

Pilot study on the influence of stress caused by the need to combine work and family on occupational accidents in working women

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A B S T R A C T

The influx of a large number of women into the workforce involves the need for these women to combine family and work responsibilities. Multiple roles lead to work–family conflict. This study analyzes the influence of work–family conflict on the causes of minor occupational accidents suffered by working women. A survey was done on working women in the Madrid region, who had suffered a minor occupational accident in 2004. The main finding was that nearly half of the women with children considered that the stress and fatigue caused by trying to combine work and family played a part in the accident; 21% of the respondents whose accidents took place while traveling to or from work and 11% the respondents who suffered the accident in the workplace said that family reasons played a part. Additionally, 50% of the women suffered after-effects as a result of the accident; children had to change their routine in almost 1 in 4 cases; nearly a quarter of the respondents said their work situation had been temporarily modified. This points to a need for policies that encourage men and employers to contribute more to solve work–family conflicts.

Keywords:

Occupational accident
Work
Family
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1. Introduction

The multiple role pressures experienced by women and men make work–family conflict virtually inevitable (Burke, 1988; Greenhaus, 1988). Grandey and Cropanzano (1999) defined work–family conflict as a perception of insufficient energy and/or time to perform both work and family roles successfully. Work-related and non-work-related factors associated with work–family conflict have been amply studied (Geurts et al., 1999; Greenhaus and Kopelman, 1981; Jansen et al., 2003; Pleck et al., 1980), as well as the consequences associated with work–family conflict, such as job dissatisfaction, job burnout, stress, depression and life dissatisfaction among others (Allen et al., 2000; Lundberg and Frankenhaeuser, 1999).

Working women still have a greater psychological and behavioral involvement in family work than men, and are primarily responsible for the children and household to a greater degree than their partners (Conde and Gabriel, 2002; Greenhaus and Parasuraman, 1999; Lewis and Cooper, 1999; Swanson, 2000). Twenty-five percent of European women over 18 are involved in childcare every day, as compared to 9% of men (Instituto Nacional de

Estadística, 2007). This lack of support by men is basically due to cultural reasons. This tendency is more pronounced in Mediterranean countries (European Commission, 2006; Kauppinene and Irja, 1998). A worldwide study of 30,000 people in 30 countries carried out in 1999 by the consulting company Roper Starch Worldwide showed a high level of stress in women who work full-time and have children under 13; in fact this is the most highly-stressed group of all those in employment, (Biscay, 1999).

In Europe, the influx of large numbers of women into the workforce in recent decades has meant that health and safety policies at work have had to take into account occupational illnesses and work-related risks specifically affecting women. Community strategy on health and safety at work (2002–2006) acknowledges the specific requirements of women in matters of work safety and recommends that these gender-related aspects should therefore be integrated into the legislation and into company organization. Efforts should also be made to improve ergonomics in the workplace, so as to recognize physiological and psychological differences between the sexes, and to address gender-related aspects of risk evaluation, preventive measures and compensation (European Commission, 2002).

The combination of unsafe behavior, unsafe conditions and the risk inherent in the activity may lead to work-related accidents (Petersen, 1984), and these risks may be further aggravated by emotional stress and psychosocial factors (Kirschenbaum et al., 2000; Li et al., 1999; Swaen et al., 2004). Several studies carried

out in the 1990s show that 26–40% of workers report high levels of stress in the workplace (Bond et al., 1997; Conde and Gabriel, 2002; Galinsky et al., 1993; Reich and Nussbaum, 1994; Swanson, 2000). Conflicts between work and family roles and gender-specific stressors are considered job stressors (Hurrell and Murphy, 1992; Martín et al., 2004; Sauter and Swanson, 1996).

Approximately 20% of the accidents incurring injury leave in the European Union occur in Spain. This rate is twice the Eurozone average in the manufacturing, construction and transport, storage and communication sectors, although there has been a downward trend since 1999 (Eurostat, 2005). Until 1999, when the authorities changed the law regulating work-related accidents, there was a suspicion of under-reporting. Under the new legislation, employers have to pay the first 15 days of absence from work when this is due to common illness, while insurance companies are still responsible for compensating absence due to accidents. As a consequence, more accidents are now being reported which were previously being compensated as “illnesses” (Attwood et al., 2006).

