

PUBLIC POLICY DIMENSIONS OF FACTORS INFLUENCING WORKLOAD IN THE OPERATING ROOM: AN ANALYSIS OF MEDICAL STAFF RATINGS

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Abstract. *Operating-room work combines high temporal, cognitive, physical, and organisational demands, yet evidence linking staff perceptions to hospital-management and public-policy priorities remains limited. This study examined modifiable factors influencing operating-room workload and developed evidence-based recommendations for hospital governance and health-sector policy. A cross-sectional survey of 1,003 operating-room professionals in Latvia assessed four determinants on a 10-point scale (1 = no influence; 10 = very frequent influence): limited time to complete tasks, interpersonal communication, workload distribution, and workplace convenience. Descriptive statistics, 95% confidence intervals, independent-samples t-tests, one-way analysis of variance (ANOVA), chi-square tests, and correlation analysis were applied. Limited time received the highest rating ($M = 6.88$, $SD = 2.41$), followed by workload distribution ($M = 6.74$, $SD = 2.31$), workplace convenience ($M = 6.73$, $SD = 2.35$), and interpersonal communication ($M = 6.17$, $SD = 2.31$). Ratings differed significantly across professional positions for limited time, $F(7, 991) = 2.184$, $p = .033$, and workload distribution, $F(7, 991) = 3.184$, $p = .002$; age-group differences were significant only for limited time, $F(5, 988) = 2.663$, $p = .021$. Professional experience was associated with communication, workload distribution, and workplace convenience, whereas gender and dominant-hand comparisons were not significant. The findings indicate that workload is primarily related to modifiable organisational and ergonomic conditions. Hospital policy should prioritise realistic scheduling, equitable task allocation, ergonomic workplace design, structured interprofessional communication, and role-sensitive monitoring to support staff well-being, operational efficiency, and patient safety.*

Keywords: *public policy, operating-room personnel, workload, interpersonal communication, workload distribution, workplace ergonomics.*

Reikšminiai žodžiai: *viešasis administravimas, operacinis personalas, darbo krūvis, tarpasmeninis bendravimas, darbo vietas patogumas.*

Introduction

Effective health-care management is fundamental to population health, service quality, and health-system sustainability. Operating-room personnel work in a safety-critical environment where time pressure, physical and cognitive demands, teamwork, organisational arrangements, and environmental conditions interact. Inadequate physical ergonomics is associated with musculoskeletal disorders, pain, fatigue, stress, and burnout, while cognitive and organisational ergonomics influence decision-making, coordination, safety culture, and performance under pressure (Tiferes, Hussein, and Bisantz 2016; Pasquer et al. 2024; Tjugum et al. 2026). Noise, lighting, temperature, spatial design, and equipment availability may further affect perceived workload and operative-team performance (Boyle et al. 2025). From a public-policy perspective, these conditions are relevant because staff well-being, retention, operational efficiency, and patient safety depend on both institutional standards and hospital-level implementation. Previous studies often address individual ergonomic, psychosocial, or operational determinants separately; integrated evidence across professional and demographic groups remains limited. Accordingly, this study examines four organisationally actionable determinants—limited time to complete tasks, interpersonal communication, workload distribution, and workplace convenience—among operating-room professionals in Latvia. The aim was to identify factors influencing perceived workload and formulate evidence-based recommendations for hospital management and public-policy development. The objectives were to review current evidence, assess staff ratings, and test differences across professional position, age, experience, gender, and dominant hand.

Theoretical Background of Analysis

Public policy and hospital governance shape operating-room safety through regulation, risk management, staffing standards, workflow design, and accountability mechanisms (Paté-Cornell et al. 1997; Quach, Vittetoe, and Langerman 2023). Workload and time pressure are consistently identified as major psychosocial stressors and may contribute to moral distress, burnout, and reduced care quality, particularly when communication and interprofessional collaboration are weak (Aggarwal et al. 2004; Babiker et al. 2025; Sierpińska, Comber, and Kozestańska-Oczkowska 2025; Tjugum et al. 2026). Policy responses should therefore address the organisational sources of excessive demand rather than rely solely on individual coping.

Organisational ergonomics is central to operating-room performance. Stable teams, clear role allocation, coordinated scheduling, and effective communication are associated with fewer disruptions, shorter operative times, and improved patient safety (Grozdanovic et al. 2021; Kamande et al. 2022; Pasquer et al. 2024). Conversely, uneven task distribution and avoidable interruptions increase cognitive load and reduce efficiency, supporting participatory work redesign involving surgeons, anaesthesia personnel, nurses, and support staff.

The physical environment is an equally important policy determinant. Operating-room layout, access routes, door systems, scrub facilities, ventilation, equipment positioning, lighting, noise, and maintenance can facilitate or impede safe work (Arikan and Erdem 2023; Menon et al. 2025). Poor design increases unnecessary movement, awkward postures, interruptions, and perceived time pressure; human-centred spatial design and equipment maintenance should therefore form part of quality assurance.

