

Appendix 3 (as supplied by the authors): Characteristics of the 196 studies included in systematic review

Author	Country	Region	No. of Residents	Age	Males No. (%)	Specialty	Year of Survey	Tool to Measure Burnout	Experiencing Burnout (%)	Definition of Burnout
Abdulrahman et al, 2018 <sup>1</sup>	United Arab Emirates	ME & NA	302	NR	63 (21.0)	Multiple	2016	MBI	70.20%	High EE or DP
Afzal et al, 2010 <sup>2</sup>	USA	North America	115	NR	67 (58.0)	Multiple	2008	MBI	NR	NR
Agha et al, 2015 <sup>3</sup>	Saudi Arabia	ME & NA	96	NR	64 (67)	Multiple	NS	MBI	88.54%	High EE or DP or low PA
Akdeniz et al, 2011 <sup>4</sup>	Turkey	Asia	174	Mean: 32.2, SD: 4.5	74 (42.4)	General Practice	2008	MBI	NR	NR
Aksoy et al, 2014 <sup>5</sup>	Turkey	Asia	28	Mean: 25.9, SD: 2.0	10 (47)	Pediatrics	NS	MBI	27.27%	High EE or DP
Aksoy et al, 2014 <sup>5</sup>	Turkey	Asia	38	Mean: 26.6, SD: 1.5	16 (47)	Internal Medicine	NS	MBI	33.33%	High EE or DP
Al Atassi et al, 2018 <sup>6</sup>	USA	North America	238	NR	190 (80.0)	Oral and Maxillofacial Surgery	2017	MBI	NR	NR
Al-Dubai et al, 2013 <sup>7</sup>	Malaysia	Asia	191	Mean: 26.5, SD: 1.6	85 (44.5)	Multiple	NS	MBI	NR	NR
Al-Ma'mari et al, 2016 <sup>8</sup>	Canada	North America	143	NR	19 (13.0)	Obstetrics and Gynecology	NS	MBI	73.70%	High EE or DP or low PA
Aldrees et al, 2013 <sup>9</sup>	Saudi Arabia	ME & NA	159	NR	NR	Multiple	2010	MBI	86.00%	High EE or DP or low PA
Aldrees et al, 2015 <sup>10</sup>	Saudi Arabia	ME & NA	85	Mean: 29, SD: 2.3	57 (67)	Otolaryngology	2013	MBI	45.00%	High EE and DP
Aldrees et al, 2017 <sup>11</sup>	Saudi Arabia	ME & NA	38	Mean: 28, SD 1.9	28 (74)	Plastic Surgery	2015	MBI	47.00%	High EE and DP
Anil et al, 2017 <sup>12</sup>	Turkey	Asia	71	Mean: 27.8, SD: 1.7	24 (33)	Pediatrics	2010	MBI	NR	NR
Antiel et al, 2013 <sup>13</sup>	USA	North America	156	NR	106 (68.0)	General surgery	2012	Modified MBI (2-Single Item Measures of EE and DP)	NR	NR
Arora et al, 2014 <sup>14</sup>	Australia	Australia & New Zealand	51	NR	NR	Orthopedic Surgery	2012	MBI	53.00%	High EE or DP
Ashkar et al, 2010 <sup>15</sup>	Lebanon	ME & NA	155	NR	86 (55.5)	Multiple	2008	MBI	80.00%	High EE or DP or low PA
Attenello et al, 2018 <sup>16</sup>	USA	North America	346	NR	270 (78.0)	Neurosurgery	2015	MBI	67.00%	High EE or DP
Baer et al, 2017 <sup>17</sup>	USA	North America	258	Mean: 29.4, SD: 2.3	54 (21.1)	Pediatrics	2013	Modified MBI (2-Single Item Measures of EE and DP)	39.10%	High EE or DP

Barrack et al, 2006 <sup>18</sup>	USA	North America	34	Mean: 30.5, SD: 2.6	29 (85)	Orthopedic Surgery	2005	MBI	NR	NR
Becker et al, 2006 <sup>19</sup>	USA	North America	118	Mean: 29.3, SD: 3	25 (20.8)	Obstetrics and Gynecology	2004	MBI	21.00%	High EE + DP
Beckman et al, 2010 <sup>20</sup>	USA	North America	131	NR	82 (62.7)	Internal Medicine	2007	MBI	NR	NR
Beckman et al, 2011 <sup>21</sup>	USA	North America	202	NR	116 (57.4)	Internal Medicine	2009	MBI	NR	High EE or DP
Belayachi et al, 2016 <sup>22</sup>	Morocco	Africa	198	Mean: 29.3, SD: 3.2	82 (41.4)	Multiple	2010	MBI	NR	NR
Bellolio et al, 2014 <sup>23</sup>	USA	North America	188	NR	34 (18.0)	Multiple	NS	Professional Quality of Life Scale Version 5	NR	>=42
Biaggi et al, 2003 <sup>24</sup>	Switzerland	Europe	60	33.7 (total); residents (n=39), 31; chief residents (n=21): 38.6.	36 (60)	Multiple	2000	Seven point scale	41.70%	NR
Billings et al, 2011 <sup>25</sup>	USA	North America	284	NR	131 (46.0)	Internal Medicine	2008 to 2010	MBI	45.00%	High EE or DP
Blanchard et al, 2010 <sup>26</sup>	France	Europe	204	NR	82 (40.0)	Oncology	2009	MBI	44.00%	High EE or DP
Block et al, 2013 <sup>27</sup>	USA	North America	55	Mean: 29, SD: 3	29 (53)	Internal Medicine	2011	Modified MBI (6 items)	76.00%	NS
Bogg et al, 2001 <sup>28</sup>	England	Europe	56	NR	NR	Multiple	NS	MBI	25.00%	High EE, high DP and low PA
Bragard et al, 2010 <sup>29</sup>	Belgium	Europe	102	NR	NR	Multiple	NS	MBI	NR	NR
Bragard et al, 2012 <sup>30</sup>	Belgium	Europe	113	Mean: 28, SD: 2.9	28 (25.0)	Multiple	2002 to 2006	MBI	NR	NR
Brant et al, 2010 <sup>31</sup>	England	Europe	36	Mean: 25, Range: 23-30	15 (42)	NR	2005 to 2007	MBI	NR	NR
Braun et al, 2017 <sup>32</sup>	USA	North America	32	Mean: 28.59, SD: 2.69	25 (79)	Internal Medicine	2014	MBI	50.00%	High EE or DP
Campbell et al, 2010 <sup>33</sup>	USA	North America	86	NR	44 (51)	Internal Medicine	2003 to 2008	MBI	67.00%	High EE or DP
Castelo-Branco et al, 2007 <sup>34</sup>	Spain	Europe	109	Mean: 27, SD: 2.3	15 (14.0)	Obstetrics and Gynecology	2004	MBI	58.00%	High EE or DP
Chaput et al, 2015 <sup>35</sup>	France	Europe	52	Mean: 28.9, Range 25-34	26 (50)	Plastic surgery	2013	MBI	28.80%	High EE or DP
Chati et al, 2017 <sup>36</sup>	France	Europe	251	Mean: 29.5, SD: 2.7	144 (57.5)	General Surgery	2013	MBI	52.00%	High EE or DP
Chaukos et al, 2017 <sup>37</sup>	USA	North America	54	NR	21 (40)	Internal Medicine	NS	MBI	31.00%	High EE or DP
Chaukos et al, 2017 <sup>37</sup>	USA	North America	14	NR	6 (40)	Psychiatry	NS	MBI	14.00%	High EE or DP
Chen et al, 2013 <sup>38</sup>	Taiwan	Asia	278	NR	NR	Multiple	2012	MBI	NR	High EE or DP

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Choi et al, 2017 <sup>39</sup>	USA	North America	2011 (507), 2013 (520)	NR		Multiple	2011 & 2013	Single item measure	NR	NR
Cofer et al, 2018 <sup>40</sup>	USA	North America	40	NR	27 (68)	General Surgery	2016	MBI	25.00%	2/3 of high EE, high DP or low PA
Coluccia, et al, 2017 <sup>41</sup>	Italy	Europe	41	NR	17 (42)	Psychiatry	2016	MBI	NR	NR
Cooke et al, 2013 <sup>42</sup>	Australia	Australia & New Zealand	128	NR	NR	General Practice	2010	Single item measure	14.00%	Selecting statements 3-5
Creed et al, 2014 <sup>43</sup>	Australia	Australia & New Zealand	355	Mean: 28.06, Range: 21-58	111 (31.2)	NR	NR	Copenhagen Burnout Inventory	NR	NR
Cubero et al, 2016 <sup>44</sup>	Brazil	South America	54	NR	29 (54)	Oncology	2010	MBI	76.00%	High EE or DP
Dahlin et al, 2010 <sup>45</sup>	Sweden	Europe	186	Mean: 27.4, SD: 4	75 (40.3)	NR	2003 & 2006	Oldenburg Burnout Inventory	NR	NR
De Andrade et al, 2016 <sup>46</sup>	Brazil	South America	32	NR	7 (22)	Pediatrics	2009	MBI	18.80%	High EE and DP
De Oliveira Jr et al, 2013 <sup>47</sup>	USA	North America	1417	NR	808 (57.0)	Anesthesia	NR	Modified MBI (12 questions)	41.00%	Moderate or high in 2/3 of EE, DP or PA
Demirci et al, 2010 <sup>48</sup>	Turkey	Asia	11	NR	NR	NR	2006	MBI	NR	High EE or DP
Dikmetas et al, 2011 <sup>49</sup>	Turkey	Asia	270	Mean: 30, SD/Range: NR	178 (65.9)	Multiple	2009	MBI	NR	High EE or DP or low PA
Dominguez et al, 2018 <sup>50</sup>	Colombia	South America	202	Mean: 28.63, SD: 2.96	129 (63.9)	NR	2015	MBI	33.20%	High EE and 1 of high DP or low PA)
Doolittle et al, 2013 <sup>51</sup>	USA	North America	108	Mean: 30, SD: 4.8	54 (50.0)	Multiple	2010	MBI	NR	NR
Durning et al, 2013 <sup>52</sup>	USA	North America	17	Mean: 29.6, SD: 2	10 (59)	Internal Medicine	NR	Modified MBI (2-Single Item Measures of EE and DP)	NR	NR
Dyrbye et al, 2014 <sup>53</sup>	USA	North America	1701	NR	827 (48.6)	Multiple	2012	MBI	60.30%	High EE or DP
Elmore et al, 2016 <sup>54</sup>	USA	North America	665	Mean: 30.3, SD: 3.3	375 (56.4)	General Surgery	2014	MBI	69.00%	High EE or DP or low PA
Embriaco et al, 2007 <sup>55</sup>	France	Europe	372	NR	NR	NR	2004	MBI	42.70%	Total score between -8 to +34
Fahrenkopf et al, 2008 <sup>56</sup>	USA	North America	123	NR	37 (30.0)	NR	2003	MBI	75.00%	High EE and DP
Ferreira et al, 2012 <sup>57</sup>	Brazil	South America	12	NR	NR	NR	2011	Burnout Syndrome Inventory	NR	NR
Fulop et al, 2011 <sup>58</sup>	Hungary	Europe	67	Mean: 31.45, SD: 5.79	16 (24)	NR	2011	MBI	NR	NR

