

Meta-analysis of the impact of role stress on the turnover intention of medical staff in tertiary hospitals

Shanshan Yang¹, Yi Qiu², Jian He¹

¹The Party and Government Office, The Affiliated Hospital of North Sichuan Medical College, Nanchong, China; ²Information Center, The Affiliated Hospital of North Sichuan Medical College, Nanchong, China

Contributions: (I) Conception and design: S Yang; (II) Administrative support: S Yang; (III) Provision of study materials or patients: S Yang, Y Qiu; (IV) Collection and assembly of data: All authors; (V) Data analysis and interpretation: Y Qiu, J He; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

Correspondence to: Jian He. A20 Room of the Party and Government Office, The Affiliated Hospital of North Sichuan Medical College (New District), No.1 Maovua South Road, Shunging District, Nanchong, China. Email: dzb2222856@163.com.

> Background: This study aimed to conduct a meta-analysis on the effect of role stress on the turnover intention of medical staff in tertiary hospitals.

> Methods: Based on the inclusion and exclusion criteria of literatures, we searched the English language databases Science Direct, PubMed, Springerlink, CBM, ISI, and Web of Science for studies published between January 2000 and October 2020 on the effect of role stress on the turnover intention of medical staff in tertiary hospitals. Publications were strictly screened according to the standards, and RevMan5.3 was adopted to conduct a meta-analysis of the relevant data. The influence of role stress and its various dimensions, such as role conflict, role ambiguity, and role overload on medical staff in tertiary hospitals turnover intention was analyzed. The Q test was adopted for heterogeneity analysis and the Egger's test adopted to detect publication bias.

> Results: A total of 12 publications meeting the requirements were included in this study. The results showed that the combined correlation coefficient r between total role stress and turnover intention was 0.2503 (95% CI: 0.2235-0.3489). There was also a positive correlation between role stress and the turnover intention of medical staff in tertiary hospitals (r=0.2503). The meta-analysis results of each dimension of role stress showed turnover intention was positively correlated with role conflict (r=0.2838), role ambiguity (r=0.2628), and role overload (r=0.2687).

> **Conclusions:** The greater the role stress of medical staff in tertiary hospitals, the stronger the turnover intention. Measures must be taken to avoid the loss of medical staff and improve the quality of medical services.

Keywords: Role stress; role conflict; medical staff; turnover intention; meta-analysis

Submitted Nov 11, 2020. Accepted for publication Jan 17, 2021. doi: 10.21037/apm-20-2446 View this article at: http://dx.doi.org/10.21037/apm-20-2446

Introduction

1

3

2 The effects of rapid economic development combined 4 with an ageing population have dramatically increased the 5 demand for high-quality medical services. Hospitals must 6 increasingly bear service pressures, and some medical staff 7 have gradually experienced high "professional burnout"

and turnover tendencies (1,2). The specific demands of 8 the medical industry are such that medical staff are faced with increasing tension between doctors and patients, an 10 increased need to maintain teaching and academic roles in 11 addition to their clinical activities, and a general increase 12 in public and media scrutiny concerning their activities. In 13 such an environment, work pressure is extremely high (3) 14

and studies have revealed that work stress has a significant 15 impact on employee job satisfaction, personal growth, and 16 turnover intention (4). There is an urgent need to examine 17 and address the turnover tendency of tertiary hospital 18 medical staff as an important measure in maintaining and 19 improving the quality of medical services in China. 20

