Formal Parental Leave Policies and Trainee Well-Being in US Graduate Medical Education: A Systematic Review

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ABSTRACT

Background Variability in parental leave policies across graduate medical education (GME) programs in the United States complicates efforts to support resident wellness and identify best practices for resident well-being.

Objective This review aims to assess how formal parental leave policies affect trainees' well-being, professional satisfaction, and performance during training.

Methods A systematic review following the Preferred Reporting Items for Systematic Reviews and Meta Analyses (PRISMA) 2020 guidelines was conducted and registered on PROSPERO in May 2023. Databases searched included MEDLINE, Embase, and Cochrane Central. Studies that evaluated parental leave policies of US-based GME programs and their direct impact on residents and/or fellows were included. Studies were screened for inclusion by 2 independent reviewers, and any conflicts were resolved by a third author.

Results Of 1068 articles screened, 43 articles met inclusion criteria. These studies highlighted that leave durations of less than 6 weeks were associated with higher rates of burnout and postpartum depression among trainees. There was no evidence that taking parental leave increased program attrition rate; however, 3 studies reported more than one-third of trainees extended training as a result of taking leave. Trainees who had more than 8 weeks of parental leave reported more successful breastfeeding 6 months out from delivery than those with less than 8 weeks of leave.

Conclusions Extended parental leave, notably beyond 6 weeks, improved trainee well-being and professional satisfaction. Based on trainees' perspectives, ideal parental leave policies offer a minimum of 6 to 8 weeks of leave, with a formal and clearly written policy available.

Introduction

Physicians in training in the Unites States commonly face challenges when balancing family planning goals with training responsibilities, as graduate medical education (GME) traditionally overlaps with childbearing years.[1] Formal parental leave policies may mitigate some of these challenges by clearly informing trainees of their institutional support and permissions for leave. Among the general population, formal parental leave policies are associated with health benefits for parents and children, including longer duration of breastfeeding, increased early childhood checkups and immunizations, decreased rates of rehospitalization of mothers and children, lower self-reported rates of poor parental health, reduced rates of postpartum depression and burnout, and increased relationship stability between parents.[2-6]

Despite evidence demonstrating the advantages of formal parental leave policies and recent improvements in the standardization of the Accreditation Council for Graduate Medical Education (ACGME) Institutional Requirements for parental leave,[7] there remain wide variations in their implementation across residency and fellowship programs.[8] While there are data characterizing the lack of uniformity in parental leave policies across GME, there is a paucity of literature examining the impact of formal parental leave policies on trainees across training programs and specialties.[1,9-11]

To better understand the relationship between parental leave policies and resident well-being, we conducted a systematic review of the published literature. We aimed to determine the impact of parental leave policies of GME programs on trainees. We hypothesized that formal written leave policies and longer leave lengths would be associated with higher rates of trainee well-being and satisfaction.

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Editor's Note: The online supplementary data contains the search strategy used in the study and further data from the study.

Methods

Research Question

What is the effect of parental leave policies on trainee well-being, job satisfaction, performance, and retention rates?

Search Methods

After consideration and discussion with a professional information scientist (K.D.), a systematic review was chosen to address our research question per recent typology.[12] This systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta Analyses (PRISMA) 2020 statement and checklist.[13] A protocol for this review was registered with PROSPERO, the International Prospective Register of Systematic Reviews, on May 3, 2023 (ID# CRD42023415789). Databases searched included MEDLINE, Embase, and Cochrane Central. The reproducible search strategies for all databases are available upon request, and additional search strategy information is provided in the online supplementary data.

Eligibility Criteria

Studies were included for analysis if they met the following criteria: (1) the sample consisted of trainees in a US-based GME program; (2) the studies discussed the details of any form of parental (caring for a newborn or newly adopted child), medical (related to childbirth), or caregiver leave policies, consistent with section IV.H.1.a of the ACGME Institutional Requirements[7]; and (3) the studies discussed the direct impact of these policies on trainees. Exclusion criteria included systematic reviews, meta-analyses, and case reports. All other study designs passed screening if they met all other inclusion criteria. Quantitative and qualitative studies were included. No publication date restriction was used.

Studies were excluded if they assessed trainees from military or non-US-based programs, investigated medical students' or attendings' well-being without reporting trainee experiences separately, or elicited only GME program directors' perspectives.