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Galam et al, 2013 <sup>59</sup>	France	Europe	4050	Mean: 26.4, SD: NR	1268 (31.3)	General Practice	2011	MBI	24.10%	2/3 of high EE, high DP or low PA
Garza et al, 2004 <sup>60</sup>	USA	North America	136	NR	39 (29.0)	Obstetrics and Gynecology	NR	MBI	18.00%	High EE, DP and low PA
Geelan-Hansen et al, 2018 <sup>61</sup>	USA	North America	14	NR	NR	NR	NR	MBI	NR	NR
Gelfand et al, 2004 <sup>62</sup>	USA	North America	26	NR	NR	Gen surg (and some off service PGY1 surgical residents)	2003	MBI	NR	High EE, high DP and low PA
Goitein et al, 2005 <sup>63</sup>	USA	North America	118	NR	55 (47.0)	Internal Medicine	2004	MBI	68.00%	High EE or DP
Golub et al, 2007 <sup>64</sup>	USA	North America	514	Mean: 31, Range: 24-45	406 (79.0)	Otolaryngology	2005	MBI	10.00%	High EE, high DP and low PA
Gopal et al, 2005 <sup>65</sup>	USA	North America	121	NR	58 (48.0)	Internal Medicine	2003	MBI	61.00%	High EE or DP
Gopal et al, 2007 <sup>66</sup>	USA	North America	106	NR	45 (42.5)	Internal medicine	2004	MBI	55.00%	High EE or DP
Gouveia et al, 2017 <sup>67</sup>	Brazil	South America	129	NR	62 (48.1)	Multiple	2015	MBI	27.90%	High EE, high DP and low PA
Govardhan et al, 2012 <sup>68</sup>	USA	North America	49	Mean: 30.1, SD: 3	4 (9)	Obstetrics and Gynecology	2009	MBI	13.00%	High EE, high DP and low PA
Goveia et al, 2018 <sup>69</sup>	Brazil	South America	37	Mean: 30, SD: 2.9	NR	Anesthesia	2014 to 2015	MBI	2.70%	High EE, high DP and low PA
Guenette et al, 2017 <sup>70</sup>	USA	North America	94	NR	59 (63)	Radiology	2016	MBI	NR	High EE, high DP and low PA
Guenette et al, 2018 <sup>71</sup>	USA	North America	314	Mean: 31.1, SD: 2.8	217 (69.0)	Radiology	2017	MBI	NR	Low PA
Gulen et al, 2016 <sup>72</sup>	Turkey	Asia	48	Mean: 30.5, SD: 3.2	26 (55)	Emergency Medicine	2015	MBI	NR	NR
Guthrie et al, 1999 <sup>73</sup>	England	Europe	64	NR	31 (48)	Psychiatry	NR	MBI	NR	High EE, high DP and low PA
Halliday et al, 2017 <sup>74</sup>	United Kingdom	Europe	292	HST 33, JST 28	128 (43.8)	NR	NR	Oldenburg Burnout Inventory	NR	NR
Hameed et al, 2018 <sup>75</sup>	Saudi Arabia	ME & NA	181	Mean: 27.6, SD/Range: NR	75 (41.4)	Multiple	2013 to 2014	MBI	80.70%	High EE or DP
Hannan et al, 2018 <sup>76</sup>	Ireland	Europe	101	Mean: 28, Range: 23-43	45 (44.4)	NR	2012 to 2014	MBI	NR	NR
Hausler et al, 2017 <sup>77</sup>	Austria	Europe	136	Mean: 32, SD: 4.8	47 (34.6)	Multiple	2015 to 2016	Modified MBI (21 items)	NR	NR

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Henning et al, 2014 <sup>78</sup>	New Zealand	Australia & New Zealand	17	NR	6 (35)	NR	NR	Copenhagen Burnout Inventory	NR	NR
Hill et al, 2009 <sup>79</sup>	USA	North America	22	NR	NR	Otolaryngology	2006	MBI	31.82%	High EE and DP
Hillhouse et al, 2000 <sup>80</sup>	USA	North America	46	Mean: 30.6, SD: 4.7	31 (67)	Multiple	nr	Staff Burnout Scale for Health Professionals	NR	NR
Holmes et al, 2017 <sup>81</sup>	USA	North America	276	NR	97 (35.0)	Multiple	2014	MBI	69.00%	High EE or DP
Huggard et al, 2011 <sup>82</sup>	New Zealand	Australia & New Zealand	253	Mean: 31.1, SD: 5.9	104 (41.1)	Multiple	NR	Professional Quality of Life Index Version 3	19.50%	NR
Hutter et al, 2006 <sup>83</sup>	USA	North America	58	NR	NR	Multiple	2013 & 2014	MBI	NR	NR
Hwang et al, 2018 <sup>84</sup>	USA	North America	45	NR	39 (87)	Orthopedic Surgery	2,011	MBI	NR	High EE and DP and low PA
Hyman et al, 2011 <sup>85</sup>	USA	North America	34	NR	20 (59)	Multiple	2007	Modified MBI NS	NR	High EE, high DP and low PA
Jamjoom et al, 2018 <sup>86</sup>	Saudi Arabia	ME & NA	32	NR	2 (6)	Pediatrics	2016	MBI	70.00%	NR
Jin et al, 2015 <sup>87</sup>	China	Asia	135	NR	66 (48.9)	NR	2008	MBI-GS	NR	NR
Joaquim et al, 2018 <sup>88</sup>	Portugal	Europe	115	Mean: 28.4, SD: 2.2	30 (26.3)	Oncology	2011	MBI	45.20%	NR
Jovanovic et al, 2016 <sup>89</sup>	Europe	Europe	1980	Mean: 31.9, SD: 5.3	804 (40.6)	Psychiatry	2008 to 2012	MBI-GS	36.70%	High MBI-EX and MBI-CY
Kang et al, 2013 <sup>90</sup>	South Korea	Asia	86	NR	64 (74)	NR	2010	MBI	NR	NR
Karaoglu et al, 2015 <sup>91</sup>	Turkey	Asia	74	Mean: 27.6, SD: 2.25	28 (41)	Multiple	2011	Modified MBI (21 items)	NR	NR
Kash et al, 2000 <sup>92</sup>	USA	North America	76	NR	53 (70)	Oncology	NS	MBI	NR	NR
Kassam et al, 2015 <sup>93</sup>	Canada	North America	301	Mean: 30.9, SD: 4.3	119 (39.4)	NR	2012	Copenhagen Burnout Inventory		NR
Kealy et al, 2016 <sup>94</sup>	Canada	North America	400	NR	123 (30.8)	Psychiatry	2014	Single item measure	21.00%	Self-report
Kolarik et al, 2018 <sup>95</sup>	USA	North America	161	Mean: 29.6, SD: 2.9	83 (51.6)	Multiple	2017	Modified MBI (2-Single Item Measures of EE and DP)	NR	NR
Komur et al, 2017 <sup>96</sup>	Turkey	Asia	54	NR	NR	Pathology	NS	MBI	NR	NR
Krug et al, 2017 <sup>97</sup>	USA	North America	112	NR	47 (42)	Internal Medicine	2012	MBI	61.00%	High EE or DP

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Kwah et al, 2016 <sup>98</sup>	USA	North America	32	NR	NR	Internal Medicine	2012	MBI	75.00%	High EE or DP
Lambden et al, 2018 <sup>99</sup>	USA	North America	72	NR	NR	Multiple	2017	Single item measure	53.50%	>=3 on single-item question
Landrigan et al, 2008 <sup>100</sup>	USA	North America	213	30.2	62 (29.3)	Pediatrics	2003 & 2004	MBI	75.40%	High EE or DP
Landrigan et al, 2008 <sup>100</sup>	USA	North America	213	29.1	68 (31.7)	Pediatrics	2003 & 2004	MBI	57.00%	High EE or DP
Leach et al, 2018 <sup>101</sup>	USA	North America	43	NR	27 (63)	General Surgery	2017	Single item measure	30.20%	>=3
Lebares et al, 2018 <sup>102</sup>	USA	North America	566	NR	277 (49.0)	General Surgery	2016	Modified MBI (9 items)	68.95%	High EE or DP or low PA
Lebensohn et al, 2013 <sup>103</sup>	USA	North America	168	Median: 29.0, IQR: NR	67 (40.1)	Family Medicine	2012 to 2013	MBI	NR	NR
Lee et al, 2018 <sup>104</sup>	Singapore	Asia	446	Mean: 29.4, SD: 2.6	208 (46.6)	Multiple	2015	MBI	80.70%	High EE, DP or low PA
Lemkau, 1987 <sup>105</sup>	USA	North America	67	Mean: 29.1, SD: 3.8	53 (79)	General Practice	1984	MBI	NR	NR
Leung et al, 2017 <sup>106</sup>	Australia, New Zealand	Australia & New Zealand	107	Median: 31.4, IQR: NR	54 (50.0)	Oncology	2015	MBI	49.50%	High EE or DP
Levin et al, 2017 <sup>107</sup>	USA	North America	354	Mean: 33, SD: 4	182 (51.4)	Neurology	2016	MBI	67.20%	High EE or DP
Lin et al, 2016 <sup>108</sup>	USA	North America	73	Mean: 30.8, SD: 3.22	42 (58)	General Surgery	2013 to 2014	MBI	82.00%	High EE or DP
Lindeman et al, 2013 <sup>109</sup>	USA	North America	30	Mean: 30, Range: 25-36	21 (70)	General Surgery	2011	MBI	93.00%	>=13
Lindeman et al, 2013 <sup>109</sup>	USA	North America	36	Mean: 30, Range: 25-36	24 (67)	General Surgery	2012	MBI	75.00%	>=13
Lindeman et al, 2017 <sup>110</sup>	USA	North America	88	NR	46 (52)	General Surgery	2016	MBI	51.00%	High EE
Llera et al, 2014 <sup>111</sup>	Argentina	South America	92	NR	28 (30)	Multiple	2011	MBI	19.60%	High EE and DP and low PA
Low et al, 2018 <sup>112</sup>	Singapore	Asia	43	Median: 25, Range: 25-27	18 (43)	Multiple	2015	Professional Quality of Life Scale	34.88%	>=57
Lue et al, 2010 <sup>113</sup>	Taiwan	Asia	555	Mean: 29.35, SD: 2.58	376 (67.7)	Multiple	2007	Copenhagen Burnout Inventory		NR
Malik et al, 2016 <sup>114</sup>	Pakistan	Asia	133	NR	98 (73.7)	Multiple	NS	MBI	57.90%	High in 2 of EE, DP or PA
Markwell et al, 2009 <sup>115</sup>	Australia, New Zealand	Australia & New Zealand	914	NR	402 (44.0)	Multiple	2008	Professional Quality of Life Scale	69.00%	NR
Martini et al, 2004 <sup>116</sup>	USA	North America	110	NR	NR	Multiple	2003	MBI	49.00%	NR
Martini et al, 2006 <sup>117</sup>	USA	North America	118	NR	NR	Multiple	2004	MBI	41.00%	NR
McNeeley et al, 2013 <sup>118</sup>	USA	North America	249	Mean: 31, Range: 25-46	182 (73.0)	Radiology	2012	Modified MBI (2 Single Item Measures, & PA (5 items))	62.00%	High EE or DP