The considerable differences existing among the EU countries regarding the gathering of information on work accidents led Eurostat (Statistics Office of the European Union) in cooperation with EU member states, to develop in 1990 the ESAW project (European Statistics on Accidents at Work), in order to collect comparable data on accidents and to establish a database (European Agency for Safety and Health at Work, 2000). However, even today there are several differences in criteria between the proposals in the ESAW project and Spanish legislation (Ministerial Order TAS/2926/2002):

1. According to ESAW, an accident at work is defined as a “discrete occurrence in the course of work, which leads to physical or mental harm”; the definition also includes accidents occurring during work but off the company’s premises (i.e. in transit, public places). The current definition of Spanish legislation is “All bodily injury suffered by any worker employed by a third party in the course of, or as a result of, his or her work, both while traveling from home to the workplace and vice versa (*in itinere*), and in the workplace itself”. Spanish legislation therefore considers commuting accidents to be work accidents, as occurs in Belgium, Austria, and Portugal (Jacinto and Aspinwall, 2004).
2. ESAW statistics are based on the criterion of more than 3 days’ absence from work for non-fatal accidents; Spanish statistics are based on one day’s absence from work.
3. Regarding the severity of the injury, Spain recognizes four degrees: minor, serious, very serious and fatal. The degree of severity assigned to the accident in the corresponding report must coincide with the evaluation in the medical report completed by the doctor who attended the injured worker, and is not related to the length of the person’s leave period.

Act 31/95 of 8 November, 1995, regarding risk prevention at work, transferred the functions and services of the Spanish Central Administration to the Autonomous Governments of each region, who were granted executive and management powers in matters of health and safety at work as of January 1996. In the Madrid region, the work accident rate was 3985 per 10,000 people per year, very near the national average (Instituto Nacional de Estadística, 2005a). The Madrid region has one of the highest GDP at current prices in the whole of Spain (Instituto Nacional de Estadística, 2006). Among the 17 autonomous regions, the figure for active population in the Madrid region was 2,705,525 people in 2004, the highest in the country together with Andalusia and Catalonia. The Madrid region has the highest employment rate in Spain for both women and men, with figures of 61% and 79%, respectively. Of the active population, 1% work in agriculture, 13% in industry, 12% in construction and 74% in the service sector (Instituto Nacion-

al de Estadística, 2005). Finally, the figure corresponding to women under 50 occupied with their children was 5200 out of every 10,000 people in 1999 (Instituto Nacional de Estadística, 1999).

The aim of the study was to analyze, by means of a participative process, the importance of work–family conflict in the factors involved in minor work-related accidents, and to determine how these accidents subsequently affected the subjects’ families and work.

2. Method

In the European Union, the regulations contained in Directive 89/391/EEC introducing measures to encourage improvements in the health and safety of workers at work, highlighted the need to harmonize the data on work accidents. In order to achieve this goal, the European Statistics on Accidents at Work project was set up in 1990, and coordinated by the Commission’s Directorate General of Employment and Social Affairs, and by the Statistics Office of the European Union (EUROSTAT) (European Agency for Safety and Health at Work, 2000). Order TAS/2926/2002 approved the new models for reporting work accidents, as well as the Electronic Accident Declaration System (Delt@). This system came into service in Spain at the end of 2003. In the Madrid region, according to this order, the Regional Institute of Health and Safety at Work, IRSST, is authorized to access and operate the database for this area. Our study began with a survey of a random sample of women in the Madrid region who had suffered a minor work accident in 2004. Under Act 15/1999 of 13 December on Personal Data Protection, the survey had to be anonymous (i.e. we did not know respondents’ names, ID numbers or exact address). The survey was conducted by post, by the IRSST. Respondents could either fill in the questionnaire and return it, or call anonymously one of the telephone numbers provided in the questionnaire if they preferred to answer by phone. The survey was conducted in September and October 2005. Once the question period was finished, the answers were purged and analyzed, and the relation between some of the indicators was studied using χ^2 independence tests.

2.1. Sample size and sampling errors

The population sample was taken from the total reports of women who had suffered a minor work accident in the Madrid region in 2004, and were recorded in the Delta system. The size of the population was 34,404 women. The sample was taken at random with the Statgraphics 5.1 program, and the erroneous or incomplete data were purged. The final size of the sample was 2400 women.

