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Social support and posttraumatic growth in Iranian burn survivors: The mediating role of spirituality

Fardin Ajoudani [a,*], *Hossein Jafarizadeh* [b], *Jafar Kazamzadeh* [c]

[a] *School of Nursing and Midwifery, Urmia University of Medical Sciences, Urmia, Iran*
[b] *Patient Safety Research Centre, Urmia University of Medical Sciences, Urmia, Iran*
[c] *Reconstructive and Burn Surgery Department, Urmia University of Medical Sciences, Urmia, Iran*

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ABSTRACT

Background: Social support and spirituality are important issues among burn survivors that appear to affect their posttraumatic growth (PTG).
Aim: To investigate the relationship between social support and PTG in Iranian burn survivors, as mediated by their perceptions of spiritual well-being.
Method: This is a correlation study with a cross-sectional design, and it uses anonymous questionnaires as study instruments (i.e. Posttraumatic Growth Inventory, Spiritual Well-Being Scale and the Multidimensional Scale of Perceived Social Support). A total of 118 questionnaires were sent to participants by post. Nine envelopes were not returned, and seven questionnaires were incompletely filled. Data were collected from 102 burn survivors who had a history of hospitalisation at Imam Khomeini Teaching Hospitals of Urmia, the capital of Western Azerbaijan Province, northwest of Iran. Structural equation modelling and bootstrapping procedures were employed to identify the mediating role of their perceptions of spiritual well-being.
Results: The mean scores of social support (ranging from 12 to 84), PTG (ranging from 0 to 105) and the spirituality (ranging from 20 to120) among the participants were 56.96, 78.13 and 92.15, respectively. The results confirmed our hypothesised model. All the latent variables (variables that are not directly observed but are rather inferred from other variables that are observed (directly measured by items of an instrument)) of study were significantly correlated in the predicted directions. Social support and spirituality were significant predictors of PTG. Spirituality partially mediated the relationship between social support and PTG. The mediating role of the spirituality suggests that social support increases PTG, both directly and indirectly.
Conclusion: The mediating role of spirituality should provide new visions for the augmentation of PTG in burn survivors.

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1. Introduction

Burns are among the most common causes of injury and mortality in the world [1]. Burns have many negative effects on the individual's physique and psyche. Among the various problems of these patients, psychiatric disorders such as dissatisfaction with appearance, depressed mood, anxiety and sleep disorders are more visible. It is noteworthy that post-traumatic stress symptoms in one-third of these patients are evident [2,3]. Most studies in this area tend to highlight the negative features of the burn injury rather than the positive

* *Corresponding author at*: Faculty of Nursing and Midwifery, Nazloo Highway, Urmia, West Azerbaijan Province, Iran.
E-mail address: fardin.ajodani@yahoo.com (F. Ajoudani).
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aspects such as any positive psychological change that might occur beyond pre-trauma functioning, beliefs and ideals [4]. However, some qualitative studies have pointed out to positive changes in burn survivors. These changes are described as 'gaining meaning from life' or 'A new understanding of life' [5,6]. In a qualitative study, burn survivors acknowledged that they had re-discovered themselves after the burn injury, and their relationship with their loved ones has improved. It was also discovered in this research that this positive change is accompanied by many struggles and fragility within the individual [7]. In another study, the same result was obtained in terms of co-existence of the two concepts of 'positive change' and 'distress' in burn survivors [8]. This 'positive change' in the literature is known as 'posttraumatic growth (PTG)'. PTG tends to describe people for whom their personal functioning gets better sooner than the time before the trauma. There are three areas of PTG: 1) change in the philosophy of life (having spiritual views and life appreciation); 2) change in self-understanding (sense of power) and 3) relationship improvement (knowing others as valuable beings) [9]. Not only PTG improves the mental health of the burn survivors, but it is also an important achievement for them. Investigators have studied PTG following different types of traumas such as terrorist events and grief [10,11].

Social support is the perception that an individual is cared for and has support available from other people and that one is part of a supportive social network. It is a multidimensional concept with a variety of emotional, informational, and instrumental forms and encompasses love, acceptance and respect for an individual [12]. In the conceptual model of Schaefer and Moos, social support is recognised as an important environmental source for comprehending positive consequences of life catastrophes and changes [13]. According to them, social support is a cause of personal evolution. It influences the coping behaviour and nurtures effective adaptation to life catastrophes. Social support is an important predictor of positive changes in the posttraumatic period [14]. In some recent studies, a direct causal relationship between social support and PTG has been confirmed [15,16].