Current domestic and foreign research shows that 21 sources of work stress usually include organizational 22 tendencies, organizational structure, career development, 23 work factors, job roles, and interpersonal relationships (5). 24 Among these, role stress is a common finding in medical 25 staff. Nurses and doctors must adopt a social role in the 26 treatment of patients, an organizational role as a part of the 27 administrative and organizational structure in which they 28 29 work, and an academic role as a supervisor and researcher within the scientific community. The stress associated with 30 31 these multiple roles produces role conflict, role ambiguity, and role overload (6,7). Role conflict exists when staff face 32 33 multiple expectations; from themselves, patients, colleagues, supervisors, administrators, and others. In clinical practice, 34 the judgment of patients' and estimates of their own 35 conditions often do not match those of nurses and doctors 36 and patients and practitioners often have inconsistent 37 expectations and requirements (8). Disagreement on the 38 choice of assessment and management options between 39 colleagues is another important source of role conflict. The 40 medical workplace is one in which practitioners of various 41 ages, training backgrounds, and clinical experience exist 42 and consensus on which direction to take is often difficult 43 to establish. Role ambiguity occurs when medical staff must 44 assume multiple roles such as treating patients, undertaking 45 research, teaching junior colleagues, and fulfilling 46 administrative duties. This can result in staff developing 47 a blurred understanding of their roles and priorities (9) 48 leading to frustration and uncertainty. Role overload occurs 49 when large workloads clash with available time and the 50 need to devote time to professional development adds to 51 this pressure. The self-confidence of staff is also challenged 52 by the ongoing requirement for them to develop additional 53 capabilities to deal with the rapid technological advances in 54 the field of health care (10). 55

We examined the effect of role stress on the turnover 56 intention of medical staff in tertiary hospitals via a meta-57 analysis of existing literature with a view to establishing 58 a theoretical basis for reducing medical staff turnover 59 intention and improving the quality of health care. We 60 present the following article in accordance with the 61 PRISMA reporting checklist (available at http://dx.doi. 62

org/10.21037/apm-20-2446).	63
	64

Methods

Literature inclusion and exclusion criteria

The inclusion criteria for studies examined in this meta-69 analysis included the following: (I) medical staff were the 70 research object; (II) the types of nurses included internal 71 medicine nurses and surgical nurses; (III) the publication 72 was written in English; (IV) primary and secondary 73 literature; (V) literature data was complete; (VI) turnover 74 intention was taken as a research variable. The following 75 literature types were excluded from the analysis: (I) studies 76 of non-medical staff; (II) repeated studies; (III) studies with 77 incomplete research results; (IV) review articles. 78

Literature	e searci	b strategy
------------	----------	------------

The English search terms used were "nurse"/"medical 82 care personnel"/"paramedic"/"medical staff", "role stress", 83 "turnover intention"/"turnover"/"departure"/"intent to 84 leave" and "quit". Published studies from January 2000 85 to October 2020 were searched in the English language 86 databases Science Direct, PubMed, Springerlink, CBM, ISI, 87 and Web of Science. 88

Literature screening

A preliminary screening of the results was performed and 92 relevant information such as the title and abstract of the 93 citation obtained were carefully read and studies obviously 94 not meeting the inclusion criteria were eliminated. The 95 full text of remaining studies was then read and those 96 which featured inconsistent research objects, incomplete 97 article data, inconsistent inclusion criteria, and inconsistent 98 evaluation indicators were eliminated. In cases of ambiguity, 99 the corresponding author of the study was contacted to seek 100 clarification before the study was included in our analysis. 101

Outcome indicators

The turnover intention and role stress scales were used. The 105 outcome indicator was the r value obtained according to 106 Pearson correlation coefficient analysis, which represented 107 the correlation between role stress and turnover intention. 108 A positive r value indicated a positive correlation between 109 role stress and turnover intention and negative value 110

65

66

67 68

79

80

81

89

90

91

111 indicated a negative correlation between the two.

112

¹¹³ *Literature data extraction*

The obtained literature was organized and analyzed, and 115 the author information, publication time, research object, 116 and number of research samples were extracted. A total of 117 12 English language publications met the meta-analysis 118 standards and these were carefully read and subject to data 119 120 extraction. The extracted content included the sample size of the research objects, the selection criteria, the related 121 scale to evaluate the turnover intention, the relevant scale 122 to evaluate the role stress, and the correlation coefficient 123 124 between the two.

The turnover intention was mainly evaluated by the 125 TIQ scale (11). The assessment content involved six items 126 and three dimensions, including the possibility of resigning 127 from the current job, seeking other work motivations, and 128 the possibility of obtaining external work. The sum of the 129 six items was the total score. The higher the scale score, 130 131 the stronger the turnover intention. The reliability of Cronbach's a coefficient of the TIQ scale was 0.865, and 132 the content validity was 0.78. 133

Role stress was mainly evaluated by the role stress 134 scale (12), which involved four parts and three dimensions, 135 including eight role conflicts, six role ambiguities, five role 136 overloads (quantity), and five role overloads (quality). Likert 137 5-point scoring was adopted for scoring with a higher 138 139 score indicating the greater the role stress of the individual. The internal consistency coefficients of role conflict, role 140 141 ambiguity, and role overload were 0.835, 0.848, and 0.8163, respectively. The reliability of the scale Cronbach's a 142 143 coefficient was 0.874.