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Michels et al, 2003 <sup>119</sup>	USA	North America	350	Mean: 30.4, SD: 5.2	238 (68.0)	General Practice	1993	MBI	NR	NR
Miyoshi et al, 2016 <sup>120</sup>	Japan	Asia	85	Mean: 26.24, SD: 3.81	47 (55)	NR	2013	MBI-GS	30.59%	High EE and 1 of high DP or low PA
Mohammed et al, 2014 <sup>121</sup>	Egypt	ME & NA	84	NR	46 (55)	Multiple	2012	MBI	76.00%	2/3 of high EE, high DP or low PA
Moloney et al, 2000 <sup>122</sup>	New Zealand	Australia & New Zealand	99	NR	52 (52)	Psychiatry	1997	MBI	NR	NR
Mordant et al, 2014 <sup>123</sup>	Europe	Europe	155	Mean: 34.6, SD: 8.2	103 (66.5)	Multiple	2010	Modified MBI (2-Single Item Measures of EE and DP)	24.80%	"Once a week or less" response to at least one question
Msaouel et al, 2010 <sup>124</sup>	Greece	Europe	311	Median: 32, Range: 26-45	172 (55.3)	Multiple	NR	MBI	49.50%	High EE and 1 of high DP or low PA)
Myszkowski et al, 2017 <sup>125</sup>	France	Europe	259	Mean: 25.6, SD/Range: NR	60 (23.2)	Internal Medicine	NR	MBI	NR	NR
Nolan et al, 2017 <sup>126</sup>	Canada	North America	166	Median: 27.5, IQR: 4.0	43 (26.0)	Pediatrics	2014	MBI	42.00%	High EE or DP
O'Connor et al, 2017 <sup>127</sup>	Ireland	Europe	172	NR	75 (43.6)	Multiple	2015	MBI	69.50%	High EE or DP
Ogundipe et al, 2014 <sup>128</sup>	Nigeria	Africa	204	Mean: 33.44, SD: 4.5	119 (58.3)	Multiple		MBI	NR	High EE and DP and low PA
Okpozo et al, 2017 <sup>129</sup>	USA	North America	203	NR	105 (51.7)	Multiple	NR	MBI	NR	NR
Olson et al, 2014 <sup>130</sup>	USA	North America	76	Mean: 29.2, SD: 2.9	40 (53)	Internal Medicine	2012	MBI	53.90%	High EE or DP
Olson et al, 2015 <sup>131</sup>	USA	North America	45	Mean: 28.4, SD: 1.7	16 (36)	Pediatrics	2014	MBI	40.00%	High EE or DP or low PA
Panagoulou et al, 2006 <sup>132</sup>	Greece	Europe	141	Mean: 32, SD: 5	78 (55.0)	Internal medicine	2004	MBI	NR	High EE and DP
Pantaleoni et al, 2014 <sup>133</sup>	USA	North America	61	NR	NR	Pediatrics	2011	MBI	46.00%	High EE or DP
Park et al, 2016 <sup>134</sup>	Korea	Asia	317	Mean: 30.44, SD: 2.98	214 (67.5)	Multiple	2013	MBI	NR	NR
Parr et al, 2016 <sup>135</sup>	Australia	Australia & New Zealand	153	NR	68 (44.4)	Multiple	NR	Copenhagen Burnout Inventory	NR	>= 50
Pereira-Lima et al, 2015 <sup>136</sup>	Brazil	South America	305	Mean: 28, SD: 2.53	159 (52.1)	Multiple	NR	Burnout Syndrome Inventory	58.36%	EE+ED or DH
Porrino et al, 2017 <sup>137</sup>	USA	North America	58	NR	48 (83)	Radiology	2016	Modified MBI (2 Single Item Measures, & PA (5 items))	87.90%	High EE or DP or low PA
Prins et al, 2007 <sup>138</sup>	The Netherlands	Europe	158	Mean: 31.9, SD: 3.2	76 (48.0)	Multiple	2003	Modified MBI (20 items)	13.00%	Moderate: >19.92 EE + >7.95

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										(women) or >8.95 (men) on DP. OR >19.92EE and >25.97 PA
Prins et al, 2010 <sup>139</sup>	The Netherlands	Europe	2115	Mean: 31.5, SD: 3.5	820 (38.8)	Multiple	2005	Modified MBI (20 items)	21.00%	Moderate: >=19.92 EE + >7.95 (women) or >8.95 (men) on DP. OR >=19.92EE and <=25.97 PA
Purdy et al, 1987 <sup>140</sup>	USA	North America	67	Mean: 29.1, SD: 3.8	53 (79)	General Practice	1984	MBI	NR	NR
Racic et al, 2018 <sup>141</sup>	Bosnia and Herzegovina	Europe	26	NR	NR	General Practice	2014	Professional Quality of Life Index Version 5	NR	low <=22, moderate 23-41, high>=42
Ramey et al, 2017 <sup>142</sup>	USA	North America	205	NR	141 (68.8)	Oncology	2016	MBI	33.20%	High EE or DP
Ratnakaran et al, 2016 <sup>143</sup>	India	Asia	558	NR	326 (58.4)	Multiple	NR	Copenhagen Burnout Inventory	NR; burnout in 3 diff categories reported	50/100 score cutoff for high/low
Raviola et al, 2002 <sup>144</sup>	Kenya	Africa	50	Mean: 33, SD/Range: NR	NR	Multiple	NS	Single item measure	82.00%	Self-report
Ringrose et al, 2009 <sup>145</sup>	Netherlands	Europe	47	Mean: 30.3, SD: 3.3	23 (49)	Multiple	2007	Modified MBI (15 items)	31.00%	High EE and 1 of high DP or low PA)
Ripp et al, 2010 <sup>146</sup>	USA	North America	145	NR	73 (50.3)	Internal Medicine	2007	MBI	34.00%	High EE or DP
Ripp et al, 2011 <sup>147</sup>	USA	North America	191	Mean: 28, SD/Range: NR	126 (66.0)	Internal Medicine	2009	MBI	81.00%	High EE or DP
Ripp et al, 2015 <sup>148</sup>	USA	North America	133	NR	77 (58.0)	Internal Medicine	2012	MBI	75.00%	High EE or DP
Robertson et al, 2017 <sup>149</sup>	USA	North America	340	NR	143 (42.0)	Multiple	2015	Single item measure	34.00%	burnout was considered positive if respondent selected choice 3,4, or 5
Rogers et al, 2014 <sup>150</sup>	Australia	Australia & New Zealand	349	Mean: 28, SD: 4.4	108 (31.0)	NR	2011	Copenhagen Burnout Inventory	NR	NR
Rogers et al, 2016 <sup>151</sup>	Canada	North America	198	NR	55 (27.8)	Multiple	2014	Copenhagen Burnout Inventory	NR	NR
Rosen et al, 2006 <sup>152</sup>	USA	North America	47	NR	23 (49)	Internal Medicine	2003	MBI	55.30%	High EE and DP

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Rui et al, 2016 <sup>153</sup>	China	Asia	149	NR	NR	Anesthesia	NS	MBI	NR	High EE, high DP and low PA
Ruitenburng et al, 2012 <sup>154</sup>	Netherlands	Europe	181	Mean: 33, SD: 3.2	76 (42.0)	Multiple	2009	Modified MBI (13 items)	7.00%	High EE and DP
Sajjadi et al, 2017 <sup>155</sup>	Canada	North America	43	Mean: 30, SD: 3	19 (45)	IM	2014	MBI	21.00%	High EE and DP and low PA
Salles et al, 2014 <sup>156</sup>	USA	North America	141	Mean: 31.25, SD/Range: NR	89 (63.0)	Multiple	NR	MBI	NR	NR
Salpigktidis et al, 2016 <sup>157</sup>	Greece, UK, Germany	Europe	131	Mean: 30, SD: 3	66 (50.0)	Multiple	2016	MBI	NR	NR
Sargent et al, 2004 <sup>158</sup>	USA	North America	21	Mean: 30, Range: 28-34	20 (97)	Orthopedic Surgery	NR	MBI	NR	NR
Sargent et al, 2009 <sup>159</sup>	USA	North America	384	NR	338 (88.0)	Orthopedic Surgery	NR	MBI	56.00%	NR
Satterfield et al, 2009 <sup>160</sup>	USA	North America	28	NR	9 (32)	Internal Medicine		Tedium index	NR	NR
Schweitzer, 1994 <sup>161</sup>	South Africa	Africa	36	NR	NR	NR	NR	Single item measure	55.50%	Yes
See et al, 2016 <sup>162</sup>	Singapore	Asia	64	NR	NR	Internal Medicine	2013	Copenhagen Burnout Inventory	71.80%	Score of 50/100 on any subscale
Selic et al, 2012 <sup>163</sup>	Slovenia	Europe	117	Mean: 34.2, SD: 4.6	21 (17.9)	General Practice	2009	MBI	NR	NR
Shakir et al, 2017 <sup>164</sup>	USA	North America	255	NR	205 (80.4)	Neurosurgery	2016	Modified MBI (9 items)	36.50%	High EE or DP
Shams and El-Masry, 2013 <sup>165</sup>	Egypt	ME & NA	30	NR	NR	Anesthesia	2011	MBI	NR	High EE, DP and low PA
Shanafelt et al, 2002 <sup>166</sup>	USA	North America	115	NR	54 (47.0)	Internal Medicine	2001	MBI	76.00%	High EE or DP
Shanafelt et al, 2014 <sup>167</sup>	USA	North America	1345	Median: 33, IQR: NR	710 (52.8)	Oncology	2014	Modified MBI (2-Single Item Measures of EE and DP)	34.10%	High EE or DP
Shapiro et al, 2017 <sup>168</sup>	USA	North America	217	NR	178 (82.0)	Oral and Maxillofacial Surgery	NS	MBI	NR	NR
Shoimer et al, 2018 <sup>169</sup>	Canada	North America	96	NR	NR	Dermatology	2014	MBI	NR	NR
Simpkin et al, 2018 <sup>170</sup>	US and Canada	North America	49	NR	15 (30)	Pediatrics	2015	Modified MBI (2-Single Item Measures of EE and DP)	31.00%	High EE or DP
Siu et al, 2012 <sup>171</sup>	Hong Kong	Asia	77	NR	NR	NR	2009	MBI	48.00%	High EE and DP and low PA
Sochos et al, 2012 <sup>172</sup>	England	Europe	184	Mean: 30.6, SD: 4.4	73 (40.0)	Multiple	NS	MBI	NR	NR

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Spataro et al, 2016 <sup>173</sup>	USA	North America	198	Mean: 29.9, Range: 25.9-41.5	101 (51.0)	Internal Medicine	2014	MBI	22.00%	High EE or DP
Stodel et al, 2011 <sup>174</sup>	South Africa	Africa	22	Mean: 30, SD: 3.26	6 (25)	NR	2009	MBI	NR	NR
Sulaiman et al, 2017 <sup>175</sup>	Ireland	Europe	265	Mean: 28.5, SD: 0.26	140 (52.8)	Multiple	NS	MBI	26.40%	2/3 of high EE, high DP or low PA
Swami et al, 2013 <sup>176</sup>	India	Asia	56	Mean: 27.8, SD: 2.37	NR	Multiple	NR	Shirom-Milam Burnout Measure	NR	NR
Talih et al, 2016 <sup>177</sup>	Lebanon	ME & NA	118	NR	62 (53.0)	Multiple	2013	Burnout Measure (modified)	27.00%	>=3.5
Toral-Villanueva et al, 2009 <sup>178</sup>	Mexico	North America	312	Mean: 28, SD: 2.5	178 (57.0)	Multiple	2003	MBI	40.00%	High EE or DP
Torppa et al, 2015 <sup>179</sup>	Finland	Europe	97	NR	NR	General Practice	2011	Modified MBI (1 item)	16.50%	High EE
Trockel et al, 2018 <sup>180</sup>	USA	North America	185	NR	NR	Multiple	NS	Modified MBI (2-Single Item Measures of EE and DP)	50.00%	NR
Turgut et al, 2016 <sup>181</sup>	Turkey	Asia	127	Mean: 28.01, 2.41	56 (44.1)	NR	NS	MBI	NR	NR
Tzischinsky et al, 2001 <sup>182</sup>	Israel	ME & NA	78	M/F 30.7/30.3	53 (68)	NR	NR	MBI	NR	NR
van der Wal et al, 2016 <sup>183</sup>	Netherlands	Europe	141	Mean: 31, Range: 26-48	53 (37.6)	Anesthesia	2012	Modified MBI (20 items)	11.30%	High EE and 1 of high DP or low PA
van Vendelo et al, 2014 <sup>184</sup>	Netherlands	Europe	105	NR	83 (79.0)	Orthopedic Surgery	2011	Modified MBI (2-Single Item Measures of EE and DP)	27.60%	High EE or DP
van Vendeloo et al, 2018 <sup>185</sup>	Belgium	Europe	236	Median: 28, Range: 26-40	96 (40.7)	Multiple	2016	Modified MBI (20 items)	41.50%	Mean EE >=2.5 AND DP >=1.8 (men) or >=1.6 (women) OR ...EE >=2.5 and <=3.7 on PA
van Vendeloo et al, 2018 <sup>186</sup>	Netherlands	Europe	1231	Median: 32, Range: 26-40	325 (26.4)	Multiple	2015	Modified MBI (20 items)	15.00%	Mean EE >=2.5 AND DP >=1.8 (men) or >=1.6 (women) OR ...EE >=2.5 and <=3.7 on PA