Study Selection and Review Process

All titles/abstracts were screened by 2 independent reviewers using Covidence (Veritas Health Innovation Melbourne VIC 3000). Authors were blinded to decisions while performing reviews. Any conflicts in voting between 2 authors were resolved by a third independent author. Full manuscript review was conducted for the remaining titles. The librarian then conducted a cited reference search of the manuscripts selected for inclusion through Web of Science and Google Scholar on June 22, 2023. These articles were screened with the same processes described above.

Data Collection

Data collection occurred during the full-text review stage of the project. This ensured that data was extracted independently by the 2 reviewers who voted for each specific study. Data items extracted from eligible studies, if available, included: study design, study subjects, specialty of training program, sample size, and key findings.

Well-being was defined as a state of optimal mental health and functioning based on positive emotion and resilience in the face of adversity, as most of the included studies reported psychological well-being in terms of depression, anxiety, stress, and burnout.[14-16] We also decided to include studies that discussed perceived support, meaning trainees' understanding of and belief in the support available to them, as it was found these data were closely associated with well-being.[17,18]

Risk of Bias Assessment

Each manuscript that met inclusion criteria was assessed for risk of bias using the 10-question ROBINS-I[19] tool and was assigned a score from 1 to 10. Studies were then grouped by their risk of bias score, into poor (0-3), fair (4-7), and good (8-10) studies. Scores can be found in the TABLES and online supplementary data.

Synthesis Methods

Analysis was performed by grouping eligible articles into common themes, including sufficient breastfeeding time, fear of burdening co-residents/fellows, fear of extending training, frustration with lack of written formal leave policy, and lack of time/resources for childcare. After grouping the studies, summary statements regarding findings were derived from each group of data for the categories listed above. The terms "men" and "women" are used here to denote gender, except when reported as "male" and "female" in the original study.

Per the University of Colorado Institutional Review Board (IRB) protocol, systematic reviews do not require IRB approval.

Results

Study Selection

Covidence software was used for deduplication of database search results, title and abstract screening, full text review, and data extraction. Forty-three of

the 1068 articles screened met the inclusion criteria for the systematic review. See the FIGURE for the PRISMA 2020 flow diagram. A summary of study characteristics can be found in TABLE 1.

Primary Research Question: What Is the Effect of Parental Leave Policies on Resident/Fellow Well-Being, Job Satisfaction, Performance, and Retention Rates?

Well-Being: Twenty-five studies presented data discussing parental leave policies and resident/fellow well-being (TABLE 2).[3,8-10,20-40] Well-being was not well defined in each of these studies. Only 5 of these studies assessed the direct effect of parental leave policies on resident/fellow well-being.[3,21,23,25,32] In all 5 studies, leave time of less than 6 weeks was associated with higher rates of burnout and postpartum depression. Two studies showed that residents felt inadequate leave time was a postpartum stressor, and that residents would prefer longer leave time to combat postpartum depression.[34,35] Presence of a written policy was associated with less anxiety and greater perceptions of support for parental leave from program faculty[8,21,23,24,27,29,35,38,40-42] and co-residents.[9,23,42,43]

Other studies presented data regarding trainee perspectives, opinions, and preferences regarding parental leave policies and well-being. Almost all trainees emphasized that a policy supportive of taking sufficient leave was essential for well-being. Major stressors included feeling stigmatized for taking time off,[10,31,33] and being pressured to return to work before the maximum allowed leave time.[27,36]

Satisfaction: Trainee satisfaction encompassed studies that discussed trainees' professional/job satisfaction as a result of a leave policy in place, or how satisfied they were with details of the policy itself. Satisfaction was not defined in each of the studies but instead left to the interpretation of the respondent.

Twenty-one studies presented data discussing parental leave policies and trainee satisfaction (TABLE 3).[3,8,10,11,25-27,29,34,36,37,39,40,42,44-50] Eight assessed the direct effect of parental leave policies on job satisfaction. Four showed that trainees expressed general job satisfaction if a parental leave policy was in place.[24,42,47,51] Two studies reported professional dissatisfaction even with leave policy in place, primarily revolving around struggles to find childcare.[30,45] One study found that lack of parental leave policy was associated with lower rates of professional satisfaction.[50]

