

Odds ratios analysis based on COPSOQ (ISTAS 21 short) for longitudinal and cross-sectional assessments

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Company studied and nature of work

- office studied provided administrative and financial services to the company's field operations, as well as service to its utility customers
- customer service consumes important part of the 32 administrative workers' attention
- office hours were from 9am to 6pm on week days
- other activity was coordination of the field infrastructure as well as dispatching field maintenance and picket teams, and generating and handling bills and delayed payments
- office also dealt with all the company's management systems

Company studied and nature of work

- company had 82 blue-collar workers, who worked in the field, either permanently in field stations, or as part of dispatch teams
- field workers had week day only work times from 8am to 5pm
- dispatch teams worked in rotational shifts, covering 24h of the day, 7 days of the week
- field workers engaged in routine and non-routine physical activities concerned with regular and emergency maintenance and operation of the water and sewage treatment plants, as well as the supporting grid
- computerized reporting and control of plants in place

outline

diferences in psychosocial assessment

- between office and field workers in the utility company (cross-sectional study)
- between water and sewage treatment workers (cross-sectional study)
- within office workers in the company (longitudinal study – 1.5 years apart)

opposing roles within same organizational environment (1)

- effect of the differences in the nature of work on the psychosocial assessment of people working under the same management
- 32 field workers and 14 office workers of a utility company volunteered
- short version of COPSQQ (ISTAS 21)

Participating subjects

- 6 men and 8 women, workers in the office (44% participation rate)
- sample of office workers mean age = 37.14 (sd=6.11)
- sample of field workers only men, totaling 32 subjects [39% participation rate; mean age = 39.69 (sd=9.67)]
- overall, the age range of the population included in the study (46 participating subjects) was 26 to 55 years of age ($m = 38.9$; $sd = 8.75$)
- subject data was treated anonymously
- company did not authorize the dissemination of its identity

opposing roles within same organizational environment (2)

- independent samples Mann-Whitney U Test was applied to the six sub-scale scores across the two groups of workers
- statistical analysis yielded a significantly higher esteem score for the field workers

Office (n=14) and Field (n=32)

CoPsoQ sub-scale	Total range (severe range)	Office workers		Field workers		U-test
		m	sd	m	sd	p
Psychological demands	0-24 (12-24)	<u>12.5</u>	3.96	<u>11.7</u>	2.96	0.415
Insecurity towards the future	0-16 (10-16)	8.7	4.01	<u>9.6</u>	3.93	0.308
Conflicting demands	0-16 (7-16)	<u>8.3</u>	4.34	6.4	2.19	0.110
Workers control over work	0-40 (0-18)	23.1	5.20	25.7	5.52	0.287
Social support and leadership quality	0-40 (0-24)	26.1	9.96	30.0	5.47	0.184
Esteem	0-16 (0-9)	<u>7.4</u>	3.80	10.3	3.20	0.012*

