The influence of belief conflict on stress and burnout syndrome in healthcare workers: Using structural equation modeling in a cross-sectional study

Makoto Kyougoku, Mutsumi Teraoka

Purpose: Belief conflict has been hypothesized to contribute to increased stress and burnout syndrome among healthcare workers. However, tests on this hypothesis have been limited. The aim of this study was to evaluate the effect of belief conflict on stress and burnout syndrome in healthcare workers using structural equation modeling (SEM).

Method: A sample of 488 participants (4.3% physicians, 32.4% nurses, 16.2% occupational therapists, 10.7% physical therapists, 36.4% other) responded to a questionnaire based on the Assessment of Belief Conflict in Relationship-14 (ABCR-14), Stress Response Scale-18 (SRS-18), and Japanese Burnout Scale (JBS). These data were examined using descriptive statistics and a causal sequence model.

Results : The hypothesized model exhibited an excellent model fit (RMSEA = 0.041, CFI = 0.937, TLI = 0.933). The results suggested that belief conflict has positive causal effects on stress and burnout syndrome: standardized total effect = 0.676 (S.E. = 0.041, Est . /S.E. = 16.334, *p*-value = 0.000, 95% CI = 0.411; 0.646), standardized total indirect effect = 0.221 (S.E. = 0.031, Est . /S.E. = 7.066, *p*-value = 0.000, 95% CI = 0.115; 0.231), standardized direct effect = 0.455 (S.E. = 0.048, Est . /S.E. = 9.497, *p*-value = 0.000, 95% CI = 0.257; 0.455).

Conclusion: This study indicated that healthcare workers suffer stress and burnout related to belief conflict. Therefore, assessment of belief conflict in healthcare workers, followed by appropriate intervention where indicated, would be beneficial in preventing stress and burnout.

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Competing Interests

The authors declare that no competing interests exist.

Keywords

belief conflict, stress, burnout syndrome, structural equation modeling

Introduction

Belief conflict, a concept first coined by Japanese philosopher Seiji Takeda (2004) in his book, is considered a contributing factor to job stress among healthcare workers in Japan (Kyougoku 2011b). Beliefs are described as actions, feelings, and thoughts that people do not usually question (Takeda 2004). Belief conflict is defined as a fundamental confrontation that arises when people's beliefs are questioned (Kyougoku 2011b; Saijo 2005; Takeda 2004). Such conflicts can emerge among healthcare workers such as the conflict between healthcare workers and other staff, and between healthcare workers and the patients or their family members (Kyougoku 2012a). Belief conflict can sometimes have a negative effect on therapeutic relationships; in the case of interactions with fellow professionals, and patient care (Kyougoku 2012b).

In Japan, the awareness about belief conflict among the public has been through a program called Dissolution Approach for Belief Conflict (DAB) (Kyougoku 2011b). DAB is a comprehensive intervention program to support people suffering from belief conflicts in a variety of circumstances (Kyougoku 2011b). In this model, dissolution signifies clarification of the problem (Kyougoku 2011b; Kyougoku 2014). The model has been applied in hospitals, outpatient clinics, nursing homes, rehabilitation programs, and other organizations (Kyougoku 2012a; Yamamori & Kyougoku 2014). Moreover, DAB has been used to support healthcare workers suffering from belief conflict, to improve interaction among professionals in the workplace, and to promote therapeutic relationships (Kyougoku 2011a, 2012a; Shimizu 2012).

The problem of belief conflict has been perceived as a risk factor contributing to job-related stress and burnout among healthcare workers (Kyougoku 2014). Stress is defined as negative emotive, physical responses and arises when the job requirements don't match with abilities, resources or needs of workers. (Najimi et al. 2012). Burnout syndrome is defined as a job-related stress syndrome comprising symptoms of exhaustion (Peterson et al. 2011). Stress and burnout syndrome affect around19%–30% of the general working population (Bourbonnais et al. 2005; Cooper & Marshall 1976; Finney et al. 2013), and stress is associated with an increased incidence of burnout syndrome (Heeb & Haberey-Knuessi 2014). On the other hand, belief conflict has been associated with an increase of overall stress among healthcare workers (Kobayashi & Kyougoku 2012; Kono et al. 2014; Masuda & Kyougoku 2013; Tanabe 2010). Moreover, an upward trend in belief conflict and stress has been associated with an increase in burnout syndrome (Kobayashi & Kyougoku 2012; Kono et al.

