

Workplace Hierarchy and Well-being among Resident Doctors: A Systematic Review of Occupational Stress, Social Support, and Job Satisfaction

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Abstract

This systematic review examined the relationship between workplace hierarchy, occupational stress, social support, and job satisfaction among resident doctors. Quantitative studies involving resident doctors and postgraduate medical trainees were reviewed to identify workplace and organisational factors associated with occupational well-being. The review included 23 quantitative studies conducted across different countries and healthcare settings. The findings showed that occupational stress and burnout were commonly associated with high workload, long working hours, poor workplace and learning environments, inadequate supervision, limited autonomy, poor communication, mistreatment, and weak organisational support. In contrast, supportive supervision, positive learning environments, social support, organisational support, and constructive professional relationships were generally associated with better job satisfaction, work engagement, and occupational well-being. The findings also indicate that workplace hierarchy is not necessarily harmful in itself. Hierarchical structures can provide supervision, guidance, accountability, and opportunities for professional learning; however, negative experiences of authority, including intimidation, exclusion, poor communication, and limited participation, may contribute to poorer well-being. Social support from supervisors, senior physicians, peers, colleagues, and programme leadership emerged as an important protective factor for residents working in demanding environments. Overall, the evidence suggests that resident doctors' well-being is shaped by interconnected organisational and interpersonal conditions rather than individual factors alone. Improving workplace culture, supervision, communication, psychological safety, workload management, autonomy, and social support may help reduce occupational stress and burnout and improve job satisfaction. Further longitudinal research is needed to establish causal relationships and evaluate workplace interventions designed to improve the occupational well-being of resident doctors.

Keywords: Resident Doctors; Workplace Hierarchy; Occupational Stress; Social Support; Job Satisfaction; Occupational Well-being.

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Introduction

Residency is a critical stage of medical training in which doctors develop clinical competence while working within complex healthcare organisations. Unlike many educational settings, residency combines learning with substantial clinical responsibility, long working hours, frequent supervision, and continuous interaction with senior physicians, peers, nurses, and other healthcare professionals. The workplace therefore forms an important part of residents' educational and professional experience. Conditions within this workplace can influence not only how residents learn and perform their duties but also how they experience their work and maintain their psychological well-being.

Occupational well-being among doctors is a multidimensional concept that extends beyond the absence of burnout. It includes positive evaluations and experiences of work, such as job satisfaction,

work engagement, professional commitment, and a sense of meaning, alongside negative outcomes such as occupational stress, emotional exhaustion, psychological distress, and burnout (Scheepers et al., 2015). Previous research has increasingly demonstrated that residents' well-being is shaped by their working environment rather than solely by individual characteristics. A systematic review and meta-analysis of trainee physicians found that work-related factors were more strongly associated with burnout and stress than several non-work-related factors, with work demands, poor work environment, and poor work-life balance showing particularly important associations (Zhou et al., 2020).

Within the resident workplace, hierarchy represents an important organisational and social structure. Medical training traditionally operates through clearly differentiated levels of authority, from junior

residents to senior residents, consultants, and programme leadership. Hierarchy can serve constructive functions by defining responsibility, supporting supervision, facilitating clinical decision-making, and providing opportunities for progressive learning. However, hierarchy may become problematic when differences in authority restrict communication, autonomy, participation, or the ability of junior doctors to express concerns. Salehi et al. (2020) distinguish between functional and dysfunctional medical hierarchy, noting that dysfunctional hierarchical relationships can discourage residents from voicing concerns and may contribute to mistreatment, moral distress, stress, fatigue, and burnout. Thus, hierarchy itself is not necessarily harmful; its effects may depend on how authority is exercised and experienced within the workplace.

The unequal distribution of authority may also influence residents' exposure to bullying, intimidation, harassment, discrimination, and other forms of mistreatment. Residents may be particularly vulnerable because their educational progression, assessments, recommendations, and career opportunities can depend on senior members of the organisation. Reviews of medical training have consequently identified hierarchical power relationships as an important context for resident mistreatment (Fnais et al., 2014; Leisy & Ahmad, 2016). Such experiences can undermine psychological safety and make residents reluctant to report problems or challenge inappropriate behaviour. The consequences may extend beyond individual distress to affect learning, professional relationships, teamwork, and perceptions of the training environment.

Workplace hierarchy also operates through broader organisational conditions. Leadership style, supervisory relationships, autonomy, workload, communication, organisational culture, and the learning climate can determine whether hierarchical structures function as sources of support or sources of pressure. Evidence from residents suggests that the quality of the clinical learning environment is associated with important aspects of occupational well-being. For example, Lases et al. (2019) found that a positive learning climate was associated with greater work engagement and job satisfaction among residents. Similarly, research among general surgery residents has shown that workplace climate and perceived organisational support are related to job satisfaction and burnout (Appelbaum et al., 2019). These findings suggest that the effects of hierarchy cannot be separated from the wider organisational environment in which authority and supervision are experienced.

