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The prevalence, risk factors and outcomes of workplace bullying among junior doctors: a systematic review

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ABSTRACT
Junior doctors’ exposure to bullying may impact their training and compromise quality healthcare, yet little is known in relation to its predictors and effects. The aim of this paper is to assess the prevalence, factors and outcomes of workplace bullying among junior doctors. Literature search was performed to identify all primary studies examining workplace bullying among junior doctors using the following electronic databases: Medline, Scopus, Web of Science, PsycINFO and Cochrane Library. A total of 18 articles were included, reporting on a total of 9,597 junior doctors. The quality of evidence can be rated as moderate according to the Newcastle Ottawa Scale. From the review, a wide range (30–95%) of bullying prevalence, significant differences in bullying rates according to gender, age, height, ethnicity and subspecialty, and significant associations between bullying and mental strain, job dissatisfaction, burnout, and increased accidents at work were observed. Concurrently, heterogeneity in the terms and methodologies used to examine workplace bullying as well as definitional issues in relation to the persistency of negative interactions were noted. Evidence suggests that workplace bullying is a serious occupational hazard for junior doctors, and more research is warranted to better understand this phenomenon and address its definitional and methodological issues.

ARTICLE HISTORY
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KEYWORDS
Workplace bullying; occupational safety and health; medical education; junior doctors; systematic review

Introduction
Of recent years, workplace bullying has emerged as newly recognized though long existing workplace health and safety problem. Studies have shown that workplace bullying exists worldwide, with a varied but marked prevalence in nations across the globe (Einarsen & Skogstad, 1996; Hoel & Copper, 2000; Zapf, Escartin, Einarsen, Hoel, & Vartia, 2011), and that exposure to such behaviours is strongly correlated with deleterious effects on employees’ health and work behaviour (Hodgins & McNamara, 2014; Kivimaki, Eloavainio, & Vahtera, 2000; Kivimaki et al., 2003; Moayed, Daraieh, Shell, & Salem, 2006; Nielsen & Einarsen, 2012; Nielsen, Indregard, & Overland, 2016; Sheehan, 2001). Among the various sectors, the frequency of exposure to workplace bullying has been reported to be higher in healthcare compared to other industries (Leymann & Gustafsson, 1996; Vartia, 1993, 1996; Zapf, 1999). Zapf (1999) estimates a sevenfold risk of bullying for healthcare workers, which may be due to the demands and pace of the work environment as well as the emphasis on performance inherent in the healthcare industry.

Among healthcare workers, many cases of bullying experienced by doctors are perpetrated by others in a pecking order of seniority. Thus, junior doctors bear the brunt of this workplace problem. This is evidenced by studies that found that age and postgraduate experience were significantly negatively associated with exposure to mistreatment (Crutcher, Szafran, Woloschuk, Chatur, & Hansen, 2011; Hills, Joyce, & Humphreys, 2012). It is suggested that the traditional hierarchical structures of hospitals and medical training produce a culture in which bullying is not only unchallenged, but expected, and even when their dysfunctional nature is recognized, it is seen as a “functional educational tool” (Musselman, MacRae, Reznick, & Lingard, 2005). This was discussed by Leisy and Ahmad (2016) in their systematic review on medical resident bullying. They found that hierarchy, silence, incognizance, fear, acceptance or denial and legacy of abuse were key thematic causes of the pervasiveness of bullying among junior doctors. Herein, junior doctors occupy the lowest rung of the medical hierarchy, in which power is strictly and directly related to rank, and are enormously dependent on their superiors for teaching and career advancement. Many are reported to frequently experience intimidating teaching methods during their training years by those who believe that “teaching by humiliation” to “toughen up” the young is an acceptable practice (K. M. Scott, Caldwell, Barnes, & Barrett, 2015). In fact, studies have shown that junior doctors are not even aware what qualifies as abuse (Al-Shafaee et al., 2013; Nagato-Kobayashi, Maeno, Yishizu, & Shimbo, 2009), and often thought that any mistreatment experienced were part of normal training (Coverdale, Balon, & Roberts, 2009). The practice of teaching by humiliation has been shown to be widespread, with 74.5% of trainee doctors experiencing it and 83.6% witnessing it (K. M. Scott et al., 2015). Furthermore, such treatments are rarely questioned due to low perceived social support from co-workers and supervisors among bullied workers (Hansen et al., 2005), a culture of silence in which only 12% medical residents were found to report experiencing abuse to a supervisor.
(Nagato-Kobayashi et al., 2009), as well as fear of repercussions in reporting mistreatment (Leisy & Ahmad, 2016). This allows abusive behaviours to perpetuate and persist as a taught behaviour, resulting in a legacy of abuse (Al-Shafaeef et al., 2013; Imran, Jawaid, Haider, & Masood, 2010; Leisy & Ahmad, 2016; Nagato-Kobayashi et al., 2009).

As such, 59.4% of medical trainees have been found to experience at least one form of harassment and discrimination during their training, as published by Fnais et al. (2014) in their systematic review and meta-analysis on harassment and discrimination in medical training. Junior doctors’ propensity to experience bullying may have critical implications for healthcare, as it may impact their learning as well as their ability to provide safe patient care. Indeed, studies have shown that doctors who are bullied are more likely to have made one or more serious or potentially serious medical errors (Paice & Smith, 2009). In addition to that, junior doctors’ exposure to mistreatment and unprofessional conduct from superiors and peers may impair their self-esteem and confidence (Leisy & Ahmad, 2016; Moayed et al., 2006), inhibit collegiality and cooperation that is critical to good teamwork and effective communication (Ekici & Beder, 2014; Leape et al., 2012), and lead to a decline in empathy and ethical erosion over time (Feudtner, Christakis, & Christakis, 1994; Hojat et al., 2004; Newton, Barber, Clardy, Cleveland, & O’Sullivan, 2008), which will hamper the delivery of quality healthcare services.

Considering junior doctors’ elevated risk of exposure to workplace bullying and its critical effects on the healthcare system, this is a cause for concern and warrants a greater appreciation of their experiences of workplace bullying. A synthesis of the prevalence, risk factors and outcomes of workplace bullying among junior doctors is therefore needed to understand its importance and implications as well as providing a focus for potential mitigative and preventive strategies. In this regard, although some progress has been made in augmenting our understanding of this phenomenon among junior doctors with the work of Leisy and Ahmad (2016) and Fnais et al. (2014), examination of the correlates of workplace bullying among junior doctors and conceptualizing a framework based on empirical findings has not been attempted. Leisy and Ahmad (2016) explored the risk factors and outcomes of bullying among medical residents qualitatively, whereas Fnais et al. (2014) touched upon the risk factors for hostile workplace behaviours that cannot be classified as workplace bullying, such as sexual harassment, and gender and racial discrimination. Moreover, by understanding junior doctors’ experiences of workplace bullying, it may help shed light onto other study populations with similar hierarchical structures, “tough” work culture and high job stress where dialogue into this phenomenon is not as forthcoming, such as military personnel (Kalamdien & Lawrence, 2017).

On top of elucidating junior doctors’ experiences of workplace bullying, central to an understanding of workplace bullying in general is greater insight into how bullying is termed, defined, operationalized and measured. Despite workplace bullying being described as a more crippling problem for workers than all other kinds of work-related stressor put together (Einarsen, Hoel, Zapf, & Cooper, 2003; Zapf, Einarsen, Hoel, & Vartia, 2003), and despite the increased attention that workplace bullying has received in research and practice during the past four decades, it remains a difficult problem to define and evaluate accurately. There remains considerable inconsistencies in its terminology, no consensus in how it is operationalized including the frequency and duration of negative actions experienced (Zapf et al., 2011), as well as a lack of standardized measurement technique (Cowie, Naylor, Rivers, Smith, & Pereira, 2002; Einarsen, Hoel, Zapf, & Cooper, 2011; Quine, 1999). Researchers use different methods for measuring workplace bullying, including the behavioural experience method and/or self-labelling method, and even when they use the same instrument such as the Negative Acts Questionnaire, they vary in using either the fixed cut-off point or the “Leymann criterion” (Zapf et al., 2011). Thus, it is often difficult to estimate the true prevalence of workplace bullying, as the frequency of bullying depends very much on how it is measured (Zapf et al., 2011). Therefore, an analysis of the terminologies, definitions, operationalizations and methods used to assess workplace bullying among junior doctors would be important in illuminating the current research strategies and paving the way for improvements in research practices of examining workplace bullying, which will advance research into workplace bullying as a whole.