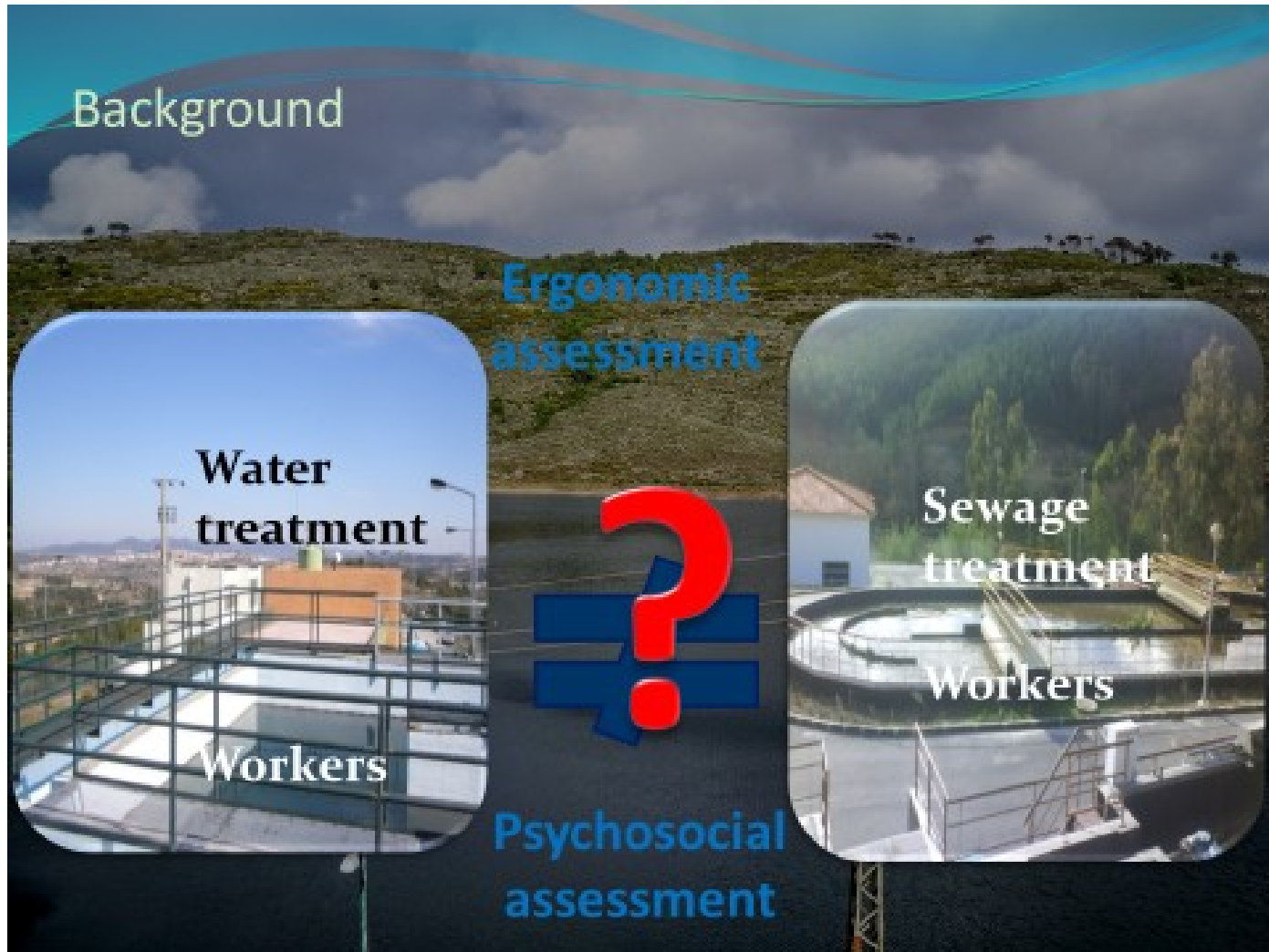
opposing roles within same organizational environment (3)

- odds ratios were calculated considering as exposure factor the condition of working in the terrain as opposed to working in the office
- variables of interest were considered the conditions of severe psychosocial sub-scale ratings, as presented in ISTAS 21 materials
- odds ratios analysis carried out for the nature of work for CoPsoQ subscales did not reveal significant differences

Odds ratios analysis (n=46)

Psychosocial sub-scale	Odds Ratio	p-value	95% Confidence Inter.	
			Lower	Upper
Psychological demands	0.521	0.38	0.120	2.265
Insecurity towards the future	0.722	0.71	0.127	4.116
Conflicting demands	0.583	0.40	0.164	2.073
Workers control over work	0.463	0.31	0.103	2.078
Social support and leadership quality	0.259	0.09	0.049	1.361
Esteem	0.309	0.10	0.072	1.322

water vs. sewage treatment (foul odour) (1)



water vs. sewage treatment (foul odour) (2)

- hypothesis: “sewage treatment workers, subjected to foul odors, show higher severity of psychosocial factors than water treatment workers”
- odds ratios for the foul odour condition were computed for all psychosocial sub-scales

Results of psychosocial assessment

CoPsoQ sub-scale	Total range (severe range)	Workers not subj. to foul smell (n=11) mean (sd)	Workers subj. to foul smell (n=21) mean (sd)	Ind. s. Mann-Whitney U-Test p-value
Psychological demands	0-24 (12-24)	10.2 (2.3)*	<u>12.4</u> (3.0)*	0.031*
Insecurity towards the future	0-16 (10-16)	<u>10.4</u> (3.5)	9.1 (4.2)	0.33
Conflicting demands	0-16 (7-16)	5.6 (2.0)	<u>6.9</u> (2.2)	0.12
Workers control over work	0-40 (0-18)	24.0 (4.5)	26.6 (5.9)	0.33
Social support and leadership quality	0-40 (0-24)	30.1 (4.2)	30.0 (6.1)	0.76
Esteem	0-16 (0-9)	<u>10.4</u> (2.5)	<u>10.2</u> (3.6)	0.91

Odds ratio for foul smell – psychological demands

Psychosocial sub-scale	Odds Ratio	p-value	95% Confidence Inter.	
			Lower	Upper
Psychological demands	5.333	0.034*	1.069	26.613

