

Sleep and alertness in shift work disorder – findings of a field study

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Supplementary material

Supplementary table 1 Shift-specific questions on insomnia and sleepiness

Questions/symptoms	Sub-questions	never/ rarely	rather rarely	rather often	often/ continuously	not applicable
1. How often do you experience difficulties in initiating sleep in relation to	i) morning shifts?	()	()	()	()	()
	ii) evening shifts?	()	()	()	()	()
	iii) night shifts?	()	()	()	()	()
	iv) two weeks of being on holiday?	()	()	()	()	()
2. How often do you awaken during a sleep period in relation to	i) morning shifts?	()	()	()	()	()
	ii) evening shifts?	()	()	()	()	()
	iii) night shifts?	()	()	()	()	()
	iv) two weeks of being on holiday?	()	()	()	()	()
3. How often do you experience difficulties falling asleep after awakening in relation to	i) morning shifts?	()	()	()	()	()
	ii) evening shifts?	()	()	()	()	()
	iii) night shifts?	()	()	()	()	()
	iv) two weeks of being on holiday?	()	()	()	()	()
4. How often do you experience non-restorative sleep in relation to	i) morning shifts?	()	()	()	()	()
	ii) evening shifts?	()	()	()	()	()
	iii) night shifts?	()	()	()	()	()
	iv) two weeks of being on holiday?	()	()	()	()	()
5. How often do you experience daytime sleepiness in relation to	i) morning shifts?	()	()	()	()	()
	ii) evening shifts?	()	()	()	()	()
	iii) night shifts?	()	()	()	()	()
	iv) two weeks of being on holiday?	()	()	()	()	()
6. How often do you experience difficulties in staying awake at work in relation to	i) morning shifts?	()	()	()	()	()
	ii) evening shifts?	()	()	()	()	()
	iii) night shifts?	()	()	()	()	()

Criteria for SWD and non-SWD groups: SWD cases had to report at least four of the symptoms (Questions 1–5) ‘never/rarely’ or ‘rather rarely’ after two weeks on holiday (iv). In addition, they had to have at least one of the ‘never/rarely’ or ‘rather rarely’ occurring symptoms (Questions 1–5) or difficulties in staying awake at work (Question 6) ‘often/continuously’ in connection with some shift (i – iii). The non-SWD group was composed of those who reported at least five of the six symptoms as ‘never/rarely’ or ‘rather rarely’ in relation to all shifts (Questions 1–6) and on holiday (Questions 1–5). Those who reported at least four of the five symptoms (Questions 1–5) as ‘never/rarely’ or ‘rather rarely’ in relation to all shifts (Questions 1–5) and on holiday (Questions 1–5) were also included in the non-SWD group. In this case, they had to ‘never/rarely’ or ‘rather rarely’ have difficulties in staying awake at work in relation to all shifts (Question 6: i – iii).

Supplementary table 2 Work shift characteristics of the participants having morning shifts (n = 30), evening shifts (n = 31), and night shifts (n = 26)

	Median	(IQR)
Morning shifts		
Monthly number	6.3	(3.3)
Shift start time (h:mm)	6:00	(0:19)
Shift end time (h:mm)	15:46	(1:14)
Evening shifts		
Monthly number	4.1	(1.7)
Shift start time (h:mm)	14:00	(0:30)
Shift end time (h:mm)	00:00	(0:40)
Night shifts		
Monthly number	5.1	(1.5)
Shift start time (h:mm)	21:15	(2:30)
Shift end time (h:mm)	6:00	(0:30)
Number of consecutive		
Days off	2.0	(0.5)
Morning shifts	2.0	(1.5)
Evening shifts	2.0	(2.0)
Night shifts	2.0	(2.0)

Supplementary table 3 Fragmentation index of sleep among shift workers with and without SWD

	SWD group			Non-SWD group			Group ^a		
	Mean	(SD)	n	Mean	(SD)	n	df	F	p
Days off	25	(8)	22	17	(8)	9	27.970	4.00	0.055
Before morning shifts	28	(13)	22	19	(5)	8	28.585	3.94	0.057
After evening shifts	25	(10)	22	21	(7)	9	23.210	0.91	0.349
After night shifts	21	(9)	18	18	(9)	8	21.481	1.00	0.328

^a Linear mixed model for repeated measurements with Group and Age as main effects