Human factors and non-technical skills—including communication, situation awareness, leadership, and decision-making—are essential to safe practice. Simulation- and team-based training can strengthen

these competencies (Aggarwal et al. 2004; Gür and Eren 2025; Pasquer et al. 2024), while operational research shows that scheduling and case sequencing affect utilisation, delays, and staff workload (Denton, Viapiano, and Vogl 2007; Dexter, Coffin, and Tinker 1995; Sandberg et al. 2005; Wright, Roche, and Khoury 2010).

Recovery opportunities are also organisationally important. Regular breaks and micro-breaks may reduce physical and mental fatigue, whereas insufficient recovery can impair attention, comfort, and performance during prolonged procedures (Schouten et al. 2025; Sierpińska, Comber, and Kozestańska-Oczkowska 2025; Yizengaw et al. 2021). Workload policies should therefore balance productivity with safe staffing, realistic schedules, and recovery time.

In this study, workplace convenience denotes the usability and ergonomic suitability of the immediate work environment, including equipment access, spatial arrangement, postural demands, and workflow continuity. Poor ergonomic design and workflow disruption may increase physical strain, contamination risk, errors, and inefficiency (Beldi et al. 2009; Berguer, Forkey, and Smith 1999; Hignett and McAtamney 2000; Wiegmann et al. 2007).

The literature therefore conceptualises operating-room workload as a multidimensional systems outcome arising from interactions among ergonomic, psychosocial, organisational, and environmental conditions. Effective intervention requires coordinated policy standards, hospital governance, participatory redesign, training, and continuous monitoring. The present study applies this systems perspective to four modifiable determinants.

Research Methods Applied

A cross-sectional questionnaire was developed from research on operating-room workload, ergonomics, psychosocial risks, and work organisation. The research team prepared the instrument over four months and pilot-tested it with 18 members of the target population; wording and response options were subsequently refined. Ethical approval was obtained from the Ethics Committee of the University of Latvia, and hospital management authorised data collection. Participation was voluntary, and confidentiality and anonymous data processing were ensured. The analytical sample comprised 1,003 operating-room professionals. Respondents rated how often four factors affected their workload-limited time to complete tasks, interpersonal communication, workload distribution, and workplace convenience on a 10-point scale (1 = no influence; 10 = very frequent influence). Analyses included means, medians, modes, standard deviations, standard errors, ranges, and 95% confidence intervals. Group differences by professional position, age, professional experience, gender, dominant hand, and time working in an operating room were examined using independent-samples t-tests and one-way ANOVA; chi-square tests and correlation analysis were applied where appropriate. Statistical significance was set at $p < .05$. Because ordinal ratings were treated as approximately continuous, the findings describe differences in perceived influence and do not establish causality.

Operating Room Staff Survey Results

The analysis examined staff ratings of the four workload determinants; overall descriptive statistics are presented in Table 1.

Limited time to complete tasks received the highest mean rating ($M = 6.88$, $SD = 2.41$), followed by workload distribution ($M = 6.74$, $SD = 2.31$), workplace convenience ($M = 6.73$, $SD = 2.35$), and interpersonal communication ($M = 6.17$, $SD = 2.31$). Medians were 7, except for communication (6), and modes were 10 for limited time, workload distribution, and workplace convenience. The full response range indicates substantial heterogeneity, while the central estimates identify time pressure and work organisation as priority areas.

Table 1. Main indicators of descriptive statistics on evaluations of “How often do the factors below affect your workload in the operating room?” by medical personnel working in operating rooms in Latvia in 2025

Statistical indicators		Limited time to complete tasks	Interpersonal communication	Workload distribution	Workplace convenience
N	Valid	1000	1001	1000	1002
	Missing	3	2	3	1
Mean		6,88	6,17	6,74	6,73
Standard Error of Mean		0,076	0,073	0,073	0,074
Median		7	6	7	7
Mode		10	7	10	10
Standard Deviation		2,413	2,309	2,308	2,351
Range		9	9	9	9
Minimum		1	1	1	1
Maximum		10	10	10	10

Source: Authors calculations based on survey results, n=1003, evaluation scale 1-10, where 1- do not influence; 10-influence very often

The sample included operating-room physicians and residents across specialties, anaesthesiologists and anaesthesiology residents, anaesthesia and operating nurses, nurse aides, endoscopy nurses, medical assistants, and other operating-room personnel.

Descriptive results by professional position are presented in Table 2.

