Work-Family Conflict and Back Pain among Nurses.

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Abstract:
Background: *The aim of this study was to examine the role of work-family conflict on the occurrence of back pain among nursing staff in a district hospital in Tunisia.*
Materials and Methods: *A cross-sectional study was conducted on 72 nurses assigned to a District Hospital in Tunisia. Data collection was based on an administered questionnaire on the socio-demographic and occupational characteristics of the participants. Psychosocial factors at work and work-family interface were evaluated using the OPC questionnaire and Carlson's work-family conflict scale. Screening of musculoskeletal disorders of the spine was conducted through a Nordic-style questionnaire.*
Results: *According to the univariate analysis, the main factors associated with back pain were: gender (p = 0.009), age (p = 0.021), marital status (p<10^{-3}), BMI (p=0.009), history of chronic disease (p=0.009), job seniority (p = 0.008), the duration of home-hospital journey (p = 0.024), work-family conflict (p<10^{-3}) and family-work conflict (p=0.005). Multivariate analysis showed that the significant predictors of back pain after control of confounders were personal history of chronic diseases (p = 0.009; OR = 6.5; $CI_{95\%}$ = [1.6-26.7]) and Work-Family Conflict (p<10^{-3} ; OR = 11.8 ; $CI_{95\%}$ = [2.9-47.3]).*
Conclusion: *Work-family conflict is one of the most important stress factors that cause back pain among nurses. The extent of this phenomenon in this professional category justifies its taking into account in any precautionary approach to prevent musculoskeletal disorders in healthcare settings.*
Key Word*: Conflict, Work, Family, Low back pain, Neck pain, Nurses.*

I. Introduction

Because of the specific nature of work in health care sector, nursing staff are exposed to multiple occupational constraints such as heavy workload, atypical working hours and often poor working conditions[1]. This will make it difficult for health care staff to balance work and private life [1]. Thus, Work Family Conflict (WFC) -defined as a form of inter-role conflict, where the general requirements, the time devoted to work and the tension created by work interfere with the fulfillment of family responsibilities - is one of the most specific sources of stress in the nursing profession [2,3]. Although the impact of this phenomenon on both family life and mental health of nurses has been well documented [3], its role as a risk factor for musculoskeletal disorders (MSD) has only recently been the subject of scientific research [4,5,6]. In this context, we conducted this study to examine the impact of Work-Family Conflict on the occurrence of back pain in nurses working in the public sector in Tunisia.

II. Material And Methods

This was a cross sectional study conducted in January 2019 among nurses assigned to a District Hospital in Tunisia, whose job seniority was at least one-year. Nurses on long-term sick leave were not included in this study. Data were collected by a pre-established questionnaire concerning socio-demographic, lifestyle, medical and work related risk factors of back pain. The Standardized Nordic questionnaire was used to assess spine musculoskeletal disorders. Psychosocial and organizational constraints at work were evaluated by the Organizational Psychological Constraints questionnaire (OPC) developed from the Nursing work Index [7]. The OPC explores 8 dimensions: support of nurses, adequacy of staffing, exchange of information allowed by the organization, interruptions in tasks, relationships with doctors within the health care team, sharing common values, administration support and respect of holidays and rest time. Work-family interface was carried out

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using the Work-Family Conflict scale of Carlson. Through 18 items, this scale explores two directions of conflict (Work-to-family and Family-to-work) with 3 forms (time-based conflict, strain-based conflict and behavior-based conflict) in each direction [8]. Responses to the statements were collected from a 5-point Likert scale with anchors of "strongly disagree" (1) to "strongly agree" (5). Scores of Work-to-Family Conflict (WF-C) and Family-to-Work Conflict (FW-C) corresponds to the averages of the nine WF-C items and the nine FW-C items respectively. A high score corresponds to a high level of conflict.

Statistical analysis

The data were analyzed using Statistical Package for Social Science (SPSS) programme version 21. Chi-square and Fisher exact tests were performed to test for differences in proportions of categorical variables between two or more groups. Student's t-test was used to ascertain the significance of differences between mean values of two continuous variables. A binary logistic regression model was used in order to predict factors that influence the occurrence of back pain. In this model, only significant variables of interest at threshold 20% (p <0.2) were introduced. The level p < 0.05 was considered as the significance threshold.

III. Results

1. Descriptive study :

Our study population included 72 nurses with a mean age of 42.38 ± 10.85 years [24-60]. Most nurses (75%) were females.