144

¹⁴⁵ 146 *Literature quality evaluation*

The STROBE checklist methodology was combined with 147 148 the systematic evaluation method of the observational research quality evaluation tool in Sanderson and other 149 studies, and the quality of all included literature and 150 methodology were evaluated comprehensively. This 151 included research object inclusion criteria and sources, 152 research location, institution, relevant data, statistical 153 methods, defined outcomes, confounding factors, data 154 sources of meaningful variables, control methods for 155 potential bias, sample determination methods, and 156 157 descriptions of conflicts of interest.

Statistical processing

159 Review Manager 5.3 software was adopted to conduct 160 161 the meta-analysis and the correlation coefficient r of role stress and turnover intention, and the value of correlation 162 coefficient r of each dimension were input into the software. 163 The R software instruction was set as follows: library 164 (grid); library (meta); datal<-data.frame [study=numeric(0), 165 n=numeric(0), r=numeric(0); datal<-metacor 166 (r,n,data=datal,sm=ZCOR"); forest(datal), summary(datal); 167 funnel(datal); metabias (datal,method="linreg")]. The 168 statistical methods used included heterogeneity detection, 169 meta-analysis, and publication bias analysis. Q test was 170 adopted to test for heterogeneity. When P<0.05 and 171 (or) $I^2 > 50\%$, the included studies were considered to be 172 heterogeneous, and random effects models (REM) analysis 173 was used. When P>0.05 and (or) $I^2 < 50\%$, the included 174 studies were regarded as homogeneous, and fixed effects 175 model (FEM) analysis was performed. Finally, the funnel 176 plot was used to evaluate and analyze the publication bias of 177 the included studies. When P<0.05, the difference between 178 groups was considered to be statistically significant. 179

Results

Literatures search results

A duration limit from January 2000 to October 2020 was set 185 and resulted in the retrieval of 436 publications. Of these, 92 186 were retrieved from the PubMed database, 65 from the ISI 187 Web of Science database, 103 from the Springlink database, 188 and 176 from the Science Direct database. After Endnote 189 X8 software was adopted to remove repeated publications 190 and post-processing, 214 publications remained. The title, 191 abstract, and full text of each publication was carefully 192 read and further duplicate publications and literature 193 reviews were excluded. Finally, a total of 12 publications 194 were included in this study. The basic process of literature 195 screening is shown in Figure 1 and the basic information on 196 included research publications shown in Table 1. 197

Literature quality evaluation results

The 12 publications included in the study correspond to 201 (13-24), and the quality evaluation results are shown in 202 *Table 2*. All publications described the relevant content of 203 the research design, including research object, inclusion 204 criteria and sources, research locations, institutions, 205

158

180

181

182

183

198

199



Figure 1 Selection process.

relevant data, and statistical methods. Eight publications
(66.7%) defined outcomes and confounding factors, and
provided data sources for meaningful variables and four
(33.3%) explained potential bias control methods. Three
publications (25%) gave sample determination methods,
and none explained conflicts of interest. Based on the above
results, the included publications were of high quality.

213

Analysis of overall correlation coefficient between role stress and turnover intention

Figure 2 shows the heterogeneity test result was tau-217 squared =0.0043, I^2 =69.5%, and P<0.01, suggesting that 218 the research was very heterogeneous, so the RFM was 219 used for analysis. RFM was adopted to calculate turnover 220 intention and role stress, the combined effect r and 95% 221 CI were 0.2503 (0.2235-0.3489), and the difference was 222 evident (P<0.01). Figure 3 is a funnel plot of the publication 223 bias analysis of role stress and turnover intention. The 224

distribution of various studies on both sides of the funnel 225 was basically symmetrical, indicating that there was no 226 obvious publication bias. Egger's test indicated P>0.05, 227 further indicating there was no obvious publication bias. 228