2014; Masuda & Kyougoku 2013). Consequent of this rise in stress and burnout generated by belief conflict, healthcare workers have reported job dissatisfaction, insufficient work–life balance, moodiness, anger, hostility, fatigue, and lack of sleep (Kobayashi & Kyougoku 2012; Kono et al. 2014; Masuda & Kyougoku 2013).

However, although an association between the factors has been confirmed, no previous study has specified the causal impact of belief conflict on stress and burnout syndrome. We hypothesize that belief conflict, assessed using the Assessment of Belief Conflict in Relationship-14 (ABCR-14), will be associated with higher scores on the Stress Response Scale-18 (SRS-18), and Japanese Burnout Scale (JBS). Moreover, we hypothesize that the occurrence of belief conflict among healthcare workers will be identifiable as causing increased stress and burnout through the use of structural equation modeling (SEM) (Figure 1). SEM methodology affords the advantage of being able to identify causal relationships between several independent and dependent variables (Ullman & Bentler 2003). This study also examined the impact of various personal factors (such as age, gender, license, clinical experience, marital status, smoking, and alcohol use) and workplace factors (such as work time, commute time, working arrangements, phase, and team approach to health care) as moderators of the causal relations between belief conflict, stress, and burnout syndrome in this hypothesized model.

The aim of the study is to provide insights that will expand our understanding of one frequent cause of stress and burnout syndrome among healthcare workers.

Method

Ethics statement

The Ethics Committee of Kibi International University approved this study's research protocol (No. 13−01). When contacting prospective study participants, along with a survey form we enclosed a letter explaining the relevant purpose and method and the informed consent procedures. All participation was voluntary, and participants had the right to discontinue involvement in the study at any time without providing a reason. We regarded the return of the survey form as consent to participate. The survey forms were returned anonymously in sealed envelopes.

Participants: Participants were recruited through research collaborators. The total number of participants was 623.

Measures

Participant Profiles: Demographic data were obtained from participants. We assessed the following aspects: age, gender, license, clinical experience, work time, commute time, working arrangement, phase, whether the employee has taken a leave of absence, satisfaction with leisure time, health condition, interpersonal relationships, team approach to health care, marital status, smoking, and alcohol use.

ABCR-14: Belief conflict was measured using ABCR-14, based on the DAB (Kyougoku 2014; Kyougoku et al. 2013). The ABCR-14 contains 14 items divided into three subscales: belief conflict among healthcare workers (5 items; score range 5–35), belief conflict between healthcare workers and other staff (5 items; score range 5–35), and belief conflict in therapeutic relationships (4 items; score range, 4–28), with all responses on a seven-point scale ranging from 1 (strongly disagree) to 7 (strongly agree).

SRS-18: Job-related stress was measured using the SRS-18 (Suzuki 1997). This tool contains 18 items divided into three subscales: depression and anxiety (6 items; score range 0–18), irritability-anger (6 items; score range 0–18), and helplessness (6 items; score range, 0–18), with a four-point response scale from 0 (disagree) to 3 (agree).

JBS: Burnout syndrome was measured using the JBS (Kubo 2014), which contains 17 items divided into three subscales: depersonalization (6 items; score range 6–30), emotional exhaustion (5 items; score range 1–25), and diminished personal accomplishment (6 items; score range 6–30), with a five-point response scale from 1 (disagree) to 5 (agree).

Statistical Analysis

SPSS Statistics 22 (http://www.spss.com) was used for the sample characteristics. Mplus 7.3 (http://www.statmodel.com) was used for the SEM.

Sample Characteristics: The participants' demographics were summarized using descriptive analyses. The normal distribution of responses to the ABCR-14, SRS-18, and JBS were examined using the Kolmogorov–Smirnov test ($p > 0.05$).