Social support is particularly important within this context because it may protect residents against the adverse effects of demanding work environments. Support may come from supervisors, senior

physicians, colleagues, friends, or the organisation itself and can provide emotional assistance, practical help, feedback, recognition, and opportunities to discuss work-related difficulties. From a job demands–resources perspective, social support represents a workplace resource that can help individuals manage demanding work conditions (Demerouti et al., 2001). Evidence among residents supports this relationship. West et al. (2022), in a national study of U.S. residents, found that greater emotional and tangible social support were associated with lower odds of burnout and greater satisfaction with residency programmes and organisations, whereas social isolation showed the opposite pattern. These findings indicate that interpersonal relationships may influence both negative and positive dimensions of residents' occupational well-being.

Job satisfaction is another important dimension because it reflects residents' overall evaluation of their work and training experience. Satisfaction may be influenced by relationships with supervisors and colleagues, opportunities for learning, workload, autonomy, recognition, organisational support, and the general workplace climate. In a study of residents in China, social support was associated with job satisfaction through pathways involving emotional exhaustion and anxiety (Zhang et al., 2021). Similarly, evidence from residents' learning environments indicates that supportive educational relationships and accessible supervisors are associated with more positive work experiences (Lases et al., 2019). Job satisfaction should therefore not be viewed simply as an individual attitude; it can reflect residents' experiences of the organisational and relational conditions in which they work.

Previous systematic reviews provide an important foundation for understanding these relationships but have generally examined them through separate outcomes or specific workplace factors. Zhou et al. (2020) focused on factors associated with stress and burnout among trainee physicians, while reviews of medical mistreatment have concentrated on bullying, harassment, intimidation, and discrimination (Fnais et al., 2014; Bahji & Altomare, 2020). Other reviews have examined broader physician occupational well-being or the relationship between well-being and quality of care (Scheepers et al., 2015). Research from other healthcare professions similarly demonstrates that well-being is influenced by factors operating at individual, job, and organisational levels rather than by individual characteristics alone. A systematic review of nurses' well-being, for example, emphasised the importance of social relationships, organisational conditions, leadership, autonomy, and other workplace factors across multiple levels of the organisation.

However, the existing evidence remains fragmented. Workplace hierarchy is often examined indirectly

through related concepts such as bullying, supervision, leadership, autonomy, psychological safety, workplace climate, or organisational support. At the same time, occupational stress and burnout, social support, and job satisfaction are frequently investigated as separate outcomes. This fragmentation makes it difficult to understand how hierarchical workplace structures may connect different aspects of residents' occupational well-being. Moreover, the heterogeneity of measures and workplace contexts presents an important methodological challenge. Previous systematic reviews of physician well-being have noted that differences in the measurement of occupational well-being and working conditions can limit direct comparison and quantitative pooling of findings.

A systematic synthesis focused specifically on workplace hierarchy and resident well-being can therefore bring together evidence that is currently distributed across several research areas. Such a synthesis can examine hierarchy not only as a source of adverse experiences but also as an organisational structure that may support supervision, learning, accountability, and professional development when functioning appropriately. It can further examine how hierarchical and organisational conditions relate to occupational stress and burnout, how social support may operate as a protective resource, and how these workplace experiences are reflected in job satisfaction and broader well-being.

Accordingly, this systematic review aims to synthesise the empirical evidence on the relationship between workplace hierarchy and the occupational well-being of resident doctors. Specifically, the review examines evidence concerning occupational stress and burnout, social support, job satisfaction, and related workplace and organisational conditions. Where sufficient methodological and conceptual comparability exists, quantitative findings will be considered for meta-analysis; otherwise, evidence will be synthesised narratively to account for differences in study designs, measures, and contexts. By integrating these dimensions, the review seeks to clarify how the organisation of authority and relationships within residency workplaces may contribute to either strain or well-being among resident doctors.

Data and Methods

Search Strategy

A systematic literature search was designed to identify quantitative empirical studies examining the relationship between workplace hierarchy and occupational well-being among resident doctors. The search was conducted across PubMed, Scopus, OVID Medline, Web of Science, PsycINFO, CINAHL to capture evidence from medicine, medical education, psychology, occupational health, and social sciences. The search was supplemented by screening the reference lists of relevant included studies and previously published systematic reviews

to identify additional eligible articles. Previous systematic reviews have similarly used multidisciplinary databases to capture workplace and well-being research extending beyond conventional medical databases.

The search strategy combined terms relating to three main concepts: resident doctors, workplace hierarchy and related workplace conditions, and occupational well-being. Population-related terms included "resident physician," "medical resident," "resident doctor," "junior doctor," "trainee physician," "medical trainee," "residency," and "postgraduate medical education." Workplace-related terms included "hierarchy," "power," "authority," "supervision," "leadership," "autonomy," "workplace climate," "learning environment," "organisational culture," "psychological safety," "communication," "bullying," "mistreatment," "harassment," "discrimination," and "organisational support." Outcome-related terms included "occupational stress," "work stress," "burnout," "social support," "occupational well-being," "job satisfaction," "work satisfaction," "career satisfaction," and "work engagement." The search covered studies from database inception to the final search date. The complete database-specific search strategies, including Boolean operators, controlled vocabulary, and search dates, will be reported in the supplementary material.