229

230

231 232

Analysis of the correlation coefficients of turnover intention and role stress in each dimension

The test results of turnover intention and role conflict 233 heterogeneity are shown in Figure 4, tau-squared =0.00135, 234 I^2 =83%, and P<0.01, indicating the research was very 235 heterogeneous, so the REM was used for analysis. The 236 turnover intention and role conflict were calculated, 237 the combined fisher's Z and 95% CI were 0.2838 238 (0.1810-0.3928), and the difference was greatly notable 239 (P<0.01). Figure 5 is a funnel plot of turnover intention and 240 role conflicts which is symmetrical, indicating the possibility 241 of new publication bias is small. 242

The results of the fuzzy heterogeneity test of turnover 243

Annals of Palliative Medicine, Vol 10, No 1 January 2021

Table 1	Basic	informatio	on included	in	the	literature
	Duore	monute	in monute		ci c	meenacure

First outbox	Dublich voor	Comple eize		Role stress		Canalysian
First author	Publish year	Sample size -	Role conflict	Role ambiguity	Role overload	Conclusion
Han SS	2015	n	Y	\checkmark		Role conflict was positively correlated with turnover intention and role ambiguity was positively correlated with turnover intention (P<0.001)
Elçi M	2012	500		\checkmark		There was a positive correlation between role stress and turnover intention (P<0.01)
Lou JH	2007	1,093		\checkmark		There was a positive correlation between role stress and turnover intention (P<0.01)
Mosadeghrad AM	2013	91		\checkmark		There was a positive correlation between role stress and turnover intention (P<0.01)
Morter	2010	296		\checkmark		There was a positive correlation between role overload and turnover intention (P<0.01)
O'Brien-Pallas L	2010	176	V	\checkmark		Role conflict was positively correlated with turnover intention and role ambiguity was positively correlated with turnover intention (P<0.001)
Jang HJ	2013	4,481		\checkmark		There was a positive correlation between role stress and turnover intention (P<0.01)
Sung MH	2013	573			\checkmark	There was a positive correlation between role overload and turnover intention (P<0.01)
Tziner A	2015	504		\checkmark		There was a positive correlation between role stress and turnover intention (P<0.01)
Al-Hawajreh KM	2011	124	Y	\checkmark		Role conflict was positively correlated with turnover intention and role ambiguity was positively correlated with turnover intention (P<0.001)
Cui Y	2011	144	Y	V		Role conflict was positively correlated with turnover intention and role ambiguity was positively correlated with turnover intention (P<0.001)
Kim KS	2013	168		\checkmark	\checkmark	There was a positive correlation between role overload and turnover intention (P<0.01)

473

Item	Explanation	1	2	3	4	5	6	7	8	9	10	11	12
Research design	The main content of the design	Υ	Y	Υ	Υ	Y	Y	Υ	Υ	Y	Υ	Υ	Y
Research setting	Research location, institution, and other information	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Research object	Inclusion criteria and source	Υ	Y	Υ	Υ	Y	Y	Υ	Υ	Y	Υ	Υ	Y
Sample size	Sample determination method	Ν	Ν	Ν	Ν	Y	Ν	Υ	Ν	Ν	Ν	Υ	Ν
Variable	Define outcomes and confounding factors	Ν	Y	Y	Y	Y	Ν	Y	Ν	Ν	Ν	Y	Y
Data	Significant variables need to provide with data sources	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Statistical methods	Explain statistical methods	Y	Y	Y	Υ	Y	Y	Υ	Υ	Y	Υ	Υ	Y
Bias	Methods of controlling potential bias	Ν	Y	Ν	Ν	Y	Ν	Y	Ν	Ν	Ν	Ν	Y
Conflict of interest	State conflict of interest	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν

 Table 2 Quality evaluation of included literature



Figure 2 Comparison of role stress and turnover intention using fisher's Z.