Another resource for burn survivors is their spiritual belief system. Researchers have created strong evidence that spirituality plays an important role in quality of life, thereby coping and search for meaning following health crises and other major life events. The results of a study show that most burn patients like to talk about their religious beliefs and, if possible, pray with their doctor or nurse [17,18]. Despite the intense tendency of burn patients to combine spirituality with their care process, there is little information about the effect of spirituality on the lives of burn survivors. The non-burn literature has shown that spirituality increases PTG, as it creates a kind of supportive sense in the individual that improves the meaning-making process [16].

Literature suggests that those who consider themselves spiritual or join religious services experience better social support and even private religious and spiritual practices such as prayer and the Holy Scriptures study are linked to greater social support [19,20]. Therefore, based on earlier studies, it can be hypothesised that spirituality might mediate the relationship between social support and PTG.

The main objective of the current research was to study the direct and indirect effects of the main study variables on PTG among burn survivors. Based on previous research, it was assumed that a positive relationship would be found between perceived social support, spiritual well-being and PTG. Furthermore, the mediation role of spirituality might exist between perceived social support and PTG (the hypothesised model id depicted in Fig. 1). To the best of our knowledge, this is the first research that aimed to test the associations between perceived social support, spirituality and PTG in burn survivors. In addition, there have not been any studies in Iran on the concept of PTG in burn survivors thus far.

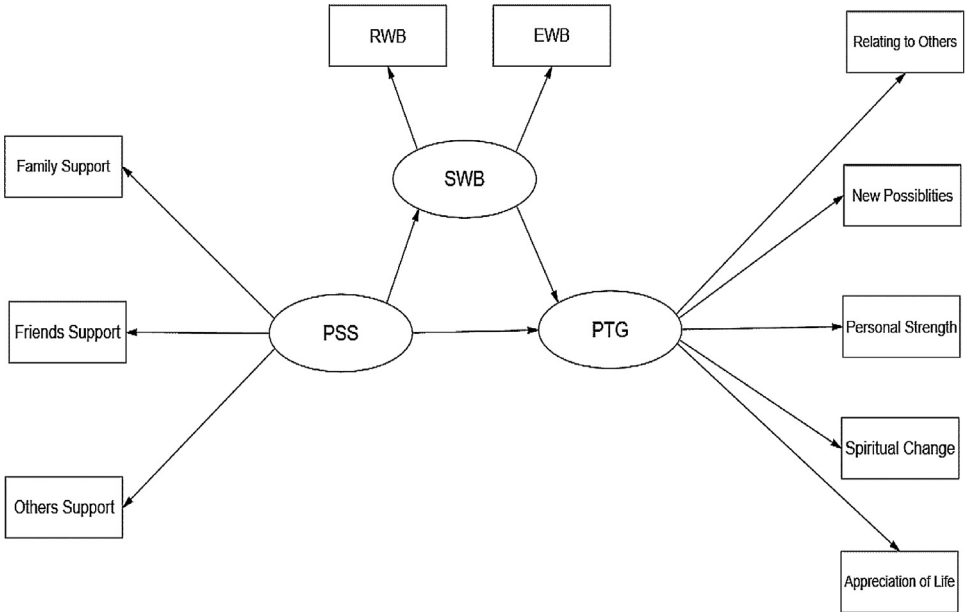

Fig. 1 – The hypothesised model. Note: EWB, Existential Well-being; PSS, Perceived Social Support; PTG, Posttraumatic growth; RWB, Religious Well-being; SWB, Spiritual well-being.

2. Methods

2.1. Sample size and sampling method

On the basis of two earlier similar studies conducted in Iran [21,22], the sample size was calculated using the Cochran's formula (p=0.6, d=0.1, Z=1.96 and n=96). With regard to the possible attrition of 20% of the samples, 118 individuals were selected through convenience sampling from the individuals who had been burned for at least one year and were willing to participate in the research. The participants included the patients who were admitted to Imam Khomeini Teaching Hospital in Urmia and discharged after the recovery. Questionnaires were sent to patients by post. A cover letter was placed inside the envelope in which the purpose of the study was explained, and patients were assured that their personal information would remain confidential. Participants were also asked to return their questionnaires to the source address after completing the questionnaires. We put the remittance fee in the envelope to ensure that the participants return the questionnaires. Out of 118 envelopes, nine of them were not returned. Seven questionnaires were also incompletely filled. Finally, 102 valid questionnaires were analysed (Fig. 2).

2.2. Inclusion criteria

Based on previous studies, we considered the following inclusion criteria for participants:

- Age between 16 and 50 years.
- At least one year should have passed since the burn.
- TBSA more than 15%.

