Teaching safety - Resident anaesthetists at the forefront of COVID-19.

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1 Teaching safety - Resident anaesthetists at the forefront of COVID-19.

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- 12 Abstract.
- 13 We aimed to evaluate the impact of the COVID-19 pandemic on anaesthesiology residents in a COVID-19
- 14 hub hospital in Latium and ascertain their level of perceived justice and work-related stress. Residents and
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29 during aerosol generating procedures involving the airway, such as emergency tracheal intubation, cardiac 30 arrest, anaesthetic care and tracheal extubation ⁽²⁾. Only the most experienced doctors, who have already 31 had the opportunity to work with patients with respiratory infections, are familiar with these procedures 32 that constitute an additional new work task for trainees. In medical schools, the pressing demand for new 33 specialists has led to the hiring of residents on fixed-term contracts before they have completed their 34 period of specialization. This has undoubtedly burdened these doctors with new and greater clinical responsibilities at a time when they are still completing their training, exposing them to the risk of clinical 35 36 errors and inappropriate behaviours ⁽³⁾. Therefore, we aimed to evaluate the perception of the correctness 37 of safety procedures in resident anaesthetists working in an Italian Covid-19 hub hospital during the first 38 phase of the pandemic and compare it with that of permanent contract anaesthetists working in the same 39 hospital.

40 The survey was conducted during the first wave of Covid-19 in the months of April and May 2020. The 41 anaesthetists treating COVID-19 patients were invited to participate in an online survey by means of the 42 SurveyMonkey© platform. The perception of Organizational Justice (OJ), which refers to how an employee 43 judges the fairness of processes and procedures in the organization ⁽⁴⁾, was investigated using the Italian 44 version ⁽⁵⁾ of the Colquitt questionnaire, which comprises the subscales of Procedural Justice (PJ) and informational Justice (IJ). PJ was measured by 7 items (e.g., "Were you able to express your views and 45 feelings during those procedures?"); IJ was measured with 5 items (e.g., "Do you think the communications 46 you received were reliable?"). Each question was answered according to a 5-point Likert scale. Work-47 related stress was measured using the Italian version ⁽⁶⁾ of the "Effort Reward Imbalance" (ERI) model, 48 49 which postulates that failed reciprocity between high efforts spent at work and low rewards received in 50 turn elicits strong negative emotions and stress reactions with adverse long-term effects on health. The Effort subscale was based on three questions (e.g., "I'm always under pressure for the workload") with 51 52 responses ranging on a 4-point Likert scale; the total score ranged from 3 to 12. The Reward sub-scale was 53 based on seven questions (e.g., "Considering all my efforts and what I have achieved, I receive the respect 54 and prestige I deserve at work"); consequently, this score ranged from 7 to 28. Stress was measured as the

weighted ratio between Effort and Reward. The effect of organizational justice on occupational stress was
assessed by logistic regression, with adjustment for age and sex. The study was authorized by the
University Ethical Committee (ID 3292). Prior to participation, all participants gave their written informed
consent. Analyses were conducted using the IBM/SPSS 26.0 package.
50 out of 77 residents (65%), and 40 out of 64 specialist anaesthetists (63%) took part. Residents were
mainly female (30, 60%) under 35 years of age (49, 98%). Of the predominantly male anaesthesia specialists
(58%), half were over 35 years old. Resident trainees perceived lower levels of procedural and

62 informational justice than specialist anaesthesiologists. The difference was very significant for IJ, which

refers to the way information is transmitted. The overall organizational justice score was also significantly

64 lower in residents than in specialists with a permanent contract (Table 1). Perceived stress levels were very

high (effort/reward ratio >1) in 38 (76%) of the residents, and in 24 (65%) of the anaesthesiologists. The

66 variables that express organizational justice (PJ and IJ) were correlated with each other and inversely

67 correlated with the reward received by workers. Effort and reward were inversely correlated with each

68 other (Table 2). In a multivariate logistic regression model, adjusted for age and gender, perceived

69 organizational justice was a significant protective factor for work-related stress (Table 3).

70 Our study showed that in the first phase of the COVID-19 pandemic, residents working in a COVID-19 hub 71 hospital reported a lower level of organizational justice than specialist anaesthesiologists and that 72 perceived justice was inversely related to occupational rewards. Organizational justice acted as a protective 73 factor for occupational stress. The findings of our study, which to the best of our knowledge is the only one 74 that has compared the perception of organizational justice in anaesthesiology trainees and specialists 75 during COVID-19, confirm the evidence in the literature. Resident anaesthetists are unanimously 76 considered to be highly exposed to occupational stress, burnout, and depression ^(7, 8). In many countries, 77 including Italy, anaesthesiologists in teaching hospitals complain of insufficient teamwork, difficulty in 78 recognizing, discussing, and correcting errors and reluctance on the part of senior theatre staff to accept 79 input from junior members ⁽⁹⁾. In the early stages of the pandemic, some of the trainees may have felt the

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96 Our study has the limitation of having been conducted on a small sample with a cross-sectional model.

97 However, this study was the baseline of a repeated cross-sectional study that aims to follow frontline

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140 Comparison of Organizational Justice and work-related stress perceived by residents and anaesthetists during the

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	Residents Anaesthetists		Student's	Mann-
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Variable	Mean \pm s.d	Mean \pm s.d	р	р
Procedural Justice (range 7-35)	16.6 ± 4.1	18.9 ± 5.7	0.031	0.113.
Informational Justice (range 5-25)	12.7 ± 3.4	15.3 ± 2.9	0.001	0.000
Organizational Justice (range 12-60)	29.3 ± 6.5	34.1 ± 7.6	0.002	0.004
Effort (range 3-12)	8.2 ±1,6	8.1 ± 2.0	0.668	0.654
Reward (range 7-28)	16.2 ±3,0	16.8 ± 4.1	0.445	0.436
Effort/reward Imbalance ERI	1.23 ± 0.35	1.3 ± 0.66	0.748	0.319

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146 Correlations between Justice and Stress subscales

		PJ	IJ	Effort	Reward
PJ Procedural Justice	Pearson's r	1	.524**	171	.390**
	Two tailed p		.000	.108	.000
IJ Informational Justice	Pearson's r		1	200	.358**
	Two tailed p			.059	.001
Effort	Pearson's r			1	339**
	Two tailed p				.001
Reward	Pearson's r				1

** p<0.001.

Table 2

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Table 3

150 Association of organizational justice with work-related distress (ERI>1)

151

			95% C.I.		
Variable	р	OR	Inferior	Superior	
Gender	0.142	2.168	0.771	6.097	
Ageclass	0.678	1.291	0.387	4.311	
Organizational Justice	0.001	0.860	0.786	0.940	

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** p<0.001.

Table 2

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