Study Inclusion and Exclusion Criteria

Studies were eligible if they were original quantitative research articles involving resident doctors, physicians, junior doctors, trainee physicians, or doctors undertaking postgraduate medical training. Studies conducted in hospitals, teaching hospitals, residency programmes, and other healthcare settings providing postgraduate medical training were considered eligible. Studies involving mixed populations were included only when resident-specific findings could be separately identified.

Eligible studies were required to examine workplace hierarchy or a related organisational or interpersonal condition, including authority, power, supervision, leadership, autonomy, workplace or learning environment, organisational culture, psychological safety, communication, bullying, mistreatment, harassment, discrimination, or organisational support. Studies assessing workplace social support from supervisors, senior physicians, colleagues, peers, programme leadership, or organisations were also eligible when related to residents' occupational well-being. The outcomes of interest were occupational stress, social support, occupational well-being, job satisfaction, work engagement, or related measures of work-related well-being.

Table 1. Study Inclusion and Exclusion Criteria

Criterion	Inclusion criteria	Exclusion criteria
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Population	Resident doctors/physicians, junior doctors, trainee physicians, and doctors undertaking postgraduate medical training.	Medical students, undergraduate trainees, fully qualified physicians not undergoing residency/postgraduate training, nurses, and other healthcare professionals when resident-specific findings are unavailable.	Social support	Studies assessing support from supervisors, senior physicians, colleagues, peers, programme leadership, or the organisation in relation to residents' well-being.	Studies assessing social relationships unrelated to the workplace or without relevance to residents' occupational well-being.
	Hospitals, teaching hospitals, residency programmes, and other healthcare settings where postgraduate medical training is undertaken. Studies examining workplace hierarchy or related organisational and interpersonal conditions, including authority, power, supervision, leadership, autonomy, workplace/learning environment, organisational culture, psychological safety, communication, bullying, mistreatment, harassment, discrimination, and organisational support.	Non-healthcare settings or studies unrelated to the residency training environment.		Occupational stress, social support, occupational well-being, job satisfaction, work engagement, or related measures of work-related well-being.	Studies reporting only clinical or patient outcomes without an identifiable resident workplace or well-being outcome.
Workplace setting			Outcomes		
Workplace exposure			Study design	Quantitative observational studies, longitudinal studies, and relevant intervention studies providing applicable baseline or comparative data.	Case reports, protocols, editorials, commentaries, letters, narrative reviews, qualitative studies, systematic reviews, and conference abstracts lacking sufficient empirical information.
		Studies with no relevant workplace, organisational, hierarchical, or interpersonal exposure.	Publication type	Original, peer-reviewed empirical research articles.	Non-peer-reviewed publications and non-empirical publications.
			Language	Studies published in English.	Studies published in languages other than English.
			Data availability	Studies providing sufficient information to identify the population, workplace exposure, and relevant well-being outcome.	Studies where resident-specific data or relevant exposure/outcome information could not be identified or extracted.

Publication period	Studies published from database inception to the date of the final literature search.	Studies published outside the predefined search period.
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Quantitative observational studies, including cross-sectional and longitudinal studies, as well as relevant intervention studies providing applicable baseline or comparative data, were included. Case reports, protocols, editorials, commentaries, letters, narrative reviews, qualitative studies, systematic reviews, and conference abstracts lacking sufficient empirical information were excluded. Non-peer-reviewed publications, studies involving only medical students or non-resident healthcare professionals, studies without relevant workplace exposures, and studies reporting only clinical or patient outcomes were also excluded. Only studies published in English were considered. The full inclusion and exclusion criteria are presented in [Table 1](#).

Data Extraction

A structured data-extraction form was used to collect relevant information from each included study. The extracted information included author and publication year, country, study setting, study design, sample size, and characteristics of the resident doctors. Details of the workplace exposure, such as hierarchy, supervision, workplace environment, organisational support, mistreatment, and social support, were also recorded. Information on the main outcomes, including occupational stress, burnout, job satisfaction, work engagement, and occupational well-being, was extracted along with the reported effect estimates and statistical findings. The extracted data were checked for completeness and consistency before analysis.

Quality Appraisal and Bias Assessment

The methodological quality of the included quantitative studies was assessed using the appropriate Joanna Briggs Institute (JBI) critical appraisal checklist according to study design. The assessment examined participant selection, measurement of workplace exposures and well-being outcomes, control of potential confounding factors, completeness of data, and appropriateness of statistical analysis. Two reviewers independently assessed each study. Any disagreements were resolved through discussion or consultation with a third reviewer. The appraisal findings were considered when interpreting the strength and consistency of the evidence and when deciding whether studies were suitable for quantitative synthesis.