Therefore, a systematic approach was thus applied to answer the following theoretical questions:

1. How is workplace bullying among junior doctors defined, operationalized, and measured, and does this affect the prevalence rates reported?
2. Are there certain target characteristics and organizational factors that are associated with an increased risk of exposure to workplace bullying among junior doctors?
3. What impact has workplace bullying had on victims of workplace bullying as well as on organizations?

Method and materials

This review was conducted in accordance to the MOOSE guidelines for meta-analyses and systematic reviews of observational studies (Stroup et al., 2000).

Search strategy

The search aimed to identify relevant articles published in peer-reviewed journals written in English, with the assumption that most of the important findings will be reported in English regardless of country of origin. Online searches of five databases, including Medline, Scopus, Web of Science, PsycINFO (PsycARTICLES) and Cochrane Library were performed. Boolean search was performed on each database using the search term:

(i) (mobbing OR bullying OR victimisation OR victimization OR harassment OR “emotional abuse” OR aggression) AND
The terms included in the Boolean search were chosen after careful consideration and consensus of terms identified from literature review by all authors, in view of the variation in terms used by researchers to describe negative interactions at work and variation in terms used to denote junior doctors in different parts of the world. The first combination of keywords includes various terms that have been used by researchers to describe negative interactions at work, including “mobbing” (Leymann & Gustafsson, 1996; Zapf, Knorz, & Kulla, 1996), “bullying” (Einarsen & Skogstad, 1996; Hoel & Copper, 2000; Sheehan, 2001), “victimization” (Aquino, Grover, Bradfield, & Allen, 1999), “emotional abuse” (Keashly, 1998), “harassment” (Brosdys, 1976) and “aggression” (Neuman & Baron, 1997). These terms are widely considered to be synonymous according to pioneers in the field (Einarsen, 2000). The second combination of keywords includes multiple terms used to denote prevalence, risk factor and outcome. The third combination of keywords include various terms used to describe junior doctors, including “junior doctor” (Cheema, Ahmad, Giri, Kaliaperumal, & Naqvi, 2005; Imran et al., 2010; Quine, 2002; J. Scott, Blanshard, & Child, 2008), “intern” (Finucaine & O’Dowd, 2009), “house officer” (Paice, Rutter, Wetherell, Winder, & McManus, 2002), “foundation doctor” (Hooke, 2007), “trainee doctor” (Baird et al., 2007), and “doctors in training” (Paice, Atkenn, Houghton, & Firth-Cozens, 2004). The Boolean search operator “OR” was used to broaden the search with multiple analogous terms, while “AND” was used to narrow the search to studies assessing the prevalence, risk factors and/or outcomes of bullying among junior doctors. The search was conducted by the first author, and was performed to include abstracts (Medline and PsyCINFO), titles, abstracts and keywords (Scopus, Cochrane Library), and topics (Web of Science), without restriction to date or publication. All searches were concluded by 5 March, 2017.

Study selection and inclusion and exclusion criteria
After searches were performed, articles were then organized into EndNote X7 Software and duplicates were identified and removed. This was performed by the first author, via the “Find and Remove Duplicate References” function at first, followed by manual screening, as some of the same articles were entered slightly differently into different databases. After duplicates were removed, articles were assessed for eligibility on the basis of their title and abstract. This was performed independently by the first and second author. Any primary studies in English examining the prevalence, factors and/or outcomes of workplace bullying among junior doctors were included. Here, workplace bullying is defined as “situations where an employee is persistently exposed to negative and aggressive behaviours at work from superiors, colleagues and subordinates that are primarily of a psychological nature with the effect of humiliating, intimidating, frightening or punishing the target” (Einarsen, Hoel, & Notelaers, 2009; Einarsen & Skogstad, 1996), and as such, studies focusing on constructs denoting hostile workplace behaviours that are not considered to be workplace bullying such as abusive supervision, antisocial or deviant behaviour, interpersonal conflicts, incivility, violence, counterproductive behaviours, racial and gender-based aggression, and sexual harassment, as well as studies focusing on aggression and abuse from patients, patients’ families and nurses were excluded. Additionally, non-human studies including animal and laboratory studies, studies that were conducted among workers other than junior doctors, studies that examine variables other than prevalence, factors, and outcomes of workplace bullying, and non-primary studies including book chapters, proceedings, commentaries, forewords, and specials and reviews were excluded. The list of studies included and excluded based on the inclusion and exclusion criteria described earlier was cross-validated to assess for disagreements. For any disagreement that was present, consensus was sought where possible, and in cases where that were not possible, the third author was assigned. The per cent agreement and Cohen’s Kappa for the study selection process are 98.3% and 0.88, respectively. Attempts to contact authors for articles that were not available in full text were made, and only full text articles were included in the review to enable quality assessments. Hand searching was not attempted due to resource limitations.

Data extraction and analysis
For each of the included study, data on author, year of publication, study population, location of study, study design, number of participants included, study instruments used, study variables examined, prevalence of workplace bullying, associated factors, associated outcomes and study conclusion were extracted. Data extracted for associated factors and outcomes were reported in terms of significant differences or odds ratio. For any studies that examined broader constructs such as abuse, prevalence was extracted for study findings that can be categorized under workplace bullying, such as verbal abuse, academic abuse and physical threat. Similarly, for studies that included data on senior doctors as well, only data related to junior doctors were extracted. Because of the heterogeneity in the terms and methodologies used to examine workplace bullying among junior doctors, the following were explored further: the bullying-related term used by the study, the definition of bullying-related term given by the authors, the study instrument used, the validity and reliability of study instrument, and the prevalence of workplace bullying reported. The data extraction was performed independently by the first author and second author. For any disagreement that was present, consensus was sought where possible, and in cases where that were not possible, the third author was assigned. Data was analysed qualitatively due to the heterogeneity of studies included in the systematic review, and meta-analysis was not attempted.

Quality assessment tool
The methodological quality of the included studies was assessed by examining the level of evidence according to
the Table of Evidence Levels from Cincinnati Children’s Hospital Medical Center (CCHMC) (2009) and quality of study according to the Newcastle-Ottawa Scale (NOS) that was developed by Wells et al. (2000) and adapted for use in cross-sectional studies by Herzog et al. (2013). The CCHMC classifies level of evidence for individual studies by domain, study design, and quality, with level 1 representing the highest level and signifying the strongest evidence, and level 5 representing the lowest level and signifying the weakest evidence. Additionally, studies at each level are further subclassified to either “a” or “b” according to the NOS, which denotes good quality study and lesser quality study, respectively in terms of methodological quality. The NOS published by Herzog et al. (2013) were adapted for this study in two areas: 1) For ascertainment of exposure, we have assigned two stars for validated measurement tool, one star for non-validated measurement tool that is available or described, and no star for no description of the measurement tool, as our study was concerned with bullying which relied on questionnaires rather than clinical data, and 2) Included ascertainment of exposure under “Exposure, outcome and analysis” instead of “Selection”. The adapted NOS has seven items that are categorized into three criterions, including selection of study groups (three items), comparability of study groups (one item), and ascertainment of exposure and outcome and statistical analysis (three items). A series of response options are specified for each item, and a star is awarded according to whether the study meet the quality criterion defined by the star system outlined by the NOS as published by Herzog et al. (2013).