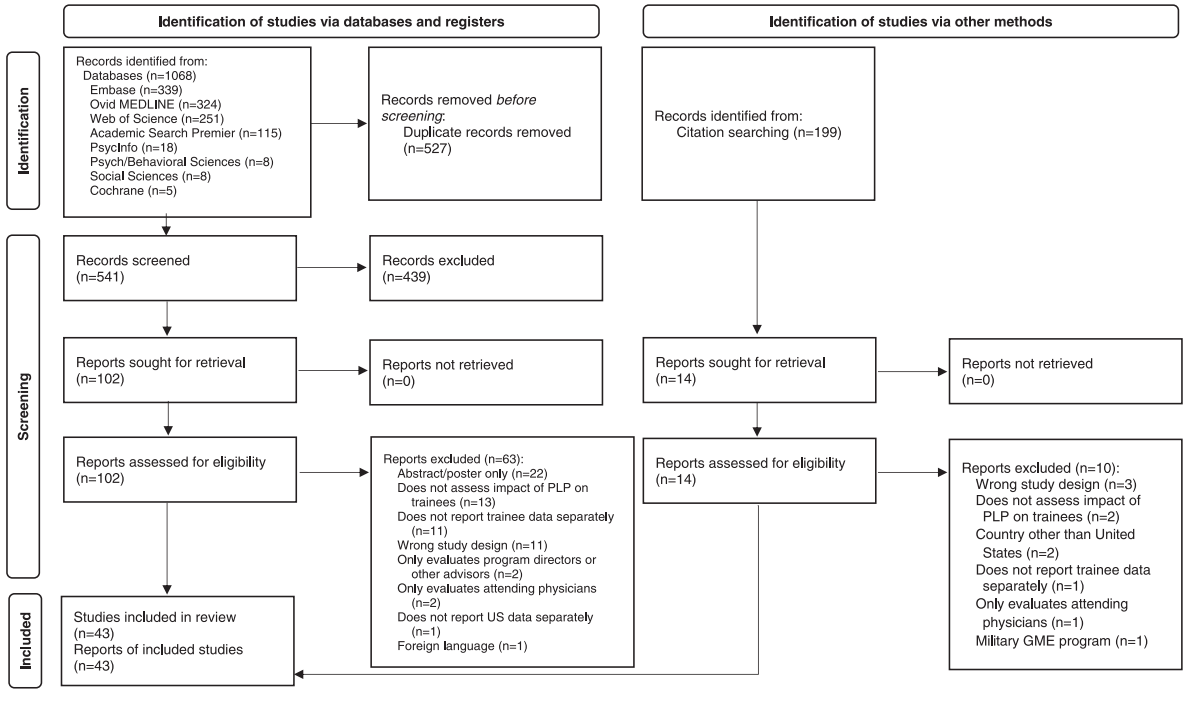

FIGURE
PRISMA Flowchart

Abbreviations: PRISMA, Preferred Reporting Items for Systematic reviews and Meta-Analyses; PLP, parental leave policy; GME, graduate medical education.

TABLE 1
Study Characteristics

Characteristics	n (%), N=43
Year	
2023	1 (2)
2022	10 (23)
2021	8 (19)
2020	3 (7)
2019	5 (12)
2018	5 (12)
Before 2018	11 (26)
Specialty	
General surgery	8 (19)
Otolaryngology	3 (7)
Pediatrics	3 (7)
Obstetrics and gynecology	3 (7)
Family medicine	2 (5)
Ophthalmology	2 (5)
Anesthesiology	2 (5)
Orthopedics	2 (5)
Plastic surgery	1 (2)
Neurology	1 (2)
Dermatology	1 (2)
Neurosurgery	1 (2)
Unspecified/multiple	13 (30)
Study methods	
Cross-sectional	36 (84)
Focus groups	5 (12)
Retrospective	2 (5)

Seventeen studies discussed trainee satisfaction with the amount of leave time they received and examined opinions on optimal leave time. Almost all studies reported that most trainees were unsatisfied with parental leave length. Those who were unsatisfied often recommended longer leave times, with the common theme that 6 weeks is insufficient and one study suggesting 7 to 12 weeks is optimal based on resident opinion.[45] In most of the studies in which leave length was reported, it averaged 5 to 8 weeks. One study reported that 8% of residents were satisfied with leave time when less than 6 weeks was provided, and 20% were satisfied with leave time when greater than 6 weeks was provided (P=.14).[39] Another study reported residents were more satisfied with the parental leave policy when more than 8 weeks were provided (75% vs 56%, P=.39).[3,11,36,49] Two of the studies reported that job satisfaction of residents/fellows correlated with leave time, and that longer leave time was associated with greater satisfaction.[44,50] No significant difference in satisfaction with leave was found between surgical and nonsurgical trainees.[30]