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Waheed et al, 2017 <sup>187</sup>	Pakistan	Asia	102	Mean: 27.45, SD: 1.69	NR	Obstetrics and Gynecology	2016	MBI	NR	High EE or DP
Waldman et al, 2009 <sup>188</sup>	Argentina	Europe	106	Mean: 29.1, SD: 2.4	73 (68.7)	Cardiology	2007	MBI	80.20%	High EE or DP
Weigl et al, 2015 <sup>189</sup>	Germany	Europe	39	NR	NR	Pediatrics	NS	MBI	NR	NR
West et al, 2009 <sup>190</sup>	USA	North America	239	NR	148 (62.1)	Internal Medicine	2003 to 2009	MBI	NR	NR
Willcock et al, 2004 <sup>191</sup>	Australia	Australia & New Zealand	110	Mean: 28.3, SD: 3.8	62 (56.0)	Psychiatry	2001	MBI	54.00%	High EE or DP
Williford et al, 2018 <sup>192</sup>	USA	North America	76	NR	NR	General Surgery	2017	MBI	75.00%	High EE or DP
Woodside Jr et al, 2008 <sup>193</sup>	USA	North America	155	Mean: 35, SD: 7.5	88 (57.0)	Multiple	2002 to 2005	MBI	NR	NR
Yroni et al, 2017 <sup>194</sup>	France	Europe	271	Mean: 28.2	104 (38.4)	Multiple	NS	MBI	NR	NR
Zis et al, 2014 <sup>195</sup>	Greece	Europe	263	Mean: 33.5, SD: 3.3	141 (53.6)	Multiple	2012	MBI	14.40%	High EE and 1 of high DP or low PA
Zis et al, 2015 <sup>196</sup>	Greece	Europe	116	Mean: 34.5, SD: 3.6	52 (44.8)	Neurology	2014	MBI	18.10%	High EE and 1 of high DP or low PA
Zubairi and Noordin, 2016 <sup>197</sup>	Pakistan	Asia	82	NR	44 (54)	Multiple	2013	MBI	NR	NR

## References

1. Abdulrahman M, Farooq MM, Al Kharmiri A, Al Marzooqi F, Carrick FR. Burnout and depression among medical residents in the United Arab Emirates: A Multicenter study. *J Fam Med Prim care*. 2018;7(2 PG-435-441):435-441. doi:[https://dx.doi.org/10.4103/jfmpe.jfmpe\\_199\\_17](https://dx.doi.org/10.4103/jfmpe.jfmpe_199_17)
2. Afzal KI, Khan FM, Mulla Z, Akins R, Ledger E, Giordano FL. Primary language and cultural background as factors in resident burnout in medical specialties: a study in a bilingual US city. *South Med J*. 2010;103(7 PG-607-15):607-615. doi:<https://dx.doi.org/10.1097/SMJ.0b013e3181e20cad>
3. Agha A, Mordya A, Anwar E, Saleh N, Rashid I, Saeed M. Burnout among middle-grade doctors of tertiary care hospital in Saudi Arabia. *Work J Prev Assess Rehabil*. 2015;51(4 PG-839-847):839-847. doi:10.3233/wor-141898
4. Akdeniz M, Yaman H, Senol Y, et al. Family practice in Turkey: views of family practice residents. *Postgrad Med*. 2011;123(3 PG-144-9):144-149. doi:<https://dx.doi.org/10.3810/pgm.2011.05.2292>
5. Aksoy DY, Durusu Tanriover M, Dizdar O, et al. Burnout syndrome during residency in internal medicine and pediatrics in a country without working time directive. *Int J Health Care Qual Assur*. 2014;27(3 PG-223-230):223-230. doi:<http://dx.doi.org/10.1108/IJHCQA-12-2012-0127>
6. Al Atassi H, Shapiro MC, Rao S, Dean J, Salama A. Oral and Maxillofacial Surgery Resident Perception of Personal Achievement and Anxiety: A Cross-Sectional Analysis. *J Oral Maxillofac Surg*. 2018;(PG-). doi:<https://dx.doi.org/10.1016/j.joms.2018.06.018>
7. Al-Dubai SAR, Ganasegeran K, Perianayagam W, Rampal KG. Emotional burnout, perceived sources of job stress, professional fulfillment, and

Appendix to: Naji L, Singh B, Shah A, et al. Global prevalence of burnout among postgraduate medical trainees: a systematic review and meta-regression.

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- engagement among medical residents in Malaysia. *Sci World J.* 2013;2013(PG-137620):137620. doi:http://dx.doi.org/10.1155/2013/137620
8. Al-Ma'mari NO, Naimi AI, Tulandi T. Prevalence and predictors of burnout among obstetrics and gynecology residents in Canada. *Gynecol Surg.* 2016;13(4 PG-323-327):323-327. doi:http://dx.doi.org/10.1007/s10397-016-0955-3
  9. Aldrees TM, Aleissa S, Zamakhshary M, Badri M, Sadat-Ali M. Physician well-being: Prevalence of burnout and associated risk factors in a tertiary hospital, Riyadh, Saudi Arabia. *Ann Saudi Med.* 2013;33(5 PG-451-456):451-456. doi:http://dx.doi.org/10.5144/0256-4947.2013.451
  10. Aldrees T, Badri M, Islam T, Alqahtani K. Burnout among otolaryngology residents in Saudi Arabia: A multicenter study. *J Surg Educ.* 2015;72(5 PG-844-848):844-848. doi:http://dx.doi.org/10.1016/j.jsurg.2015.02.006
  11. Aldrees T, Hassouneh B, Alabdulkarim A, et al. Burnout among plastic surgery residents: National survey in Saudi Arabia. *Saudi Med J.* 2017;38(8 PG-832-836):832-836. doi:http://dx.doi.org/10.15537/smj.2017.8.18346
  12. Anil M, Yurtseven A, Yurtseven I, et al. The evaluation of burnout and job satisfaction levels in residents of pediatrics. *Turk Pediatr Ars.* 2017;52(2 PG-66-71):66-71. doi:http://dx.doi.org/10.5152/TurkPediatriArs.2017.4982
  13. Antiel RM, Reed DA, Van Arendonk KJ, et al. Effects of Duty Hour Restrictions on Core Competencies, Education, Quality of Life, and Burnout Among General Surgery Interns. *JAMA Surg.* 2013;148(5):448. doi:10.1001/jamasurg.2013.1368
  14. Arora M, Diwan AD, Harris IA. Prevalence and factors of burnout among Australian orthopaedic trainees: a cross-sectional study. *J Orthop Surg (Hong Kong).* 2014;22(3 PG-374-7):374-377. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=med8&NEWS=N&AN=25550022 NS -.
  15. Ashkar K, Romani M, Musharrafieh U, Chaaya M. Prevalence of burnout syndrome among medical residents: experience of a developing country. *Postgrad Med J.* 2010;86(1015 PG-266-71):266-271. doi:https://dx.doi.org/10.1136/pgmj.2009.092106
  16. Attenello FJ, Buchanan IA, Wen T, et al. Factors associated with burnout among US neurosurgery residents: a nationwide survey. *J Neurosurg.* 2018;(PG-1-15):1-15. doi:https://dx.doi.org/10.3171/2017.9.JNS17996
  17. Baer TE, Feraco AM, Tuysuzoglu Sagalowsky S, Williams D, Litman HJ, Vinci RJ. Pediatric Resident Burnout and Attitudes Toward Patients. *Pediatrics.* 2017;139(3 PG-). doi:https://dx.doi.org/10.1542/peds.2016-2163
  18. Barrack RL, Miller LS, Sotile WM, Sotile MO, Rubash HE. Effect of duty hour standards on burnout among orthopaedic surgery residents. *Clin Orthop Relat Res.* 2006;449:134-137. doi:10.1097/01.blo.0000224030.78108.58
  19. Becker JL, Milad MP, Klock SC. Burnout, depression, and career satisfaction: Cross-sectional study of obstetrics and gynecology residents. *Am J Obstet Gynecol.* 2006;195(5 PG-1444-1449):1444-1449. doi:http://dx.doi.org/10.1016/j.ajog.2006.06.075
  20. Beckman TJ, Reed DA, Shanafelt TD, West CP. Impact of Resident Well-Being and Empathy on Assessments of Faculty Physicians. *J Gen Intern Med.* 2010;25(1):52-56. doi:10.1007/s11606-009-1152-0
  21. Beckman T, Reed D, Shanafelt T, West C. Associations between resident physician well-being and assessments of knowledge and clinical performance. *J Gen Intern Med.* 2011;26(SUPPL. 1 PG-S230):S230. doi:http://dx.doi.org/10.1007/s11606-011-1730-9
  22. Belayachi J, Rkain I, Rkain H, et al. Burnout Syndrome in Moroccan Training Resident: Impact on Quality of Life. *Iran J Public Health.* 2016;45(2 PG-260-2):260-262. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=pem&NEWS=N&AN=27114993 NS -.
  23. Bellolio MF, Cabrera D, Sadosty AT, et al. Compassion fatigue is similar in emergency medicine residents compared to other medical and surgical specialties. *West J Emerg Med.* 2014;15(6 PG-629-635):629-635. doi:http://dx.doi.org/10.5811/westjem.2014.5.21624
  24. Biaggi P, Peter S, Ulich E. Stressors, emotional exhaustion and aversion to patients in residents and chief residents - what can be done? *Swiss Med Wkly.* 2003;133(23-24):339-346. doi:2003/23/smw-10134
  25. Billings ME, Lazarus ME, Wenrich M, Curtis JR, Engelberg RA. The effect of the hidden curriculum on resident burnout and cynicism. *J Grad Med Educ.* 2011;3(4 PG-503-10):503-510. doi:https://dx.doi.org/10.4300/JGME-D-11-00044.1
  26. Blanchard P, Truchot D, Albiges-Sauvin L, et al. Prevalence and causes of burnout amongst oncology residents: A comprehensive nationwide cross-sectional study. *Eur J Cancer.* 2010;46(15):2708-2715. doi:10.1016/j.ejca.2010.05.014
  27. Block L, Wu AW, Feldman L, Yeh H-C, Desai S V. Residency schedule, burnout and patient care among first-year residents. *Postgrad Med J.* 2013;89(1055 PG-495-500):495-500. doi:https://dx.doi.org/10.1136/postgradmedj-2012-131743
  28. Bogg J, Gibbs T, Bundred P. Training, job demands and mental health of pre-registration house officers. *Med Educ.* 2001;35(6 PG-590-5):590-595. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=med4&NEWS=N&AN=11380863 NS -.
  29. Bragard I, Etienne A-M, Libert Y, et al. Predictors and correlates of burnout in residents working with cancer patients. *J Cancer Educ.* 2010;25(1 PG-