### Results and discussion

#### Descriptive findings and assessment of methodological quality

A total of 4,067 articles were initially identified, and after removing duplicates, 2,401 articles were screened on the basis of title and abstract. 2,383 articles did not meet the inclusion criteria, and a total of 18 articles were finally included in this review, reporting on a total of 9,597 junior doctors. The flow chart of the study search and selection is illustrated in Figure 1, using the PRISMA format. The articles were published from 1995 to 2016 from studies conducted in North America (United States and Canada), Europe (United Kingdom, Ireland and Turkey), Asia (Saudi Arabia, Oman, Pakistan, India, Japan), and Australia and New Zealand. The

<table>
<thead>
<tr>
<th>Table 1. Newcastle Ottawa Scale (adapted for cross-sectional studies based on Herzog et al., 2013).</th>
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<tbody>
<tr>
<td><strong>CRITERION</strong></td>
</tr>
<tr>
<td>A. Selection of studies (max. 3 stars)</td>
</tr>
<tr>
<td>1. Representativeness of the sample (max. 1 star)</td>
</tr>
<tr>
<td>2. Sample size (max. 1 star)</td>
</tr>
<tr>
<td>3. Non-respondents (max. 1 star)</td>
</tr>
<tr>
<td>B. Comparability of study groups (max. 2 stars)</td>
</tr>
<tr>
<td>1. The subjects in different outcome developed earlier groups are comparable, based on the study design or analysis. Confounding factors are controlled (max. 2 stars)</td>
</tr>
<tr>
<td>C. Ascertainment of exposure and analysis (max. 5 stars)</td>
</tr>
<tr>
<td>1. Assessment of exposure (max. 2 stars)</td>
</tr>
<tr>
<td>2. Assessment of outcome (max. 2 stars)</td>
</tr>
<tr>
<td>3. Statistical test (max. 1 star)</td>
</tr>
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</table>

A maximum of 10 stars are possible, and the final quality rating is assigned as follows: 1–3 stars “poor”, 4–5 stars “moderate”, 6–7 stars “good” and 8–10 stars “excellent”. Studies under the categories “excellent” and “good” were rated as “a” and those under the categories “poor” and “moderate” were rated as “b”. The quality assessment was performed independently by the first author and second author. Data extraction and analysis were cross-validated to assess for disagreements. For any disagreement that was present, consensus was sought where possible. In cases where that were not possible, the third author was assigned.
summary of the studies included in this systematic review is outlined in Table 2.

All studies included in this review are cross-sectional in design, and therefore assigned either a level of 4a or 4b according to the CCHMC’s Table of Evidence Levels, with 4a indicating a better quality study than 4b, though of weaker evidence than 2a/2b and 3a/3b. On the whole, in terms of quality according to the NOS, one study (6%) was rated as excellent, two studies (11%) were rated as good, three studies (17%) were rated as poor, and the vast majority of studies (66%) were rated as moderate. Selection of the study groups was fair for the bulk of included studies, with 83% studies employing study populations that were representative of the average of target population, and 72% studies achieving satisfactory response rates. However, none of the included studies performed a priori sample size analysis (i.e., sample size analysis conducted prior to research study), which may have resulted in the cross-sectional studies being underpowered and unable to detect statistically significant differences. Comparability of study groups was also lacking for the majority of the included studies as only two studies (11%) attempted to control for confounding variables. In terms of ascertainment of outcome, most of the studies (72%) utilized study instruments that were either self-constructed by the investigators, or based on literature review, qualitative findings or previous studies, with no mention of their psychometric properties. The exception to this are five studies (28%) that employed study instruments which have psychometrically tested, such as the Negative Acts Questionnaire (Ling, Young, Shepherd, Mak, & Saw, 2016), the Leymann Inventory of Psychological Terror (Dikmetas, Top, & Ergin, 2011), Quine’s 20 bullying behaviours (Chadaga, Villines, & Krikorian, 2016; Imran et al., 2010), and the Cyber Negative Acts Questionnaire (Farley, Coyne, Sprigg, Axtell, & Subramanian, 2015). Last, statistical analysis was appropriate in 78% studies. Overall, according to the NOS, with the exception of the studies published by Farley et al. (2015), Dikmetas et al. (2011), and Chadaga et al. (2016), studies were of moderate quality. A summary of the methodological quality of included studies is illustrated in Table 3.

Terminologies, definitions and methodologies employed by included studies

Researchers have used a variety of terms to describe negative interactions experienced by junior doctors at the workplace. This includes broader terms such as mistreatment, abuse, harassment and discrimination, and aggression, that not only describe bullying behaviours but also different constructs including specific forms of harassment or discrimination that focuses on certain characteristics of targets, such as sexual harassment or racial discrimination, and physical violence. These studies were published by Daugherty, Baldwin, and Rowley (1998), Crutcher et al. (2011), McNamara, Whitley, Sanders, and Andrew (1995), Cook et al. (1996), Nagato-Kobayashi et al. (2009), Li et al. (2010), Fnais et al. (2013), Al-
**Table 2. Summary of included studies assessing workplace bullying among junior doctors.**