2.3. Measurements

2.3.1. Posttraumatic growth

In this study, we used the Persian version of the posttraumatic growth inventory (PTGI) to measure the concept of PTG. This instrument has 21 items that determine 5 domains of psychological growth after encountering a stressful incident. The tool is a Likert scale from zero (I did not experience this alteration because of my illness) to score 5 (I experienced this alteration because of my illness). The PTGI consists of 5 subscales: relationship with others (7 questions), new possibilities (5 questions), personal strengths (4 questions), appreciation of life (3 questions) and spiritual changes (2 questions). The total score of the questionnaire varies between 0 and 105. A higher score means a higher level of PTG [23]. Tedeschi et al. confirmed the internal consistency of the instrument by calculating the Cronbach's alpha coefficient (0.9). Two different studies confirmed the reliability and validity of the Persian version of the questionnaire [22,24]. In the current study, the Cronbach's alpha coefficient of the questionnaire was 0.87.

2.3.2. Spirituality

We used spiritual well-being scale (SWBS) in the current study. The SWBS is a 20-item questionnaire whose responses are based on the 6-degree Likert Scale ('I strongly agree' to 'I strongly disagree'). This scale measures existential well-being and religious well-being. The total score of spiritual well-being is between 20 and 120. Validity and reliability of the Persian version of the scale have been confirmed by two different studies in Iran [25,26]. In our study, the Cronbach's alpha for SWBS was 0.89.

2.3.3. Perceived social support

In this study, social support was quantified by the validated Persian version of the multidimensional scale of perceived social support (MSPSS) [27]. The MSPSS is a short scale intended to quantify the perceptions of social support from three sources: family, friends and significant others. It comprises 12 items. The responses are based on a 7-point Likert scale: from 'very strongly disagree' to 'very strongly agree'. The sum of scores ranges from 12 to 84. Higher scores correspond to higher levels of perceived social support [28]. MSPSS reveals strong internal consistency, construct validity and factor structure stability across diverse populations worldwide [29–31]. In the current study, the reliability of the scale (α=0.88) was obtained by Cronbach's alpha coefficient.

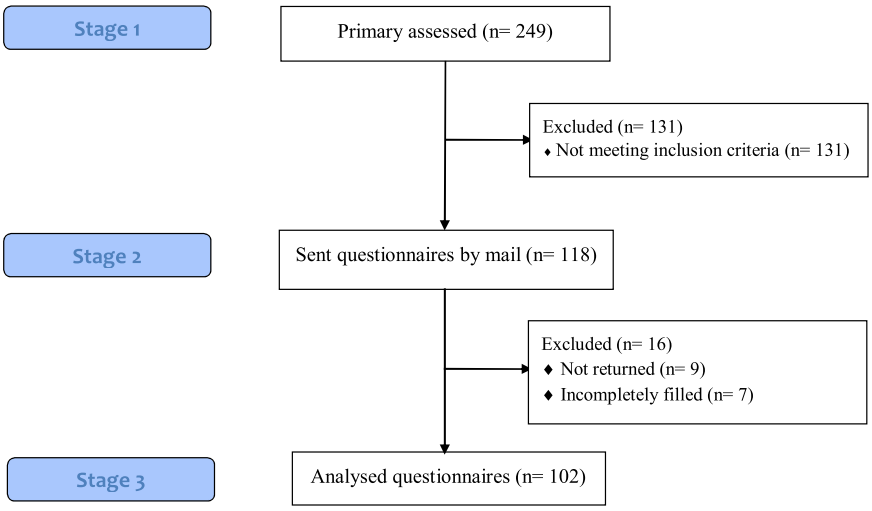

Fig. 2 – Sampling process of the study.

2.4. Data analysis

SPSS and AMOS version 23 were used to analyse the data. The demographic characteristics of the participants, PTG prevalence, spirituality level and perceived social support were analysed proportionally using frequency, percentage, mean and SD. Univariate analyses were applied to test the association of PTG with the sociodemographic and clinical-related variables. The relationships between social support, spirituality and PTG were determined by the Pearson's correlation test. Anderson and Gerbing's two-step modelling procedure was used to find out the mediation effect [32]. In the first step, the fitness of the measurement model was tested. To reach this purpose, the degree of fitness of latent variable's structures to the hypothesised model was assessed. If the indicators could represent all the latent variables well, then we would confirm the structure of the proposed model in the second step. Therefore, the convergent and differential validity was provided by the measurement model. In addition, the predictive validity was confirmed by structural model. For evaluating the fitness of model, Chi-square values, comparative fit index (CFI), root mean square error of approximation (RMSEA) Tucker-Lewis fit index (TLI) and the standardised root mean residual (SRMR) were used. A good fitness between the hypothesised model and the measured data could be indicated by a non-significant chi-square value. The general cut-offs to accept a model included a CFI $\geq$0.95, an RMSEA $\leq$0.05, TLI $\geq$0.90 and an SRMR $\leq$0.08 (0.05 determined as the level of significance for all path coefficients) [33].