The error was calculated for each question. The expression of the error was as follows:

$$d = \sigma_p Z_{\alpha/2} \quad (1)$$

where $Z_{\alpha/2}$ is the fractal of normal distribution associated to the significance level $\alpha/2$.

σ_p is the standard deviation, whose expression is as follows:

$$\sigma_p = \sqrt{\frac{pq(N-n)}{n(N-1)}} \quad (2)$$

where p is the proportion of answers analyzed, q the proportion of other answers, N is the population size and n the size of the sample.

2.2. Description of the questionnaire

The questionnaire, which can be consulted on Internet, was divided into five sections with questions designed to describe the respondent, her household responsibilities, work situation and

the causes and consequences of the accident. These sections were the following:

1. Personal characteristics of the women questioned

The main aim of the questions in this section was to obtain an objective classification of the respondent by compiling data on her age, educational level, professional characteristics, marital status and household responsibilities at the time of the accident.

2. Family-work interrelation

To determine the parameters affecting levels of stress and fatigue, in this section the subject was asked whether during the workday her family duties interfered with her work and vice versa, and whether her work activity extended into her time at home after the end of the working day.

3. Opinion of the respondents on their work situation before the accident

This part of the survey was designed to measure the degree of satisfaction of the women with their work, not only with their actual functions at work, but also with the atmosphere in the workplace, as well as with the facilities provided by their employers to assist in combining work and family.

4. Personal opinion of the accident

This group of questions focused on the accident itself. It was designed to determine what the women subjectively considered to be the cause of the accident, and whether the stress and fatigue accumulated by combining work and family (if this were the case) had played a part in causing the accident.

5. Consequences of the accident on the subject's family and work

This last section was intended to ascertain whether these accidents classified as "minor" could be serious enough subsequently to affect family life and/or work. To determine this, the women were asked if they had suffered any after-effects as a result of the accident, and if they had observed any repercussions on the family or their work.

Finally, the respondent was able to add any comment related with the topics in the questionnaire.

3. Results

3.1. Accuracy and representativity of the sampling

The questionnaire was sent to 2400 people. At the end of the data collection phase, the number of questionnaires returned was 13%, although some respondents had omitted to answer whole sections of questions. 94% of the questions had a sampling error of less than 7%, and the most common error was 5%. These errors are acceptable from the statistical point of view, and therefore the size of the sample was not increased.

As the percentage of the questionnaires answered was 13%, we analyzed the representativity of the sample. To do so, we compared sample values for the type of injury variable, according to the classification of the Ministry of Work and Social Affairs (Ministerio de Trabajo y Asuntos Sociales, 2004) with the population values for minor accident reports in 2004 in the Delta data base (Table 1).

The distribution of injury types is very similar in the women who answered the questionnaire and the population; in both cases, more than half the injuries were dislocations and sprains, followed by superficial wounds and injuries, in 21 and 23% of cases respectively. Other data that were also compared with population data to verify the representativity of the sample were the number of children for working women up to the age of 49. The National Fertility Survey of 1999 (Instituto Nacional de Estadística, 1999) shows that 52% of working women under 49 had children, a figure that coin-

Table 1

Percentage of respondents, and population percentages for women's minor work-related accident reports in 2004, according to type of injury

Type of injury	% of respondents	% of population
00 - Unknown injury	1	1
01 - Superficial wounds and injuries	21	23
02 - Fractures	10	5
03 - Dislocations and sprains	51	58
05 - Concussion and internal injuries	6	6
06 - Burns, scalds and frostbite	1	1
09 - Effects of noise, vibration and pressure	1	0
11 - Shock	1	1
12 - Multiple injuries	3	2
99 - Other specified injuries not included in other categories	5	3

cides with the proportion of women under 50 who answered the questionnaire. In view of these results, we considered the sample to be representative of the population.

3.2. Results of the survey

3.2.1. Personal characteristics of the women questioned

Table 2 shows a summary of the personal characteristics of the women questioned.

