

# Shift work, mental distress and job satisfaction among Palestinian nurses

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<b>Background</b>	Associations between shift work (SW) schedules, mental distress and job satisfaction have never been completely described.
<b>Aims</b>	To examine gender-specific associations of SW with mental distress and job satisfaction in nurses in Hebron District, Palestine, in 2012.
<b>Methods</b>	Detailed information on work schedules (day versus shift), socio-demographic status, mental distress (General Health Questionnaire, GHQ-30) and job satisfaction (Generic Job Satisfaction Scale) in nurses employed in Hebron District, Palestine, was obtained through a questionnaire survey. Associations of SW and outcomes were examined by linear regression analysis.
<b>Results</b>	Of 372 nurses eligible for the study, 309 and 338 completed surveys regarding mental distress and job satisfaction, respectively. The sample comprised 62% women and 38% men. After adjusting for covariates, women working shifts reported significantly higher levels of mean mental distress [ $\beta$ coefficient 3.6; 95% confidence interval (CI) 0.3–7.0] compared with women working regular day shifts. Men working shifts reported significantly lower levels of job satisfaction ( $-3.3$ ; 95% CI $-6.2$ to $-0.5$ ) than men working regular day shifts. Women reported higher levels of mental distress than men, but this was unrelated to work schedule.
<b>Conclusions</b>	In this study, nurses working shifts reported higher levels of mental distress and lower levels of job satisfaction, although these associations were weaker when adjusted for potential covariates. There was no evidence of a gender differential in the association between SW and mental distress and job satisfaction.
<b>Key words</b>	Gender; job satisfaction; mental distress; shift work schedule.

## Introduction

Most nurses have working hours scheduled as shift work (SW). SW is defined as organization of daily working hours where different persons or teams work in succession to cover more than the usual 8 h day [1]. SW can have adverse health consequences, including mental health problems [2–5] and job dissatisfaction [3,5]. The relationship between SW and mental distress is conditioned by sex [6]. Although the number of studies on SW is increasing, little is known about the potential negative effects of SW on mental health, especially with regard to impact on mental distress in non-Western countries. Additionally, few studies have addressed gender differences associated with SW. This study examined associations between SW, mental distress and job satisfaction

among Palestinian nurses, an under-researched population, in Hebron District. Due to the large proportion of male nurses in Hebron (40%), gender effects could also be studied.

## Methods

The study was part of a larger study of Palestinian nurses employed at hospitals and primary health care clinics [4,7]. From October to December 2012, nurses were invited to participate in the study. The study was approved by the Regional Committee for Medical and Health Research Ethics, REC South East, Norway.

Demographic variables (age, sex, number of children) were collected along with job information. Work schedule was recorded with a single-item question with

two response categories: 'day work' and 'SW' (rotating between day, evening, night or fixed night shifts).

Mental distress was measured with the GHQ-30 (General Health Questionnaire) [8]. Responses were scored on a four-point Likert scale (values: 0–3). Higher scores indicated more mental distress. The scale ranged from 0 to 90 (Cronbach's  $\alpha = 0.90$ ). Job satisfaction (Cronbach's  $\alpha = 0.79$ ) was measured with the 10-item Generic Job Satisfaction Scale [9]. Responses were coded as strongly disagree (0), disagree (1), do not know (2), agree (3) and strongly agree (4). The scale ranged from 0 to 40. Higher scores indicated greater job satisfaction.

Mental distress and job satisfaction scores were treated as continuous variables. Analyses were conducted with using STATA v. 10 (Stata Statistical Software, 2007). Univariate differences were analysed using analysis of variance and *t*-tests. Linear regression with listwise deletion was used to assess associations between

SW and participant levels of mental distress and job satisfaction, adjusted for age, number of children and job position. Tests of independence, homoscedasticity, normality, outliers and collinearity indicated that the statistical assumptions for regression analyses were fulfilled. Results are expressed as coefficients (betas) with 95% confidence intervals (CIs). The beta coefficients represent the differences between groups. An interaction term (SW by gender) was included to examine whether SW had a differential impact for men and women. Level of statistical significance was set to  $P < 0.05$ .