2.5. Ethical consideration

The Committee of Ethics of Patient Safety Research Center of Urmia University of Medical Sciences approved this research.

Table 1 – Characteristics of participants and associations with PTG (n=102).

Variable		n (%) or (Mean±SD)	Test results	P
Age		27.5±8.14	r=0.21	P=0.67
TBSA		32.90±6.11	r=0.44	P=0.01**
Gender	Male	41 (40.19)	t=1.19	P=0.39
	Female	61 (59.81)		
Depth of burn			F=0.47	P=0.68
	Degree II	12 (11.76)		
	Degree III	19 (18.62)		
	Degrees II and III	71 (69.6)		
Cause of burn injury			F=0.51	P=0.52
	Flame	74 (72.54)		
	Hot liquid	14 (13.72)		
	Electricity	10 (9.8)		
	Chemical	2 (1.96)		
	Touch	2 (1.96)		
History of burn hospitalisation			t=0.53	P=0.44
	Yes	2 (1.96)		
	No	100 (98.04)		
Level of education			F=3.02	P= 0.03**
	Illiterate	6 (5.88)		
	Primary	40 (39.21)		
	High school	39 (38.23)		
	BS	17 (16.66)		
Occupational status			t=1.79	P=0.29
	Inactive	31 (30.4)		
	Active	71 (69.6)		
Income status			F=0.66	P=0.34
	Low	40 (39.21)		
	Moderate	52 (50.98)		
	High	10 (9.8)		
Insurance coverage				
	Without insurance	0 (0)	–	–
	Insured	102 (100)		

*P<.05.
**P<.01.

Written informed consents were collected from the patients after providing them with adequate explanation of the project. Research participants were assured of the confidentiality of the collected data.

3. Results

3.1. Demographics of the participants

Most of the participants were female (59.81%).The mean age of the participants was 27.5±8.14years, and the mean TBSA was 32.9±6.1%. Most patients had second- and third-degree burns (69.6%), with the most frequent cause of burn being flame (72.54%), and 98.04% of the patients had no previous hospitalisation due to burns. Most patients had primary education (39.21%), were employed (69.6%) and had moderate income (50.98%). All participants had insurance coverage. Table 1 shows the demographic characteristics of the participants.

3.2. Associations of PTG with demographic characteristics of participants

Univariate analyses (Table 1) revealed that there were significant differences in total PTGI scores among demographic variables such as TBSA (r=0.44, P=0.01) and level of education (F=3.02; P=0.03). No significant differences in PTG were found among the other demographic and clinical variables.

3.3. Means, SDs and correlations of latent variables of study

Means, SDs and correlations among subscales of the main study variables are shown in Table 2. The means and SDs of total scores of PTGI, SWBS and MSPSS were 78.13, 92.15 and 56.96, respectively. Higher levels of perceived social support (r=0.332, P<0.01) and spirituality (r=0.371, P<0.01) were significantly associated with higher PTGI scores. The level of social support was positively associated with the level of spirituality (r=0.442, P<0.01).

3.4. Measurement model

Ten observed variables and three latent variables, namely, social support, PTG and spirituality, were included in the hypothesised model. The measurement model had a good fitness as indicated by $\chi 2=107.2$, df=52, P=0.007, RMSEA=0.05; SRMR=0.06; TLI=0.93 and the CFI=0.95. Furthermore, all the factor loadings for the indicators on the latent variables were significant (P<0.001). It means that the indicators of all the latent variables represent them well.

3.5. Structural model

In the absence of mediators, the direct standardised path coefficient from the independent variable (perceived social support) to the dependent variable (PTG) showed significance $\beta=0.39$, P<0.001. The results showed that the total effect of perceived social support on PTG decreased when the mediator (spirituality) was included in the model ($\beta=0.21$, p<0.001). The final model is a partially mediated model and contains a mediator and a direct path from perceived social support to PTG and exhibits a good fitness to the data: $\chi 2=107.2$, df=52, P=0.007, RMSEA=0.05; SRMR=0.06; TLI=0.93 and the CFI=0.95 (Fig. 3). Moreover, to examine the significance of the path coefficients, we tested their parameter estimates. All paths from social support to PTG, from social support to spiritual well-being and from spiritual well-being to PTG were significant. The bootstrap method is the most accurate procedure to determine the confidence intervals for indirect effects [34]. Thus, we took advantage of the bootstrap estimation practice [35] (using 5000 specified bootstrap samples) to test the significance of the mediating role of spirituality in the relationship between social support and PTG. Taken together, all hypothesised direct effects among latent variables (depicted in Fig. 3.) were significant. Remarkably, the indirect effect of perceived social support on PTG through the perception of spirituality was similarly significant (Table 3).