Testing a Causal Relation: We tested our hypothesized model using SEM (Figure 1). SEM was run to under the special unconstrained. Estimator was used to robust weighted least squares factoring method (WLSMV) with missing data (Asparouhov & Muthén 2010). Items on the ABCR-14, SRS-18, and JBS were regarded as categorical variables. We assessed the model fit for hypothesized relationships between latent variables and data from the ABCR-14, SRS-18, and JBS by using SEM. To account for the moderator, personal variables and workplace variables were included in the model. Indirect effects estimates on burnout syndrome were calculated to test whether belief conflict was indirectly associated with burnout via stress. We used the Sobel test for statistical significance of indirect effects on burnout syndrome through stress from belief conflict (Sobel 1982). We also used three indexes for assessment of the model data fit. Two of these were the comparative fit index (CFI) and the Tucker–Lewis index (TLI), both with analytical values above 0.95 (Kline 2011). The third index was the root mean square error of approximation (RMSEA). Diagnostic values of RMSEA from 0.08 to 0.10 imply a mediocre fit, and values below 0.08 indicate a good fit (Kline 2011). If modify of a model from the result of model fit, we follow with an awareness of the hypothetical model of this study, the first model was modified such as the modification indices, model fit, and standardized estimates.

Results

Sample Characteristics

Out of the 623 initial participants, dataset contained responses from 488 persons (4.3% physicians, 32.4% nurses, 16.2% occupational therapists, 10.7% physical therapists, 36.4% other), among whom 68.3% were female and 31.7% male. Details of the sample characteristics are reported in Table 1. Table 2 indicates descriptive statistics and normality tests of the three measures (ABCR-14, SRS-18, and JBS). The data were non-normal in distribution using the Kolmogorov–Smirnov test ($p >$ 0.05).

Hypothesized Model

All parameter estimates are shown in Table 3. The hypothesized model exhibited an excellent fit on the first analysis (RMSEA = 0.041, CFI = 0.937, TLI = 0.933). Therefore, the hypothesized model did not need to be modified in this study. For ease of comprehension, Figure 2

shows the hypothesized model with only the standardized estimates.

In accordance with our hypothesized model, belief conflict led to an increase in stress and burnout. The total effect of belief conflict on burnout, including the effect of belief conflict mediated through stress, was statistically significant (standardized total effect = 0.676, S.E. = 0.041, Est./S.E. = 16.334, *p*-value = 0.000, 95% CI = 0.411; 0.646). The total indirect effect of belief conflict mediated through stress was also statistically significant (standardized total indirect effect = 0.221, S.E. = 0.031, Est./S.E. = 7.066, *p*-value = 0.000, 95% CI = 0.115; 0.231). Finally, the direct effect of belief conflict on burnout was statistically significant (standardized direct effect = 0.455, S.E. = 0.048, Est./S.E. = 9.497, *p*-value = 0.000, 95% CI = 0.257; 0.455). Among the moderator variables, clinical experience and work time were associated with an increase in belief conflict. Also, greater work time was associated with intensified stress, and working arrangements were correlated with burnout syndrome. The other moderator variables had no effect on belief conflict, stress, or burnout.

Indirect effects of belief conflict on stress factors were observed for the following indicators: depression-anxiety (standardized indirect effect = 0.475), irritability-anger (standardized indirect effect = 0.386), and helplessness (standardized indirect effect = 0.422). Moreover, the total indirect effect of belief conflict on burnout syndrome factors included stress for the following indicators: depersonalization (standardized total indirect effect = 0.588), emotional exhaustion (standardized total indirect effect = 0.639), and diminished personal accomplishment (standardized total indirect effect = 0.279).

Discussion

This study is the first one to test a hypothesized model relevant to the relationship between belief conflict, stress, and burnout syndrome in healthcare workers. Previous studies offered limited data to support the validity of this hypothesized model (Kobayashi & Kyougoku 2012; Masuda & Kyougoku 2013; Tanabe 2010; Yamamori & Kyougoku 2014). Our statistical results provide stronger evidence related to the hypothesis and warrant further research on the relationship among these factors.

Our findings demonstrated that belief conflict is a significant contributor to stress and burnout. As indicated in Table 3 and Figure 2, belief conflict had a direct effect on burnout as well as an indirect effect through stress. Moreover, belief conflict and stress caused an indirect effect on three factors that were statistically connected with burnout syndrome: diminishing self-awareness, emotional

and physical exhaustion, and a low sense of self-efficacy. Also, this problem caused an indirect effect on several factors related to stress, including depression, anxiety, anger, and a sense of helplessness. Therefore, it is apparent that the processes involved in belief conflict may cause burnout syndrome and stress.

