant positive correlation between positive work to family spillover and supervisor support. These findings supported by previous researches on supervisor support and work-family enrichment. Authors reported that a family supportive supervisor appears to increase employees’ energy, enthusiasm, and positive attitude at work, which empowers employees to transfer knowledge and learned skills at work to their families. Supportive supervisor look to aid establishments to produce high engaging work environments and create atmospheres of psychological satisfaction among employees [Siu et al. 2010; Straub et al. 2017].

Limitations

These data were cross-sectional; accordingly, it is important for future research to longitudinally study the determinants and consequences of both positive and negative spillovers for the individual, her family members, and the individual’s performance at work. Also, our data were self-reported. So, it will be important for further research to rule out the probability that the correlations we found were due to common-method variance. The non-probability sampling technique limited our result generalization.

Conclusion

The prevalence of both positive and negative work to family and family to work spillovers was relatively high. Significant positive correlation was detected between work characteristics as skills discretion, decision authority, coworker support, and supervisor support and both of positive work to family and family to work spillovers. Negative work to family and family to work spillovers significantly increased by increasing in work demands. Significant and negative correlations were found between each of skills of discretion and supervisor support scales and the negative impact of family to work spillover.

Recommendations

Work-family conflict can be reduced through creating family supportive and comfortable work environments, as flexible work schedules, child and elder care services, adjustment of work demands, enforcement of decision authorities, skills discretion, and supervisor and co-worker support.

Author contribution Hanaa Abdelaziz Zayed participated in data collection, statistical analysis and was a major contributor in writing and revision of the manuscript. Ibrahim Ali Kabbash was responsible for the concept of the paper, statistical analysis of data and shared in writing and revision of the manuscript. Rania Moustafa El-Sallamy participated in data collection, statistical analysis and writing of the paper. Sanaa Abd El-fatah Abdo was a major contributor in preparation of questionnaire and data collection.

Availability of data and materials Not available.

Declarations

Ethical approval This study was approved by Tanta Faculty of Medicine Research Ethics Committee (REC).
Consent to participate  Formal written consent was taken from all study participants.

Consent for publication  Not applicable.

Conflict of interest  The authors declare no competing interests.

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