Table 2. Main indicators of descriptive statistics on evaluations of “How often do the factors below affect your workload in the operating room?” by medical personnel positions working in operating rooms in Latvia in 2025

Analysed Aspects	Position	N	Mean	Std. Dev.	Std. Error	95% Confidence interval for mean		Min	Max
						Lower bound	Upper bound		
Limited time to complete tasks	Operating staff various specialties	227	7,15	2,196	0,146	6,86	7,43	1	10
	Resident in various specialties	110	7,32	2,150	0,205	6,91	7,72	2	10
	Anesthesiologist	113	6,96	2,433	0,229	6,50	7,41	1	10
	Anesthesiology resident	47	6,79	2,970	0,433	5,92	7,66	1	10
	Anesthesia nurse	107	6,70	2,775	0,268	6,17	7,23	1	10
	Operating nurse	222	6,75	2,414	0,162	6,43	7,07	1	10
	Nurse's aide	103	6,83	2,264	0,223	6,38	7,27	1	10
	Other (enter profession)	70	6,10	2,520	0,301	5,50	6,70	1	10
	Total	999	6,88	2,414	0,076	6,73	7,03	1	10

Analysed Aspects	Position	N	Mean	Std. Dev.	Std. Error	95% Confidence interval for mean		Min	Max
						Lower bound	Upper bound		
Inter-personal communication	Operating staff various specialties	227	6,19	2,277	0,151	5,90	6,49	1	10
	Resident in various specialties	110	6,43	2,061	0,196	6,04	6,82	1	10
	Anesthesiologist	114	6,20	2,297	0,215	5,78	6,63	1	10
	Anesthesiology resident	47	6,40	2,499	0,365	5,67	7,14	1	10
	Anesthesia nurse	107	6,29	2,403	0,232	5,83	6,75	1	10
	Operating nurse	222	6,12	2,386	0,160	5,81	6,44	1	10
	Nurse's aide	103	6,24	2,286	0,225	5,80	6,69	1	10
	Other (enter profession)	70	5,36	2,259	0,270	4,82	5,90	1	9
	Total	1000	6,17	2,310	0,073	6,03	6,31	1	10
Workload distribution	Operating staff various specialties	228	6,80	2,253	0,149	6,50	7,09	2	10
	Resident in various specialties	110	6,92	2,331	0,222	6,48	7,36	1	10
	Anesthesiologist	113	7,06	2,205	0,207	6,65	7,47	1	10
	Anesthesiology resident	47	7,13	2,455	0,358	6,41	7,85	1	10
	Anesthesia nurse	106	7,06	2,263	0,220	6,62	7,49	2	10
	Operating nurse	222	6,46	2,331	0,156	6,16	6,77	1	10
	Nurse's aide	103	6,83	2,260	0,223	6,38	7,27	1	10
	Other (enter profession)	70	5,77	2,335	0,279	5,21	6,33	1	10
	Total	999	6,74	2,309	0,073	6,60	6,88	1	10
Workplace convenience	Operating staff various specialties	227	6,76	2,279	0,151	6,46	7,06	1	10
	Resident in various specialties	110	6,79	2,450	0,234	6,33	7,25	2	10
	Anesthesiologist	114	6,55	2,335	0,219	6,12	6,99	1	10
	Anesthesiology resident	47	6,98	2,690	0,392	6,19	7,77	1	10
	Anesthesia nurse	107	7,21	2,146	0,207	6,80	7,63	1	10
	Operating nurse	222	6,62	2,407	0,162	6,30	6,94	1	10
	Nurse's aide	103	6,83	2,381	0,235	6,37	7,30	1	10
	Other (enter profession)	71	6,20	2,221	0,264	5,67	6,72	1	10
	Total	1001	6,74	2,350	0,074	6,59	6,88	1	10

Source: Authors calculations based on survey results, n=1003, evaluation scale 1-10, where 1- do not influence; 10-influence very often

Mean ratings varied by professional position. Residents reported the highest limited-time rating ($M = 7.32$), anaesthesiology residents the highest workload-distribution rating ($M = 7.13$), and anaesthesia nurses the highest workplace-convenience rating ($M = 7.21$). Results for the heterogeneous “other” category should be interpreted cautiously.

Differences across professional positions were tested using one-way ANOVA (Table 3).

Professional-position differences were significant for limited time, $F(7, 991) = 2.184$, $p = .033$, and workload distribution, $F(7, 991) = 3.184$, $p = .002$, but not for interpersonal communication, $F(7, 992) = 1.584$, $p = .136$, or workplace convenience, $F(7, 993) = 1.456$, $p = .180$. Thus, perceptions of time pressure and task allocation vary by occupational role; post-hoc tests are required to identify specific between-group differences.