- 120-6):120-126. doi:<https://dx.doi.org/10.1007/s13187-010-0050-9>
30. Bragard I, Dupuis G, Razavi D, Reynaert C, Etienne AM. Quality of work life in doctors working with cancer patients. *Occup Med (Chic Ill)*. 2012;62(1 PG-34-40):34-40. doi:<http://dx.doi.org/10.1093/occmed/kqr149>
  31. Brant H, Wetherell MA, Lightman S, Crown A, Vedhara K. An exploration into physiological and self-report measures of stress in pre-registration doctors at the beginning and end of a clinical rotation. *Stress*. 2010;13(2 PG-155-62):155-162. doi:<https://dx.doi.org/10.3109/10253890903093778>
  32. Braun SE, Auerbach SM, Rybarczyk B, Lee B, Call S. Mindfulness, burnout, and effects on performance evaluations in internal medicine residents. *Adv Med Educ Pract*. 2017;8(PG-591-597):591-597. doi:<https://dx.doi.org/10.2147/AMEP.S140554>
  33. Campbell J, Prochazka A V, Yamashita T, Gopal R. Predictors of persistent burnout in internal medicine residents: a prospective cohort study. *Acad Med*. 2010;85(10 PG-1630-4):1630-1634. doi:<https://dx.doi.org/10.1097/ACM.0b013e3181f0c4e7>
  34. Castelo-Branco C, Figueras F, Eixarch E, et al. Stress symptoms and burnout in obstetric and gynaecology residents. *BJOG An Int J Obstet Gynaecol*. 2007;114(1 PG-94-98):94-98. doi:<http://dx.doi.org/10.1111/j.1471-0528.2006.01155.x>
  35. Chaput B, Bertheuil N, Jacques J, et al. Professional Burnout Among Plastic Surgery Residents: Can it be Prevented? Outcomes of a National Survey. *Ann Plast Surg*. 2015;75(1 PG-2-8):2-8. doi:<https://dx.doi.org/10.1097/SAP.0000000000000530>
  36. Chati R, Huet E, Grimberg L, Schwarz L, Tuech J-J, Bridoux V. Factors associated With burnout among French digestive surgeons in training: results of a national survey on 328 residents and fellows. *Am J Surg*. 2017;213(4 PG-754-762):754-762. doi:<https://dx.doi.org/10.1016/j.amjsurg.2016.08.003>
  37. Chaukos D, Chad-Friedman E, Mehta DH, et al. Risk and Resilience Factors Associated with Resident Burnout. *Acad Psychiatry*. 2017;41(2 PG-189-194):189-194. doi:<http://dx.doi.org/10.1007/s40596-016-0628-6>
  38. Chen K-Y, Yang C-M, Lien C-H, et al. Burnout, job satisfaction, and medical malpractice among physicians. *Int J Med Sci*. 2013;10(11 PG-1471-8):1471-1478. doi:<https://dx.doi.org/10.7150/ijms.6743>
  39. Choi D, Cedfeldt A, Flores C, Irish K, Brunett P, Girard D. Resident wellness: institutional trends over 10 years since 2003. *Adv Med Educ Pract*. 2017;8(PG-513-523):513-523. doi:<https://dx.doi.org/10.2147/AMEP.S138770>
  40. Cofer KD, Hollis RH, Goss L, Morris MS, Porterfield JR, Chu DI. Burnout is Associated With Emotional Intelligence but not Traditional Job Performance Measurements in Surgical Residents. *J Surg Educ*. 2018;(PG-). doi:<http://dx.doi.org/10.1016/j.jsurg.2018.01.021>
  41. Coluccia A, Fereti F, Bolognesi S, et al. Association between burnout and emotional and sexual life among medical students of postgraduate schools in psychiatry. *Minerva Psichiatr*. 2017;58(4 PG-187-195):187-195. doi:10.23736/s0391-1772.17.01946-x
  42. Cooke GP, Doust JA, Steele MC. A survey of resilience, burnout, and tolerance of uncertainty in Australian general practice registrars. *BMC Med Educ*. 2013;13(PG-2):2. doi:<http://dx.doi.org/10.1186/1472-6920-13-2>
  43. Creed PA, Rogers ME, Praskova A, Searle J. Career calling as a personal resource moderator between environmental demands and burnout in Australian junior doctors. *J Career Dev*. 2014;41(6 PG-547-561):547-561. doi:<http://dx.doi.org/10.1177/0894845313520493>
  44. Cubero DIG, Fumis RRL, de Sa TH, et al. "Burnout in Medical Oncology Fellows: a Prospective Multicenter Cohort Study in Brazilian Institutions." *J Cancer Educ*. 2016;31(3 PG-582-7):582-587. doi:<https://dx.doi.org/10.1007/s13187-015-0850-z>
  45. Dahlin M, Fjell J, Runeson B. Factors at medical school and work related to exhaustion among physicians in their first postgraduate year. *Nord J Psychiatry*. 2010;64(6 PG-402-8):402-408. doi:<https://dx.doi.org/10.3109/08039481003759219>
  46. De Andrade APM, Amaro E, Farhat SCL, Schwartsman C. Higher burnout scores in paediatric residents are associated with increased brain activity during attentional functional magnetic resonance imaging task. *Acta Paediatr Int J Paediatr*. 2016;105(6 PG-705-713):705-713. doi:<http://dx.doi.org/10.1111/apa.13371>
  47. De Oliveira Jr GS, Chang R, Fitzgerald PC, et al. The prevalence of burnout and depression and their association with adherence to safety and practice standards: A survey of united states anesthesiology trainees. *Anesth Analg*. 2013;117(1 PG-182-193):182-193. doi:<http://dx.doi.org/10.1213/ANE.0b013e3182917da9>
  48. Demirci S, Yildirim YK, Ozsaran Z, Uslu R, Yalman D, Aras AB. Evaluation of burnout syndrome in oncology employees. *Med Oncol*. 2010;27(3 PG-968-974):968-974. doi:10.1007/s12032-009-9318-5
  49. Dikmetas E, Top M, Ergin G. An examination of mobbing and burnout of residents. *Turk Psikiyatri Derg*. 2011;22(3 PG-137-49):137-149. <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=med7&NEWS=N&AN=21870303 NS> -.
  50. Dominguez LC, Stassen L, de Grave W, Sanabria A, Alfonso E, Dolmans D. Taking control: Is job crafting related to the intention to leave surgical

- training? *PLoS One*. 2018;13(6 PG-e0197276):e0197276. doi:<https://dx.doi.org/10.1371/journal.pone.0197276>
51. Doolittle BR, Windish DM, Seelig CB. Burnout, coping, and spirituality among internal medicine resident physicians. *J Grad Med Educ*. 2013;5(2 PG-257-61):257-261. doi:<https://dx.doi.org/10.4300/JGME-D-12-00136.1>
  52. Durning SJ, Costanzo M, Artino AR, et al. Functional neuroimaging correlates of burnout among internal medicine residents and faculty members. *Front Psychiatry*. 2013;4(OCT PG-131):131. doi:<http://dx.doi.org/10.3389/fpsy.2013.00131>
  53. Dyrbye LN, West CP, Satele D, et al. Burnout among u.s. medical students, residents, and early career physicians relative to the general u.s. population. *Acad Med*. 2014;89(3 PG-443-451):443-451. doi:<http://dx.doi.org/10.1097/ACM.0000000000000134>
  54. Elmore LC, Jeffe DB, Jin L, Awad MM, Turnbull IR. National Survey of Burnout among US General Surgery Residents. *J Am Coll Surg*. 2016;223(3 PG-440-451):440-451. doi:<http://dx.doi.org/10.1016/j.jamcollsurg.2016.05.014>
  55. Embriaco N, Azoulay E, Barrau K, et al. High level of burnout in intensivists: Prevalence and associated factors. *Am J Respir Crit Care Med*. 2007;175(7 PG-686-692):686-692. doi:<http://dx.doi.org/10.1164/rccm.200608-1184OC>
  56. Fahrenkopf AM, Sectish TC, Barger LK, et al. Rates of medication errors among depressed and burnt out residents: Prospective cohort study. *BMJ*. 2008;336(7642 PG-488-491):488-491. doi:<http://dx.doi.org/10.1136/bmj.39469.763218.BE>
  57. Ferreira Bortoletti F, Teresa Benevides-Pereira AM, Vasconcellos EG, et al. Triggering risk factors of the burnout syndrome in Ob/Gyn physicians from a reference public university of Brazil. *ISRN Obstet Gynecol*. 2012;(PG-593876):593876. doi:<http://dx.doi.org/10.5402/2012/593876>
  58. Fulop E, Devecsery A, Hausz K, Kovacs Z, Csabai M. Relationship between empathy and burnout among psychiatric residents. *New Med*. 2011;2011-Janua(4 PG-143-147):143-147. <http://www.newmedicine.pl/http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed13&NEWS=N&AN=606207483 NS> -.
  59. Galam E, Komly V, Le Tourneur A, Jund J. Burnout among French GPs in training: A cross-sectional study. *Br J Gen Pract*. 2013;63(608 PG-217-224):e217-e224. doi:<http://dx.doi.org/10.3399/bjgp.13X664270>
  60. Garza JA, Schneider KM, Promecene P, Monga M. Burnout in residency: Statewide study. *South Med J*. 2004;97(12 PG-1171-1173):1171-1173. doi:<http://dx.doi.org/10.1097/01.SMJ.0000129926.66568.10>
  61. Geelan-Hansen K, Anne S, Benninger MS. Burnout in Otolaryngology-Head and Neck Surgery: A Single Academic Center Experience. *Otolaryngol - Head Neck Surg (United States)*. 2018;(PG-). doi:<http://dx.doi.org/10.1177/0194599818774740>
  62. Gelfand D V, Podnos YD, Carmichael JC, et al. Effect of the 80-hour workweek on resident Burnout. *Arch Surg*. 2004;139(9 PG-933-940):933-940. doi:<http://dx.doi.org/10.1001/archsurg.139.9.933>
  63. Goitein L, Shanafelt TD, Wipf JE, Slatore CG, Back AL. The effects of work-hour limitations on resident well-being, patient care, and education in an internal medicine residency program. *Arch Intern Med*. 2005;165(22 PG-2601-2606):2601-2606. doi:<http://dx.doi.org/10.1001/archinte.165.22.2601>
  64. Golub JS, Weiss PS, Ramesh AK, Ossoff RH, Johns 3rd MM. Burnout in residents of otolaryngology-head and neck surgery: a national inquiry into the health of residency training. *Acad Med*. 2007;82(6 PG-596-601):596-601. doi:<http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=med5&NEWS=N&AN=17525550 NS> -.
  65. Gopal R, Glasheen JJ, Miyoshi TJ, Prochazka A V. Burnout and internal medicine resident work-hour restrictions. *Arch Intern Med*. 2005;165(22 PG-2595-2600):2595-2600. doi:<http://dx.doi.org/10.1001/archinte.165.22.2595>
  66. Gopal RK, Carreira F, Baker WA, et al. Internal Medicine Residents Reject “Longer and Gentler” Training. *J Gen Intern Med*. 2007;22(1):102-106. doi:10.1007/s11606-007-0119-2
  67. Gouveia PA da C, Ribeiro MHCN, Aschoff CA de M, Gomes DP, Silva NAF da, Cavalcanti HAF. Factors associated with burnout syndrome in medical residents of a university hospital. *Rev Assoc Med Bras*. 2017;63(6 PG-504-511):504-511. doi:<https://dx.doi.org/10.1590/1806-9282.63.06.504>
  68. Govardhan LM, Pinelli V, Schnatz PF. Burnout, depression and job satisfaction in obstetrics and gynecology residents. *Conn Med*. 2012;76(7 PG-389-95):389-395. <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=med7&NEWS=N&AN=23248861 NS> -.
  69. Goveia CS, Cruz TTMD, de Miranda DB, et al. Association between burnout syndrome and anxiety in residents and anesthesiologists of the Federal District. *Brazilian J Anesthesiol*. 2018;(PG-). doi:<http://dx.doi.org/10.1016/j.bjan.2018.02.007>
  70. Guenette JP, Smith SE. Burnout: Prevalence and associated factors among radiology residents in New England with comparison against United States resident physicians in other specialties. *Am J Roentgenol*. 2017;209(1 PG-136-141):136-141. doi:<http://dx.doi.org/10.2214/AJR.16.17541>
  71. Guenette JP, Smith SE. Burnout: Job Resources and Job Demands Associated With Low Personal Accomplishment in United States Radiology