Over the past 12 months, the prevalence of back pain among the study population has been 77.8 %. Low back pain was the most common localization (75 %) followed by neck pain (47.2%).

The mean job seniority of the study population was of 15.82 ± 10.49 years. More than half (51.4%) of the nursing staff were assigned to medical wards, 29.4% to surgical wards and 19.2% to Emergency Rooms.

2. Prediction of back pain :

2.1. Socio-demographic and medical factors :

Table n°1 illustred Chi square test for sociodemographic, lifestyle and medical characteristics of the study population. The results revealed that there were a significant associations between gender (p=0.009), age (p= 0.021), marital status (p <10^{-3}), number of dependents (p <10^{-3}), BMI (p = 0.009) and the presence of personal history of chronic disease (p = 0.009) and spine MSD.

Table n°1 : Univariate analysis of socio-demographic and medical factors likely to influence the occurrence of back pain in the study population (n=72).

		Back pain		p
		No (n)	Yes (n)	
Gender :	**Male**	8	10	**0.009**
	Female	8	46	
Age (years):	**<40**	12	22	**0.021**
	≥40	4	34	
Marital status :	**Married**	7	48	**<10^{-3}**
	Single / Divorced	9	8	
Number of dependents :	**0-1**	9	7	**<10^{-3}**
	≥2	7	49	
Active smoking :	**No**	11	48	0.12
	Yes	5	8	
Regular physical exercises :	**No**	11	48	0.12
	Yes	5	8	
BMI (Kg /m ^{2}) :	**<25**	8	10	**0.009**
	≥25	8	46	
Chronic disease :	**No**	14	27	**0.009**
	Yes	2	29	

2.2. Occupational factors:

Table n°2 showed Chi square test for occupational characteristic of nurses and back pain. The results revealed that there were a significant associations between job seniority (p = 0.008), trip duration from house to work (p=0.024) and distance traveled from house to work (p=0.011) and back pain.

Table n°2: Univariate analysis of occupational factors determining the occurrence of back pain among the study population (n=72).

Factors		Back pain		p
		No (n)	Yes (n)	
Trip duration from house to work :	<30min	13	27	**0.024**
	≥30min	3	29	
Means of transport :	On foot	5	9	
	Car	6	28	0.45
	Public transport / motorcycle	5	19	
Distance traveled from house to work :	≤10 Km	14	29	**0.011**
	> 10 Km	2	27	
Ward :	Emergency + Surgical	10	25	0.20
	Medical	6	31	
Job seniority :	≤10 years	11	18	**0.008**
	> 10 years	5	38	
Shift Work :	No	5	23	0.40
	Yes	11	32	
Awkward postures :	Always	9	26	0.48
	Sometimes / Never	7	30	
Carrying heavy loads :	Always	13	45	0.93
	Sometimes / Never	3	11	
Frequent trips at work :	Always	8	39	0.14
	Sometimes / Never	8	17	
Extended standing :	Always	8	27	0.90
	Sometimes / Never	8	29	

2.3. Work family conflict and psycho-organizational constraints:

Table n°3 showed the Student's t-test for scores of work family conflict, psycho-organizational constraints and back pain. The results revealed that there were no statistically significant link between the occurrence of MSD of the spine and psycho-organizational constraints explored by the OPC. However, back pain was significantly associated with both work-family and family-work conflicts ($p<10^{-3}$ and p = 0.005 respectively).

Table n° 3: Association between Work-Family conflicts, psycho-organizational constraints and back pain in the study population (n=72).

Score	Back pain	Mean ± SD	p
Conflicts			
Work-Family Conflict	(-)	2.69±0.48	**$<10^{-3}$**
	(+)	3.68±0.69	
Family-Work Conflict	(-)	2.56±0.39	**0.005**
	(+)	2.98±0.78	
Psycho-organizational constraints			
Organization that does not promote communication	(-)	9.66±1.05	0.35
	(+)	9.89 ±1.67	
Lack of support from the health manager	(-)	9.38±1.20	0.39
	(+)	9.73±2.18	
Staff that is too insufficient to do the job	(-)	13.48±1.96	0.13
	(+)	12.56±2.67	
Frequent work interruptions	(-)	10.23±1.72	0.29
	(+)	10.76±1.73	
Poor relationships within the healthcare and medical team	(-)	7.97±0.89	0.72
	(+)	7.86±1.71	
Lack of shared work values	(-)	9.73±2.39	0.57