Table 3. Main indicators of analysis of variance - ANOVA on evaluations of “How often do the factors below affect your workload in the operating room?” by medical personnel positions working in operating rooms in Latvia in 2025

Analysed aspects	Variance	Sum of squares	Df	Mean square	F	Sig.
Limited time to complete tasks	Between Groups	88,355	7	12,622	2,184	0,033
	Within Groups	5728,176	991	5,780		
	Total	5816,531	998			
Interpersonal communication	Between Groups	58,952	7	8,422	1,584	0,136
	Within Groups	5272,807	992	5,315		
	Total	5331,759	999			
Workload distribution	Between Groups	116,999	7	16,714	3,184	0,002
	Within Groups	5202,853	991	5,250		
	Total	5319,852	998			
Workplace convenience	Between Groups	56,111	7	8,016	1,456	0,180
	Within Groups	5468,734	993	5,507		
	Total	5524,845	1000			

Source: Authors calculations based on survey results, $n=1003$, evaluation scale 1-10, where 1- do not influence; 10-influence very often

Because age may reflect both accumulated professional experience and age-related changes in work capacity, ratings were also compared across age groups (Ocaktan and Karabacak 2025). Age-group descriptive statistics are presented in Table 4.

Ratings were broadly comparable across age groups. The 26–35-year group reported the highest limited-time rating ($M = 7.35$), whereas the 20–25-year group reported the highest workplace-convenience rating ($M = 7.09$). Substantial within-group variability remained.

Table 4. Main indicators of descriptive statistics on evaluations of “How often do the factors below affect your workload in the operating room? by medical personnel age groups working in operating rooms in Latvia in 2025

Analysed aspects	Age groups	N	Mean	Std. Deviation	Std. Error	95% Confidence interval for mean		Minimum	Maximum
						Lower bound	Upper bound		
Limited time to complete tasks	20-25	43	6,00	2,812	0,429	5,13	6,87	1	10
	26-35	182	7,35	2,331	0,173	7,01	7,69	1	10
	36-45	262	6,81	2,451	0,151	6,51	7,11	1	10
	46-55	203	6,78	2,444	0,172	6,45	7,12	1	10
	56-65	212	6,85	2,346	0,161	6,53	7,17	1	10
	66 and more	92	6,87	2,293	0,239	6,39	7,34	1	10
	Total	994	6,88	2,418	0,077	6,73	7,03	1	10
Inter-personal communication	20-25	43	6,23	2,399	0,366	5,49	6,97	1	10
	26-35	182	6,42	2,235	0,166	6,10	6,75	1	10
	36-45	262	5,93	2,232	0,138	5,66	6,20	1	10
	46-55	202	6,07	2,428	0,171	5,73	6,41	1	10
	56-65	213	6,30	2,352	0,161	5,98	6,61	1	10
	66 and more	93	6,22	2,264	0,235	5,75	6,68	1	10
	Total	995	6,17	2,311	0,073	6,02	6,31	1	10
Workload distribution	20-25	43	6,81	2,528	0,386	6,04	7,59	2	10
	26-35	181	7,02	2,298	0,171	6,68	7,35	1	10
	36-45	261	6,53	2,209	0,137	6,26	6,80	1	10
	46-55	204	6,59	2,485	0,174	6,25	6,93	1	10
	56-65	212	6,77	2,326	0,160	6,45	7,08	1	10
	66 and more	93	7,01	2,030	0,210	6,59	7,43	2	10
	Total	994	6,74	2,310	0,073	6,60	6,88	1	10
Workplace convenience	20-25	43	7,09	2,147	0,327	6,43	7,75	2	10
	26-35	182	6,94	2,381	0,177	6,59	7,29	1	10
	36-45	262	6,60	2,413	0,149	6,30	6,89	1	10
	46-55	204	6,69	2,415	0,169	6,36	7,02	1	10
	56-65	212	6,67	2,266	0,156	6,36	6,97	1	10
	66 and more	93	6,81	2,295	0,238	6,33	7,28	2	10
	Total	996	6,73	2,353	0,075	6,59	6,88	1	10

Source: Authors calculations based on survey results, n=1003, evaluation scale 1-10, where 1- do not influence; 10-influence very often

Age-group differences were tested using one-way ANOVA (Table 5).

Table 5. Main indicators of analysis of variance - ANOVA on evaluations of "How often do the factors below affect your workload in the operating room?" by medical personnel age groups working in operating rooms in Latvia in 2025

Analysed aspects	Variance	Sum of squares	Df	Mean square	F	Sig.
Limited time to complete tasks	Between Groups	77,208	5	15,442	2,663	0,021
	Within Groups	5730,020	988	5,800		
	Total	5807,228	993			
Interpersonal communication	Between Groups	32,350	5	6,470	1,213	0,301
	Within Groups	5275,956	989	5,335		
	Total	5308,306	994			
Workload distribution	Between Groups	37,003	5	7,401	1,389	0,226
	Within Groups	5262,511	988	5,326		
	Total	5299,514	993			
Workplace convenience	Between Groups	20,133	5	4,027	0,726	0,604
	Within Groups	5490,360	990	5,546		
	Total	5510,493	995			

Source: Authors calculations based on survey results, $n=1003$, evaluation scale 1-10, where 1- do not influence; 10-influence very often

Age-group differences on evaluations of "How often do the factors below affect your workload in the operating room?" were significant only for limited time, $F(5, 988) = 2.663$, $p = .021$; communication, workload distribution, and workplace convenience did not differ significantly. Perceived time pressure may therefore vary across career stages, although the cross-sectional design precludes causal interpretation and post-hoc tests are needed.