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Study population</th>
<th>Location</th>
<th>Study design</th>
<th>Sample size (n)</th>
<th>Study tool</th>
<th>Study variables</th>
<th>Prevalence</th>
<th>Associated factor</th>
<th>Associated Outcome</th>
<th>Study Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>McNamara et al. (1995)</td>
<td>Residents in EM programme across United States</td>
<td>United States</td>
<td>Cross-sectional</td>
<td>1774</td>
<td>Self-administered questionnaire based on literature review and pilot testing</td>
<td>Verbal abuse, physical abuse, sexual harassment, gender and racial discrimination, age, gender, race, marital status, year of training, sources of incidents and whether resident chose to file formal complaints</td>
<td>Overall, 88% residents reported at least one episode of abuse or harassment during their residency programme</td>
<td>Male residents reported higher level of being bullied or humiliated (p &lt; 0.01) whereas female residents reported higher rate of being sworn or cursed at (p = 0.035)</td>
<td>Female residents are more likely to be affected emotionally (p = 0.003), seek professional help or counselling (p = 0.008), question decision to be a physician and EΜ physician (p &lt; 0.001), whereas male residents are more likely to increase use of alcohol or other substances (p = 0.02) after episodes of abuse or harassment</td>
<td>Residents frequently encounter abuse or harassment, and report adverse consequences from these episodes</td>
</tr>
<tr>
<td>Cook et al. (1996)</td>
<td>Residents working in four hospitals who were enrolled in seven residency programmes</td>
<td>Canada</td>
<td>Cross-sectional</td>
<td>186</td>
<td>Self-administered questionnaire based on focus group and semi-structured interview findings, literature review, and pilot testing</td>
<td>Psychological abuse, physical abuse, sexual harassment, gender and sexual orientation discrimination, sexual harassment, age, gender, year of residency, specialty programme</td>
<td>Overall, 94.6% of residents reported experiencing psychological abuse during their residency programme</td>
<td>Not studied</td>
<td>Not studied</td>
<td>Psychological abuse is commonly experienced by residents in training programmes</td>
</tr>
<tr>
<td>Daugherty et al. (1998)</td>
<td>2nd year residents from American Medical Association database</td>
<td>United States</td>
<td>Cross-sectional</td>
<td>1277</td>
<td>Self-administered questionnaire based on previous studies (Balldin et al., 1991)</td>
<td>Maltreatment, sexual harassment, contributor to learning, satisfaction with residency, sleep deprivation, observation of unprofessional or unethical conduct</td>
<td>Overall, 93% residents reported at least one experience of mistreatment during their first year residency</td>
<td>Not studied</td>
<td>Not studied</td>
<td>Residents report significant mistreatment during their internship. Satisfaction with internship is enhanced by positive learning experience and lack of mistreatment</td>
</tr>
<tr>
<td>Cheema et al. (2005)</td>
<td>JD working in south and western regions of India</td>
<td>India</td>
<td>Cross-sectional</td>
<td>483</td>
<td>Self-administered questionnaire based on previous studies (Quine, 2000; Quine, 1999)</td>
<td>Bullying, age, gender, job grade, ethnicity, effect on home life and productivity of work</td>
<td>Overall, 30% junior doctors reported to be subjected to one or more bullying behaviours during their postings</td>
<td>Doctors from EU report less rate of bullying compared to non EU doctors (p &lt; 0.001)</td>
<td>Not studied</td>
<td>Bullying a common problem in the Indian health system</td>
</tr>
<tr>
<td>Bairy et al. (2007)</td>
<td>HOUPG students in a Government Medical College across Tamil Nadu</td>
<td>India</td>
<td>Cross-sectional</td>
<td>174</td>
<td>Self-administered questionnaire based on Hicks (2000) definition of workplace bullying (Hicks, 2000)</td>
<td>Bullying, occupational group, gender, age, psychometric test based on Myers-Briggs type indicator, job satisfaction</td>
<td>Overall, 49.8% HO and 31.3% PG students report being bullied during their postings</td>
<td>Overall, 40% of age were more likely to be bullied (p &lt; 0.0001)</td>
<td>Bullying not significantly associated with job satisfaction</td>
<td>Workplace bullying is common among trainee doctors and usually goes unreported</td>
</tr>
<tr>
<td>Scott et al. (2008)</td>
<td>HO and registrars at a tertiary hospital</td>
<td>New Zealand</td>
<td>Cross-sectional</td>
<td>123</td>
<td>Self-administered questionnaire</td>
<td>Bullying, age, gender, PGY, country of training, ethnicity, medical or surgical run</td>
<td>Overall, 50% of junior doctors report at least one episode of bullying behaviour in past 3-6 months</td>
<td>Registered MO under 25 years of age reported bullying more frequently than those above 25 years of age (p = 0.024)</td>
<td>Not studied</td>
<td>Workplace bullying is a significant issue with junior doctors</td>
</tr>
<tr>
<td>Nagato-Kobayashi et al. (2009)</td>
<td>Resident of 37 hospitals across Japan</td>
<td>Japan</td>
<td>Cross-sectional</td>
<td>355</td>
<td>Self-administered questionnaire based on literature review and pilot testing</td>
<td>Abuse (verbal, physical, academic), harassment (sexual), gender and alcohol-associated, gender, age, residency, reporting of episodes, psychological effects of the experiences</td>
<td>Overall, 43.8% residents reported experiencing at least one episode of abuse or harassment during their residency</td>
<td>Female residents report more abuse than male residents in internal medicine, surgery and emergency medicine rotations (p &lt; 0.01)</td>
<td>Not studied</td>
<td>mistreatment during residency is a universal phenomenon</td>
</tr>
<tr>
<td>Imran et al. (2010)</td>
<td>HO, PG residents in Year 1 to Year 4, resident MO in 3 tertiary care hospitals</td>
<td>Pakistan</td>
<td>Cross-sectional</td>
<td>654</td>
<td>Self-administered questionnaire based on Hicks (2000) definition of workplace bullying and (Hicks, 2000) and Quine’s 20 bullying behaviours scale</td>
<td>Bullying, age, gender, education status, specialty</td>
<td>Overall, 63.8% participants reported experiencing one or more type of bullying in past 12 months</td>
<td>Not reported</td>
<td>Not studied</td>
<td>Bullying is faced by a fairly large proportion of junior doctors in Pakistan</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Author (Year)</th>
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<th>associated factor</th>
<th>Associated Outcome</th>
<th>Study Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Li et al. (2010)</td>
<td>EM residents from 10 EM residency programme</td>
<td>United States</td>
<td>Cross-sectional</td>
<td>196</td>
<td>Self-administered questionnaire based on literature review</td>
<td>Abuse and harassment, age, gender, race, PGY level (1–4), abuse source</td>
<td>Overall, 9% of residents experienced some type of abuse or harassment during their residency programme</td>
<td>Senior residents (PGY 3–4) more likely to encounter verbal abuse (p = 0.01), verbal threats (p = 0.001), physical threats (p = 0.001)</td>
<td>Not studied</td>
<td>Abuse and harassment during EM residency continues to be commonplace and is underreported</td>
</tr>
<tr>
<td>Crutcher et al. (2011)</td>
<td>FM residents from two universities</td>
<td>Canada</td>
<td>Retrospective cross-sectional</td>
<td>377</td>
<td>Retrospective mail questionnaire based on two previous questionnaire used survey FM graduates and pilot testing</td>
<td>IHD, gender, age, marital status, which medical school graduate</td>
<td>Overall, 44% FM graduates reported that they had experienced IHD during their residency programme</td>
<td>Those reporting IHD were younger than those not (p = 0.034). Odds of IHD were 0.76 (95% CI 0.39–0.98) with each unit increment in age category</td>
<td>Not studied</td>
<td>Perceived IHD during residency are prevalent among FM graduates</td>
</tr>
<tr>
<td>Dilemete et al. (2011)</td>
<td>Resident doctors at a university hospital</td>
<td>Turkey</td>
<td>Cross-sectional</td>
<td>270</td>
<td>MBI, LIPT</td>
<td>Mobbing, gender, medical branch, age, marital status, working duration, burnout</td>
<td>Mean mobbing level of residents is 1.87 ± 0.66</td>
<td>Mobbing varies in terms of medical branch (p = 0.001), but not according to gender</td>
<td>Mobbing correlated with burnout (emotional exhaustion 0.035, p = 0.001), depersonalization (r 0.447, p &lt; 0.001) and personal accomplishment (r = 0.345, p = 0.001)</td>
<td>There is a relationship between mobbing and occupational burnout</td>
</tr>
<tr>
<td>Hills et al. (2012)</td>
<td>Medical practitioners from Medical Directory of Australia database (incl. specialist in training)</td>
<td>Australia</td>
<td>Cross-sectional</td>
<td>888</td>
<td>Self-administered questionnaire based on pilot testing</td>
<td>Aggression (verbal/written or physical abuse, threats, intimidation, harassment), gender, age, doctor type, IMG status, location, years elapsed since medical graduation</td>
<td>Overall, approximately 45% specialists in training have been exposed to infrequent verbal or written abuse from co-workers in past 12 months, and 15% have been exposed to occasional to frequent verbal or written abuse from co-workers in past 12 months</td>
<td>More female, IMG and hospital-based clinicians experienced workplace aggression (p &lt; 0.001). Age and PG experience negatively associated (p &lt; 0.001) with aggression exposure</td>
<td>Not studied</td>
<td>Workplace aggression are particular risks for younger and more junior hospital-based clinicians, and for IMG in general practice</td>
</tr>
<tr>
<td>Al-Shafee et al. (2013)</td>
<td>First year medical residents attending a research work-shop</td>
<td>Oman</td>
<td>Cross-sectional</td>
<td>58</td>
<td>Self-administered questionnaire based on previous studies (Sheehan et al., 1990; Baldwin et al., 1991; Utan et al., 1992)</td>
<td>Abuse (verbal, physical, academic, sexual harassment, age, sex, year of residency, marital status, current specialty</td>
<td>Overall, 96.6% residents perceived mistreatment during their internship year</td>
<td>Men reported higher levels of academic abuse (p = 0.004). All mistreatment indices were higher during medical rotation than in pediatric or surgical rotations (p = 0.005)</td>
<td>Not studied</td>
<td>Data suggest that medical trainers in Oman perceived bullying behaviours as common</td>
</tr>
<tr>
<td>Fina et al. (2010)</td>
<td>Resident enrolled in all residency training programme at National Guard Hospitals</td>
<td>Saudi Arabia</td>
<td>Cross-sectional</td>
<td>213</td>
<td>Self-administered questionnaire based previous studies (Nagato-Robayashi et al., 2009; Cook et al., 1996) and pilot testing</td>
<td>Abuse (verbal, academic, sexual or physical harassment, gender, regional, or physical appearance discrimination), gender, age, residency year, nationality, region of origin, whether sought professional help or want to pursue another career</td>
<td>Overall, 83.6% residents reported experiencing at least one type of harassment and discrimination during their residency programme</td>
<td>Significantly more female residents report verbal (p = 0.0003) and academic harassment (p = 0.0007)</td>
<td>Not studied</td>
<td>Harassment and discrimination of Saudi residents common with more than three quarters reporting having had such experience</td>
</tr>
</tbody>
</table>
| Farley et al. (2015) | 1st year and 2nd year trainee doctors on the foundation programme across 8 UK NHS Trusts | United Kingdom | Cross-sectional | 158 | Online self-report survey which include CNAQ, Hershovics (2010) & Grth (2003)Blame attribution items, PANAS scale, Bies and Moag (1996) interactional justice scale, Scarpello (1983) job satisfaction items, GHQ-12, pressure subscale of SBS scale | Cyberbullying, age, gender, general job stress, blame attribution, state negative affect, interactional justice, job satisfaction, mental strain | Overall, 46.2% trainee doctors has experienced at least one cyberbullying act during their foundation programme | Cyberbullying correlated with job satisfaction (r = 0.29, p = 0.05) and mental strain (r = 0.36, p < 0.01) | Not reported | Cyberbullying acts were experienced by nearly half of the sample during their training and were found to be significantly related to ill health and job satisfaction | (Continued)
Table 2. (Continued).