Performance: Nine studies presented data discussing parental leave policies and impact on resident/fellow job performance (TABLE 4).[20,31,37,43,47,49,51-53] Two studies showed that taking leave with a formal policy in place had no effect on American Board of Surgery In-Training Examination (ABSITE) performance, board pass rates, or other performance metrics.[20,52] One study showed that almost one-third of residents (31%) who took leave at a program with a formal leave policy had lower ABSITE scores than residents who did not take leave.[53] Another study reported that most residents who took leave with a formal leave policy received no negative feedback on performance from their program (67.2%) or co-residents (72.9%).[51]

The other studies commented on residents/fellows' subjective perception of how taking parental leave affected their career in medicine. Five of the studies reported that a substantial proportion of the residents/fellows felt that having a child during training and taking parental leave was detrimental to their career, limited career opportunities, caused them to fall behind, decreased research productivity, and/or impacted medical knowledge and skills.[43,47,51,53] It is unclear if these negative feelings were the result of merely having a child during residency or of taking a formal leave, and these studies did not provide information on trainees who had a child but did not take a formal leave.

Retention Rates: Three studies presented data discussing parental leave policies and resident/fellow retention rates (online supplementary data TABLE 1).[20,50,54] Two studies reported residents/fellows considering leaving their field due to lack of parental leave policy or inadequate length of leave.[50,54] A third evaluated risks of attrition from general surgery residency programs and found no association between child rearing during training and attrition from the program.[20]

Additional Themes

Sufficient Breastfeeding Time: Among 14 studies evaluating perception or experience of lactation and breastfeeding, the overall theme was that women residents did not have sufficient time to breastfeed regardless of leave length (online supplementary data TABLE 2).[3,11,23,29,35,37,38,41,43,45,48,50,51,55] One study reported that residents/fellows who had more than 8 weeks of parental leave had more successful breastfeeding 6 months out from delivery than those with less than 8 weeks of leave (89% vs 33%, P=.09), and longer breastfeeding duration was associated with longer maternity leave.[3] Concerns reported

TABLE 2
Well-Being

Author	Year	Study Design	Specialty	Subjects	Risk of Bias	Conclusions Drawn From Study
Altieri et al[9]	2019	Cross-sectional	General surgery	474 residents	Fair (7)	About one-third of all residents regardless of sex felt unsupported when they took parental leave.
Brown et al[20]	2014	Retrospective study	General surgery	25 residents	Good (9)	Average leave length of 10.1 weeks and no difference in well-being from those who had children and took leave, and those who didn't have children.
Bye et al[21]	2022	Cross-sectional	Unspecified	71 residents	Good (8)	In residents who had 4 to 6 weeks of parental leave, postpartum depression rates were 40%, and for those who had 6 to 8 weeks, rates were 25%. Residents said they would feel more supported if they had more time allowed off for parental leave.
Carty et al[22]	2002	Cross-sectional	General surgery	5 residents	Good (9)	Most residents had 5 to 6 weeks off of leave, and stress level was at highest rating when returning from leave.
Castillo-Angeles et al[10]	2022	Focus group-based study	General surgery	15 male residents	Good (10)	Male residents felt less supported as they reported more stigma against them taking leave compared to their female counterparts.
Champaloux et al[23]	2022	Focus group-based study	Otolaryngology	16 residents	Good (8)	Having a formal written parental leave policy was beneficial for well-being. Having less than 6 weeks led to a more challenging year for residents with higher rates of postpartum mood symptoms.
Conway et al[24]	2022	Cross-sectional	Neurology	35 residents	Good (8)	After revising parental leave policy, length changed from 4 to 12 weeks. This resulted in an increase of residents feeling supported, from 60% to 86%.
Dundon et al[25]	2021	Cross-sectional	Pediatrics	61 residents	Good (9)	Female residents with less than 6 weeks of parental leave had higher rates of burnout and postpartum depression, and burnout rates were correlated with leave length.
Dyess et al[26]	2022	Cross-sectional	Pediatrics	626 fellows	Fair (7)	Almost half of respondents indicated that their parental leave policy increased the stress of having children during residency.
Gjerdingen et al[27]	1995	Cross-sectional	Family medicine	171 residents	Fair (6)	Average leave length was 6.7 weeks, and 29% of respondents felt pressured by their program to return before maximum time allowed.
Harris et al[28]	1990	Retrospective study	Unspecified	236 residents	Good (9)	Lack of formal leave policy associated with more stressful pregnancy.
Jamorabo et al[8]	2021	Cross-sectional	Unspecified	236 fellows	Fair (7)	Average parental leave length was 5.3 weeks, and most respondents felt supported by leadership with regards to parental leave.
Kraus et al[29]	2021	Cross-sectional	Anesthesia	542 residents	Good (8)	Average leave length was 8.1 weeks, and 34% of respondents felt discouraged from taking more time off, resulting in a negative culture surrounding pregnancy during residency.
Magudia et al[30]	2020	Cross-sectional	Unspecified	167 residents and fellows	Good (8)	Female residents had an average of 5.5 weeks of parental leave, while male residents had 1.9 weeks. Ninety-five percent of respondents felt supported, and almost 100% reported that feeling supported was crucial for well-being.