## Results

Among the 372 nurses who were invited to participate in the study, 16 declined to participate, 10 were on leave, and two had incomplete data. Thus, 344 nurses (92.5% response rate) were included in the analysis. [Table 1](#)

**Table 1.** Mental distress symptoms ( $n = 309$ ) and job satisfaction scores ( $n = 338$ ) by demographic characteristics, Hebron District, 2012

Outcomes	Females			Males			Differences between females and males	
	<i>n</i>	Mean	95% CI	<i>n</i>	Mean	95% CI	Mean difference	95% CI
Mental distress <sup>a</sup>	195	28.4	26.9 to 29.9	114	25.7	23.4 to 28.0	2.7	0.1 to 5.3
Work schedule								
Day work	105	26.5	24.7 to 28.2	44	22.3	18.9 to 25.7	4.1	0.7 to 7.7
SW	90	30.7	28.2 to 33.2	70	27.9	24.9 to 30.9	2.9	-1.0 to 6.7
Age group (years)								
<30	34	28.5	25.3 to 31.8	30	27.3	22.3 to 32.3	1.2	-4.5 to 6.9
30–45	126	29.2	27.2 to 31.1	65	25.7	22.5 to 28.8	3.5	-0.1 to 7.0
>45	35	25.8	22.6 to 29.0	19	23.3	18.8 to 27.8	2.5	-2.9 to 7.9
Number of children								
No child	35	26.3	22.2 to 30.4	21	26.9	22.2 to 30.4	-0.6	-7.2 to 5.9
1–3 child	49	28.4	25.2 to 31.6	34	24	19.9 to 28.2	4.3	-0.7 to 9.5
>3 child	111	29.1	27.2 to 31.0	59	26.3	22.9 to 29.6	2.9	-0.7 to 6.4
Job position								
Administrative	26	21.8	19.2 to 24.4	45	23	19.8 to 26.1	-1.2	-5.7 to 3.3
Non-administrative	169	29.5	27.8 to 31.1	69	27.5	24.3 to 30.7	1.9	-1.3 to 5.2
Job satisfaction <sup>b</sup>	209	23.9	23.1 to 24.8	129	22.7	21.6 to 23.9	1.2	-0.2 to 2.6
Work schedule								
Day work	109	24.8	23.7 to 26.0	49	24.7	23.0 to 26.4	0.1	-1.9 to 2.2
SW	100	23	21.8 to 24.1	80	21.5	20.1 to 23.0	1.4	-0.4 to 3.2
Age group (years)								
<30	35	24.9	23.4 to 26.4	37	21.5	19.1 to 23.8	3.4	0.6 to 6.2
30–45	136	23.1	22.1 to 24.2	72	22.9	21.4 to 24.3	0.3	-1.5 to 2.0
>45	38	25.9	23.8 to 27.9	20	24.6	21.7 to 27.5	1.3	-2.2 to 4.7
Number of children								
No child	36	23.1	21.0 to 25.2	22	20.3	17.3 to 23.4	2.8	-0.7 to 6.3
1–3 child	52	23.7	22.0 to 25.4	41	21.8	19.5 to 24.0	1.9	-8.0 to 4.6
>3 child	121	24.3	23.2 to 25.3	66	24.2	22.8 to 25.5	0.2	-1.6 to 1.9
Job position								
Administrative	27	24.2	21.1 to 27.3	49	23.3	21.5 to 25.1	0.8	-2.40 to 4.1
Non-administrative	182	23.9	23.1 to 24.7	80	22.4	20.9 to 23.8	1.5	-0.04 to 3.1

<sup>a</sup>A lower score is a 'better score'.

<sup>b</sup>A higher score is a 'better score'.

**Table 2.** Regression analysis of the association between mental distress, job satisfaction and SW by gender, Hebron District, 2012:  $\beta$  coefficients with 95% CIs