Figure 3 Funnel plot of the analysis of the bias of role stress and turnover intention.

intention and roles are shown in *Figure 6*, tau-squared =0.0068, I²=74.2%, and P<0.01, indicating the research was very heterogeneous, so the REM was used for analysis. The turnover intention and role ambiguity were calculated, the combined fisher's Z and 95% CI were 0.2628 (0.2354–0.3508), and the difference was considerable (P<0.01). *Figure* 7 shows the fuzzy funnel plot of turnover intention and roles. The funnel plot is symmetrical, and the possibility of new publication bias is small.

The results of the heterogeneity test of turnover intention and role overload are shown in *Figure 8*. Tau-squared <0.0001, $I^2=0\%$, and P>0.05. This suggest the research had little heterogeneity, so the FEM was used for analysis. The FEM was adopted to calculate turnover intention and role overload, fisher's Z, and 95% CI were 0.2687 (0.2135;

256

257

Annals of Palliative Medicine, Vol 10, No 1 January 2021

Study	Total	COR	95%CI	W(fixed)	W(random)					
Han SS 2015	236	0.43	[0.26;0.40]	13.3%	22.4%					
O'Brien-Pallas L 2010	106	0.11	[0.14;0.29]	6.0%	17.3%		-			
Al-Hawajreh KM 2011	743	0.23	[0.08;0.30]	43.5	28.5%					
Cui Y 2011	596	0.34	[0.05;0.32]	32.6	27.6%			-,		
Fixed effect model	1681	0.28	[0.23;0.34]	100%	-			\$		
Random effects mod	del	0.28	[0.18;0.39]	-	100%			$\langle \rangle$		
Hetergeneity: I-squared=8	33%.tau-squ	ared=0.0013	35.p=0.0002			F	+		+	
5						0.0	0.1	0.2	0.3	0.4
						Corr	elation (base	d on Fisher's z	transformatio	on)

Figure 4 Comparison of intention turnover and role conflict via fisher's Z.



Figure 5 Funnel plot of intention turnover and role conflict.

0.3428), and the difference was remarkable (P<0.01). *Figure 9* is a funnel plot of turnover intention and role
overload. The funnel plot is symmetrical, and the possibility
of new publication bias is small.

Discussion

263

The main sources of work pressure in the workplace 266 are working conditions, role pressure, interpersonal 267 relationships, career development, organizational 268 269 systems, and the interaction of family and work. Among which, role pressure stimulates the individual's negative 270 emotions, which in turn affects the individual's impact on 271 job satisfaction and job performance. Therefore, it is an 272 273 important source of work stress (25). The work of medical staff is relatively special. Under the environment of tension 274 between doctors and patients, media focus, and increased 275 social supervision, medical staff have long been faced with 276 pressure from work, patients, and the environment. Since 277 the tertiary hospitals are the highest-level hospitals outside 278 of the national special hospitals in China, the stability and 279

work quality of its medical staff significantly affect the 280 overall level of China's medical services. Therefore, Medical 281 staff in tertiary hospitals experience discipline specific role 282 stress and this kind of pressure has a negative effect on 283 employee enthusiasm for work and mental health. Staff 284 may become emotionally exhausted and the tendency for 285 turnover intensifies. 286

The meta-analysis results of this work show that the 287 role pressure (including various dimensions: role conflict, 288 role ambiguity, and role overload) of medical staff in the 289 tertiary hospitals has a significant positive correlation with 290 the willingness to resign. The greater the role pressure 291 of medical staff in the tertiary hospitals, the stronger the 292 willingness to resign. The results are basically consistent 293 with those of Mosadeghrad et al., which proved that the 294 greater the work pressure, the stronger the willingness of 295 hospital employees to guit (26). Therefore, it is important 296 to establish a sound method to both monitor medical staff 297 role stress and prevent its escalation. Role stress experienced 298 by medical staff usually arises in three ways; through role 299 conflict, role ambiguity, and role overload (27). In the 300 hospital environment a particular clinical circumstance may 301 require multiple treatments and examinations, and there is a 302 problem of overlapping responsibilities. Moreover, medical 303 staff also need to cope with the pressure of academic 304 research and career promotion when performing their daily 305 duties. For these and other reasons, staff develop a sense of 306 ambiguity about their roles leading to uncertainty regarding 307 their real focus, an ability to prioritize, and fatigue. At this 308 time, managers are required to understand the demands 309 of employees, so as to give more support, care, and 310 recognition. Moreover, corresponding career development 311 plans should be formulated, and the career promotion 312 channels should be issued and optimized to help medical 313 staff to position themselves. Role conflict manifests when 314 competing desires and agendas clash within the clinical 315