	(+)	10.11±2.28	
Lack of administrative support	(-)	11.95±2.81	0.43
	(+)	12.59±2.76	
Organization that does not respect rest time	(-)	9.02±1.22	0.91
	(+)	8.97±2.78	

(-): Absence of back pain; (+): Presence of back pain
DS : Standard deviation

2.4. Multivariate Analysis:

Table n°4 showed the final model explaining the occurrence of spinal pain in nurses. The results revealed that the determinants of back pain were Work-to-Family conflict ($p<10^{-3}$; OR=12.16; $CI_{95\%}$=[3.18-46.4]) and personal history of chronic disease (p=0.014; OR=10.05; $CI_{95\%}$=[1.58-63.7]).

Table n° 4: Determinants of back pain in the study population (n=72).

	p	OR	$CI_{95\%}$
Personal history of chronic disease	0.014	10.05	1.58 to 63.7
Work-to-Family Conflict	$<10^{-3}$	12.16	3.18 to 46.4

OR : Odds ratio, $CI_{95\%}$: confidence interval.

IV. Discussion

This study highlighted the frequency of back pain among nurses, with an annual prevalence of 75 % for low back pain, and 47.2% for neck pain. The determinants of these MSD in our study population were work-family conflict and personal history of chronic diseases.

Back pain is the most frequent MSD among nurses [5]. These affections are multifactorial and are dominated by low back pain whose prevalence varies from 58 to 81% [9,10,11]. In accordance with the literature, many individual factors were significantly associated with the risk of back pain in the present study such as age, BMI, number of dependents and personal history of chronic disease [9,10,11]. However, the role of these factors is still controversial [5,12,13].

In the present study, the length and the duration of the trip from home to work were statistically associated with back pain in nurses. Similar results were reported by Debbabi and al [14]. Prolonged exposure to biomechanical constraints in the workplace is a major determinant of the occurrence of back pain [15]. Awkward postures of the spine, heavy load handling, prolonged standing, frequent trips and shift work were reported in the literature as risk factors for MSD of the spine [9,10,11]. However, none of these factors was retained in our study as a risk factor of back pain, which is in accordance with the results reached by Nutzi and al [5] and Debbabi and al [14].

Many studies have shown the role of psychosocial factors at work in the occurrence and/or the persistence of back pain [4,10,11,15]. In the present study, some psycho-organizational problems were reported by most nurses. However, no statistically significant associations between these constraints and the risk of back pain were objectified. The same findings were reported in a nursing population in Tunisia [9]. Work-family conflict is a fairly widespread phenomenon among nurses [16]. According to Falco and al [17], this conflict is the final effect of work-related stressors such as overload, overtime and low workload predictability. The negative impact of this phenomenon on both mental and physical health of employees has been reported in the literature [3,18]. Its role in the occurrence of MSD has been recently the subject of scientific research and the arguments in favor of its involvement as a risk factor for MSD in the workplace are increasing [19,20,21]. Baur and al [6] stipulated that work-family conflict is responsible for the increase in norepinephrine levels, particularly known to increase muscle tension. In the long term, keeping an increased muscle tension during and after work could be responsible for the onset of MSD. In the present study, WFC appeared to be a major predictor of the risk of back pain in nurses. These findings are in accordance with those reported by several authors [4,5,6].

The present study has certainly brought some unprecedented results in terms of the influence of work-family conflict on the musculoskeletal health of nurses in Tunisia. However, certain limitations should be mentioned such as the relatively small sample size, the cross-sectional nature of the study and the possible subjectivity of the responses to the various items of the Carlson's scale.

V. Conclusion

This study revealed that back pain is widespread among nurses in Tunisia implying that there is a required need for action. Work stressors, such as work–family conflict, promote back pain among nursing staff. Therefore, this phenomenon should be reduced. Thus, improving the balance between work and personal life should be set as a priority to prevent MSD in the healthcare setting. However, to be effective, preventive measures should actively involve the staff themselves through a self-reflection process [22,23]. In addition, certain psycho-educational interventions such as the mindfulness Based Stress Reduction therapeutic approach should be considered in the management of stress in the professional environment [24] especially among nurses.

Conflict of interest: The authors declare that they have no conflict of interest in connection with this study.

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