Data Synthesis and Analysis

The findings of the included studies were first synthesised descriptively according to study characteristics, workplace exposures, and well-

being outcomes. Studies were grouped into major areas, including workplace hierarchy and supervision, workplace and learning environment, social support, occupational stress and burnout, and job satisfaction and work engagement. The direction and consistency of associations across studies were compared to identify common patterns in the evidence. Where studies examined sufficiently similar exposure–outcome relationships and reported comparable quantitative data, their findings were considered for meta-analysis. Separate analyses were planned for comparable relationships, such as social support and burnout or workplace environment and job satisfaction. A random-effects model was used because differences were expected across countries, specialties, residency programmes, and study populations. Statistical heterogeneity was assessed using the I^2 statistic. Where studies differed substantially in their definitions of workplace exposures, measurement instruments, outcomes, or statistical reporting, meta-analysis was not performed. In such cases, the findings were presented through a structured narrative synthesis. The results of the quality appraisal were considered when interpreting the consistency and strength of the evidence.

Conceptual Model

The conceptual model guiding the review positions workplace hierarchy as the primary organisational context influencing residents' workplace experiences. Hierarchy may function positively through effective supervision, mentoring, accountability, learning opportunities, and access to support. Conversely, dysfunctional hierarchy may be expressed through excessive authority, limited autonomy, poor communication, intimidation, bullying, mistreatment, and reduced psychological safety. These conditions may contribute to occupational stress and poorer occupational well-being, while social support from supervisors, senior physicians, peers, and organisations is conceptualised as a protective workplace resource. The model therefore proposes that workplace hierarchy → organisational and interpersonal workplace conditions → occupational stress and well-being, with social support acting as a protective factor, while workplace conditions may also directly influence job satisfaction and work engagement. This framework allows the review to integrate evidence that has examined hierarchy through related constructs such as supervision, workplace climate, organisational support, autonomy, and mistreatment rather than requiring all studies to use the explicit term “hierarchy.” The multi-level perspective is consistent with previous systematic reviews showing that healthcare workers' well-being is influenced by interacting individual, job, social, and organisational factors ([see figure 1](#)).

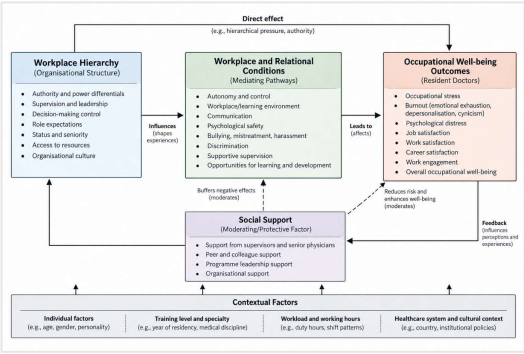


Figure 1. Conceptual model illustrating the pathways linking workplace hierarchy with occupational well-being among resident doctors

Results

Search Results and Study Selection

The systematic search identified studies examining the relationship between workplace hierarchy and related workplace conditions and occupational well-being among resident doctors. After removal of duplicate records, the remaining articles were screened by title and abstract according to the predefined eligibility criteria. Potentially relevant articles were retrieved for full-text assessment. Studies were excluded when they did not involve resident doctors, did not examine a relevant workplace or organisational exposure, did not report an occupational well-being outcome, or did not meet the predefined study-design and publication criteria. Studies meeting all inclusion criteria were retained for the final qualitative synthesis. Where sufficient quantitative information and conceptual similarity were available, studies were further assessed for inclusion in meta-analysis.

The search identified **4,021 records**, including 3,928 from databases and 93 from other sources. After removing 611 duplicates, **3,410 records** were screened by title and abstract, of which 3,071 were excluded. **Sixty-eight full-text articles** were assessed for eligibility, and 40 were excluded for predefined reasons. Finally, **23 quantitative studies** met all eligibility criteria and were included in the final synthesis. The complete study-selection process, including the numbers of records identified, screened, assessed for eligibility, and included, is presented in the PRISMA flow diagram (*see figure 2*).

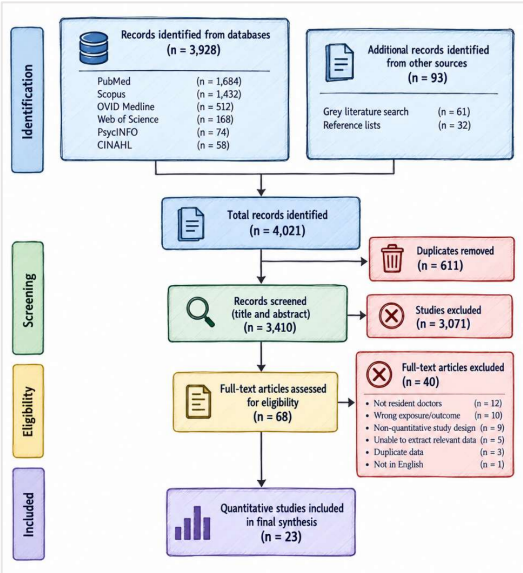


Figure 2. PRISMA flow diagram showing the identification, screening, eligibility assessment, and inclusion of quantitative studies in the systematic review.