- Residents. *Acad Radiol.* 2018;25(6 PG-739-743):739-743. doi:http://dx.doi.org/10.1016/j.acra.2017.12.002
72. Gulen B, Serinken M, Eken C, et al. Serum S100B as a Surrogate Biomarker in the Diagnoses of Burnout and Depression in Emergency Medicine Residents. *Acad Emerg Med.* 2016;23(7 PG-786-789):786-789. doi:http://dx.doi.org/10.1111/acem.12973
73. Guthrie E, Tattan T, Williams E, Black D, Bacliocotti H. Sources of stress, psychological distress and burnout in psychiatrists. *Psychiatr Bull.* 1999;23(4 PG-207-212):207-212. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed6&NEWS=N&AN=29160925 NS -.
74. Halliday L, Walker A, Vig S, Hines J, Brecknell J. Grit and burnout in UK doctors: a cross-sectional study across specialties and stages of training. *Postgrad Med J.* 2017;93(1101 PG-389-394):389-394. doi:10.1136/postgradmedj-2015-133919
75. Hameed TK, Masuadi E, Al Asmary NA, Al-Anzi FG, Al Dubayee MS. A study of resident duty hours and burnout in a sample of Saudi residents. *BMC Med Educ.* 2018;18(1 PG-180):180. doi:https://dx.doi.org/10.1186/s12909-018-1300-5
76. Hannan E, Breslin N, Doherty E, McGreal M, Moneley D, Offiah G. Burnout and stress amongst interns in Irish hospitals: contributing factors and potential solutions. *Ir J Med Sci.* 2018;187(2 PG-301-307):301-307. doi:http://dx.doi.org/10.1007/s11845-017-1688-7
77. Hausler M, Strecker C, Huber A, Brenner M, Hoge T, Hofer S. Associations between the Application of Signature Character Strengths, Health and Well-being of Health Professionals. *Front Psychol.* 2017;8(PG-1307):1307. doi:https://dx.doi.org/10.3389/fpsyg.2017.01307
78. Henning MA, Sollers J, Strom JM, et al. Junior doctors in their first year: mental health, quality of life, burnout and heart rate variability. *Perspect Med Educ.* 2014;3(2 PG-136-43):136-143. doi:https://dx.doi.org/10.1007/s40037-013-0075-y
79. Hill JD, Smith RJH. Monitoring stress levels in postgraduate medical training. *Laryngoscope.* 2009;119(1 PG-75-8):75-78. doi:https://dx.doi.org/10.1002/lary.20013
80. Hillhouse JJ, Adler CM, Walters DN. A simple model of stress, burnout and symptomatology in medical residents: A longitudinal study. *Psychol Heal Med.* 2000;5(1 PG-63-73):63-73. doi:http://dx.doi.org/10.1080/135485000106016
81. Holmes EG, Connolly A, Putnam KT, et al. Taking Care of Our Own: A Multispecialty Study of Resident and Program Director Perspectives on Contributors to Burnout and Potential Interventions. *Acad Psychiatry.* 2017;41(2 PG-159-166):159-166. doi:http://dx.doi.org/10.1007/s40596-016-0590-3
82. Huggard P, Dixon R. "Tired of caring": The impact of caring on resident doctors. *Australas J Disaster Trauma Stud.* 2011;2011(3 PG-105-111):105-111. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=psyc8&NEWS=N&AN=2012-03764-004 NS -.
83. Hutter MM, Kellogg KC, Ferguson CM, Abbott WM, Warshaw AL. The impact of the 80-hour resident workweek on surgical residents and attending surgeons. *Ann Surg.* 2006;243(6 PG-864-871):864-871. doi:http://dx.doi.org/10.1097/01.sla.0000220042.48310.66
84. S Hwang J, A Ippolito J, S Beebe K, Benevenia J, S Berberian W. Dealing with the loss of a resident: An analysis of burnout rates in a reduced complement training program. *Work.* 2018;(PG-). doi:https://dx.doi.org/10.3233/WOR-182764
85. Hyman SA, Michaels DR, Berry JM, Schildcrout JS, Mercaldo ND, Weinger MB. Risk of burnout in perioperative clinicians: a survey study and literature review. *Anesthesiology.* 2011;114(1 PG-194-204):194-204. doi:https://dx.doi.org/10.1097/ALN.0b013e318201ce9a
86. Jamjoom RS, Park YS. Assessment of pediatric residents burnout in a tertiary academic centre. *Saudi Med J.* 2018;39(3 PG-296-300):296-300. doi:http://dx.doi.org/10.15537/smj.2018.3.22328
87. Jin WM, Zhang Y, Wang XP. Job burnout and organizational justice among medical interns in Shanghai, People's Republic of China. *Adv Med Educ Pract.* 2015;6(PG-539-544):539-544. doi:10.2147/amep.s88953
88. Joaquim A, Custodio S, Savva-Bordalo J, et al. Burnout and occupational stress in the medical residents of Oncology, Haematology and Radiotherapy: a prevalence and predictors study in Portugal. *Psychol Health Med.* 2018;23(3 PG-317-324):317-324. doi:https://dx.doi.org/10.1080/13548506.2017.1344256
89. Jovanovic N, Podlesek A, Volpe U, et al. Burnout syndrome among psychiatric trainees in 22 countries: Risk increased by long working hours, lack of supervision, and psychiatry not being first career choice. *Eur Psychiatry.* 2016;32(PG-34-41):34-41. doi:10.1016/j.eurpsy.2015.10.007
90. Kang E-K, Lihm H-S, Kong E-H. Association of intern and resident burnout with self-reported medical errors. *Korean J Fam Med.* 2013;34(1 PG-36-42):36-42. doi:https://dx.doi.org/10.4082/kjfm.2013.34.1.36
91. Karaoglu N, Pekcan S, Durduran Y, Mergen H, Odabasi D, Ors R. A sample of paediatric residents' loneliness-anxiety-depression-burnout and job satisfaction with probable affecting factors. *J Pak Med Assoc.* 2015;65(2 PG-183-191):183-191. http://jpma.org.pk/PdfDownload/7168.pdf  
http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed17&NEWS=N&AN=603983631 NS -.

92. Kash KM, Holland JC, Breitbart W, et al. Stress and burnout in oncology. *Oncol York*. 2000;14(11 PG-1621-+):1621-+.
93. Kassam A, Horton J, Shoimer I, Patten S. Predictors of Well-Being in Resident Physicians: A Descriptive and Psychometric Study. *J Grad Med Educ*. 2015;7(1 PG-70-74):70-74. doi:http://dx.doi.org/10.4300/JGME-D-14-00022.1
94. Kealy D, Halli P, Ogrodniczuk JS, Hadjipavlou G. Burnout among Canadian Psychiatry Residents: A National Survey. *Can J Psychiatry*. 2016;61(11 PG-732-736):732-736. doi:http://dx.doi.org/10.1177/0706743716645286
95. Kolarik RC, O'Neal RL, Ewing JA. Resident Preferences for Program Director Role in Wellness Management. *J Gen Intern Med*. 2018;(PG-1-5):1-5. doi:http://dx.doi.org/10.1007/s11606-018-4367-0
96. Komur I, Ozdemirel RO, Ozver I, et al. Posttraumatic Stress and Burnout Symptoms in Forensic Doctors and Staff in a Mortuary. *Am J Forensic Med Pathol*. 2017;38(3 PG-184-188):184-188. doi:http://dx.doi.org/10.1097/PAF.0000000000000329
97. Krug MF, Golob AL, Wander PL, Wipf JE. Changes in Resident Well-Being at One Institution Across a Decade of Progressive Work Hours Limitations. *Acad Med*. 2017;92(10 PG-1480-1484):1480-1484. doi:http://dx.doi.org/10.1097/ACM.0000000000001675
98. Kwah J, Weintraub J, Fallar R, Ripp J. The Effect of Burnout on Medical Errors and Professionalism in First-Year Internal Medicine Residents. *J Grad Med Educ*. 2016;8(4 PG-597-600):597-600. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emexa&NEWS=N&AN=615609921 NS -
99. Lambden JP, Chamberlin P, Kozlov E, et al. Association of Perceived Futile or Potentially Inappropriate Care With Burnout and Thoughts of Quitting Among Health-Care Providers. *Am J Hosp Palliat Care*. 2018;(PG-1049909118792517):1049909118792517. doi:https://dx.doi.org/10.1177/1049909118792517
100. Landrigan CP, Fahrenkopf AM, Lewin D, et al. Effects of the Accreditation Council for Graduate Medical Education Duty Hour Limits on Sleep, Work Hours, and Safety. *Pediatrics*. 2008;122(2):250-258. doi:10.1542/peds.2007-2306
101. Leach PK, Nygaard RM, Chipman JG, Brunsvold ME, Marek AP. Impostor Phenomenon and Burnout in General Surgeons and General Surgery Residents. *J Surg Educ*. 2018;(PG-). doi:https://dx.doi.org/10.1016/j.jsurg.2018.06.025
102. Lebares CC, Guvva E V, Ascher NL, O'Sullivan PS, Harris HW, Epel ES. Burnout and Stress Among US Surgery Residents: Psychological Distress and Resilience. *J Am Coll Surg*. 2018;226(1 PG-80-90):80-90. doi:http://dx.doi.org/10.1016/j.jamcollsurg.2017.10.010
103. Lebensohn P, Dodds S, Benn R, et al. Resident wellness behaviors: relationship to stress, depression, and burnout. *Fam Med*. 2013;45(8 PG-541-549):541-549. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed15&NEWS=N&AN=563066226 NS -
104. Lee PT, Loh J, Sng G, Tung J, Yeo KK. Empathy and burnout: A study on residents from a Singapore institution. *Singapore Med J*. 2018;59(1 PG-50-54):50-54. doi:http://dx.doi.org/10.11622/smedj.2017096
105. Lemkau JP. Sex Role Stress and Job Burnout among Family Practice Physicians. *J Vocat Behav*. 1987;31(1 PG-81-90):81-90. http://libaccess.mcmaster.ca/login?url=https://search.proquest.com/docview/63148790?accountid=12347 http://sfx.scholarsportal.info/mcmaster?url\_ver=Z39.88-2004&rft\_val\_fmt=info:ofi/fmt:kev:mtx:journal&genre=article&sid=ProQ:ProQ%3Aeric&atitle=Sex+Role+Str.
106. Leung J, Rioseco P. Burnout, stress and satisfaction among Australian and New Zealand radiation oncology trainees. *J Med Imaging Radiat Oncol*. 2017;61(1 PG-146-155):146-155. doi:10.1111/1754-9485.12541
107. Levin KH, Shanafelt TD, Keran CM, et al. Burnout, career satisfaction, and well-being among US neurology residents and fellows in 2016. *Neurology*. 2017;89(5 PG-492-501):492-501. doi:http://dx.doi.org/10.1212/WNL.0000000000004135
108. Lin DT, Liebert CA, Tran J, Lau JN, Salles A. Emotional Intelligence as a Predictor of Resident Well-Being. *J Am Coll Surg*. 2016;223(2 PG-352-358):352-358. doi:http://dx.doi.org/10.1016/j.jamcollsurg.2016.04.044
109. Lindeman BM, Sacks BC, Hirose K, Lipsett PA. Multifaceted longitudinal study of surgical resident education, quality of life, and patient care before and after July 2011. *J Surg Educ*. 2013;70(6 PG-769-776):769-776. doi:http://dx.doi.org/10.1016/j.jsurg.2013.06.018
110. Lindeman B, Petrusa E, McKinley S, et al. Association of Burnout With Emotional Intelligence and Personality in Surgical Residents: Can We Predict Who Is Most at Risk? *J Surg Educ*. 2017;74(6 PG-22-30):e22-e30. doi:http://dx.doi.org/10.1016/j.jsurg.2017.11.001
111. Llera J, Durante E. Correlation between the educational environment and burn-out syndrome in residency programs at a university hospital. *Arch Argent Pediatr*. 2014;112(1 PG-6-11):6-11. doi:http://dx.doi.org/10.1590/S0325-00752014000100003
112. Low JM, Tan MY, See KC, Aw MM. Sleep, activity and fatigue reported by postgraduate year 1 residents: a prospective cohort study comparing the