Of the 308 women questioned, 57% were living with their partners when the accident occurred. The work situation of the partners was on the whole stable; 76% were in permanent employment, 20% in temporary employment and only 4% were unemployed. Fifty-eight percent of the women had children in their charge; of this number, 94% had one to three children, and 6% had more than three. In 31% of cases, the youngest child was 18 or over; in 28% the youngest child was between 12 and 18; in 25%, between 5 and 12, and in 16%, between 0 and 4. Therefore a large majority of children (69%) were under 18, and 41% were under 11; at this age children are very dependent on other people. Ten percent of the respondents had disabled persons under their

Table 2

Personal characteristics of the women questioned

Parameter		Percentage of women questioned
Age	<26	11
	26-40	47
	41-55	35
	>55	7
Marital status	Living with partner	57
	Single	30
	Separated or divorced	13
Number of children	None	42
	1-3	54
	More than 3	4
Nationality	Spanish	95
	Foreign	5
Educational level	Primary school (up to six years' education)	22
	Secondary school or professional degree (12 years of education)	51
	University degree	27
Place of residence	Madrid (city)	44
	Madrid region	56
Place of work	Madrid (capital)	38
	Madrid region	62
Working hours	Part-time job (up to 25 h per week)	5
	Full-time job (35-40 h per week)	95

Table 3

Distribution of occupations of the women in the survey according to the 2000 Standard Occupational Classification System (U.S. Department of Labor, 2004)

Main groups	% of women questioned
Management occupations	5
Computer and mathematical occupations	2
Architecture and engineering occupations	<1
Education, training and library occupations	1
Art, design, entertainment, sports, and media occupations	1
Healthcare practitioners and technical occupations	2
Healthcare support occupations	10
Protective service occupations	<1
Food preparation and service related occupations	9
Building and grounds cleaning and maintenance occupations	16
Personal care and service occupations	6
Sales and related occupations	15
Office and administrative support occupations	24
Construction and extraction occupations	1
Production occupations	5
Transportation and material moving occupations	2

charge, and all these women also had children. However, only 21% of the women who answered the questionnaire (15% with children, 6% without) had any help in the home (i.e. a family member, domestic help, or a child minder).

Of the 308 women questioned, 95% had full-time jobs; 94% worked in the service sector, 5% in industry, and 1% in construction. Seventy-eight percent of the respondents had at least a secondary education. Table 3 shows the distribution of the occupations according to the U.S. Department of Labor Classification (2004).

In 61% of cases, the respondents belonged to the white-collar sector, basically administrative, and 39% to the blue-collar sector. Regarding their work situation; 23% had temporary contracts and the rest had permanent contracts.

3.2.2. Family-work interrelation

Forty-two percent of the respondents did not work in the same district as their home, and their travel time was over 45 min in 50% of the cases. Only 15% walked to their place of work, while the remainder took public or private transport. Forty-two percent of the respondents said that before arriving at work they carried out family-related activities during these travel periods. Finally, 39% answered that after work, but before arriving home, they performed family-related activities such as shopping and collecting children from school or from other activities. Almost a quarter of the women (22%) performed family-related tasks during rest periods in their work schedule.

3.2.3. Opinion of the respondents on their work situation before the accident

Forty-three percent of the respondents did not find their work fulfilling, and up to 31% were not happy in their job. Forty-one percent perceived the atmosphere at work as negative. These results were independent of the economic sector (p -value 0.6) and education (p -value 0.1) of the respondents. Regarding the interference of work in home life, the majority of the women said that they never took work home; only 4% did so, and all of these had a university degree. However, they encountered serious difficulties in combining work and family. As many as 74% said that they had no flexibility in their schedules, while 48% answered that no facilities were provided by their employers to attend to family matters. These results were independent of the economic sector (p -value 0.7) and education (p -value 0.8) of the respondents.

To measure how large a percentage of occupational stress is due to strain caused by combining work and family, we studied the variables for flexibility in the schedule, the need to attend to family matters during the workday, and availability of domestic help or

Table 4

Respondents' answers according to work-family conflict indicators

Attend to family	Flexible schedule	Help in home	% of total respondents	% of total respondents that connected family life to accident
n	y	n	6	1
n	n	y	4	1
n	n	n	4	1
y	y	n	5	1
y	n	y	13	3
y	n	n	25	15
y	y	y	1	1

childcare in the home. Table 4 shows the percentages of the answers to these variables by the total of respondents who had at least one child.