TABLE 2
Well-Being (continued)

Author	Year	Study Design	Specialty	Subjects	Risk of Bias	Conclusions Drawn From Study
Maloni et al[31]	2022	Cross-sectional	General surgery (vascular surgery)	33 pregnant residents and fellows	Good (8)	Almost all of those who became pregnant and took leave felt supported; however, 30% felt stigmatized at their workplace.
Martin et al[32]	2019	Cross-sectional	Obstetrics and gynecology	68 residents	Good (9)	Shorter leave times are associated with more feelings of postpartum depression.
Mundschenk et al[33]	2016	Cross-sectional	Unspecified	203 residents	Good (8)	Female surgical residents often perceive a supportive environment for becoming pregnant, especially in programs where women are in leadership roles. There is still a prevalent negative stigma associated with pregnancy during residency.
Phelan[34]	1992	Cross-sectional	Unspecified	295 physicians who experienced pregnancy during residency	Fair (7)	Parental leave of less than 6 weeks in length was identified as one of the major postpartum stressors.
Rangel et al[35]	2018	Cross-sectional + focus group-based study	General surgery	347 residents	Good (8)	Respondents preferred a longer leave time to be able to deal with postpartum depression. Participants were disheartened by the need to use vacation time to create maternity leave.
Reid et al[36]	2021	Cross-sectional	Orthopedics	458 residents	Good (10)	Male residents took an average of 0.8 weeks, and female residents took an average of 4.6 weeks of parental leave. Eighty-eight percent of respondents felt supported to have children, but 33% felt pressured by co-residents to take less time off.
Reilly et al[37]	2022	Cross-sectional	Ophthalmology	20 residents	Good (8)	Most respondents took 5 to 6 weeks off, and 73% reported some form of burnout. About half felt that program director was supportive.
Sharp et al[38]	2022	Cross-sectional	Unspecified	334 residents and 160 fellows	Fair (7)	Women had an average of 6 to 8 weeks, and men had an average of 2 weeks for leave. Sixty-eight percent of respondents overall felt program is supportive of starting a family.
Stack et al[39]	2019	Cross-sectional	Unspecified	77 residents	Good (9)	Those who had more than 6 weeks of leave and no difference in burnout and postpartum depression rates compared to those who had less than 6 weeks of leave.
Stack et al[3]	2018	Cross-sectional	Unspecified	25 residents	Fair (7)	Mean leave time was 8.4 weeks. Those with more than 8 weeks had lower rates of burnout and postpartum depression.
Wilder et al[40]	2021	Focus group-based study	Pediatrics	31 residents	Good (10)	Some individuals felt supported by their program and parental leave policies, but also felt pressured as they were scheduled past their due dates.

were lack of access to lactation services,[29,50,51] including easy access and proximity to designated lactation spaces and refrigeration capabilities for milk storage.

Fear of Burdening Co-Residents/Fellows: Ten studies reported residents'/fellows' fear of burdening co-residents/fellows if they took parental leave (online supplementary data TABLE 3).[3,9,23,26,31,37,39,43,55,56] One study reported that female residents/fellows delayed childbearing and taking parental leave more than male counterparts explicitly to avoid burdening peers (36% vs 13%, $P<.001$).[31]

Stigma/Bias Related to Parental Leave: Three studies mentioned stigma or bias felt by trainees when taking leave, or the fear of experiencing this stigma