Of course, stress and burnout syndrome have many causes. This study considered a variety of additional independent variables other than belief conflict, including age, gender, license, clinical experience, marriage, smoking, alcohol use, work time, commute time, working arrangement, phase, and team approach to health care. Among these variables, greater work time intensified the stress and working arrangements had an effect on burnout syndrome, but the effect of these two variables was relatively low. Moreover, clinical experience and work time had an effect on belief conflict, with clinical experience exhibiting the strongest effect. We understood that a healthcare worker with extensive clinical experience might be prone to experiencing belief conflict. However, belief conflict's impact on stress and burnout was considerably larger than what can be explained by these other variables (see Table 3 and Figure 2). Therefore, we believe that belief conflict itself can be considered a significant causal factor in stress and burnout syndrome.

We further believe that findings of this study could aid in preventing increased stress and the occurrence of burnout syndrome through timely intervention in belief conflicts at the workplace. For example, healthcare workers could be asked to complete the ABCR-14 to identify existing belief conflicts. Subsequently, a conflict manager or supervisor could meet with each worker to review the responses and gain a clear understanding of his or her belief conflicts. Some of the methods for dealing with belief conflict include conflict management, non-technical skill, and nonviolent communication in addition to DAB (Bercovitch & Rubin 1992; Kyougoku 2011b, 2012a, 2014; Rosenberg 2003; Yule et al. 2006). Effective application of these approaches could help harmonize various beliefs present in the workplace and thereby prevent, to some extent, the incidence of stress and burnout syndrome resulting from belief conflict. Further research in this area would be necessary to clarify the effects of intervention.

This study had some limitations. First, it used an inferred causal by cross-sectional design approach. Future study incorporating a longitudinal design would be necessary to confirm the causal relationships among belief conflict, stress, and burnout syndrome. Second, the analysis involved only a single sample of modest size. In order to draw broader generalizations, it would be desirable to conduct the analysis using multiple-group structural equation modeling with a larger sample.

Conclusion

This study has provided evidence about the impact of belief conflict on stress and burnout in healthcare workers. The study's findings supported the hypothesis that stress and burnout syndrome result from belief conflict. In addition, work time, working arrangements, and clinical experience also affected the incidence of stress, burnout, and belief conflict. We could thus prevent increased incidence of stress and burnout by intervening in belief conflicts in the workplace. Therefore,, our study findings are potentially beneficial for occupational health.

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224 **Table 1. Participant Characteristics (n = 488)**

Characteristics		Mean (SD)	%
Age		35.74 (10.062)	
Gender	Female		68.3
	Male		31.7
License	Physician		4.3
	Nurse		32.4
	Public health nurse		2.5
	Midwife nurse		0.4
	Pharmacist		5.3
	Welfare caretaker		3.3
	Social worker		2.5
	Occupational therapist		16.2
	Physical therapist		10.7
	Clinical psychotherapist		0.4
	Care manager		0.4
	Other		4.5
Clinical experience		11.69 (9.372)	
Work time		9.39 (1.797)	
Commute time		30.81 (21.525)	
Working arrangements			
	Day duty only		73.0
	Day and night duty		27.0
Phase	Acute phase		33.2
	Subacute phase		8.8
	Recovery phase		29.5
	Conservation phase		20.7
	Terminal phase		10.9
	Other		11.1
Taking a leave of absence			
	Very good		8.6
	Good		57.4

Fair	11.8
Poor	12.0
Neither agree nor disagree	9.2
Satisfied with leisure time	
Very good	6.4
Good	50.3
Fair	12.4
Poor	25.3
Neither agree nor disagree	5.6
Health condition	
Very good	9.6
Good	57.2
Fair	10.6
Poor	19.5
Neither good nor bad	3.0
Human relationship	
Very good	9.6
Good	50.5
Fair	28.2
Poor	9.1
Neither good nor bad	2.5
Team Approach to Health Care	
Nutrition support team	4.9
Respiratory care team	1.0
Rehabilitation team	31.4
Feeding and swallowing support team	1.6
Diabetic Support team	1.0
Decubitus care team	4.3
Infection control team	4.9
Emergency medicine team	3.5
Palliative care team	3.9

	Medical safety team	7.2
	Other	15.0
Marriage	Yes	44.5
	No	49.9
	Divorced	5.6
Smoking	Yes	13.5
	No	86.5
Drinking	Yes	53.4
	No	46.6

Note. SD = Standard deviation.