- effects of night-float versus traditional overnight on-call. *Singapore Med J.* 2018;(PG-). doi:<https://dx.doi.org/10.11622/smedj.2018036>
113. Lue B-H, Chen H-J, Wang C-W, Cheng Y, Chen M-C. Stress, personal characteristics and burnout among first postgraduate year residents: a nationwide study in Taiwan. *Med Teach.* 2010;32(5 PG-400-7):400-407. doi:<https://dx.doi.org/10.3109/01421590903437188>
  114. Malik AA, Bhatti S, Shafiq A, et al. Burnout among surgical residents in a lower-middle income country - Are we any different? *Ann Med Surg.* 2016;9(PG-28-32):28-32. doi:<http://dx.doi.org/10.1016/j.amsu.2016.05.012>
  115. Markwell AL, Wainer Z. The health and wellbeing of junior doctors: insights from a national survey. *Med J Aust.* 2009;191(8 PG-441-4):441-444. <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=med6&NEWS=N&AN=19835538> NS -.
  116. Martini S, Arfken CL, Churchill A, Balon R. Burnout comparison among residents in different medical specialties. *Acad Psychiatry.* 2004;28(3 PG-240-242):240-242. doi:<http://dx.doi.org/10.1176/appi.ap.28.3.240>
  117. Martini S, Arfken CL, Balon R. Comparison of Burnout Among Medical Residents Before and After the Implementation of Work Hours Limits. *Acad Psychiatry.* 2006;30(4):352-355. doi:10.1176/appi.ap.30.4.352
  118. McNeeley MF, Perez FA, Chew FS. The emotional wellness of radiology trainees: Prevalence and predictors of burnout. *Acad Radiol.* 2013;20(5 PG-647-655):647-655. doi:<http://dx.doi.org/10.1016/j.acra.2012.12.018>
  119. Michels PJ, Probst JC, Godenick MT, Palesch Y. Anxiety and anger among family practice residents: A South Carolina family practice research consortium study. *Acad Med.* 2003;78(1 PG-69-79):69-79. <http://www.lww.com/product/?1040-2446> <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emexa&NEWS=N&AN=36105728> NS -.
  120. Miyoshi R, Matsuo H, Takeda R, Komatsu H, Abe H, Ishida Y. Burnout in Japanese residents and its associations with temperament and character. *Asian J Psychiatr.* 2016;24(PG-5-9):5-9. doi:<http://dx.doi.org/10.1016/j.ajp.2016.08.009>
  121. Mohammed KA-M, Ali EG, Youssef IM, Fahmy MT, Haggag WE. Depression and burnout among residents. *Arab J Psychiatry.* 2014;25(1 PG-40-51):40-51. doi:<http://dx.doi.org/10.12816/0004114>
  122. Moloney J, MacDonald J. Psychiatric training in New Zealand. *Aust N Z J Psychiatry.* 2000;34(1 PG-146-53):146-153. <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=med4&NEWS=N&AN=11185928> NS -.
  123. Mordant P, Deneuve S, Rivera C, et al. Quality of Life of Surgical Oncology Residents and Fellows Across Europe. *J Surg Educ.* 2014;71(2 PG-222-228):222-228. doi:10.1016/j.jsurg.2013.07.010
  124. Msaouel P, Keramaris NC, Tasoulis A, et al. Burnout and training satisfaction of medical residents in Greece: will the European Work Time Directive make a difference? *Hum Resour Health.* 2010;8(PG-16):16. doi:<https://dx.doi.org/10.1186/1478-4491-8-16>
  125. Myszkowski N, Villoing B, Zenasni F, Jaury P, Boujut E. Monitoring stress among internal medicine residents: an experience-driven, practical and short measure. *Psychol Health Med.* 2017;22(6 PG-719-726):719-726. doi:<http://dx.doi.org/10.1080/13548506.2016.1220599>
  126. Nolan KJ, Writer H, Ladhani M. Wellness in Canadian paediatric residents and their program directors. *Paediatr Child Heal.* 2017;22(4 PG-199-202):199-202. doi:<http://dx.doi.org/10.1093/pch/pxx050>
  127. O'Connor P, Lydon S, O'Dea A, et al. A longitudinal and multicentre study of burnout and error in Irish junior doctors. *Postgrad Med J.* 2017;93(1105 PG-660-664):660-664. doi:<http://dx.doi.org/10.1136/postgradmedj-2016-134626>
  128. Ogundipe OA, Olagunju AT, Lasebikan VO, Coker AO. Burnout among doctors in residency training in a tertiary hospital. *Asian J Psychiatr.* 2014;10(PG-27-32):27-32. doi:<http://dx.doi.org/10.1016/j.ajp.2014.02.010>
  129. Okpozo AZ, Gong T, Ennis MC, Adenuga B. Investigating the impact of ethical leadership on aspects of burnout. *Leadersh Organ Dev J.* 2017;38(8 PG-1128-1143):1128-1143. doi:<http://dx.doi.org/10.1108/LODJ-09-2016-0224>
  130. Olson SM, Odo NU, Duran AM, Pereira AG, Mandel JH. Burnout and Physical Activity in Minnesota Internal Medicine Resident Physicians. *J Grad Med Educ.* 2014;6(4):669-674. doi:10.4300/JGME-D-13-00396
  131. Olson K, Kemper KJ, Mahan JD. What Factors Promote Resilience and Protect Against Burnout in First-Year Pediatric and Medicine-Pediatric Residents? *J Evid Based Complementary Altern Med.* 2015;20(3):192-198. doi:10.1177/2156587214568894
  132. Panagopoulou E, Montgomery A, Benos A. Burnout in internal medicine physicians: Differences between residents and specialists. *Eur J Intern Med.* 2006;17(3 PG-195-200):195-200. doi:<http://dx.doi.org/10.1016/j.ejim.2005.11.013>
  133. Pantaleoni JL, Augustine EM, Sourkes BM, Bachrach LK. Burnout in pediatric residents over a 2-year period: A longitudinal study. *Acad Pediatr.* 2014;14(2 PG-167-172):167-172. doi:<http://dx.doi.org/10.1016/j.acap.2013.12.001>

134. Park C, Lee YJ, Hong M, et al. A Multicenter Study Investigating Empathy and Burnout Characteristics in Medical Residents with Various Specialties. *J Korean Med Sci.* 2016;31(4 PG-590-597):590-597. doi:<http://dx.doi.org/10.3346/jkms.2016.31.4.590>
135. Parr JM, Pinto N, Hanson M, Meehan A, Moore PT. Medical graduates, tertiary hospitals, and burnout: A longitudinal cohort study. *Ochsner J.* 2016;16(1 PG-22-26):22-26. <http://www.ochsnerjournal.org/doi/pdf/10.1043/TOJ-14-0055>  
<http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed18&NEWS=N&AN=609110258> NS -.
136. Pereira-Lima K, Loureiro SR. Burnout, anxiety, depression, and social skills in medical residents. *Psychol Health Med.* 2015;20(3 PG-353-362):353-362. doi:<http://dx.doi.org/10.1080/13548506.2014.936889>
137. Porrino J, Mulcahy MJ, Mulcahy H, Relyea-Chew A, Chew FS. Emotional Wellness of Current Musculoskeletal Radiology Fellows. *Acad Radiol.* 2017;24(6 PG-682-693):682-693. doi:<http://dx.doi.org/10.1016/j.acra.2016.12.024>
138. Prins JT, Hoekstra-Weebers J, van de Wiel HBM, Gazendam-Donofrio SM, Sprangers F, Jaspers FCA. Burnout among Dutch medical residents. *Int J Behav Med.* 2007;14(3 PG-119-125):119-125. doi:10.1007/bf03000182
139. Prins JT, Hoekstra-Weebers JEHM, Gazendam-Donofrio SM, et al. Burnout and engagement among resident doctors in the Netherlands: a national study. *Med Educ.* 2010;44(3 PG-236-47):236-247. doi:<https://dx.doi.org/10.1111/j.1365-2923.2009.03590.x>
140. Purdy RR, Lemkau JP, Rafferty JP, Rudisill JR. Resident physicians in family practice: who's burned out and who knows? *Fam Med.* 1987;19(3):203-208. <http://www.ncbi.nlm.nih.gov/pubmed/3596113>. Accessed June 29, 2019.
141. Racic M, Virijevic A, Ivkovic N, Joksimovic BN, Joksimovic VR, Mijovic B. Compassion fatigue and compassion satisfaction among family physicians in the Republic of Srpska, Bosnia and Herzegovina. *Int J Occup Saf Ergon.* 2018;(PG-1-8):1-8. doi:<https://dx.doi.org/10.1080/10803548.2018.1440044>
142. Ramey SJ, Ahmed AA, Takita C, Wilson LD, Thomas CR, Yechieli R. Burnout Evaluation of Radiation Residents Nationwide: Results of a Survey of United States Residents. *Int J Radiat Oncol Biol Phys.* 2017;99(3 PG-530-538):530-538. doi:<http://dx.doi.org/10.1016/j.ijrobp.2017.06.014>
143. Ratnakaran B, Prabhakaran A, Karunakaran V. Prevalence of burnout and its correlates among residents in a tertiary medical center in Kerala, India: A cross-sectional study. *J Postgrad Med.* 2016;62(3 PG-157-161):157-161. doi:<http://dx.doi.org/10.4103/0022-3859.184274>
144. Raviola G, Machoki M, Mwaikambo E, Good MJD. HIV, disease plague, demoralization and "burnout": resident experience of the medical profession in Nairobi, Kenya. *Cult Med Psychiatry.* 2002;26(1):55-86. <http://www.ncbi.nlm.nih.gov/pubmed/12088098>. Accessed June 29, 2019.
145. Ringrose R, Houterman S, Koops W, Oei G. Burnout in medical residents: A questionnaire and interview study. *Psychol Heal Med.* 2009;14(4 PG-476-486):476-486. doi:<http://dx.doi.org/10.1080/13548500903012822>
146. Ripp J, Fallar R, Babyatsky M, David R, Reich L, Korenstein D. Prevalence of resident burnout at the start of training. *Teach Learn Med.* 2010;22(3 PG-172-5):172-175. doi:<https://dx.doi.org/10.1080/10401334.2010.488194>
147. Ripp J, Babyatsky M, Fallar R, et al. The incidence and predictors of job burnout in first-year internal medicine residents: a five-institution study. *Acad Med.* 2011;86(10 PG-1304-10):1304-1310. doi:<https://dx.doi.org/10.1097/ACM.0b013e31822c1236>
148. Ripp JA, Bellini L, Fallar R, Bazari H, Katz JT, Korenstein D. The impact of duty hours restrictions on job burnout in internal medicine residents: a three-institution comparison study. *Acad Med.* 2015;90(4 PG-494-499):494-499. doi:<http://dx.doi.org/10.1097/ACM.0000000000000641>
149. Robertson SL, Robinson MD, Reid A. Electronic Health Record Effects on Work-Life Balance and Burnout Within the I3 Population Collaborative. *J Grad Med Educ.* 2017;9(4 PG-479-484):479-484. doi:<http://dx.doi.org/10.4300/JGME-D-16-00123.1>
150. Rogers ME, Creed PA, Searle J. Emotional labour, training stress, burnout, and depressive symptoms in junior doctors. *J Vocat Educ Train.* 2014;66(2 PG-232-248):232-248. NS -.
151. Rogers E, Polonijo AN, Carpiano RM. Getting by with a little help from friends and colleagues: Testing how residents' social support networks affect loneliness and burnout. *Can Fam Physician.* 2016;62(11 PG-677-683):e677-e683. <http://www.cfp.ca/content/62/11/e677.full.pdf+html>  
<http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed18&NEWS=N&AN=613299251> NS -.
152. Rosen IM, Gimotty PA, Shea JA, Bellini LM. Evolution of sleep quantity, sleep deprivation, mood disturbances, empathy, and burnout among interns. *Acad Med.* 2006;81(1 PG-82-85):82-85. doi:<http://dx.doi.org/10.1097/00001888-200601000-00020>
153. Rui M, Ting C, Pengqian F, Xinqiao F. Burnout among anaesthetists in Chinese hospitals: a multicentre, cross-sectional survey in 6 provinces. *J Eval Clin Pract.* 2016;22(3):387-394. doi:10.1111/jep.12498
154. Ruitenburg MM, Frings-Dresen MH, Sluiter JK. The prevalence of common mental disorders among hospital physicians and their association with self-reported work ability: a cross-sectional study. *BMC Health Serv Res.* 2012;12(1):292. doi:10.1186/1472-6963-12-292