Key characteristics of included studies

The included studies examined occupational stress, social support, and job satisfaction among resident doctors across different countries and healthcare settings. Most studies used quantitative cross-sectional designs, while a few used longitudinal approaches. The studies assessed workplace factors such as workload, working conditions, supervision, learning environment, organisational support, and interpersonal relationships. Occupational stress and burnout were commonly examined alongside social support, while job satisfaction and work-related well-being were also frequently reported outcomes. Overall, the studies provided evidence on the relationship between workplace conditions and the occupational well-being of resident doctors (*see table 2*).

Table 2. Key characteristics of included studies on Occupational Stress, Social Support, and Job Satisfaction

Author(s), Year	Country	Design, Sample & Setting	Purpose	Independent Variables	Dependent Variables
Akin yemi & Atilola (2013)	Nigeria	Cross-sectional survey; 163 resident doctors; tertiary	To identify predictors of job satisfaction	Working environment, autonomy, career advancement, person	Job satisfaction

		teaching hospital	among resident doctors	al/professional value alignment	
Appelbaum et al. (2019)	USA	Cross-sectional survey; 160 general surgery residents from 19 programmes	To examine workplace climate and organisational support in relation to resident well-being	Workplace climate, perceived organisational support	Job satisfaction, burnout, well-being
Attenello et al. (2018)	USA	Cross-sectional; <i>n</i> = 346 neurosurgery residents ; national survey	To identify workplace and personal factors associated with resident burnout.	Hostile faculty, mentorship, operative exposure, social stressors	Burnout, career satisfaction

Bernburg et al. (2016)	Germany	Cross-sectional; <i>n</i> = 435 medical residents ; six specialties in German hospitals	To examine differences in occupational stress, depressive symptoms, work ability, and working environment across specialties.	Job demands, job resources, working conditions, speciality	Occupational stress, depressive symptoms, work ability
Chellaiyan et al. (2022)	India	Cross-sectional survey; 220 resident doctors at a tertiary government hospital in South Delhi	To assess factors associated with resident doctors' job satisfaction	Work environment, interpersonal relationships, professional guidance, workload, infrastructure and career opportunities	Job satisfaction
Cheng et al. (2020)	USA	Cross-sectional survey; 105 residents at	To examine workplace	Workplace mistreatment, humiliation,	Burnout, anxiety/depression

		an academic medical centre	mistreatment and its association with burn out	discrimination and harassment	symptoms
Dhusia et al. (2019)	India	Cross-sectional survey ; 300 resident doctors in four public-sector hospitals in Mumbai	To assess occupational burn out among resident doctors	Working hours, workload, work-life conditions and workplace factors	Personal, work-related and client-related burn out
Ellis et al. (2021)	USA	Cross-sectional national survey ; 5,277 general surgery residents from 301 programmes	To characterise the residency learning environment and its association with burn out	Workload, programme efficiency, social support, organisational culture, meaning in work and mistreatment	Burn out
Gabay et al. (2022)	Israel	Cross-sectional survey ; 316 residents from 31 internal	To examine organisational trust and	Organisational trust, peer support, clinical autonomy,	Professional burn out

		l medicine departments in eight hospitals	its relationships with resident burn out	value congruence and meeting expectations	
Lases et al. (2019)	Netherlands	Multicenter questionnaire study; 271 surgery and gynecology residents from 21 programmes	To examine associations between learning climate and work-related well-being	Learning climate, educational atmosphere, teamwork, supervision and learning opportunities	Work engagement, job satisfaction, specialty satisfaction
Matsu et al. (2021)	Japan	Nationwide cross-sectional survey ; 604 resident doctors	To examine burn out and associated occupational stressors	Working hours, workload, autonomy, communication problems, competition, patient complaints and support	Burn out

Ogugua et al. (2022)	Nigeria	Facility-based cross-sectional survey; 255 resident doctors at a teaching hospital	To assess level and determinants of job satisfaction	Physical working conditions, working hours, recognition, autonomy, relationships and career factors	Job satisfaction
Ogunyemi et al. (2022)	USA	Longitudinal programme assessment; n = 271 GME residents	To examine burnout and clinical learning environment factors over repeated assessment cycles.	Clinical supervision, personal relationships, programme support, backup support	Burnout
Papafstathiou et al. (2019)	Greece	Cross-sectional survey; 269 medical residents ; multiple hospitals	To examine the effects of educational environment, occupational stress, social support, autonomy and teaching	Educational environment, occupational stress, social support, autonomy and teaching	Burnout