TABLE 3
Satisfaction

Author	Year	Study Design	Specialty	Subjects	Risk of Bias	Conclusions Drawn From Study
Bourne et al[44]	2019	Cross-sectional	Plastic surgery	108 pregnant residents and fellows	Fair (7)	Almost half of the respondents had less than 6 weeks of parental leave time, and over half were unsatisfied with the amount of leave given. Length of leave time was correlated with satisfaction.
Dundon et al[25]	2021	Cross-sectional	Pediatrics	61 residents	Good (9)	Almost two-thirds of male residents had less than 2 weeks of parental leave time, and over one-fourth of female residents had less than 6 weeks. Most respondents were not satisfied with parental leave time.
Dyess et al[26]	2022	Cross-sectional	Pediatrics	626 fellows	Fair (7)	The mean satisfaction score with parental leave time allocated for respondents was 3 out of 5 (1 being completely unsatisfied and 5 being completely satisfied).
Gjerdingen et al[27]	1995	Cross-sectional	Family medicine	171 residents	Fair (6)	Average parental leave time was 8 weeks; however, residents were unsatisfied because it was comprised of sick/vacation time, so overall they were upset about not having enough time.
Gracey et al[11]	2018	Cross-sectional	Dermatology	37 residents	Fair (6)	Women had an average of 6.8 weeks of parental leave, while men had an average of 2 weeks, and in both groups, over half were unsatisfied with leave time given.
Hutchinson et al[45]	2011	Cross-sectional	Family medicine	207 residents	Fair (7)	Respondents had an average of 6.5 weeks of parental leave, which the majority was unsatisfied with. Most felt optimal amount of time off was 7 to 12 weeks.
Jamorabo et al[8]	2021	Cross-sectional	Unspecified	236 fellows	Fair (7)	Average parental leave given was 5.3 weeks, and only 25% were satisfied with length. Most felt optimal amount of time off was 5 to 15 weeks.
Kraus et al[29]	2021	Cross-sectional	Anesthesia	542 residents	Good (8)	Average time off was 8.1 weeks for parental leave, and almost 60% were unsatisfied with length.
Lashbrook et al[42]	2003	Cross-sectional	Obstetrics and gynecology	21 residents	Good (8)	Average time off was 6 weeks for parental leave. Mean satisfaction score was 4.5 of 5 (1 being completely unsatisfied and 5 being completely satisfied).
Marshall et al[46]	2020	Cross-sectional	Unspecified	175 fellows	Fair (7)	Only 25% of fellows were satisfied with parental leave they received.
Nichols[47]	1994	Cross-sectional	Obstetrics and gynecology	11 residents	Fair (7)	Average parental leave length was 6 weeks, and there was no difference in satisfaction in those who had children, and those who didn't have children.
Pearson et al[48]	2019	Cross-sectional	Anesthesia	37 residents	Good (8)	Average parental leave length was 8.9 weeks, and most residents felt length was inadequate.
Phelan[34]	1992	Cross-sectional	Unspecified	295 physicians who experienced pregnancy during residency	Fair (7)	Seventy-seven percent of respondents felt that parental leave time of less than 6 weeks was inadequate.

TABLE 3
Satisfaction (continued)

Author	Year	Study Design	Specialty	Subjects	Risk of Bias	Conclusions Drawn From Study
Powell et al[49]	2021	Cross-sectional	Unspecified	95 residents	Fair (7)	Average length of parental leave was 7.2 weeks for female residents and 2.2 weeks for male residents. Over 60% of respondents felt unsatisfied with leave of length time.
Rangel et al[54]	2018	Cross-sectional	General surgery	347 residents	Good (8)	Over half of respondents agreed with at least one statement of professional dissatisfaction, and that dissatisfaction came more so from lack of policy versus length of policy.
Reid et al[36]	2021	Cross-sectional	Orthopedics	458 residents	Good (10)	Male residents took an average of 0.8 weeks and female residents took an average of 4.6 weeks of parental leave. Just over half of respondents felt that parental leave time was adequate.
Reilly et al[37]	2022	Cross-sectional	Ophthalmology	20 residents	Good (8)	Most respondents received 5 to 6 weeks of parental leave. Only 27% were happy with that length, and 72% thought it was less than they would have liked.
Ruse et al[50]	2022	Cross-sectional	Orthopedics	71 residents	Good (9)	Average leave time for residents was 6.5 weeks. Length of leave time was associated with professional dissatisfaction.
Stack et al[39]	2019	Cross-sectional	Unspecified	77 residents	Good (9)	Only 8% of the respondents who received less than 6 weeks of parental leave were satisfied, and only 20% of respondents who received more than 6 weeks of parental leave were satisfied.
Stack et al[3]	2018	Cross-sectional	Unspecified	25 residents	Fair (7)	Mean parental leave time for residents was 8.4 weeks. Those who had more than 8 weeks of parental leave had higher levels of satisfaction with having a child (75% vs 56%).
Wilder et al[40]	2021	Focus group-based study	Pediatrics	31 residents	Good (10)	Common concerns with residents were that 6 weeks is not enough parental leave time.