44% of these respondents potentially suffered family strain.

3.2.4. Personal opinion of the accident

We began the analysis by verifying whether the perception of the work situation might be affected by the accident. The following χ^2 independence contrasts were done between the qualitative variables describing the opinion of work (Did you feel fulfilled by your work? (yes, no); Was there a good atmosphere in your place of work? (yes, no); Were you satisfied with the tasks you were given to do? (yes, no)) as compared to the work-related consequences of the accident. (Has the position you held changed since the accident? (yes, no); Do you suffer from any after-effects of the accident? (yes, no)). Of the six independence contrasts, there is only one statistically significant relation between the perception of the working environment and the after-effects of the accident (p -value 0.02). However, those women who suffered after-effects were those with the best opinion of their work. This can be explained by the fact that 87% of this subset of respondents had been satisfied with the position they held before the accident, and after the accident, 73% continued in the same position.

Sixty-six percent of those questioned suffered their accidents in the workplace, while the remaining 34% occurred traveling to or from work. Regarding the aspects that played a part in the accident, 23% considered that family preoccupations could be connected to the accident. Only 4% said that the accident was solely due to family-related reasons. Another finding was that 18% considered that their family life was responsible for diminished performance at work at certain times, and this percentage indicates that the demands of home life may have a negative effect on work-related risks (Kirschenbaum et al., 2000).

We analyzed the potential stress suffered by the respondents who considered that work-family conflict played a part in the accident. Results are shown in Table 4. Twenty percent of the total respondents, and 87% of those who considered that family preoccupations could be connected to the accident, potentially suffered family strain.

3.2.5. Consequences of the accident on the subject's family and work

Regarding the repercussions of the accident on the family, 67% required extra home help after the accident, although in 14% of cases this help came from the women's partners, who requested a temporary modification of their work schedules. As regards their children, almost 1 in 4 (24%) had to change their routine or live temporarily in the home of other family members while their mother was recovering. Fourteen percent of the women had to ask for financial assistance in order to cover their household duties after the accident and throughout the time they were off work.

Another analysis of the consequences of the accidents on the family during the leave period was done by grouping the women

Table 5
Length of leave taken by the respondents

Length of leave (days)	% of women questioned
0-6	7
7-14	21
15-21	16
22-30	18
31-61	16
62-179	14
>179	8

Table 6
Respondents' comments on the topics in the survey

Comment	Percentage
Balancing family life:	28
• Need for flexible work schedule: 14%	
• Assistance for women (crèches, childcare subsidies, involvement by employers, etc.): 14%	
Reason for accident	6
Request for financial help during the leave period:	5
Lack of time to recover from the accident:	10
Negative repercussions in the workplace on returning to work after leave period: (dismissal, non-renewal of contract, lack of help from employers, etc.)	12
Poor work organization:	22
• Staff shortages: 3%	
• Lack of work security: 10%	
• Lack of training: 1%	
• Excessive workload: 8%	
Disagreeable work environment: (harassment, inequality between men/women)	10
Other comments	7

according to the place of the accident (travelling to and from work vs at work) and work-family strain (yes vs no). However, in the case of 30% of the respondents with work-family strain, in both the group of women who suffered the accident *in itinere* and in the group who had their accident at work, their partners had to modify their work situation, compared to 13% in the groups without work-family strain.

In the case of children, 71% of the women in the group who had their accident *in itinere* and suffered work-family strain had to modify their daily routine, compared to 29% in the other groups.

Regarding length of leave period, Table 5 shows that 38% of the women were off work for at least one month.

Most of the respondents (57%) said that they considered the time off to be insufficient for their recovery. Of this number, 89% were still suffering after-effects when the survey was carried out. Among those who considered the time off to be sufficient, 42% also still suffered after-effects. These after-effects temporarily hindered their working activities, and 22% of those questioned maintained that their work situation – either the position they held or the duties they were expected to perform at work – had been temporarily modified as a result of the accident. Nine percent of the women received some kind of specific help for their situation from their employers.

The questionnaire ended with an opportunity for the respondents to add any comments they wanted. Table 6 shows these comments grouped into themes.

4. Discussion

This article has attempted to analyze how far work-family conflict can be considered to be among the psychosocial factors that play a role in minor work-related accidents, based on the opinion of women who have suffered such an accident.