Professional experience was categorised as 0–5, 6–10, 11–15, 16–20, 21–30, and 31 or more years.

Descriptive results by professional experience are presented in Table 6.

Ratings varied modestly across experience groups. Personnel with 31 or more years of experience reported the highest workload-distribution rating ($M = 7.14$), whereas the 16–20-year group reported the lowest ratings for communication ($M = 5.66$), workload distribution ($M = 6.13$), and workplace convenience ($M = 6.00$).

Experience-group differences were tested using one-way ANOVA (Table 7).

Table 6. Main indicators of descriptive statistics on evaluations of “How often do the factors below affect your workload in the operating room?” by medical personnel professional experience groups working in operating rooms in Latvia in 2025

Analysed aspects	Years in profession	N	Mean	Std. Deviation	Std. Error	95% Confidence interval for mean		Minimum	Maximum
						Lower bound	Upper bound		
Limited time to complete tasks	0-5	141	7,01	2,460	0,207	6,60	7,42	1	10
	6-10	174	6,76	2,555	0,194	6,38	7,15	1	10
	11-15	188	7,03	2,250	0,164	6,70	7,35	1	10
	16-20	150	6,73	2,368	0,193	6,34	7,11	1	10
	21-30	150	6,61	2,572	0,210	6,20	7,03	1	10
	31 and more	181	6,98	2,311	0,172	6,64	7,32	1	10
	Total	984	6,86	2,414	0,077	6,71	7,01	1	10
Interpersonal communication	0-5	141	6,19	2,164	0,182	5,83	6,55	1	10
	6-10	174	6,08	2,472	0,187	5,71	6,45	1	10
	11-15	188	6,29	2,064	0,151	5,99	6,58	1	10
	16-20	149	5,66	2,427	0,199	5,26	6,05	1	10
	21-30	151	6,11	2,421	0,197	5,72	6,50	1	10
	31 and more	182	6,52	2,261	0,168	6,19	6,85	1	10
	Total	985	6,16	2,310	0,074	6,01	6,30	1	10
Workload distribution	0-5	141	6,88	2,304	0,194	6,50	7,26	1	10
	6-10	173	6,79	2,359	0,179	6,43	7,14	1	10
	11-15	187	6,63	2,259	0,165	6,31	6,96	2	10
	16-20	151	6,13	2,451	0,199	5,74	6,53	1	10
	21-30	150	6,70	2,275	0,186	6,33	7,07	1	10
	31 and more	182	7,14	2,113	0,157	6,83	7,45	2	10
	Total	984	6,72	2,305	0,073	6,58	6,87	1	10
Workplace convenience	0-5	141	6,94	2,306	0,194	6,55	7,32	2	10
	6-10	174	6,91	2,336	0,177	6,56	7,26	1	10
	11-15	188	6,77	2,251	0,164	6,44	7,09	1	10
	16-20	151	6,00	2,471	0,201	5,60	6,40	1	10
	21-30	150	6,71	2,382	0,194	6,32	7,09	1	10
	31 and more	182	6,95	2,242	0,166	6,62	7,27	2	10
	Total	986	6,72	2,343	0,075	6,58	6,87	1	10

Source: Authors' calculations based on survey results, n=1003, evaluation scale: 1–10, where 1 = does not influence; 10 = influences very often

Table 7. Main indicators of analysis of variance - ANOVA on evaluations of “How often do the factors below affect your workload in the operating room?” by medical personnel working professional experience groups working in operating rooms in Latvia in 2025

Analysed aspects	Variance	Sum of squares	Df	Mean square	F	Sig.
Limited time to complete tasks	Between Groups	24,410	5	4,882	0,837	0,524
	Within Groups	5705,516	978	5,834		
	Total	5729,926	983			
Interpersonal communication	Between Groups	65,336	5	13,067	2,467	0,031
	Within Groups	5185,273	979	5,296		
	Total	5250,609	984			
Workload distribution	Between Groups	90,545	5	18,109	3,452	0,004
	Within Groups	5130,714	978	5,246		
	Total	5221,259	983			
Workplace convenience	Between Groups	101,034	5	20,207	3,732	0,002
	Within Groups	5306,378	980	5,415		
	Total	5407,413	985			

Source: Authors' calculations based on survey results, n=1003, evaluation scale: 1–10, where 1 = does not influence; 10 = influences very often

Limited time did not differ significantly by professional experience, $F(5, 978) = 0.837$, $p = 0.524$. Significant differences were observed for interpersonal communication, $F(5, 979) = 2.467$, $p = 0.031$, workload distribution, $F(5, 978) = 3.452$, $p = 0.004$, and workplace convenience, $F(5, 980) = 3.732$, $p = 0.002$. These results support experience-sensitive organisational measures, although post-hoc comparisons are required.