Study	Total	COR	95%CI	W(fixed)	W(random)					
Han SS 2015	243	0.20	[0.10;0.34]	8.9%	10.3%					
O'Brien-Pallas L 2010	103	0.24	[0.04;0.37]	8.7%	9.6%	-		•		-
Al-Hawajreh KM 2011	823	0.32	[0.28;0.38]	30.1%	18.5%					
Cui Y 2011	564	0.30	[0.25;0.39]	22.1%	18.3%				•	
Kim KS 2013	185	0.41	[0.09;0.24]	10.3%	15.6%			1		
Fixed effect model	1918	0.25	[0.20;0.33]	100%	-			\Rightarrow		
Random effects mod	del	0.26	[0.24;0.35]	-	100%	⊢		\rightarrow	+	
Hetergeneity: I-squared=7	74.2%,tau-sq	quared=0.00	68,p=0.0012			0.0	0.1	0.2	0.3	0.4
						Cor	relation (base	d on Fisher's z	transformatio	n)

Figure 6 Comparison of intention turnover and role ambiguity via fishers' Z.



Figure 7 Funnel plot of intentional turnover and role ambiguity.

environment. This may occur between staff and patients, 316 staff and their colleagues, and staff and others within 317 the organizational structure. Trust, respect and a clear 318 understanding and appreciation of the roles which each 319 320 individual has is essential in combatting role conflict. Good communication underpins this and there is an ongoing need 321 for medical staff to undertake training in communication 322 skills. It can be implemented through the establishment of 323 communication groups, regular vocational training, and 32.4 the organization of daily entertainment activities. Methods 325 such as timely assistance when they face difficulties can 326 improve the communication skills of medical staff with 327 patients and their families, colleagues, and family members. 328 The frustration felt by staff because of their heavy workload 329 and high work pressure can be intensified by a loss of lack 330 of self-confidence created by the need to keep abreast of 331 technological developments in the medical workplace. The 332 demand to keep up with the ongoing introduction of new 333 techniques and procedures can create a sense of helplessness 334 and inadequacy which may convert to turnover intention. 335 At this time, managers are required to create a supportive 336

management atmosphere. After the hardware facilities in
337
the work environment are updated, it is imperative to pay
attention to and regularly provide medical staff in various
departments with advanced technical training, to improve
their professional capabilities, and improve the negative
technology.

Though no review restrictions were encountered during 344 the research, yet only one indicator of Person correlation 345 coefficient was analyzed. There is a certain degree of bias in 346 the selection of the indicator. Therefore, it is necessary to 347 expand the sample size in the follow-up studies and conduct 348 a comprehensive analysis with Spearman correlation 349 coefficient and other indicators. Nevertheless, this study 350 can still provide a theoretical basis for further research and 351 analysis of the effect of role stress on the turnover intention 352 of medical staff in tertiary hospitals. 353

354

355

356

Conclusions

This meta-analysis resulted in 12 publications that focused 357 on the effect of role stress on the turnover intention of 358 medical staff in tertiary hospitals. The results showed 359 that role stress was positively correlated with turnover 360 intention and this correlation was maintained across each 361 dimension of role stress; role conflict, role ambiguity, and 362 role overload. The greater the role stress that the tertiary 363 hospitals medical staff bear, the stronger the turnover 364 intention. We recommend the implementation of measures 365 to address role stress withing the hospital environment 366 so staff loss can be avoided and high-quality services can 367 be maintained. Only the Person correlation coefficient 368 index was selected for analysis and other indicators such as 369 Spearman's correlation coefficient or regression coefficient 370 b were not used. This may have created a bias within the 371

Annals of Palliative Medicine, Vol 10, No 1 January 2021

Study	Total	COR	95%CI	W(fixed)	W(random)					
Morter 2010	235	0.26	[0.16;0.37]	19.5%	19.5%					-
Sung MH 2013	105	0.27	[0.12;0.37]	8.7%	8.7%			*		_
Kim KS 2013	754	0.25	[0.20;0.35]	65.4%	68.5%				1	
Fixed effect model	1094	0.27	[0.21;0.34]	100%	-			\$		
Random effects mod	del	0.28	[0.23;0.33]	-	100%			$\langle \rangle$		
Hetergeneity: I-squared=0)%,tau-squa	red=0,p=0.6	6435							
						0.0	0.1	0.2	0.3	0.4
			Cor	relation (base	ed on Fisher's z	transformatio	n)			

Figure 8 Comparison of intention turnover and role overload via fisher's Z.