Outcomes	Females		Males	
	Crude model	Adjusted model <sup>a</sup>	Crude model	Adjusted model <sup>a</sup>
	Coefficient (95% CI)	Coefficient (95% CI)	Coefficient (95% CI)	Coefficient (95% CI)
Mental distress		$R^2 = 0.10$ $F = 3.65$ $df = 6/188$		$R^2 = 0.08$ $F = 1.54$ $df = 6/107$
Work schedule				
SW (day work reference)	4.2 (1.3 to 7.2)	3.6 (0.3 to 7.0)	5.6 (1.0 to 10.2)	4.5 (-1.3 to 10.3)
Age group (years)				
<30	0 (reference)	0 (reference)	0 (reference)	0 (reference)
30–45	0.6 (-3.4 to 4.7)	0.01 (-4.4 to 4.5)	-1.6 (-7.0 to 3.8)	-1.5 (-8.1 to 5.2)
>45	-2.7 (-7.8 to 2.3)	-1.5 (-7.2 to 4.2)	-4.0 (-11.2 to 3.2)	-2.7 (-11.7 to 6.2)
Number of children				
No child	0 (reference)	0 (reference)	0 (reference)	0 (reference)
1–3 child	2.1 (-2.5 to 6.8)	2.8 (-1.8 to 7.4)	-2.9 (-9.7 to 4.0)	-1.5 (-8.5 to 5.6)
>3 child	2.8 (-1.2 to 6.9)	4.5 (0.1 to 9.0)	-0.6 (-6.9 to 5.6)	3.4 (-4.2 to 11.1)
Job position				
Non-administrative (administrative reference)	7.7 (3.4 to 12.0)	6.2 (1.8 to 10.6)	4.6 (-0.1 to 9.2)	3.0 (-2.6 to 8.6)
Job satisfaction		$R^2 = 0.07$ $F = 2.34$ $df = 6/202$		$R^2 = 0.10$ $F = 2.28$ $df = 6/122$
Work schedule				
SW (day work reference)	-1.9 (-3.5 to -0.3)	-1.8 (-3.6 to 0.01)	-3.2 (-5.4 to -0.9)	-3.3 (-6.2 to -0.5)
Age group (years)				
<30	0 (reference)	0 (reference)	0 (reference)	0 (reference)
30–45	-1.8 (-4.0 to 0.4)	-3.0 (-5.5 to -0.5)	1.4 (-1.2 to 3.9)	-0.6 (3.6 to 2.4)
>45	1.0 (-1.8 to 3.7)	-0.9 (-4.0 to 2.2)	3.1 (-0.4 to 6.6)	-0.6 (-4.8 to 3.7)
No of children				
No child	0 (reference)	0 (reference)	0 (reference)	0 (reference)
1–3 child	0.6 (-2.0 to 3.1)	1.0 (-1.6 to 3.5)	1.4 (-1.8 to 4.7)	1.1 (-2.2 to 4.5)
>3 child	1.2 (-1.1 to 3.4)	1.6 (-0.9 to 4.1)	3.8 (0.8 to 6.9)	3.5 (-0.1 to 7.2)
Job position				
Non-administrative (administrative reference)	-0.3 (-2.7 to 2.2)	0.5 (-2.0 to 3.0)	-1 (-3.3 to 1.3)	1.7 (-1.1 to 4.4)

df, degrees of freedom.

<sup>a</sup>Adjusted for age, number of children and job position.

shows demographic characteristics and mean levels of mental distress and job satisfaction scores by gender. Nurses working shifts reported higher mental distress and lower job satisfaction compared with non-shift workers.

Gender-specific associations between SW, mental distress and job satisfaction from regression analysis are presented in Table 2. Adjusted for covariates, women working shifts reported significantly higher levels of mean mental distress ( $\beta$  coefficient 3.6; 95% CI 0.3–7.0),  $R^2 = 0.10$  and lower job satisfaction compared with women on regular day shift but this was not significant. Men working shifts reported significantly lower job satisfaction compared with men working regular day shifts (-3.3; 95% CI -6.2 to -0.5),  $R^2 = 0.10$ . With explained variances in the range of 0.07–0.10 (Table 2),

the predictor variables had limited contributions to the variance in mental distress and job satisfaction. There was no interaction between gender and SW for mental distress ( $\beta$  coefficient -0.03; 95% CI -5.3 to +5.3) or job satisfaction (-1.6; 95% CI -4.4 to +1.2).

## Discussion

Consistent with other studies, SW was associated with job satisfaction, and to a certain degree with mental distress. Few gender differences related to SW were observed, which is noteworthy since our sample included a high proportion (40%) of male nurses. Women reported more mental distress than men, but this difference was only evident for nurses working day

shift. No gender difference in job satisfaction associated with SW was observed. The finding that men with SW schedules reported higher levels of distress and lower levels of job satisfaction compared with men with day work schedules is consistent with previous research findings, showing that SW has negative effects on health and well-being [2–5].

Strengths of this study include the high response rate and the large proportion of male nurses, allowing us to study gender differences, a missing component in many studies of this occupation. The predictor variables had limited contributions to the variance in outcomes. It should be noted that while the findings reach statistically significantly, the clinical significance may be restricted. In order to illustrate the clinical significance of the differences between groups, the total range of distribution of scores was calculated. Among the women, the total range of the mental distress symptoms was 9–68 regardless of shift status (not tabulated). The adjusted difference in mental distress score was 3.6, giving a difference in mental distress score of 6%. Among the men, the total range of the job satisfaction score was 6–38 (not tabulated). The adjusted difference in job satisfaction was 3.3, giving a difference representing roughly 10% lower job satisfaction associated with shift status.

The cross-sectional design of the study precludes inferences of causal explanations. All data were based on self-reports, which can make results susceptible to common method bias and inflated associations [10]. The association between exposure and outcomes for non-participants is unknown, which might pose selection bias, although the response rate was high. Despite limitations, our findings indicate that SW was related to higher mental distress and lower job satisfaction in both male and female nurses, without evidence of a gender differential.

### Key points

- Nurses with shift work schedules reported lower levels of job satisfaction than non-shift workers.
- Shift workers reported higher levels of mental distress than non-shift workers.
- There was no evidence of a gender differential in the association between shift work and mental distress and job satisfaction.

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### Conflicts of interest

None declared.

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