Table 2. Mean (SD) values, skewness, kurtosis, and normality test of ABCR–14, SRS–18, and JBS

Measures	Mean (SD)	Skewness	Kurtosis	Kolmogorov-Smirnov test (p-value)
ABCR-14 subscales				
Belief conflict among the same healthcare workers	17.67 (5.790)	0.175	−0.248	.001
Belief conflict between healthcare workers and other staff	19.34 (5.892)	0.086	−0.349	.006
Belief conflict in therapeutic relationships	14.59 (4.601)	−0.211	−0.601	.000
Total	51.616 (13.119)	−0.001	−0.218	.006
SRS-18 subscales				
Depression-Anxiety	4.35 (3.973)	0.931	0.385	.000
Irritability-Anger	4.71 (3.875)	1.008	0.864	.000
Helplessness	5.15 (3.990)	0.812	0.495	.000
Total	14.171 (10.498)	0.883	0.749	.000
JBS subscales				
Depersonalization	11.73 (4,404)	1.115	1.137	.000
Emotional exhaustion	14.34 (4.854)	0.178	−0.771	.000
Diminished personal accomplishment	20.32 (4.690)	−0.243	−0.315	.000
Total	46.333 (10.968)	0.427	0.138	.000

Note. SD = Standard deviation.

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	Estimate	S.E.	Est./S.E.	P-Value	95% CI
Model fit information					
RMSEA	0.041 [90% CI = 0.037; 0.044]				
CFI	0.937				
TLI	0.933				
Standardized model results					
Stress On					
Belief conflict	0.484	0.056	8.630	0.000	0.374; 0.594
Burnout syndrome On					
Belief conflict	0.455	0.048	9.497	0.000	0.361; 0.549
Stress	0.456	0.045	10.188	0.000	0.368; 0.544
Belief conflict By					
Belief conflict among the same healthcare workers	0.922	0.031	30.126	0.000	0.862; 0.982
Belief conflict between healthcare workers and other staff	0.694	0.036	19.193	0.000	0.623; 0.765
Belief conflict in therapeutic relationships	0.646	0.043	15.022	0.000	0.561; 0.730
Stress By					
Depression-Anxiety	0.982	0.018	53.509	0.000	0.946; 1.018
Irritability-Anger	0.798	0.030	26.31	0.000	0.738; 0.857

Helplessness	0.872	0.026	34.178	0.000	0.822; 0.922
Burnout By syndrome					
Depersonalization	0.870	0.023	37.555	0.000	0.824; 0.915
Emotional exhaustion	0.945	0.024	40.131	0.000	0.899; 0.991
Diminished personal accomplishment	0.413	0.059	7.018	0.000	0.298; 0.528
Belief On conflict					
Age	−0.212	0.129	−1.643	0.100	−0.465; 0.041
Sex	−0.052	0.069	−0.761	0.447	−0.188; 0.083
Clinical experience	0.311	0.119	2.616	0.009	0.078; 0.544
Work time	0.148	0.070	2.116	0.034	0.011; 0.285
Commute time	0.013	0.052	0.253	0.800	−0.088; 0.114
Working arrangements	0.081	0.070	1.149	0.251	−0.057; 0.219
Phase	0.051	0.071	0.713	0.476	−0.089; 0.191
Team Approach to Health Care	0.097	0.072	1.352	0.176	−0.044; 0.239
Marriage	−0.022	0.075	−0.288	0.773	−0.168; 0.125
Smoking	0.014	0.068	0.213	0.832	−0.119; 0.148
Drinking	−0.060	0.069	−0.868	0.385	−0.195; 0.075
Stress On					
Age	0.008	0.122	0.064	0.949	−0.231; 0.246
Sex	−0.036	0.065	−0.560	0.575	−0.164; 0.091
Clinical experience	−0.030	0.120	−0.251	0.802	-0.264; 0.204
Work time	0.136	0.064	2.108	0.035	0.010; 0.262