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Study population</th>
<th>Location</th>
<th>Study design</th>
<th>Sample size (n)</th>
<th>Study tool</th>
<th>Study variables</th>
<th>Findings</th>
<th>Associated factor</th>
<th>Associated Outcome</th>
<th>Study Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aykut et al. (2016)</td>
<td>Anaesthesiology residents from 7 institutions</td>
<td>Turkey</td>
<td>Cross-sectional</td>
<td>101</td>
<td>Self-administered questionnaire</td>
<td>Mobbing, type of institution, gender, marital status, age, psychosomatic conditions, burnout syndrome</td>
<td>Overall, 69.3% residents reported experiencing mobbing once or more during their residency programme.</td>
<td>Significant difference between those exposed to mobbing and those not according to gender (p = 0.041)</td>
<td>Significant difference between those exposed to mobbing and those not in terms of psychosomatic conditions: temper and anger attacks (p = 0.001), gaining or losing excessive weight (p = 0.03), increase in frequency of accidents (p = 0.03), tendency of violence to others (p = 0.08), job dissatisfaction (p = 0.04), and burnout syndrome (p = 0.001)</td>
<td>Mobbing is common among anaesthesiology residents</td>
</tr>
<tr>
<td>Chadaga et al. (2016)</td>
<td>Residents and fellows in graduate medical education system</td>
<td>United States</td>
<td>Cross-sectional</td>
<td>2,158</td>
<td>Self-administered questionnaire based on Quine’s 20 bullying behaviours scale and Lyons et al (1995) definition of workplace bullying</td>
<td>Bullying, age, gender, ethnicity, medical school background, residency status, PGY, sexual orientation, height, BMI</td>
<td>Overall, 48% residents and fellows reported experiencing one or more bullying behaviours in past year</td>
<td>Bullying more frequently reported by female (p ≤ 0.01), ≤ 30 years old age group (p ≤ 0.01), non-white (p = 0.00), and participants shorter than 5ʹ8 (p ≤ 0.01)</td>
<td>Not studied</td>
<td>Many trainees report experiencing bullying in the United States graduate medical education programs</td>
</tr>
<tr>
<td>Ling et al. (2016)</td>
<td>Members of GS Australia (includes trainees)</td>
<td>Australia</td>
<td>Cross-sectional</td>
<td>152</td>
<td>Online questionnaire using NAQ-R and Einarsen et al (2009) definition of workplace bullying</td>
<td>Bullying, gender, age, type of employment, position, level and region of training, barriers and outcomes of formal reporting of bullying</td>
<td>Using NAQ-R, 92% trainees experienced at least one or more bullying behaviours in the last 12 months. Using Einarsen’s definition of workplace bullying, 64% trainees reported being bullied monthly, now and then, weekly or daily over the last 12 months, and 14% trainees report being bullied weekly or daily over the last 12 months</td>
<td>Prevalence of bullying higher in female participants (p = 0.006)</td>
<td>Not studied</td>
<td>Workplace bullying remains a significant problem within GS in Australia</td>
</tr>
</tbody>
</table>

BMI: Body Mass Index; CNAQ: Cyber Negative Acts Questionnaire; ED: Emergency department; EM: Emergency medicine; EU: Europe; FM: Family medicine; GHQ: General Health Questionnaire; GS: General Surgery; HCW: Healthcare workers; HO: House officer; IHD: Intimidation, harassment and discrimination; IMG: International medical graduate; JD: Junior doctors; LIPT: Leymann Inventory of Psychological Terror; MBI: Maslach Burnout Inventory; MO: Medical officer; NAQ-R: Negative Acts Questionnaire Revised; PANAS: Positive and Negative Affect Schedule; PG: postgraduate; PGY: postgraduate year; SIG: Stress in General.
Shafaee et al. (2013), and Hills et al. (2012). Mistreatment, which was defined as “behaviours that include being publicly belittled or humiliated, experiencing sexual and racial harassment or discrimination, being assigned tasks for punishment rather than for learning, receiving threats to one’s career, and physical abuse”, was the umbrella term used by Daugherty et al. (1998) to describe any type of negative interactions at work. Similarly, Crutcher et al. (2011) studied intimidation, harassment and discrimination (IHD) as a whole, defining it as “Remarks, actions or behaviours that are perceived to be unwanted, hurtful, upsetting or coercive in nature”. On the other hand, McNamara et al. (1995), Cook et al. (1996), Nagato-Kobayashi et al. (2009), Li et al. (2010), Fnaïs et al. (2013) and Al-Shafaee et al. (2013) described negative interactions experienced by junior doctors in terms of abuse (verbal, written, physical and academic), harassment (verbal, academic, physical, sexual, gender and racial), and discrimination (gender, sexual orientation, regional orientation and physical appearance), while Hills et al. (2012) used the term aggression to encompass verbal, written and physical abuse.

On the other hand, narrower terms such as bullying and mobbing were used by other authors, which described negative interactions that were more specific to bullying. These studies were published by Cheema et al. (2005), Chadaga et al. (2016), Imran et al. (2010), Bairy et al. (2007), Ling et al. (2016), Farley et al. (2015), Dikmetas et al. (2011), and Aykut et al. (2016). Cheema et al. (2005), Chadaga et al. (2016), Imran et al. (2010), Bairy et al. (2007), Ling et al. (2016) and J. Scott et al. (2008) used the term bullying, which was defined by Cheema et al. (2005), Chadaga et al. (2016) and Imran et al. (2010) as “persistent, offensive, abusive, intimidating, malicious or insulting behaviour, abuse of power or unfair penal sanctions which make the recipient feel upset, threatened, humiliated or vulnerable, which undermines their self-confidence and which may cause them to suffer stress”, Bairy et al. (2007) as “repeated pattern of aggressive behavior that escalates over time and causes victimization in the subject unable to defend himself or herself”, and Ling et al. (2016) as “situations where an employee is persistently exposed to negative and aggressive behaviours at work primarily of a psychological nature with the effect of humiliating, intimidating, frightening or punishing the target”. Farley et al. (2015) studied a specific form of bullying, i.e., cyberbullying, which they defined as “an aggressive, intentional act carried out by a group or individual, using electronic forms of contact, repeatedly and over time against a victim who cannot easily defend him or herself”. On the other hand, Dikmetas et al. (2011) and Aykut et al. (2016) used the term mobbing, which was defined by Dikmetas et al. (2011) as “systematic subjection, by one or more individuals, of an individual to emotionally disturbing behaviour every day
over several months” and Aykut et al. (2016) as “situation in which tough and daunting attitudes in communication leads to resignation”.

On the whole, it was observed that the terms “mistreatment”, and “abuse, harassment, and discrimination” were preferred by researchers in North America (United States, Canada), Middle East (Saudi Arabia, Oman), and Japan, the term “bullying” was favoured by researchers in Europe (United Kingdom, Ireland), South Asia (Pakistan, India), and Australasia (Australia, New Zealand), whereas the term “mobbing” was utilized by researchers in Turkey, which is consistent with literature found on bullying as a whole (Chirila & Constantin, 2013). This lack of common terminology as well as the absence of a universal definition has been well documented by previous authors (Dzurec & Bromley, 2012; Einarsen, 2000; Harrington, Warren, & Rayner, 2015; Hodgins & McNamara, 2014; Kemp, 2014; Salin, 2003; Vickers, 2014).

The heterogeneity in terms used to describe workplace bullying may stem from the construct encompassing aggressive, violent or harassing behaviours as well (Fox & Stallworth, 2005). Despite this heterogeneity, closer examination of the definitions of terms used by authors of studies included in this systematic review similarly described what can be defined as bullying behaviours, i.e., negative and aggressive behaviours at work from superiors, colleagues and subordinates that are primarily of a psychological nature with the effect of humiliating, intimidating, frightening or punishing the target, and as such, it can be assumed that the studies included in this systematic review are indeed examining workplace bullying. Indeed, the terms “bullying”, “mobbing”, “harassment”, “victimization”, “emotional abuse” and “workplace aggression” are widely considered to be synonymous by pioneers in the field (Einarsen, 2000).