Gender was examined because organisational experiences and teamwork may be gendered in operating-room settings (Etherington et al. 2021).

Descriptive results by gender are presented in Table 8.

Table 8. Main indicators of descriptive statistics on evaluations of “How often do the factors below affect your workload in the operating room?” by medical personnel gender groups working in operating rooms in Latvia in 2025

Gender		Limited time to complete tasks	Interpersonal communication	Workload distribution	Workplace convenience
Male	Mean	7,06	6,33	6,91	6,81
	N	330	330	331	330
	Std. Deviation	2,340	2,244	2,231	2,357
	Median	7	6	7	7

Gender		Limited time to complete tasks	Interpersonal communication	Workload distribution	Workplace convenience
Female	Range	9	9	9	9
	Minimum	1	1	1	1
	Maximum	10	10	10	10
	Mean	6,81	6,13	6,69	6,76
	N	645	646	644	647
	Std. Deviation	2,447	2,330	2,329	2,320
	Median	7	6	7	7
I don't want to answer	Range	9	9	9	9
	Minimum	1	1	1	1
	Maximum	10	10	10	10
	Mean	5,78	4,39	5,11	4,50
	N	18	18	18	18
	Std. Deviation	2,415	2,062	2,471	2,550
	Median	5	5	5	4,50
Total	Range	9	7	9	9
	Minimum	1	1	1	1
	Maximum	10	8	10	10
	Mean	6,88	6,16	6,74	6,74
	N	993	994	993	995
	Std. Deviation	2,417	2,310	2,310	2,354
	Median	7	6	7	7
	Range	9	9	9	9
	Minimum	1	1	1	1
	Maximum	10	10	10	10

Source: Authors' calculations based on survey results, n=1003, evaluation scale: 1–10, where 1 = does not influence; 10 = influences very often

Male respondents reported slightly higher means than female respondents for all four factors, while medians were identical. The small group declining to report gender had lower means but was too small for robust interpretation. Independent-samples t-tests comparing male and female respondents are presented in Table 9.

Table 9. Main indicators of t-test of mean ratings of “How often do the factors below affect your workload in the operating room?” by gender working in operating rooms in Latvia in 2025

Analysed aspect	Variances	Levene's test for equality of variances		T-test for equality of means				
		F	Sig.	T	Df	Sig. (2-Tailed)	Mean difference	Std. Error difference
Limited time to complete tasks	Equal variances assumed	1,114	0,292	1,539	973	0,124	0,251	0,163
	Equal variances not assumed			1,562	688	0,119	0,251	0,161
Interpersonal communication	Equal variances assumed	0,912	0,340	1,286	974	0,199	0,200	0,156
	Equal variances not assumed			1,302	685	0,193	0,200	0,154
Workload distribution	Equal variances assumed	1,314	0,252	1,377	973	0,169	0,214	0,155
	Equal variances not assumed			1,396	692	0,163	0,214	0,153
Workplace convenience	Equal variances assumed	0,687	0,407	0,337	975	0,736	0,053	0,158
	Equal variances not assumed			0,336	653	0,737	0,053	0,159

Source: Authors' calculations based on survey results, $n=1003$, evaluation scale: 1–10, where 1 = does not influence; 10 = influences very often

None of the male–female comparisons reached statistical significance: limited time, $p = .124$; interpersonal communication, $p = 0.199$; workload distribution, $p = 0.169$; and workplace convenience, $p = 0.746$. The observed mean differences were therefore small and statistically inconclusive. Descriptive results by dominant hand are presented in Table 10.

Table 10. Main indicators of descriptive statistics on evaluations of “How often do the factors below affect your workload in the operating room?” by medical personnel dominant hand groups working in operating rooms in Latvia in 2025

Analysed aspects	Working hand	N	Mean	Std. Deviation	Std. Error mean
Limited time to complete tasks	Right hand	702	6,80	2,441	0,092
	Left hand	66	7,33	2,283	0,281
Interpersonal communication	Right hand	703	6,15	2,339	0,088
	Left hand	66	6,55	2,024	0,249
Workload distribution	Right hand	701	6,76	2,352	0,089
	Left hand	66	6,92	2,151	0,265
Workplace convenience	Right hand	703	6,67	2,346	0,088
	Left hand	66	7,14	2,430	0,299

Source: Authors' calculations based on survey results, $n=1003$, evaluation scale: 1–10, where 1 = does not influence; 10 = influences very often

Left-handed respondents reported somewhat higher means for all four determinants, but the group was considerably smaller than the right-handed group. Independent-samples t-tests are presented in table 11.