Commute time	−0.016	0.061	−0.265	0.791	−0.135; 0.103
Working arrangements	0.035	0.063	0.561	0.575	−0.088; 0.158
Phase	−0.078	0.066	−1.183	0.237	−0.207; 0.051
Team Approach to Health Care	−0.109	0.071	−1.547	0.122	−0.248; 0.029
Marriage	−0.059	0.066	−0.898	0.369	−0.188; 0.070
Smoking	−0.061	0.058	−1.059	0.290	−0.175; 0.052
Drinking	0.032	0.063	0.513	0.608	−0.091; 0.155
Burnout On **syndrome**					
Age	−0.143	0.100	−1.425	0.154	−0.340; 0.054
Sex	−0.092	0.054	−1.721	0.085	−0.197; 0.013
Clinical experience	−0.087	0.092	−0.945	0.345	−0.268; 0.094
Work time	−0.038	0.050	−0.775	0.438	−0.135; 0.059
Commute time	0.011	0.047	0.224	0.823	−0.082; 0.103
Working arrangements	0.142	0.045	3.153	0.002	0.054; 0.230
Phase	−0.066	0.048	−1.369	0.171	−0.160; 0.028
Team Approach to Health Care	−0.031	0.043	−0.725	0.468	−0.116; 0.053
Marriage	0.007	0.053	0.140	0.889	−0.097; 0.112
Smoking	0.024	0.047	0.513	0.608	−0.068; 0.116
Drinking	−0.001	0.052	−0.019	0.985	−0.102; 0.100
Standardized total, total indirect, and direct effects					
Total	0.676	0.041	16.334	0.000	0.411; 0.646
Total indirect	0.221	0.031	7.066	0.000	0.115; 0.231
Direct	0.455	0.048	9.497	0.000	0.257; 0.455

Note. CI = Confidence interval; “By” defines latent variables; “On” defines regression relationships. Belief conflict is based on the ABCR-14, stress on the SRS-18, and burnout on the = JBS

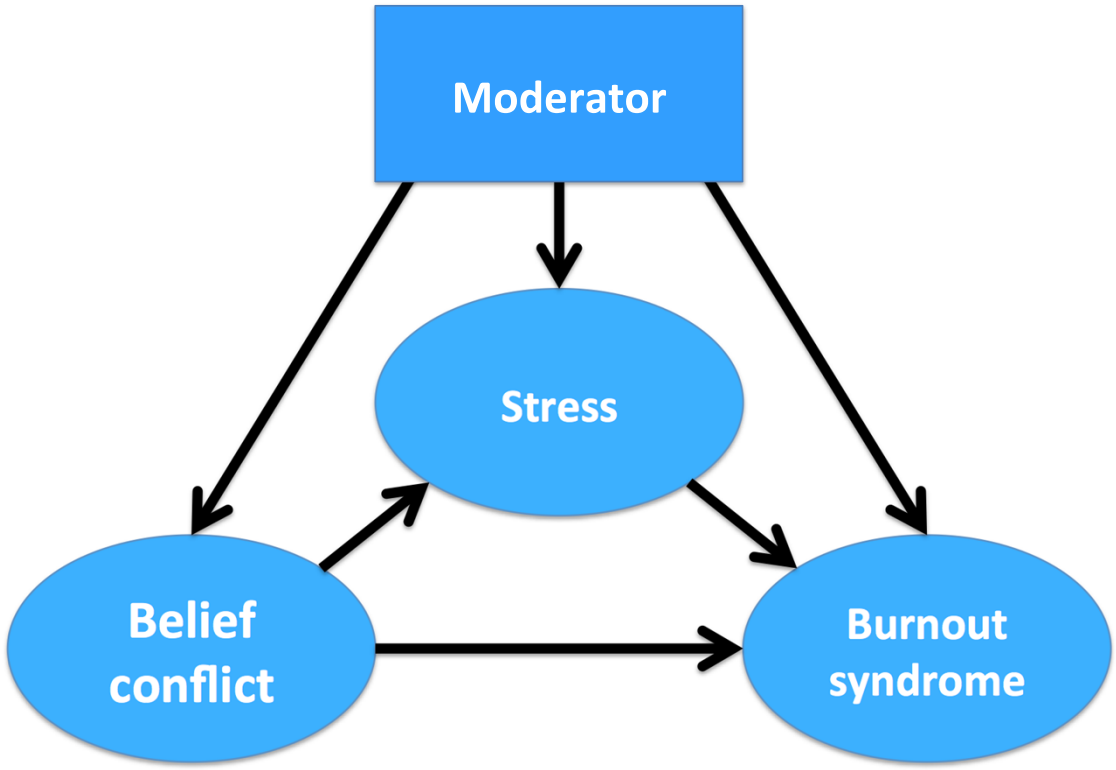

Figure 1. Hypothesized model

Note. Belief conflict = ABCR-14, stress = SRS-18, and burnout syndrome = JBS, Moderators considered include age, gender, license, clinical experience, marriage, smoking, drinking, work time, commute time, working arrangement, phase, and team approach to health care.