Rogers et al. (2016)	Canada	Cross-sectional survey; 198 physician-trainees ; University of British Columbia	To examine how social-support network works influence burnout and loneliness	Family, friend and colleague social support	Personal burnout, work-related burnout, loneliness
Shiga et al. (2022)	Japan	Cross-sectional survey; 374 acute-care resident physicians	To examine factors associated with career satisfaction	Educational environment, working environment, teaching, clinical support, working hours and stress	Career satisfaction
Surawattanasakul et al. (2024)	Thailand	Cross-sectional; n = 238 resident physicians ; university hospital	To examine burnout in relation to working conditions	Working conditions, workload, psychiatric factors, medical errors	Burnout

			ditions and other determinants.		
Tah et al. (2024)	Tunisia	Cross-sectional; n = 117 medical residents	To examine work-related psychosocial factors, job satisfaction, and life satisfaction.	Decision latitude, workload, collegial support, hierarchical support	Job satisfaction, life satisfaction
Van Vendevelo et al. (2018)	Netherlands	National cross-sectional online survey; 1,231 residents across 33 specialties	To examine the relationship between learning environment and resident burnout	Learning environment: content, organization and atmosphere	Burnout
Weng et al. (2015)	Canada	Cross-sectional online survey; 317 residents ; University	To identify predictors of well-being	Personal burnout, work-related burnout, work dissatisfaction	Psychological well-being
		sity of Calgary	g among resident physicians	satisfaction, sleep and nutritional needs	
West et al. (2022)	USA	Cross-sectional survey; 762 residents/fellows from 58 programmes	To examine social support, social isolation and burnout	Emotional support, tangible support, social isolation, programme leadership, faculty relationships and autonomy	Burnout, programme satisfaction, organizational satisfaction
Yao et al. (2024)	China	Cross-sectional survey; 700 resident physicians from 10 affiliated/cooperative hospitals	To examine the relationship between sense of belonging and burnout	Sense of school belonging, residency year, specialty and sex	Burnout, emotional exhaustion, depersonalization, personal accomplishment
Zaman et al. (2021)	India	Quantitative cross-sectional survey; 232 resident doctors from 18 hospitals	To examine quality of work-life factors associated	Meaningful development, working conditions, supervision, economic benefit	Job satisfaction

		Is in Delhi/ NCR	ciated with job satis facti on	s and intra- group relatio ns	
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Workplace Hierarchy and Workplace Conditions

The included studies showed that workplace hierarchy was expressed mainly through supervision, authority, autonomy, learning climate, interpersonal treatment, and organisational culture. A positive workplace structure was generally associated with supportive supervision, accessible senior physicians, effective teamwork, psychological safety, and opportunities for learning. Lases et al. (2019) found that several learning-climate domains, including accessibility of supervisors, teamwork, peer collaboration, and work adapted to competence, were positively related to residents' work-related well-being. Similarly, Appelbaum et al. (2019) identified workplace climate and perceived organisational support as important factors associated with resident well-being. Ellis et al. (2021), in a large national sample of general surgery residents, reported that organisational culture, social support, workload, and mistreatment were important components of the residency work environment. Dyrbye et al. (2021) further demonstrated that negative interpersonal experiences, including problems related to psychological safety, inclusion, respect, and fairness, were associated with subsequent burnout among residents.

The findings also indicate that hierarchical relationships can become problematic when authority is accompanied by humiliation, discrimination, intimidation, or limited resident voice. Cheng et al. (2020) reported that personal experiences of workplace mistreatment were strongly associated with burnout among residents. These findings suggest that hierarchy itself should not be interpreted as inherently harmful; rather, the way authority and supervision are exercised appears important for residents' workplace experiences. Overall, the quantitative evidence indicates that supportive supervision, respectful communication, autonomy, fair treatment, and a positive learning environment represent important workplace conditions within residency training.

Social Support and Occupational Well-being

Social support emerged as an important protective workplace resource across the included studies. Support was assessed through relationships with supervisors, senior physicians, fellow residents, colleagues, programme leadership, and other workplace members. Prins et al. (2007) examined workplace social support among medical residents and showed the relevance of support from supervisors and colleagues to resident burnout. In a

national Dutch study, Prins et al. (2010) further assessed burnout and work engagement among 2,115 resident doctors, demonstrating substantial variation in occupational well-being across the residency population. Rogers et al. (2016) found that residents' social-support networks, particularly support from colleagues and other close contacts, were related to burnout and loneliness. West et al. (2022), using data from 762 residents and fellows across 58 programmes, similarly examined emotional and tangible social support alongside social isolation and organisational factors in relation to burnout and programme satisfaction.

The findings suggest that social support operates at several levels of the residency workplace. Peer support may provide residents with opportunities to discuss difficult experiences with colleagues who understand the demands of training, while support from senior physicians and programme leadership may provide practical assistance, guidance, and recognition. Gabay et al. (2022) also examined organisational trust, peer support, clinical autonomy, and value congruence in relation to professional burnout. Taken together, the quantitative evidence indicates that supportive workplace relationships are consistently linked with better occupational well-being and may reduce the adverse effects of demanding residency environments.