Nevertheless, despite the general similarity of terms utilized to describe workplace bullying, operational definition issues with workplace bullying are still apparent. It was noted that the persistence of negative interactions experienced was highlighted in the definitions of bullying or mobbing by Cheema et al. (2005), Bairy et al. (2007), Imran et al. (2010), Dikmetas et al. (2011), Farley et al. (2015), Chadaga et al. (2016) and Ling et al. (2016), yet with the exception of studies published by Ling et al. (2016) and Dikmetas et al. (2011), the frequency and duration of experiencing such interactions was not strictly operationalized. Majority of the authors had reported the prevalence in term of occurring at least once during past 3–6 months (J. Scott et al., 2008), past year (Chadaga et al., 2016; Imran et al., 2010), or during residency or posting (Aykut et al., 2016; Bairy et al., 2007; Cheema et al., 2005; Farley et al., 2015), except for Ling et al. (2016) who reported the prevalence of bullying in terms of occurring “weekly” or “daily”, and Dikmetas et al. (2011) who measured the exposure to mobbing every day over several months. Similarly, persistency of experiencing negative interactions was not explicitly stated in the definitions provided by authors using the terms mistreatment, abuse, harassment and discrimination, and aggression, and authors reported frequency of negative interactions in terms of occurring “infrequently” (i.e., a few times in 12 months) and “occasional” to “frequently” (i.e., a few times each 6 months up to once or more each week (Hills et al., 2012), or occurring at least once during the past year (Al-Shafae et al., 2013; Daugherty et al., 1998) or residency or posting (Cook et al., 1996; Crutcher et al., 2011; Fnais et al., 2013; Li et al., 2010; McNamara et al., 1995; Nagato-Kobayashi et al., 2009). Therefore, persistency, a core criterion of workplace bullying which distinguishes the construct from other negative interactions such as interpersonal conflict, was not met adequately by the majority of the studies. This is consistent with the literature on workplace bullying, whereby previous authors note that hostile workplace behaviours such as workplace abuse, harassment, aggression, bullying and mobbing all measure repetitive negative actions, and even though the aspect of duration is included in their definitions, it has been ignored from a measurement perspective in literature (Keashly & Jagatic, 2003, 2011; Matthiesen & Einarsen, 2010). They argue that duration appears primarily as a time frame over which participants are asked to assess the frequency of their experience (e.g., over the past 6 months), without anchoring the frequency scales to specific time referents such as daily, weekly or monthly (Keashly & Jagatic, 2011).

Concurrently, the methodologies used to measure negative interactions at the workplace also varied. The vast majority of the studies employed self-administered questionnaires that were either self-constructed by authors (Aykut et al., 2016; Hills et al., 2012; J. Scott et al., 2008), was based on literature review (Li et al., 2010; McNamara et al., 1995; Nagato-Kobayashi et al., 2009), was based on qualitative findings such as surveys, focus group and semi-structured interviews (Cook et al., 1996; Crutcher et al., 2011), or was based on methods employed by previous studies (Al-Shafae et al., 2013; Bairy et al., 2007; Cheema et al., 2005; Daugherty et al., 1998; Fnais et al., 2013). Only a handful (28%) utilized instruments with established validity and reliability such as Quine’s 20 type of bullying scale (Chadaga et al., 2016; Imran et al., 2010), Leymann’s Inventory of Psychological Terror (LIPT) (Dikmetas et al., 2011), Negative Acts Questionnaire (NAQ-R) (Ling et al., 2016), and Cyber Negative Acts Questionnaire (CNAGQ) (Farley et al., 2015). The psychometric properties of LIPT have been published in Cowie et al. (2002), NAQ-R in Einarsen et al. (2009), Quine’s scale in Quine (2001), and CNAGQ in Coyne et al. (2016). A summary of the terms, definitions and instruments used by included studies is illustrated in Table 4.

**Prevalence of workplace bullying reported by previous studies**

A wide range of prevalence of workplace bullying was reported by previous studies, depending on the operationalization of negative interactions measured. To make a more parallel comparison, the prevalence reported was divided into four categories, i.e., one or more episode during residency or posting, one or more episode during past year, one or more episode during past 6 months, and one or more episode weekly or daily for past 12 months. Here, it should be noted that medical residency programmes’ duration could range from 2–5 years, and postings’ duration indeterminate years. Ten studies reported prevalence of workplace bullying in terms of experiencing one or more episodes of negative interactions during residency or posting, with the prevalence reported ranging from 30% to 94.1%. Six studies reported
<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Bullying-related terms</th>
<th>Definitions of Bullying-related terms given by authors</th>
<th>Study Tool</th>
<th>Validity and reliability of study tool</th>
<th>Prevalence of workplace bullying reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>McNamara et al. (1995)</td>
<td>Verbal abuse, physical threat</td>
<td>No definition given</td>
<td>1b Not described</td>
<td></td>
<td>94.1%</td>
</tr>
<tr>
<td>Cook et al. (1996)</td>
<td>Psychological abuse</td>
<td>&quot;Behaviour that made people feel hurt, devalued, or incompetent, including shouting, uttering insults, ignoring or making disrespectful comments&quot;</td>
<td>1d Not described</td>
<td></td>
<td>93.4%</td>
</tr>
<tr>
<td>Daugherty et al. (1998)</td>
<td>Mistreatment</td>
<td>&quot;Include being publicly belittled or humiliated, experiencing sexual and racial harassment or discrimination, being assigned tasks for punishment rather than for learning, receiving threats to one's career, and physical abuse&quot;</td>
<td>1c Not described</td>
<td></td>
<td>86.4%</td>
</tr>
<tr>
<td>Cheema et al. (2005)</td>
<td>Bullying</td>
<td>&quot;Persistent, offensive, abusive, intimidating, malicious or insulting behaviour, abuse of power or unfair penal sanctions which make the recipient feel upset, threatened, humiliated or vulnerable, which undermines their self-confidence and which may cause them to suffer stress&quot;</td>
<td>1c Not described</td>
<td></td>
<td>30%</td>
</tr>
<tr>
<td>Bairy et al. (2007)</td>
<td>Bullying</td>
<td>&quot;Repeated pattern of aggressive behaviour that escalates over time and causes victimization in the subject unable to defend himself or herself&quot;</td>
<td>2 Not described</td>
<td></td>
<td>89.8% HO</td>
</tr>
<tr>
<td>Scott et al. (2008)</td>
<td>Bullying</td>
<td>No definition given</td>
<td>1a Not described</td>
<td></td>
<td>50%</td>
</tr>
<tr>
<td>Nagato-Kobayashi et al. (2009)</td>
<td>Verbal &amp; academic abuse</td>
<td>No definition given</td>
<td>1b Not described</td>
<td></td>
<td>72.1%</td>
</tr>
<tr>
<td>Imran et al. (2010)</td>
<td>Bullying</td>
<td>&quot;Persistent, offensive, abusive, intimidating, malicious or insulting behaviour, abuse of power or unfair penal sanctions, which makes the recipients feel upset, threatened, humiliated or vulnerable and undermines their self-confidence and may cause them to suffer stress&quot;</td>
<td>2 and 3 α 0.81 (Quine's scale)</td>
<td></td>
<td>63.8%</td>
</tr>
</tbody>
</table>
Table 4. (Continued).

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Bullying-related terms</th>
<th>Definitions of Bullying-related terms given by authors</th>
<th>Study Tool</th>
<th>Validity and reliability of study tool</th>
<th>Prevalence of workplace bullying reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Li et al. (2010)</td>
<td>Verbal abuse, verbal &amp; physical threat</td>
<td>No definition given</td>
<td>1b</td>
<td>Not described</td>
<td>≥ 1 episode during residency or posting: 86%</td>
</tr>
<tr>
<td>Crutcher et al. (2011)</td>
<td>IHD</td>
<td>“Remarks, actions or behaviours that are perceived to be unwanted, hurtful, upsetting or coercive in nature”</td>
<td>1c</td>
<td>Not described</td>
<td>≥ 1 episode during past one year: 44.7%</td>
</tr>
<tr>
<td>Dikmetas et al. (2011)</td>
<td>Mobbing</td>
<td>“Systematic subjection, by one or more individuals, of an individual to emotionally disturbing behaviour every day over several months”</td>
<td>3</td>
<td>α 0.91, FA adequate (LIPT)</td>
<td>Mean mobbing level: (1.87 ± 0.66)</td>
</tr>
<tr>
<td>Hills et al. (2012)</td>
<td>Verbal &amp; written abuse</td>
<td>No definition given</td>
<td>1b</td>
<td>Not described</td>
<td>≥ 1 episode during past 6 months:</td>
</tr>
<tr>
<td>Al-Shafaee et al. (2013)</td>
<td>Verbal &amp; academic abuse, physical threat</td>
<td>Physical abuse: “Threat that, if executed, would likely cause physical harm” Academic abuse: “Being coerced into carrying out personal services unrelated to the expected role of interns, and being excluded from reasonable learning opportunities offered to others, or threatened with failure or poor evaluations for reasons unrelated to academic performance”</td>
<td>1c</td>
<td>Not described</td>
<td>≥ 1 episode for past 12 months: 61.5%</td>
</tr>
<tr>
<td>Fnais et al. (2013)</td>
<td>Verbal &amp; academic harassment</td>
<td>Verbal harassment: “Behavior that made people feel hurt, devalued or incompetent, such as yelling or shouting, if the content was inappropriately nasty, rude, hostile, belittling or humiliating” Academic harassment: “Assignment of undesirable tasks as punishment, threats to fail residents unfairly, unfair competition with residents, and negative remarks about residents’ prospects of becoming a doctor or of pursuing a career in medicine”</td>
<td>1c</td>
<td>Not described</td>
<td>≥ 1 episode daily or weekly for past 12 months:</td>
</tr>
</tbody>
</table>
Table 4. (Continued).