Table 11. *Main indicators of t-test of mean ratings of “How often do the factors below affect your workload in the operating room?” by dominant hand of operating-room personnel in Latvia in 2025*

Analysed aspects	Variances	Levene’s test for equality of variances		T-test for equality of means				
		F	Sig.	T	Df	Sig. (2-Tailed)	Mean difference	Std. Error difference
Limited time to complete tasks	Equal variances assumed	2,079	0,150	-1,714	766	0,087	-0,536	0,313
	Equal variances not assumed			-1,811	80	0,074	-0,536	0,296
Interpersonal communication	Equal variances assumed	2,596	0,108	-1,344	767	0,179	-0,400	0,298
	Equal variances not assumed			-1,515	82	0,134	-0,400	0,264
Workload distribution	Equal variances assumed	1,362	0,244	-0,545	765	0,586	-0,164	0,301
	Equal variances not assumed			-0,587	80	0,559	-0,164	0,279
Workplace convenience	Equal variances assumed	0,017	0,898	-1,553	767	0,121	-0,471	0,303
	Equal variances not assumed			-1,509	77	0,135	-0,471	0,312

Source: Authors’ calculations based on survey results, n=1003, evaluation scale: 1–10, where 1 = does not influence; 10 = influences very often

No dominant-hand comparison was statistically significant: limited time, $p = 0.087$; interpersonal communication, $p = 0.179$; workload distribution, $p = 0.586$; and workplace convenience, $p = 0.063$. These differences should not be interpreted as evidence of systematic dominant-hand effects.

Correlations among workload ratings and respondent characteristics are presented in Table 12.

Table 12. *Main indicators of correlation analysis of evaluations of “How often do the factors below affect your workload in the operating room?” of medical personnel working in operating rooms in Latvia in 2025*

Analysed aspects	Indicators of correlation analysis	Limited time to complete tasks	Inter-personal communication	Work-load distribution	Work-place convenience	Position	Age group	Gender	Working hand	Work experience: (years) in the profession
Limited time to complete tasks	Pearson Correlation	1	0,387**	0,564**	0,470**	-0,105**	-0,015	-0,075*	0,034	-0,013
	Sig. (2-tailed)		0,000	0,000	0,000	0,001	0,648	0,018	0,281	0,684
	N	1000	998	997	999	999	994	993	993	984

Analysed aspects	Indicators of correlation analysis	Limited time to complete tasks	Inter-personal communication	Work-load distribution	Work-place convenience	Position	Age group	Gender	Working hand	Work experience: (years) in the profession
Interpersonal communication	Pearson Correlation	0,387**	1	0,446**	0,328**	-0,053	-0,001	-0,092**	0,000	0,029
	Sig. (2-tailed)	0,000		0,000	0,000	0,094	0,971	0,004	0,993	0,363
	N	998	1001	998	1000	1000	995	994	994	985
Workload distribution	Pearson Correlation	0,564**	0,446**	1	0,641**	-0,082**	0,000	-0,089**	-0,032	0,020
	Sig. (2-tailed)	0,000	0,000		0,000	0,009	0,994	0,005	0,309	0,523
	N	997	998	1000	999	999	994	993	993	984
Workplace convenience	Pearson Correlation	0,470**	0,328**	0,641**	1	-0,023	-0,027	-0,080*	0,024	-0,022
	Sig. (2-tailed)	0,000	0,000	0,000		0,469	0,394	0,011	0,451	0,489
	N	999	1000	999	1002	1001	996	995	995	986
Position	Pearson Correlation	-0,105**	-0,053	-0,082**	-0,023	1	-0,023	0,175**	-0,024	-0,003
	Sig. (2-tailed)	0,001	0,094	0,009	0,469		0,463	0,000	0,447	0,937
	N	999	1000	999	1001	1002	996	995	995	986
Age Group	Pearson Correlation	-0,015	-0,001	0,000	-0,027	-0,023	1	-0,027	0,063*	0,571**
	Sig. (2-tailed)	0,648	0,971	0,994	0,394	0,463		0,395	0,048	0,000
	N	994	995	994	996	996	997	992	990	983
Gender	Pearson Correlation	-0,075*	-0,092**	-0,089**	-0,080*	0,175**	-0,027	1	-0,100**	-0,061
	Sig. (2-tailed)	0,018	0,004	0,005	0,011	0,000	0,395		0,002	0,055
	N	993	994	993	995	995	992	996	992	986
Working hand	Pearson Correlation	0,034	0,000	-0,032	0,024	-0,024	0,063*	-0,100**	1	0,050
	Sig. (2-tailed)	0,281	0,993	0,309	0,451	0,447	0,048	0,002		0,118
	N	993	994	993	995	995	990	992	996	987

Analysed aspects	Indicators of correlation analysis	Limited time to complete tasks	Inter-personal communication	Work-load distribution	Work-place convenience	Position	Age group	Gender	Working hand	Work experience: (years) in the profession
Work experience: (years) in the profession	Pearson Correlation	-0,013	0,029	0,020	-0,022	-0,003	0,571**	-0,061	0,050	1
	Sig. (2-tailed)	0,684	0,363	0,523	0,489	0,937	0,000	0,055	0,118	
	N	984	985	984	986	986	983	986	987	987
**. Correlation is significant at the 0.01 level (2-tailed).										
*. Correlation is significant at the 0.05 level (2-tailed).										