Only 13% of the women selected for the questionnaire responded, and therefore an analysis was made of the representativ-

ity of the respondents (Cea, 2001); we used a representative variable for "type of injury", and the results demonstrated that the sample could be considered representative.

Another possible problem was that the number of women who answered that their family life played a part in the accident might be higher than the actual figure, as the respondents were aware of the objectives of the questionnaire. However, the answers showed that only 4% considered that the only cause of the accident was the work-family conflict, and the respondents' comments indicate that their main preoccupation was how to successfully combine their work with their family life (flexible work schedules, involvement by the employer, etc.) (28%), their situation at work (32%), and to a lesser degree the accident itself (10%). We therefore feel confident that the percentage of women who consider that they were under stress arising from family causes has not been overestimated.

Factors that determine the occurrence of the work-family conflict are schedule, domestic help, the presence of children at home, commuting time to and from work (Geurts et al., 1999; Greenhaus and Kopelman, 1981; Jansen et al., 2003; Pleck et al., 1980). Therefore, the variables used to determine the existence of work-family strain were the need to attend to family matters during the workday, flexible work schedule, the presence of children and domestic help in the home.

The work-family conflict was analyzed in combination with lack of job satisfaction, as these two stressors could both increase the risk of accidents (Swaen et al., 2003). What is more, there is a statistically significant relationship between job satisfaction and the variable "need to attend family matters" (p -value 0.0033) and job satisfaction and flexible schedule, (p -value <0.0001). In the case of work, employees who view the organization as involved in a positive social exchange will have a more positive attitude toward the organization (Lankau, 1997; Robinson et al., 1994). Additionally, the availability of workplace supports and organizational work-family culture also uniquely predicts job satisfaction (Kirschenbaum et al., 2000), but long working hours for employed women with children are linked to higher stress and lower job satisfaction (Allen et al., 2000; Kauppinene and Irja, 1998; Jansen et al., 2003; Lundberg and Frankenhaeuser, 1999). Women who considered that family life affected their work (23% of total respondents) generally bore more family responsibilities. Within this group, 11% of total respondents considered that their situation at work was satisfactory; most were subjected to work-family strain, which might increase the risk of work-related accidents (Kirschenbaum et al., 2000; Li et al., 1999; Swaen et al., 2004). Another subgroup (10% of respondents), in addition to potentially undergoing work-family conflict, were dissatisfied with their situation at work. This is shown not only by the answers to the questionnaire, but also in the comments at the end, where 28% wanted more support by the employers.

To judge by the answers, there is a statistically significant relationship between the perception of the factors connected to the accident and the need to attend to family demands (p -value 0.0108). Eighty-seven percent of the respondents who considered that work-family conflict played a part in the accident had to attend to family matters. However, 24% of respondents had potentially the same level of work-family strain as this group, but did not consider that this stress played a part in the accident; in 62% of cases they considered that the accident was due to work, and the rest to non-specified or physical causes. Finally, 5% of respondents potentially did not have stress for family reasons, but were under pressure at work. The rest of the respondents potentially did not have stress either at work or from their family life – and this group included 5% of women with children. These respondents considered that the causes of the accident were either their work or unspecified causes.

Regarding the location of the accident, there is a statistically significant relationship between the perception that the work–family conflict was a factor in the accident and the place of the accident (in the workplace or traveling to or from work) (p -value <0.001). Twenty-one percent of the respondents whose accidents took place while traveling to or from work and 11% of the respondents who suffered the accident in the workplace said that family reasons played a part.

There are other well-documented risk factors for work accidents, such as age (Alhaique, 2000; Islam et al., 2001; Laflamme and Menckel, 1995; Salminen, 2004); young workers are less experienced than older workers, thus their risk of injury increases (Root and Hoefer, 1979; Siskind, 1982). This study highlights the statistically significant relationship between work experience and age (p -value less than 0.001 in the independence test χ^2). In this case, however, 95% of respondents under 25 did not have children and were therefore not subjected to work–family conflict; other factors were involved in the cause of these accidents (Laflamme and Menckel, 1995; Rhodes, 1983; Salminen, 1996, 2004), but these are not the subject of this study.