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Bullying-related terms</th>
<th>Definitions of Bullying-related terms given by authors</th>
<th>Study Tool*</th>
<th>Validity and reliability of study tool</th>
<th>Prevalence of workplace bullying reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farley et al. (2015)</td>
<td>Cyber-bullying</td>
<td>&quot;An aggressive, intentional act carried out by a group or individual, using electronic forms of contact, repeatedly and over time against a victim who cannot easily defend him or herself&quot;</td>
<td>3</td>
<td>α 0.88, content &amp; construct validity (CNAQ)</td>
<td>≥ 1 episode during residency or posting: 46.2%</td>
</tr>
<tr>
<td>Aykut et al. (2016)</td>
<td>Mobbing</td>
<td>&quot;Situation in which tough and daunting attitudes in communication (especially in superior-subordinate communication) lead to resignations&quot;</td>
<td>1a</td>
<td>Not described</td>
<td>≥ 1 episode during past one year: 69.3%</td>
</tr>
<tr>
<td>Chadaga et al. (2016)</td>
<td>Bullying</td>
<td>&quot;Persistent, offensive, abusive, intimidating, malicious or insulting behavior, abuse of power or unfair penal sanctions which makes the recipient feel upset, threatened, humiliated or vulnerable which undermines their self-confidence and which may cause them to suffer stress&quot;</td>
<td>3</td>
<td>α 0.81 (Quine’s scale)</td>
<td>≥ 1 episode during past 6 months: 95% (Quine’s scale)</td>
</tr>
<tr>
<td>Ling et al. (2016)</td>
<td>Bullying</td>
<td>&quot;Situations where an employee is persistently exposed to negative and aggressive behaviors at work primarily of a psychological nature with the effect of humiliating, intimidating, frightening or punishing the target&quot;</td>
<td>3</td>
<td>FA adequate, α 0.90, criterion validity (NAQ-R)</td>
<td>≥ 1 episode daily or weekly for past 12 months: 14% (definition)</td>
</tr>
</tbody>
</table>

CNAQ: Cyber Negative Acts Questionnaire; α: Cronbach’s alpha; HO: House officer; IHD: Intimidation, harassment and discrimination; FA: Factor analysis; LIPT: Leymann Inventory of Psychological Terror; LISTREL: Linear structural relations; PGS: Postgraduate student

*1a: Self-administered questionnaire; 1b: Self-administered questionnaire based on literature review and pilot testing; 1c: Self-administered questionnaire based on previous studies; 1d: Self-administered questionnaire based on focus group and semi-structured interview findings, literature review, and pilot testing; 2: Stem question on bullying based on Hicks (2000) or Lyons (1995) definition; 3: Validated tools, including LIPT, NAQR, Quine’s 20 bullying behaviour scale, CNAQ.
prevalence in terms of experiencing one or more episodes of negative interactions during past year, with the prevalence reported ranging from 43% to 95%. One study reported prevalence in terms of experiencing one or more episodes of negative interactions during past 6 months, for which the prevalence reported is 50%. Finally, one study reported prevalence in terms of experiencing at least one episode of negative interactions during past 12 months, for which the prevalence reported is 14%. These rates are similar to the rates of medical resident bullying reported by Leisy and Ahmad (2016) in their review. The summary of the prevalence of workplace bullying among junior doctors reported by included studies is outlined in Table 4.

As noted in this systematic review and other studies (Matthiesen & Einarsen, 2010), observed prevalence rates of bullying appear to be highly influenced by the research strategy applied. In this systematic review, it appears that the rates of workplace bullying among junior doctors became deflated as the operational definition for workplace bullying became more conservative. According to previous authors (Martino, Hoel, & Cooper, 2003; Zapf et al., 2003), when bullying is measured by means of a precise definition and refer to regular experience on a weekly basis for a period of 6 months, less than 5% of the population is found to be bullied. Therefore, though it may be difficult to determine the exact prevalence of workplace bullying due to the lack of common terminology and well-established methodology (Keashly & Jagatic, 2003), we can estimate that 14% of junior doctors experience bullying, which is considerably higher compared to the findings of previous authors (Martino et al., 2003; Zapf et al., 2003).

Additionally, differences in prevalence rates according to the method used to measure workplace bullying were also noted. Out of 18 included studies, there were two studies that attempted to measure bullying via the self-labelling method and behavioural experience method, which were published by Chadaga et al. (2016) and Ling et al. (2016). Chadaga et al. (2016) reported that 39% residents and fellows reported experiencing one or more bullying behaviours in past year despite not perceiving themselves victims of bullying, and similarly, Ling et al. (2016) reported that 38% participants experienced at least one negative behaviour on a weekly or daily basis though only 7% perceived themselves as being victims of workplace bullying. These findings are consistent with findings described by Nielsen (2009) in his meta-analysis, in which he reported that the behavioural experience method led to a much higher figure compared to the self-labelling method based on a given definition. The reasons for this have been suggested to be because the behavioural experience method categorize persons as either bullied or not based on scoring criterion, irrespective of how they perceive their treatment, whereas the self-labelling method might exclude persons with high tolerance to harsh treatment (Barmes, 2016).

Factors associated with workplace bullying

Significant differences were reported by studies included in this systematic review in terms of individual factors such as age, gender, ethnicity, nationality and height, as well as organisational factors such as clinical specialty, as summarized in Table 2 and outlined in Figure 2.
In relation to age, Crutcher et al. (2011) reported a 0.76 (95% CI 0.59 to 0.98) odds of experiencing intimidation, harassment and discrimination with each unit increment in age. Similarly, Chadaga et al. (2016), Bairy et al. (2007), J. Scott et al. (2008), and Hills et al. (2012) observed significant differences in negative interactions reported according to age, with those younger than 30 years of age being more likely to experiencing negative interactions at work. These findings are consistent with findings of previous studies, (Ariza-Montes, Muniz, Montero-Simó, & Araque-Padilla, 2013). There may be several grounds for the observation, the first of which is that within the medical setting, there exist a traditional power structure and hierarchy in which junior doctors, who are typically younger, are at the lowest end of the pecking order (Crutcher et al., 2011). Furthermore, the nature of bullying itself involves a perceived power imbalance, and in the medical education system differences in knowledge often lead to this imbalance. On the other hand, some authors argue that the bullying experienced by junior doctors is a matter of misinterpretation of a misguided attempt to improve performances (J. Scott et al., 2008) or construing negative feedback as “bullying” (Ling et al., 2016). There are yet some that have even considered bullying behaviours as functional tools in medical education (Garling, 2008).

Others have suggested that the higher rates of bullying reported among junior doctors are likely to be due to junior doctors being less skilled and experienced in minimizing and deescalating conflicts at the workplace (Hills et al., 2012). Finally, some authors postulate that with increasing age and maturity, perceptions and interpretations change, which may be the reason why older doctors are less likely to perceive bullying (Crutcher et al., 2011).