- Sewage treatment and maintenance workers (subject to foul smells) 5 times more likely to incur in severe levels of psychological demands than water treatment workers

water vs. sewage treatment (foul odour) (3)

- based on odds ratio analysis hypothesis not rejected for psychological demands only:
“sewage treatment workers, subjected to foul odors, show higher severity of psychosocial factors than water treatment workers”

Longitudinal assessment of office workers (1)

Participating subjects

- 1st assessment, 25 workers participated (11 men and 14 women) – Spring 2012
- 14 workers (8 women and 6 men) participated in the 2nd assessment (Autumn 2013) all of whom had already participated in the first assessment

Related samples Wilcoxon sign ranked test

CoPsoQ sub-scale	Total range (severe range)	May 2012 (n=25)		Nov 2013 (n=14)		p-v n=14
		m	sd	m	sd	
Psychological demands	0-24 (12-24)	<u>12.44</u>	2.77	<u>12.50</u>	3.96	0.592
Insecurity towards the future	0-16 (10-16)	8.12	2.99	8.71	4.01	0.964
Conflicting demands	0-16 (7-16)	<u>8.57</u>	2.80	<u>8.27</u>	4.34	0.538
Workers control over work	0-40 (0-18)	25.88	4.76	23.07	5.20	0.288
Social support and leadership quality	0-40 (0-24)	27.28	6.96	26.07	9.96	0.959
Esteem	0-16 (0-9)	<u>7.76</u>	4.01	<u>7.36</u>	3.80	0.320

Longitudinal assessment of office workers (2)

- statistical analysis showed a fairly stable outlook longitudinally, with sustained severe scores in many of the sub-scales
- odds ratios analysis considering gender as exposure factor showed an effect on intensification of severity of workers control over work for men

Female only - Wilcoxon sign ranked test

CoPsoQ sub-scale	Total range (severe range)	May 2012 (n=14)		Nov 2013 (n=8)		p-v n=8
		m	sd	m	sd	
Psychological demands	0-24 (12-24)	<u>11.71</u>	3.12	<u>13.63</u>	2.61	0.073
Insecurity towards the future	0-16 (10-16)	7.57	2.24	8.25	3.58	0.786
Conflicting demands	0-16 (7-16)	<u>9.75</u>	2.01	<u>11.17</u>	2.64	0.074
Workers control over work	0-40 (0-18)	24.57	3.57	23.75	4.98	0.462
Social support and leadership quality	0-40 (0-24)	24.50	5.79	24.63	7.13	0.104
Esteem	0-16 (0-9)	<u>6.29</u>	3.65	<u>6.88</u>	2.53	0.865

Male only - Wilcoxon sign ranked test

CoPsoQ sub-scale	Total range (severe range)	May 2012 (n=11)		Nov 2013 (n=6)		p-v n=6
		m	sd	m	sd	
Psychological demands	0-24 (12-24)	<u>13.36</u>	2.01	11.00	5.14	0.343
Insecurity towards the future	0-16 (10-16)	8.82	3.74	9.33	4.80	0.832
Conflicting demands	0-16 (7-16)	<u>7.00</u>	3.04	4.80	3.27	0.588
Workers control over work	0-40 (0-18)	27.55	5.59	22.17	5.81	0.046 *
Social support and leadership quality	0-40 (0-24)	30.82	6.94	28.00	13.39	0.225
Esteem	0-16 (0-9)	9.64	3.80	<u>8.00</u>	5.25	0.039 *

Odds ratios analysis (exposure: female sex)

Psychosocial sub-scale	Odds Ratio Value	p-value	95% Conf. Interval	
			Lower	Upper
Psychological demands	8.333	0.086	0.631	110.022
Insecurity towards the future	0.600	0.640	0.070	5.136
Conflicting demands (n=11)	3.000	0.376	0.255	35.334
Workers control over work	0.067	0.031*	0.005	0.970
Social support and leadership quality	0.143	0.124	0.010	1.995
Esteem	0.200	0.198	0.016	2.575

Discussion

- results suggest that the organizational design and management system in place, as well as overall cultural environment, create a much stronger and decisive impact on the measurements made than other factors
- individual differences as well as alternative job content and technological systems in use in the company scenarios considered are bound to come in second place as contributing factors to the differences in psychosocial assessment

Limitations

- odds ratio analysis looks promising as a tool to analyse differences in psychosocial factors across groups of workers
- numbers of subjects in this study very small, which contributes to preclude significance