Source: Authors calculations based on survey results, n=1003, evaluation scale 1-10, where 1- do not influence; 10-influence very often

Discussion

The four workload determinants were positively intercorrelated, indicating that operating-room workload is experienced as an integrated organisational system rather than as isolated demands. The strongest association was between workload distribution and workplace convenience ($r = 0.641$), followed by limited time and workload distribution ($r = 0.564$). This pattern is consistent with systems-oriented ergonomics and organisational-psychology frameworks (Aggarwal et al. 2004; Tjugum et al. 2026): inefficient task allocation may intensify environmental constraints, while inconvenient workspaces may increase movement, delays, and interruptions. Correlation does not establish directionality, but the findings suggest that isolated interventions are unlikely to be sufficient.

Professional-position differences further indicate that occupational groups encounter distinct workload configurations. Variation may reflect differences in autonomy, information access, task sequencing, interruptions, and equipment-related demands. This interpretation aligns with evidence supporting role-sensitive interventions, participatory redesign, and profession-specific training (Kamande et al. 2022; Pasquer et al. 2024), although these mechanisms were not measured directly.

Gender and dominant-hand differences were not statistically significant, and most age-group comparisons were also non-significant. By contrast, professional experience was associated with communication, workload distribution, and workplace convenience, and professional position was associated with time pressure and workload distribution. These results suggest that shared organisational conditions predominate, while selected role- and experience-related differences warrant targeted measures. Strengths include the large sample and broad occupational representation. Limitations include the cross-sectional self-report design, single-item measures, possible clustering within hospitals, multiple comparisons without reported adjustment, and the absence of effect sizes and post-hoc tests. Future studies should combine validated workload instruments with objective ergonomic, workflow, and patient-safety indicators, using longitudinal and multilevel designs.

Conclusions

The study identifies limited time to complete tasks as the most prominent perceived workload determinant in Latvian operating rooms ($M = 6.88$), followed by workload distribution ($M = 6.74$), workplace convenience ($M = 6.73$), and interpersonal communication ($M = 6.17$). Professional-position differences were significant for limited time and workload distribution; age-group differences were significant only for limited time; and professional experience was associated with communication, workload distribution, and workplace convenience. Gender and dominant hand were not significantly related to the four ratings.

The findings support five priorities for hospital management and public policy: realistic scheduling and staffing; transparent, equitable task allocation; ergonomic workplace and equipment design; structured interprofessional communication and team training; and routine, role-sensitive workload monitoring. Recovery opportunities and participatory redesign should be embedded in these measures. Because the study is cross-sectional and based on self-reports, results indicate perceived influence rather than causal effects. Future research should report effect sizes and post-hoc comparisons and integrate subjective assessments with objective measures of workflow, physical load, and patient-safety outcomes.

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Data Availability Statement

The data used to support the findings of this research are available from the corresponding authors upon request.

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**VIEŠOSIOS POLITIKOS ASPEKTAI, SUSIJĘ SU VEIKSNIAIS,
DARANČIAIS ĮTAKĄ DARBO KRŪVIUI OPERACINĖJE: MEDICINOS
PERSONALO VERTINIMŲ ANALIZĖ**

Anotacija. Operacinės darbuotojų darbas pasižymi dideliais laiko, pažintiniais, fiziniais ir organizaciniais reikalavimais. Tyrimo tikslas – išanalizuoti veiksnius, darančius įtaką operacinės personalo darbo krūviui, ir parengti moksliniais duomenimis pagrįstas rekomendacijas ligoninių vadovybei bei sveikatos politikos formuotojams. Atlikta 1 003 Latvijos operacinėse dirbančių medicinos specialistų skerspjūvio apklausa. Respondentai 10 balų skalėje vertino ribotą laiką užduotims atlikti, tarpasmeninį bendravimą, darbo krūvio paskirstymą ir darbo vietos patogumą. Didžiausias vidutinis įvertinimas nustatytas ribotam laikui užduotims atlikti ($M = 6,88$), po jo – darbo krūvio paskirstymui ($M = 6,74$), darbo vietos patogumui ($M = 6,73$) ir tarpasmeniniam bendravimui ($M = 6,17$). Reikšmingi profesinių grupių skirtumai nustatyti vertinant ribotą laiką ir darbo krūvio paskirstymą, o amžiaus grupių skirtumai – tik vertinant ribotą laiką. Rezultatai rodo, kad darbo krūvį daugiausia formuoja keičiamos organizacinės ir ergonominės sąlygos. Rekomenduojama tobulinti darbo planavimą, užtikrinti teisingą krūvio paskirstymą, ergonomišką darbo aplinką, struktūruotą komandinį bendravimą ir profesinėms grupėms pritaikytas intervencijas.

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