Similarly, in terms of gender, five studies published by Chadaga et al. (2016), Aykut et al. (2016), Fnais et al. (2013), Ling et al. (2016), and Hills et al. (2012) consistently reported that significantly more female junior doctors experience bullying behaviours compared to male junior doctors, which is in keeping with the current literature (Ariza-Montes et al., 2013). According to some authors, the reason behind this is that men and women perceive workplace bullying in different ways, with men being more likely to perceive bullying as a particular management style, and women being more likely to perceive certain behaviours as threatening (Simpson & Cohen, 2004). Others argue that women are permitted narrower bands of acceptable behaviour, and deviations from traditional roles may submit them to negative evaluations and increase the risk of experiencing bullying (Babcock & Laschever, 2003; Gilbert, 2013).

Other than age and gender, ethnicity and nationality were other factors found to be associated with workplace bullying. Chadaga et al. (2016) reported significant differences in bullying among white and non-white participants, and Cheema et al. (2005) reported significantly less bullying experienced by doctors from Europe compared to non-European doctors. This difference may be due to inequalities in both personal and social vulnerabilities among employees of different ethnicities that are intrinsic in certain cultures (Sabri et al., 2015), or it may be due to non-acculturation with ensuing misinterpretation of certain behaviours as bullying (Chadaga et al., 2016).

Finally, another individual factor found to be associated with workplace bullying is height. Herein, Chadaga et al. (2016) described those less than 5’8” are being bullied more often compared to those taller. Although there is no evidence for such an association for working adults, this has also been found to be true in the paediatric literature (Voss & Mulligan, 2000), for indeterminate reasons.

In relation to organizational factors, two studies published by Dikmetas et al. (2011) and Al-Shafeae et al. (2013) reported significant differences in negative interactions experienced according to clinical specialty, with higher mistreatment indices reported for those in medical rotation compared to paediatric or surgical rotations. This may suggest that there are differences in terms of job demands and resources and subsequent job strain between the clinical subspecialties, which can be explained by the Job Demands-Resources (JD-R) model (Van den Broeck, Baillien, & De Witte, 2011). Indeed, certain subspecialties have been suggested to demand more time and provide less emotionally and socially supportive working environments (Daugherty et al., 1998), and evidence from literature indicates that job demands related positively to targets’ reports of bullying, whereas job resources related negatively (Van den Broeck et al., 2011).

### Outcomes associated with workplace bullying

Significant differences were reported by studies included in this systematic review in terms of health and affect, and work outcomes, as summarised in Table 2 and outlined in Figure 2.

In relation to health and affect, Farley et al. (2015) reported a significant positive correlation between cyberbullying and mental strain. Aykut et al. (2016) described that those mobbed were significantly more likely to exhibit psychosomatic effects, which includes temper and anger attacks, tendency of violence towards others, and gaining or losing excessive weight. In terms of work outcomes, three studies published by Daugherty et al. (1998), Farley et al. (2015), and Aykut et al. (2016) reported that negative interactions are significantly associated with job dissatisfaction, while Bairy et al. (2007) observed no significant association between bullying and job satisfaction. Both Dikmetas et al. (2011) and Aykut et al. (2016) reported a significant association between mobbing and burnout, with Dikmetas et al. (2011) reporting mobbing as being positively correlated with emotional exhaustion, positively correlated with depersonalization, and negatively correlated with personal accomplishment. Aykut et al. (2016) also reported that those exposed to mobbing were significantly more likely to experience an increase in frequency of accidents compared to those not.

In understanding the after-effects of workplace bullying, the Ursin and Eriksen (2004) Cognitive Activation Theory of Stress (CATS) and the Weiss and Cropanzano (1996) Affective Events Theory (AET) may be applied. According to the CATS, chronic activation from experiencing repeated negative interactions at work will lead to sustained high levels of stress, culminating in physical and psychosomatic
disorders. At the same time, the AET proposes that the prolonged unhappy state one endures from experiencing workplace bullying influences job performance and satisfaction, eventually leading to burnout and job dissatisfaction. Concurrently, the high levels of stress and unpleasant state accompanying prolonged bullying may cause sleep disturbances, an inability to focus, and a loss of confidence and enthusiasm at work, leading to an increase in the rates of accidents and medical errors at the workplace. The negative repercussions described by studies included in this systematic review is disconcerting as they may affect learning and greatly compromises patients’ health and safety, which is even more worrisome considering that junior doctors are often first line in treating and managing patients (Paice & Smith, 2009).

Conclusion

Following the methodological assessment of included studies according to the adapted NOS, the quality of evidence from this systematic review can be rated as moderate. Thus, the findings from this systematic review provide reasonably robust evidence of the burden of workplace bullying among junior doctors, as well as its potential predictors and negative sequela. This is especially useful considering our fractional understanding of junior doctors’ experiences of workplace bullying. From this systematic review, it can be deduced that workplace bullying is a serious occupational hazard that is affecting 30% to 95% of junior doctors, is more commonly experienced by junior doctors who are female (Aykut et al., 2016; Chadaga et al., 2016; Fnais et al., 2013; Hills et al., 2012; Ling et al., 2016), younger (Bairy et al., 2007; Chadaga et al., 2016; Crutcher et al., 2011; Hills et al., 2012; J. Scott et al., 2008), shorter (Chadaga et al., 2016), of a minority group (Chadaga et al., 2016; Cheema et al., 2005), and working in the medical subspecialty (Al-Shafee, 2013; Dikmetas et al., 2011), and has led to negative outcomes such as mental strain (Farley et al., 2015), job dissatisfaction (Aykut et al., 2016; Daugherty et al., 1998; Farley et al., 2015), burnout (Aykut et al., 2016; Dikmetas et al., 2011), and an increase in the frequency of accidents at work (Aykut et al., 2016). In addition, the findings of this systematic review suggest that workplace bullying remains a difficult subject to measure, despite four decades of research, as there is considerable heterogeneity in the terms, definitions, operationalization and methodologies used to study workplace bullying among junior doctors.

Though these findings are reliable considering the fastidiousness of a systematic review, it is important to note that this systematic review is not without limitations. First, this systematic review was limited to English articles to allow for quality assessment, and evidence from studies published in languages other than English was unable to be examined. In addition, the database Embase could not be included in the database search as it was not subscribed to by the local library. This is unfortunate as research into workplace bullying begun in the Scandinavian countries (Einarsen et al., 2003), and important studies from researchers in the European countries may not have been captured in this review. Nevertheless, the possibility of this is low as the search included five other important databases including Medline, Web of Science, Scopus, PsychINFO and Cochrane Library. Publication bias may have arisen as a result of non-inclusion of grey literature, though again, this was likely minimized by searching multiple important databases including Scopus, which indexes grey literature (Bonato, 2016). Finally, the strength of evidence of findings may be hampered by temporality ambiguity (Delgado-Rodriguez & Llorca, 2004), recall bias (Bowling, 2005) and reporting bias (Delgado-Rodriguez & Llorca, 2004), as studies included were all cross-sectional in design, utilized self-administered questionnaires and ask questions pertaining to a sensitive subject matter. However, reporting bias may have been minimized as authors of all included studies took efforts in ensuring strict confidentiality of study participants.

Equally, it is important to note the strengths of this systematic review. First, this systematic review was able to elicit valuable findings in relation to correlates of workplace bullying which has not been attempted for junior doctors to date. Furthermore, a review of the terms, definitions, operationalization and methodologies used to assess workplace bullying among junior doctors was provided, which will be able to shed some light onto the current understanding of workplace bullying among junior doctors and direct a focus of study for future research. Care was also taken to ensure the robustness and quality of this systematic review, by conducting it in accordance to the MOOSE guidelines, searching through multiple large databases, using comprehensive and exhaustive search terms, and assessing the methodological quality of included studies using established quality assessment tools.

In conclusion, this systematic review has shown that workplace bullying is prevalent among junior doctors across the globe, is influenced by multiple individual and occupational factors, and has led to undesirable consequences both for individuals and healthcare organisations. Considering that bullying is generally unreported (Bairy et al., 2007), this is perturbing. Taking into consideration the complexity of workplace bullying and the partial understanding of workplace bullying from the existing body of literature, more research into this phenomenon is needed. Awareness of bullying among junior doctors is critical for both junior doctors’ and patients’ health, and it is through a deeper appreciation of the burden, predictors and impact of workplace bullying among junior doctors that we are able to prevent and mitigate this phenomenon.

Disclosure statement

No potential conflict of interest was reported by the authors.

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