Workplace Factors and Occupational Stress and Burnout

Occupational stress and burnout were among the most frequently examined outcomes in the included studies. The evidence indicates that burnout is associated with a combination of workload, working conditions, organisational culture, interpersonal experiences, and insufficient workplace resources rather than with a single workplace factor. Bernburg et al. (2016) examined occupational stress, depressive symptoms, working conditions, and work ability among hospital residents and identified the importance of psychosocial work factors. Matsuo et al. (2021) similarly examined working hours, autonomy, communication problems, competition, patient-related pressures, and workplace support in relation to burnout among Japanese resident doctors. Ellis et al. (2021), using a large national sample of general surgery residents, identified workload, organisational culture, social support, resources, and mistreatment as relevant workplace factors associated with burnout.

Longitudinal evidence provides additional support for the relationship between workplace conditions and later burnout. Dyrbye et al. (2021) followed residents across postgraduate years and found that more negative interpersonal experiences at the earlier assessment were associated with greater odds of burnout at the subsequent assessment. Cheng et al. (2020) also found a strong association between personal experiences of mistreatment and burnout among residents. Shalaby et al. (2023) and

Surawattanasakul et al. (2024) further examined working conditions, workplace relationships, workload, and other occupational factors in relation to resident burnout. Overall, the evidence suggests that stressful residency environments arise from interacting organisational, interpersonal, and work-demand factors.

Workplace Factors, Job Satisfaction and Work Engagement

Job satisfaction and work engagement were examined as important positive dimensions of occupational well-being. The included studies generally showed that supportive learning environments, favorable workplace relationships, effective supervision, and appropriate working conditions were associated with better satisfaction and engagement. Lases et al. (2019) found that learning climate was positively associated with both work engagement and job satisfaction among surgery and gynecology residents. The study also showed that specific learning-climate domains, including teamwork, peer collaboration, accessibility of supervisors, educational atmosphere, and work adapted to competence, were related to job satisfaction.

Indian studies also identified workplace conditions as important components of resident job satisfaction. The study among resident doctors in South Delhi assessed interpersonal professional relationships, work environment, supervision by seniors, infrastructure, career prospects, and workload as components of job satisfaction. Similarly, Okwor et al. (2022) found that physical working conditions, working hours, recognition, salary, and opportunities to use professional abilities were associated with job satisfaction among 255 resident doctors in Nigeria. Kotwal et al. (2014) likewise reported that workload and working hours were major sources of dissatisfaction among resident doctors in North India. Appelbaum et al. (2019) also examined workplace climate and perceived organisational support in relation to job satisfaction and burnout among surgical residents. Overall, the findings indicate that job satisfaction and engagement are closely connected with the quality of the residency workplace, particularly supervision, teamwork, learning opportunities, recognition, and working conditions.

Discussion

The present systematic review demonstrates that occupational well-being among resident doctors is strongly associated with the organisation of the workplace and the quality of professional relationships within residency training. Across the included studies, occupational stress and burnout were repeatedly linked with workload, working hours, workplace climate, learning environment, supervision, autonomy, and organisational support, while social support and favorable workplace relationships were associated with better well-being

and job satisfaction. These findings support the conceptual framework of the review, in which workplace hierarchy influences well-being through organisational and interpersonal conditions rather than operating only as a formal structure of authority. The findings are consistent with earlier research showing that resident well-being is influenced by multiple levels of the training environment, including individual, interpersonal, programme, and organisational factors. For example, Appelbaum et al. (2019) found that workplace climate and perceived organisational support were important in explaining burnout and job satisfaction among surgical residents. Similarly, Lases et al. (2019) showed that the learning climate was positively related to residents' work-related well-being.

A major finding of the review was the consistent association between workplace conditions and occupational stress and burnout. Residents work in environments characterised by high clinical responsibility, demanding schedules, long working hours, and continuous learning requirements. When these demands are combined with inadequate resources, limited autonomy, or poor communication, the risk of occupational stress may increase. Bernburg et al. (2016) reported associations between physicians' working conditions, occupational stress, depressive symptoms, and work ability, highlighting the importance of organisational conditions in understanding occupational health. Similar findings were reported by Matsuo et al. (2021), who examined resident burnout in relation to the work environment and identified several workplace-related factors associated with burnout. Dhusia et al. (2019) also documented substantial occupational burnout among resident doctors working in public-sector hospitals in Mumbai. More recently, Surawattanasakul et al. (2024) found relationships between burnout and working conditions, psychiatric factors, and medical errors among resident physicians. Taken together, these findings suggest that burnout should not be viewed simply as an individual failure to cope with demanding training. Rather, it reflects the interaction between high job demands and the organisational resources available to residents.