(online supplementary data TABLE 4).[9,31,43] One study showed that male respondents were more likely than female respondents to believe that a pregnant vascular surgery trainee or attending was less capable of performing her job while pregnant; female residents cited negative views from peers and program directors toward pregnancy, and discouragement from peers or attendings to have children as a reason for delaying childbearing.[31] One study showed that residents who had not taken parental leave were more likely than those who had taken leave to feel that parental leave puts an unreasonable strain on other residents (90.2% vs 9.8%, $P<.01$).[9] One common concern among residents was that placing the burden of family leave on co-residents could foster a hostile work environment among already stressed and overburdened residents.[43]

Fear of Extending Training: Nine studies discussed resident/fellow fear of extending training as a result of taking parental leave (online supplementary data TABLE 5).[26,27,37-40,48,55,57] The percentage of trainees who had to extend training for leave ranged from 4% to 56%.[26,27,37,38,48] Two studies reported that residents decreased the length of their leave to avoid extending training, and that 27% of residents/fellows experienced frustration having to choose between adequate leave time and extending training.[39,40] Taking a 6-week parental leave resulted in residents extending completion date of their certification examination qualification.[57]

Frustration With Lack of Formal Written Leave Policy: Sixteen studies discussed resident/fellow frustration with lack of a formal written leave policy,

TABLE 4
Performance

Author	Year	Study Design	Specialty	Subjects	Risk of Bias	Conclusions Drawn From Study
Brown et al[20]	2014	Retrospective study	General surgery	25 residents	Good (8)	Average leave length was 10.1 weeks, and there was no difference in board pass rates and in-training examination scores between those who had children and those who didn't.
Diaz et al[51]	2021	Cross-sectional	Oral maxillofacial surgery	220 residents	Fair (7)	Parental leave usually ranged from 2 days to 2 weeks, and 41% of residents felt that taking leave affected their performance negatively. No negative feedback on performance from program or co-residents.
Huh et al[52]	2022	Cross-sectional	Ophthalmology	44 residents	Good (9)	Median length for parental leave was 4.5 weeks. There were no differences in examination scores, research activity, Accreditation Council for Graduate Medical Education Milestones, or surgical volume between those who took leave and those who didn't. However, residents who pursued fellowship were less likely to have taken leave.
Lawlor et al[43]	2021	Cross-sectional	Otolaryngology	535 residents	Good (8)	Only 14% of residents took off less than 3 weeks. Thirty percent reported taking leave limited the number of career opportunities they had.
Maloni et al[31]	2022	Cross-sectional	General surgery (vascular surgery)	133 residents and 98 fellows	Good (8)	Women more than men delayed having children due to concerns of limiting professional advancement and being detrimental to their careers. However, 88% of women who did have children felt they were able to function at a similar capacity to before they were pregnant.
Nichols[47]	1994	Cross-sectional	Obstetrics and gynecology	11 residents	Fair (7)	Parental leave length for residents was 3 weeks, and over half of residents felt that having a child during residency was detrimental to their career.
Powell et al[49]	2021	Cross-sectional	Unspecified	95 residents	Fair (7)	Mean parental leave length was 7.2 weeks for women and 2.2 weeks for men. About half of residents who became pregnant during residency felt it had a positive effect on their training and career plans.
Reilly et al[37]	2022	Cross-sectional	Ophthalmology	20 residents	Good (8)	Nearly 60% of residents who took a formal leave reported negative feedback regarding their leave.
Shifflette et al[53]	2018	Cross-sectional	General surgery	22 residents	Good (8)	Most residents had 4 to 8 weeks of maternity leave. Half of residents felt skills fell behind fellow residents. Thirty-one percent had lower American Board of Surgery In-Training Examination scores. Residents felt maternity leave negatively affected medical knowledge and technical skills.

lack of clarity of the policy, or lack of knowledge of formal policy (online supplementary data TABLE 6).[3,8,9,11,23,24,28,30,33,36,40,43,50,51,54,55] In 8 studies, 19% to 66% of residents/fellows reported a lack of a formal written leave policy within GME programs.[11,23,28,36,43,50,51,54] The lack of a formal leave policy was reported to be associated with resident dissatisfaction, increased anxiety, feeling unsupported by program leadership, and consideration of leaving residency.[23,24,30,50,54] Furthermore, 5 studies demonstrated, even in the presence of a formal parental leave policy, a lack of awareness of the policy among most (37%-96%) trainees.[9,30,33,36,51]

Lack of Time or Resources for Childcare/Lack of Bonding With Infant: Six studies discussed trainee perception or experience with lack of time and/or resources obtaining childcare (online supplementary data TABLE 7) or lack of time to bond with their infant and family (online supplementary data TABLE 8).[35,39,41,51,53,55] Several studies identified childcare as a major stressor for residents returning to work after taking parental leave.[41,51,53,56] One study found the ability to obtain childcare to be a determinant of maternity leave length reported by 12% of residents.[56] Two studies cited desire for longer time to bond with a newborn as an important factor influencing residents' preference for longer parental leave.[35,39]

Discussion

In our systematic review of parental leave policies and their impact on residents and fellows, length of leave and cultural or program support surrounding parental leave were critical to trainee well-being. These data demonstrate the importance of a supportive professional environment where parental leave is not merely a policy but also is actively encouraged and destigmatized.