The results for the secondary objective, regarding the changes in the routine performance of household tasks during the leave period, showed that in 14% of cases, help came from the women's partners, who requested a temporary modification of their work schedules. In 24% of cases, children had to change their routine or live temporarily in the home of other family members while their mother was recovering. This lack of support from the partner is due to cultural reasons and to the inflexibility of men's work schedules (Kauppinene and Irja, 1998). Children's schedules and habits depend on the availability of women to coordinate them, to the point that when she finds it difficult to maintain the daily routine, the children's conditions are changed. Fourteen percent of the women had to ask for financial assistance in order to cover their household duties during their leave period after the accident. Five percent of the comments added by the respondents referred to the need for financial assistance during the time off work so that their families did not suffer a decline in their quality of life. In the case of accidents *in itinere*, the children of 12% of the women who considered that they had family-related stress had to change their family routine, as compared to 3% of the women who considered that they suffered stress, but whose accident occurred in the workplace. In these cases, the average leave time when the accident occurred in the workplace was 25 days, and when it occurred on the way to and from work, this average value rose to 46 days, which had a greater effect on the families.

As shown in Section 3, the injury leave times are fairly varied, but 38% of the women were off work for at least one month, and in 22% of cases the injury leave was prolonged for 2 months or longer. Moreover, 70% of the respondents indicated that they suffered from after-effects, although their seriousness was not described. There is no unified definition of what constitutes a minor work accident (Benavides and Serra, 2003); this depends on how it is classified by the doctor. Reclassifying the seriousness of work-related accidents by considering time off work – as in the Danish system in which serious injuries are predefined as lost-time-injury incidents resulting in amputations, bone fractures, or multi-trauma injuries, and minor injuries include all other reported non-fatal lost-time-injury incidents (Kines & Mikkelsen, 2003) would group work accidents in a more homogeneous manner, as it would consider type of injury and time off work.

4.1. Limitations of the survey

The application of the Data Protection Act required that the women selected should remain totally anonymous to the team carry-

ing out the survey. Only those women who voluntarily chose to do so contacted the research team by telephone, which helped to clarify some questions and the objective of the study. Most people answered by regular post, and this on occasion could give rise to some ambiguity or uncertainty in the answers due to the peculiarities of specific cases; this could only have been avoided by personal interviews.

However, although the sampling errors were low, we believe the reason that only 13% of the 2400 women to whom the questionnaire was sent actually answered was the fact that it is always more laborious to answer a questionnaire in writing and send it by post than to answer by telephone. Another aspect highlighted by those who answered the questionnaire by telephone was the fear that the survey was being done by their employers. These women reported in the questionnaire that they had been threatened with dismissal or had suffered “mobbing” by the company after the accident, and believed that objective of the survey would in some way be detrimental to them, despite the fact that the subjects were informed that the aim of the study was to determine the aspects which should be better covered by future plans aimed at facilitating work–family combination.

5. Conclusions

Although the limitations of the study preclude the drawing of definitive conclusions, it provides some useful indications for a better understanding of the influence of the effort of combining work and family on minor work accidents. The first conclusion is that a high percentage of respondents, regardless of the economic sector involved or the educational level, were possibly suffering from work–family strain at the time of the accident. In these cases, the percentage of accidents was greater traveling to and from work than in the workplace itself.

The study also detected a lack of motivation by women in their work, and that this lack of motivation was, in the case of many respondents, related with the lack of compatibility between work and family life. This same lack of motivation is itself another risk factor.

The study shows that despite of polices, the degree of participation by men in family life remained low, and it remained low both before and after the accident. To prevent the risk of accidents in women and to improve their well-being, it is necessary to promote educational policies that change these cultural factors, and to encourage employers to support family life, in benefit of both women and men.

“Minor” accidents vary widely in seriousness and importance, and include those that may become a problem affecting the lives of women on many different levels. A more precise definition of minor work accidents in the Spanish legislation would facilitate their analysis and processing both by researchers and by the administration itself.

Finally, the study should be extended to men who have suffered minor work accidents in order to compare results – as well as to working women and men who have not suffered work accidents – in order to determine the degree of stress caused to women in their dual roles as workers and as the people who are primarily responsible for the family, and whether this stress has given rise to any risk situations.

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