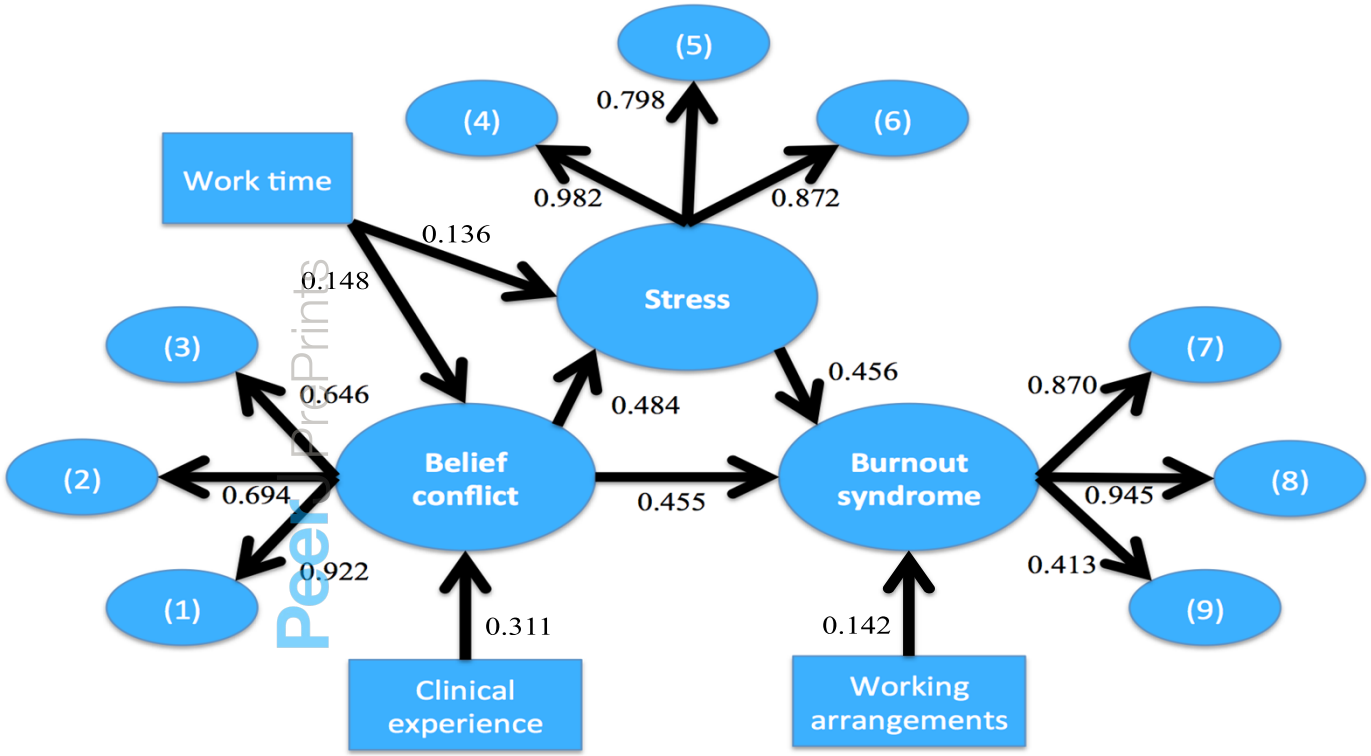

Figure 2. Path analysis model: effect of belief conflict on burnout syndrome including stress

Note. Standardized estimates shown are statistically significant. The numbered items are as follows: (1) Belief conflict among healthcare workers in the same position, (2) Belief conflict between healthcare workers and other staff, (3) Belief conflict in therapeutic relationships, (4) Depression-Anxiety, (5) Irritability-Anger, (6) Helplessness, (7) Depersonalization, (8) Emotional exhaustion, (9) Diminished personal accomplishment.

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