These results are consistent with the findings of a systematic review on the effects of parental leave on mental health in the general population, which showed increased duration of leave was generally associated with reduced risk of poor maternal mental health.[5] There is consensus that current parental leave is inadequate in length and negatively impacts the self-reported well-being of trainees.[3,21,23,25,32] The ACGME training context is complex, and there are many barriers to simply increasing the length of parental leave, including fixed time-based graduation and board eligibility requirements, coverage of patient care, impact of leave on co-trainees, and variable sources of funding for resident and fellow salaries. Despite these limitations, there are opportunities for changes that would address some of the issues identified with the inadequacy of length of parental leave. These include moving toward a competency-based model of training (such as entrustable professional activities), offering board examinations multiple times per year, or allowing for flexibility in fellowship start dates. While many board-certifying and accreditation bodies have made meaningful changes in their parental leave policies in recent years, the policies of these organizations serve as a ceiling for increasing duration of leave without delaying graduation from training and eligibility for board certification.[58] The impact of leave on lost opportunities for learning in a fixed-time environment is an additional concern. The 9 studies that we reviewed underscored a heterogeneous picture. While some studies indicated no discernible impact of parental leave on key performance metrics such as ABSITE scores or board pass rates, others presented evidence to the contrary.[25-27,37-39,48,55,57] It is worth noting that a subset of these studies suggested that taking leave might result in negative clinical performance feedback, although this was not a universally observed trend. This review also highlights the stigma that pervades issues of pregnancy and parental leave in medical training. Women surgical residents contend with negative attitudes and stigma during their pregnancies, and voluntarily delay childbearing.[59] Future research should explore how the decision to not take leave or to delay starting a family affects long-term measures such as job placements post-training, job satisfaction, mental health outcomes, and work-life integration.

Based on our review, we created recommendations for programs that wish to implement a parental leave policy:

1. Policies should be formalized with specific considerations for both the childbearing and non-childbearing parent.
2. Policies should allow for a minimum of 6 weeks of parental leave, given the data presented here demonstrating negative implications of leave length of less than 6 weeks on rates of burnout and postpartum depression.
3. Programs should promote a supportive culture for trainees who take parental leave, recognizing the stigma associated with leave and fear of burdening co-residents revealed in these data.
4. All members of the program should be educated on the data behind the value of parental leave and the impact of pregnancy on trainee health.
5. Formal leave policies should include resources available for parents to support their return to work, including availability of on-site or subsidized childcare and lactation facilities.

A variety of limitations in the current review should be considered. There was a lack of explicit

evaluation concerning the impact of leave policies on trainees and patients. Many studies focus on broader program outcomes, generalized impacts, or trainees' perspectives rather than the effects of the policies themselves. Although the risk of bias of studies included was acceptable (all studies were evaluated using a risk-of-bias tool, and no studies received a score below 6 ["Fair"]), most studies reviewed were cross-sectional survey studies, representing level 4 evidence from well-designed case-control and cohort studies. Few studies measured objective data such as impact on academic performance scores, and those that did measure these outcomes came to contradictory conclusions. The data presented may also represent publication bias that could skew the landscape of how parental leave policies, and the effects of those policies, are represented in literature. In a systematic review, there is also a risk of investigator bias in how study themes are identified and presented. While care was taken to systematically review the breadth of published literature relevant to this issue, there is also a risk of an incomplete search strategy. Despite these limitations, the data presented account for the voice and experience of trainees, which can help program leadership and institutions enact policies that better support trainee needs and aspirations.

Conclusions

The current review highlights the potential role of extended parental leave periods, notably those exceeding 6 weeks, in promoting the well-being and job satisfaction of trainees. There is a paucity of literature regarding the impact of leave on trainee performance, which demonstrates a need for further research. Importantly, the benefits of having a defined, formal parental leave policy extend beyond the duration of leave; the perceived support and endorsement of such policies by the institution play an important role in influencing the overall well-being and satisfaction of trainees.

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