The findings also demonstrate the importance of the learning and workplace environment in shaping resident well-being. Residency is simultaneously a workplace and an educational setting, meaning that residents depend on senior physicians for clinical supervision, feedback, professional development, and access to learning opportunities. A supportive learning environment may therefore reduce the negative effects of demanding clinical work, whereas an unfavorable environment may intensify stress. van Vendeloo et al. (2018) found an association between the learning environment and

burnout among a large national sample of Dutch residents. Lases et al. (2019) similarly reported that a positive learning climate was associated with better work-related well-being. Evidence from a longitudinal study by Dyrbye et al. (2021) strengthens this interpretation because negative interpersonal experiences, including problems related to psychological safety, respect, inclusion, and fairness, were associated with subsequent burnout among residents. Ellis et al. (2021) also demonstrated the relevance of the general surgery residency learning environment to resident burnout. These findings suggest that improving the educational environment requires more than increasing teaching opportunities; it also requires respectful communication, psychological safety, fair treatment, appropriate supervision, and meaningful participation in the workplace.

Social support was another consistent factor associated with occupational well-being. Support from colleagues, peers, senior physicians, supervisors, and programme leadership can provide residents with emotional assistance, professional guidance, practical help, and a sense of belonging. Rogers et al. (2016) showed that residents' social support networks were related to loneliness and burnout, indicating that relationships outside and within the workplace can influence how residents experience professional demands. More recent evidence from Leep Hunderfund et al. (2022) found that greater emotional and tangible social support were associated with lower odds of burnout and higher programme and organisational satisfaction, whereas social isolation showed the opposite pattern. These findings are also consistent with the earlier work of Prins et al. (2007), which identified an important role for social support in burnout among Dutch medical residents. The protective role of support may be particularly important within hierarchical training systems because residents may have limited power to change workload, schedules, or organisational decisions independently. Supportive relationships can therefore provide residents with resources that help them manage workplace demands while also strengthening their sense of belonging and professional identity.

The review further indicates that job satisfaction is closely connected with the social and organisational environment of residency. Job satisfaction should not be considered only as an individual attitude toward a medical career; it can also reflect residents' experiences of workload, recognition, autonomy, supervision, learning opportunities, relationships, and organisational support. Akinyemi and Atilola (2013), for example, examined job satisfaction among resident doctors in a Nigerian teaching hospital and highlighted its relevance to the functioning of residency training. Chellaiyan et al. (2022) similarly identified several workplace and professional factors associated with job satisfaction

among resident doctors in South Delhi. Ogugua et al. (2022) reported comparable concerns among resident doctors in a Nigerian public healthcare setting. Lases et al. (2019) further showed that the learning climate was related to work engagement and work-related well-being. In addition, Shiga et al. (2022) demonstrated the importance of the educational and working environment for career satisfaction among acute-care resident physicians in Japan. These findings indicate that improving resident satisfaction requires attention to the everyday organisation of training, including opportunities for learning, constructive supervision, autonomy, recognition, collegial relationships, and reasonable working conditions.

Finally, the findings have important implications for understanding workplace hierarchy in residency training. Hierarchy is an essential component of medical education because residents require supervision and senior physicians retain responsibility for clinical decision-making and patient care. However, the reviewed evidence suggests that the consequences of hierarchy depend on how authority is exercised and experienced by residents. Supportive hierarchy may provide clear roles, appropriate supervision, mentorship, and opportunities for professional development, whereas dysfunctional hierarchical relationships may be expressed through poor communication, mistreatment, limited autonomy, exclusion, or lack of psychological safety. Cheng et al. (2020) found an association between mistreatment and burnout among resident physicians, while Attenello et al. (2018) identified workplace and training-related factors associated with burnout among U.S. neurosurgery residents. Gabay et al. (2022) also highlighted the relevance of organisational trust, peer support, and professional expectations to resident burnout. Evidence from Appelbaum et al. (2019) further suggests that workplace climate and perceived organisational support are closely connected with resident well-being. Overall, the evidence supports a shift from viewing resident well-being as primarily an individual responsibility toward recognising the role of workplace structures, relationships, and organisational practices. This also suggests that interventions should combine individual support with improvements in supervision, workplace culture, social support, autonomy, communication, and organisational conditions.

Conclusion

This systematic review shows that resident doctors' occupational well-being is strongly influenced by workplace conditions. High workload, long working hours, poor workplace environments, inadequate supervision, limited autonomy, and mistreatment were associated with occupational stress and burnout. In contrast, supportive supervision, positive learning environments, social support, good

communication, and organisational support were associated with better job satisfaction and well-being. The findings suggest that workplace hierarchy is not inherently harmful; its effects depend on how authority, supervision, communication, and professional relationships are managed. Therefore, improving resident well-being requires organisational changes alongside individual support, with greater attention to supportive supervision, respectful workplace culture, manageable workloads, psychological safety, and social support. Further longitudinal research is needed to evaluate effective interventions and clarify these relationships.

Declarations

Statement of ethics approval

As this was a review of existing literature, no formal ethical approval was required.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

As this is a synthesized literature review of existing studies, we do not have access to each individual study's dataset; no data are available.

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