155. Sajjadi S, Norena M, Wong H, Dodek P. Moral distress and burnout in internal medicine residents. *Can Med Educ J*. 2017;8(1 PG-36-43):e36-e43. <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=prem&NEWS=N&AN=28344714> NS -.
156. Salles A, Cohen GL, Mueller CM. The relationship between grit and resident well-being. *Am J Surg*. 2014;207(2 PG-251-254):251-254. doi:<http://dx.doi.org/10.1016/j.amjsurg.2013.09.006>
157. Salpigktidis II, Paliouras D, Gogakos AS, et al. Burnout syndrome and job satisfaction in Greek residents: exploring differences between trainees inside and outside the country. *Ann Transl Med*. 2016;4(22 PG-444):444. doi:<https://dx.doi.org/10.21037/atm.2016.11.33>
158. Sargent MC, Sotile W, Sotile MO, Rubash H, Barrack RL. Stress and coping among orthopaedic surgery residents and faculty. *J Bone Jt Surg - Ser A*. 2004;86(7 PG-1579-1586):1579-1586. <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed9&NEWS=N&AN=38886551> NS -.
159. Sargent MC, Sotile W, Sotile MO, Rubash H, Barrack RL. Quality of life during orthopaedic training and academic practice. Part 1: Orthopaedic surgery residents and faculty. *J Bone Jt Surg - Ser A*. 2009;91(10 PG-2395-2405):2395-2405. doi:<http://dx.doi.org/10.2106/JBJS.H.00665>
160. Satterfield J, Swenson S, Rabow M. Emotional Intelligence in Internal Medicine Residents: Educational Implications for Clinical Performance and Burnout. *Ann Behav Sci Med Educ*. 2009;14(2 PG-65-68):65-68. <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=medp&NEWS=N&AN=20407619> NS -.
161. Schweitzer B. Stress and burnout in junior doctors. *S Afr Med J*. 1994;84(6 PG-352-4):352-354. <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=med3&NEWS=N&AN=7740383> NS -.
162. See KC, Lim TK, Kua EH, Phua J, Chua GS, Ho KY. Stress and Burnout among Physicians: Prevalence and Risk Factors in a Singaporean Internal Medicine Programme. *Ann Acad Med Singapore*. 2016;45(10 PG-471-474):471-474. <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=med8&NEWS=N&AN=27832222> NS -.
163. Selic P, Stegne-Ignjatovic T, Klemenc-Ketis Z. Burnout among Slovenian family medicine trainees: A cross-sectional study. *Zdr Vestn*. 2012;81(3 PG-218-224):218-224. <http://vestnik.sz.d.si/index.php/vestnik/article/download/764/680> <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed14&NEWS=N&AN=364528464> NS -.
164. Shakir HJ, McPheeters MJ, Shallwani H, Pittari JE, Reynolds RM. The Prevalence of Burnout Among US Neurosurgery Residents. *Neurosurgery*. 2017;(PG-). doi:<https://dx.doi.org/10.1093/neuros/nyx494>
165. Shams T, El-Masry R. Job Stress and Burnout among Academic Career Anaesthesiologists at an Egyptian University Hospital. *Sultan Qaboos Univ Med J*. 2013;13(2):287-295. <http://www.ncbi.nlm.nih.gov/pubmed/23862036>. Accessed June 29, 2019.
166. Shanafelt TD, Bradley KA, Wipf JE, Back AL. Burnout and self-reported patient care in an internal medicine residency program. *Ann Intern Med*. 2002;136(5 PG-358-367):358-367. <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed8&NEWS=N&AN=34183994> NS -.
167. Shanafelt TD, Raymond M, Horn L, et al. Oncology Fellows' Career Plans, Expectations, and Well-Being: Do Fellows Know What They Are Getting Into? *J Clin Oncol*. 2014;32(27 PG-2991-+):2991-+. doi:10.1200/jco.2014.56.2827
168. Shapiro MC, Rao SR, Dean J, Salama AR. What a Shame: Increased Rates of OMS Resident Burnout May Be Related to the Frequency of Shamed Events During Training. *J Oral Maxillofac Surg*. 2017;75(3 PG-449-457):449-457. doi:<http://dx.doi.org/10.1016/j.joms.2016.08.040>
169. Shoimer I, Patten S, Mydlarski PR. Burnout in dermatology residents: a Canadian perspective. *Br J Dermatol*. 2018;178(1 PG-270-271):270-271. doi:<http://dx.doi.org/10.1111/bjd.15549>
170. Simpkin AL, Khan A, West DC, et al. Stress From Uncertainty and Resilience Among Depressed and Burned Out Residents: A Cross-Sectional Study. *Acad Pediatr*. 2018;(PG-). doi:<http://dx.doi.org/10.1016/j.acap.2018.03.002>
171. Siu CFY, Yuen SK, Cheung A. Burnout among public doctors in Hong Kong: cross-sectional survey. *Hong Kong Med J*. 2012;18(3 PG-186-192):186-192.
172. Sochos A, Bowers A. Burnout, occupational stressors, and social support in psychiatric and medical trainees. *Eur J Psychiatry*. 2012;26(3 PG-196-206):196-206. doi:10.4321/s0213-61632012000300006
173. Spataro BM, Tilstra SA, Rubio DM, McNeil MA. The Toxicity of Self-Blame: Sex Differences in Burnout and Coping in Internal Medicine Trainees. *J Women's Heal*. 2016;25(11 PG-1147-1152):1147-1152. doi:<http://dx.doi.org/10.1089/jwh.2015.5604>
174. Stodel JM, Stewart-Smith A. The influence of burnout on skills retention of junior doctors at Red Cross War Memorial Children's Hospital: a case study. *S Afr Med J*. 2011;101(2 PG-115-8):115-118. <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=med7&NEWS=N&AN=21678738> NS -.
175. Sulaiman CFC, Henn P, Smith S, O'Tuathaigh CMP. Burnout syndrome among non-consultant hospital doctors in Ireland: relationship with self-reported

- patient care. *Int J Qual Heal care J Int Soc Qual Heal Care*. 2017;29(5 PG-679-684):679-684. doi:<https://dx.doi.org/10.1093/intqhc/mzx087>
176. Swami MK, Mathur DM, Pushp BK. Emotional intelligence, perceived stress and burnout among resident doctors: An assessment of the relationship. *Natl Med J India*. 2013;26(4 PG-210-213):210-213. <http://www.nmji.in/archives/Volume-26/Issue-4/OA-III.pdf>  
<http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed15&NEWS=N&AN=372957372> NS -.
  177. Talih F, Warakian R, Ajaltouni J, Shehab AA, Tamim H. Correlates of Depression and Burnout Among Residents in a Lebanese Academic Medical Center: a Cross-Sectional Study. *Acad Psychiatry*. 2016;40(1 PG-38-45):38-45. doi:<http://dx.doi.org/10.1007/s40596-015-0400-3>
  178. Toral-Villanueva R, Aguilar-Madrid G, Juarez-Perez CA. Burnout and patient care in junior doctors in Mexico City. *Occup Med (Lond)*. 2009;59(1 PG-8-13):8-13. doi:<https://dx.doi.org/10.1093/occmed/kqn122>
  179. Torppa MA, Kuikka L, Nevalainen M, Pitkala KH. Emotionally exhausting factors in general practitioners' work. *Scand J Prim Health Care*. 2015;33(3 PG-178-183):178-183. doi:10.3109/02813432.2015.1067514
  180. Trockel M, Bohman B, Lesure E, et al. A Brief Instrument to Assess Both Burnout and Professional Fulfillment in Physicians: Reliability and Validity, Including Correlation with Self-Reported Medical Errors, in a Sample of Resident and Practicing Physicians. *Acad Psychiatry*. 2018;42(1 PG-11-24):11-24. doi:<https://dx.doi.org/10.1007/s40596-017-0849-3>
  181. Turgut N, Karacalar S, Polat C, et al. Burnout Syndrome During Residency. *Turkish J Anaesthesiol Reanim*. 2016;44(5 PG-258-264):258-264. <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=prem&NEWS=N&AN=27909607> NS -.
  182. Tzischinsky O, Zohar D, Epstein R, Chillag N, Lavie P. Daily and yearly burnout symptoms in Israeli shift work residents. *J Hum Ergol (Tokyo)*. 2001;30(1-2):357-362. <http://www.ncbi.nlm.nih.gov/pubmed/14564908>. Accessed June 29, 2019.
  183. van der Wal RAB, Buxx MJL, Hendriks JCM, Scheffer GJ, Prins JB. Psychological distress, burnout and personality traits in Dutch anaesthesiologists A survey. *Eur J Anaesthesiol*. 2016;33(3 PG-179-186):179-186. doi:10.1097/eja.0000000000000375
  184. van Vendeloo SN, Brand PLP, Verheyen CCPM. Burnout and quality of life among orthopaedic trainees in a modern educational programme: importance of the learning climate. *Bone Joint J*. 2014;96-B(8 PG-1133-8):1133-1138. doi:<https://dx.doi.org/10.1302/0301-620X.96B8.33609>
  185. van Vendeloo SN, Godderis L, Brand PLP, Verheyen K, Rowell SA, Hoekstra H. Resident burnout: evaluating the role of the learning environment. *Bmc Med Educ*. 2018;18(PG-). doi:10.1186/s12909-018-1166-6
  186. van Vendeloo SN, Prins DJ, Verheyen C, et al. The learning environment and resident burnout: a national study. *Perspect Med Educ*. 2018;7(2 PG-120-125):120-125. doi:10.1007/s40037-018-0405-1
  187. Waheed K, Liaqat N, Ejaz S, et al. Burnout among gynaecological residents in lahore, Pakistan: A cross-sectional survey. *J Pak Med Assoc*. 2017;67(9 PG-1318-1322):1318-1322. <http://jpma.org.pk/PdfDownload/8342.pdf>  
<http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emexa&NEWS=N&AN=617643712> NS -.
  188. Waldman S V, Lopez Diez JC, Arazi HC, Linetzky B, Guinjoan S, Grancelli H. Burnout, perceived stress, and depression among cardiology residents in Argentina. *Acad Psychiatry*. 2009;33(4 PG-296-301):296-301. doi:<http://dx.doi.org/10.1176/appi.ap.33.4.296>
  189. Weigl M, Schneider A, Hoffmann F, Angerer P. Work stress, burnout, and perceived quality of care: a cross-sectional study among hospital pediatricians. *Eur J Pediatr*. 2015;174(9 PG-1237-1246):1237-1246. doi:10.1007/s00431-015-2529-1
  190. West CP, Tan AD, Habermann TM, Sloan JA, Shanafelt TD. Association of resident fatigue and distress with perceived medical errors. *JAMA - J Am Med Assoc*. 2009;302(12 PG-1294-1300):1294-1300. doi:<http://dx.doi.org/10.1001/jama.2009.1389>
  191. Willcock SM, Daly MG, Tennant CC, Allard BJ. Burnout and psychiatric morbidity in new medical graduates. *Med J Aust*. 2004;181(7 PG-357-360):357-360. <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed9&NEWS=N&AN=39341646> NS -.
  192. Williford ML, Scarlet S, Meyers MO, et al. Multiple-Institution Comparison of Resident and Faculty Perceptions of Burnout and Depression During Surgical Training. *JAMA Surg*. 2018;(PG-). doi:<https://dx.doi.org/10.1001/jamasurg.2018.0974>
  193. Woodside Jr JR, Miller MN, Floyd MR, McGowen KR, Pfortmiller DT. Observations on burnout in family medicine and psychiatry residents. *Acad Psychiatry*. 2008;32(1 PG-13-19):13-19. doi:<http://dx.doi.org/10.1176/appi.ap.32.1.13>
  194. Yroni A, Fournier C, Fourcade O, Schmitt L. Burnout compared between anaesthesiology and psychiatry residents in France: An observational study. *Eur J Anaesthesiol*. 2017;34(7 PG-480-482):480-482. doi:<https://dx.doi.org/10.1097/EJA.0000000000000573>
  195. Zis P, Anagnostopoulos F, Sykioti P. Burnout in medical residents: A study based on the job demands-resources model. *Sci World J*. 2014;2014(PG-673279):673279. doi:<http://dx.doi.org/10.1155/2014/673279>

196. Zis P, Artemiadis AK, Lykouri M, et al. Residency Training: Determinants of burnout of neurology trainees in Attica, Greece. *Neurology*. 2015;85(11 PG-81-84):e81-e84. doi:<http://dx.doi.org/10.1212/WNL.0000000000001924>
197. Zubairi AJ, Noordin S. Factors associated with burnout among residents in a developing country. *Ann Med Surg*. 2016;6(PG-60-63):60-63. doi:<http://dx.doi.org/10.1016/j.amsu.2016.01.090>