Figure 9 Funnel plot of intentional turnover and role overload.

372 results so the findings must be approached with caution.373

Acknowledgments

376 Funding: None.

377

³⁷⁸ ³⁷⁹ Footnote

Reporting Checklist: The authors have completed the
PRISMA reporting checklist. Available at http://dx.doi.
org/10.21037/apm-20-2446

383

- *Conflicts of Interest:* All authors have completed the ICMJE
 uniform disclosure form (available at http://dx.doi.
 org/10.21037/apm-20-2446). The authors have no conflicts
 of interest to declare.
- 388
- *Ethical Statement:* The authors are accountable for all
 aspects of the work in ensuring that questions related
 to the accuracy or integrity of any part of the work are
 appropriately investigated and resolved.
- 393
- 394 Open Access Statement: This is an Open Access article

distributed in accordance with the Creative Commons 395 Attribution-NonCommercial-NoDerivs 4.0 International 396 License (CC BY-NC-ND 4.0), which permits the non-397 commercial replication and distribution of the article with 398 the strict proviso that no changes or edits are made and the 399 original work is properly cited (including links to both the 400 formal publication through the relevant DOI and the license). 401 See: https://creativecommons.org/licenses/by-nc-nd/4.0/. 402

References

1.	Hämmig O. Explaining burnout and the intention to	405 406
	leave the profession among health professionals – a cross-	407
	sectional study in a hospital setting in Switzerland. Bmc	408
	Health Services Research 2018;18:785.	409
2.	Van den Bulcke B, Metaxa V, Reyners AK, et al. Ethical	410
	climate and intention to leave among critical care	411
	clinicians: an observational study in 68 intensive care units	412
	across Europe and the United States. Intensive Care Med	413
	2020;46:46-56.	414
3.	Austin CL, Saylor R, Finley PJ. Moral distress in	415
	physicians and nurses: Impact on professional quality of	416
	life and turnover. Psychol Trauma 2017;9:399-406.	417
4.	Li B, Li Z, Wan Q. Effects of work practice environment,	418
	work engagement and work pressure on turnover intention	419
	among community health nurses: Mediated moderation	420
	model. J Adv Nurs 2019;75:3485-94.	421
5.	Amponsah-Tawaih K, Adu MA. Work Pressure and	422
	Safety Behaviors among Health Workers in Ghana: The	423
	Moderating Role of Management Commitment to Safety.	424
	Saf Health Work 2016;7:340-6.	425
6.	Kumar A, Supowit S, Potts JD, et al. Alpha-calcitonin	426
	gene-related peptide prevents pressure-overload induced	427
	heart failure: role of apoptosis and oxidative stress. Physiol	428
	Rep 2019;7:e14269.	429
7.	Matsuhashi T, Endo J, Katsumata Y, et al. Pressure	430
	overload inhibits glucocorticoid receptor transcriptional	431

403

10.21037/apm-20-2446

Cite this article as: Yang S, Qiu Y, He J. Meta-analysis of the impact of role stress on the turnover intention of medical staff in tertiary hospitals. Ann Palliat Med 2021;10(1):469-478. doi:

Yang et al. Role stress medical staff turnover intention meta-analysis

activity in cardiomyocytes and promotes pathological		J Nurs Manag 2010;18:1073-86.	470
cardiac hypertrophy. J Mol Cell Cardiol 2019;130:122-30.	19.	Jang HJ, Baek ML. Influencing factors of the turnover	471
Feijó FR, Gräf DD, Pearce N, et al. Risk Factors for		intention in hospital paramedics J. The Korean Journal of	472
Workplace Bullying: A Systematic Review. Int J Environ		Emergency Medical Services, 2013;17.	473
Res Public Health 2019;16:1945.	20.	Sung MH, Keum EJ, Roh HJ, et al. The Relationship	474
Salomonsson M, Brasen JC, Sorensen CM. Role of		among Job Overload, Self-efficacy, Emotional Exhaust and	475
renal vascular potassium channels in physiology and		Turnover Intention in Clinical Nurses. Korean Journal of	476
pathophysiology. Acta Physiol (Oxf) 2017;221:14-31.		Occupational Health Nursing 2013;22:130-9.	477
Wang Y, Sano S, Oshima K, et al. Wnt5a-Mediated	21.	Tziner A, Rabenu E, Radomski R, et al. Work stress	478
Neutrophil Recruitment Has an Obligatory Role in		and turnover intentions among hospital physicians: The	479
Pressure Overload-Induced Cardiac Dysfunction.		mediating role of burnout and work satisfaction. Revista	480
Circulation 2019;140:487-99.		De Psicología Del Trabajo Y De Las Organizaciones	481
Duffield CM, Roche MA, Homer C, et al. A comparative		2015;31:207-13.	482
review of nurse turnover rates and costs across countries. J	22.	Al-Hawajreh KM. Exploring the Relationship between	483
Adv Nurs 2014;70:2703-12.		Occupational Stress and Organizational Commitment	484
Swartout KM, Parrott DJ, Cohn AM, et al. Development		among Nurses in Selected Jordanian Hospitals. Dirasat:	485
of the Abbreviated Masculine Gender Role Stress Scale.		Administrative Sciences 2011;40:127-43.	486
Psychol Assess 2015;27:489-500.	23.	Cui Y. Study on the influencing factors of turnover	487
Han SS, Han JW, An YS, et al. Effects of role stress on		intention among maternity nurses in Beijing. Journal of	488
nurses' turnover intentions: The mediating effects of		Nursing Administration 2011;11:112.	489
organizational commitment and burnout. Jpn J Nurs Sci	24.	Kim KS, Han YH. A Study on Intention to Quit and Job	490
2015;12:287-96.		Overload, Role Ambiguity, Burn out among Nurses in	491
Elçi M, Aksoy S, Aksoy S, et al. The Impact of Ethical		General Hospital. Korean Journal of Occupational Health	492
Leadership and Leadership Effectiveness on Employees'		Nursing 2013;22:121-9.	493
Turnover Intention: The Mediating Role of Work	25.	Molina-Sánchez H, Ariza-Montes A, Ortiz-Gómez	494
Related Stress. Procedia - Social and Behavioral Sciences		M, et al. The Subjective Well-Being Challenge in the	495
2012;58:289-97.		Accounting Profession: The Role of Job Resources. Int J	496
Lou JH, Yu HY, Hsu HY, et al. A study of role stress,		Environ Res Public Health 2019;16:3073.	497
organizational commitment and intention to quit among	26.	Mosadeghrad AM, Ferlie E, Rosenberg D. A study of	498
male nurses in southern Taiwan. J Nurs Res 2007;15:43-53.		relationship between job stress, quality of working life and	499
Mosadeghrad AM. Occupational stress and turnover		turnover intention among hospital employees. Health Serv	500
intention: implications for nursing management. Int J		Manage Res 2011;24:170-81.	501
Health Policy Manag 2013;1:169-76.	27.	Pecino V, Mañas MA, Díaz-Fúnez PA, et al. Organisational	502
Morter, Judy R. Relationship of role overload to job		Climate, Role Stress, and Public Employees' Job	503
satisfaction and intent to leave among acute care nurses.		Satisfaction. Int J Environ Res Public Health	504
Dissertations & Theses - Gradworks, 2010.		2019;16:1792.	505
O'Brien-Pallas L, Murphy GT, Shamian J, et al. Impact			506
and determinants of nurse turnover: a pan-Canadian study.	(En	glish Language Editor: B. Draper)	

4334348.

435436437 9.

10.

11.

12.

13.

14.

15.

16.

17.

18.

Ann Palliat Med 2021;10(1):469-478 | http://dx.doi.org/10.21037/apm-20-2446