3.6. Reversed model

To elaborate more on the relationships and the hypothesised directions among study latent variables and to determine the

Table 2 – Means, Standard Deviations, and Correlations between PTG, social support and spiritual well-being.

	M	SD	1	2	3	4	5	6	7	8	9
1. Relating to others	25.03	4.24									
2. New possibilities	12.31	2.19	.837*								
3. Personal strength	19.58	3.67	.742**	.867**							
4. Spiritual changes	11.10	2.54	.736**	.749*	.736**						
5. Appreciation of life	10.11	2.05	.732**	.768**	.878**	.627*					
6. Religious well-being	51.61	5.95	.314**	.393*	.492**	.780**	.411**				
7. Existential well-being	40.54	4.13	.335*	.401*	.410*	.690**	.237*	.888**			
8. Family support	23.59	6.16	.281**	.309**	.284*	.266*	.199	.472**	.366*		
9. Friends' support	18.19	3.23	.364**	.395*	.333**	.361**	.215*	.419**	.287**	.681*	
10. Others' support	15.18	2.44	.396*	.404**	.291**	.326**	.389*	.390*	.274**	.794**	.692*

* P<.05.
** P<.01.

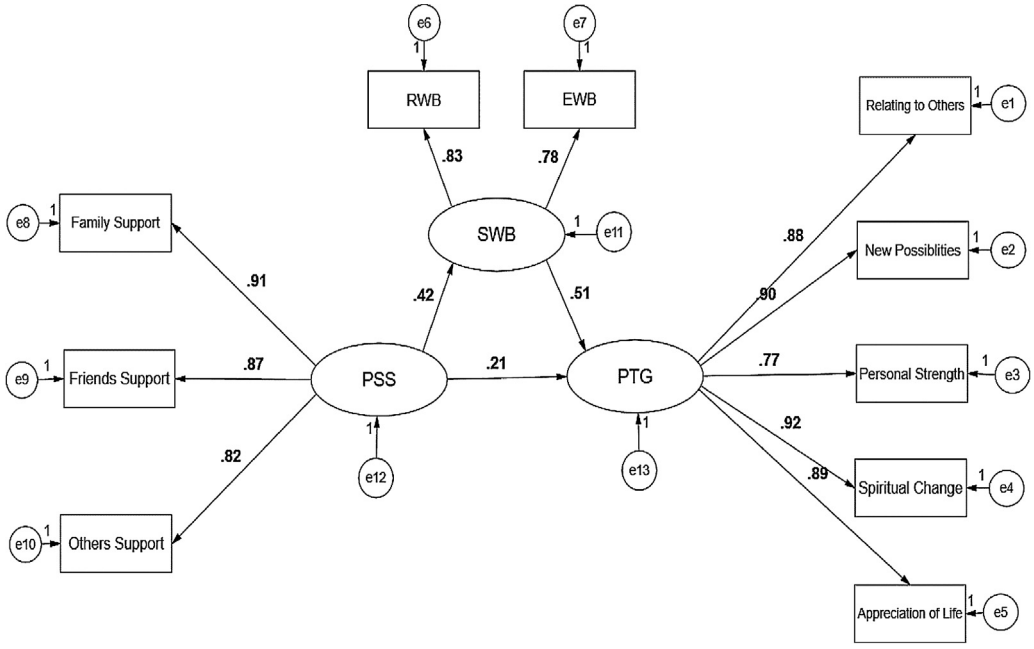

Fig. 3 – The final model (n=102). Note: Factor loadings are standardized (P < 0.01). EWB, Existential Well-being; PSS, Perceived Social Support; PTG, Posttraumatic growth; RWB, Religious Well-being; SWB, Spiritual well-being.

Table 3 – Direct and indirect effects and 95% confidence intervals for the final model.

Model pathways	Estimated	95% CI	
		Lower bound	Upper bound
Direct effects			
Social support → PTG	0.21*	0.11	0.33
Social support → Spirituality	0.42*	0.29	0.61
Spirituality → PTG	0.51*	0.43	0.62
Indirect effects			
Social support → spiritual well-being → PTG	0.19*	0.08	0.27

* Empirical 95% confidence interval does not overlap with zero.

casual associations between latent variables, we also tested the reverse model (Fig. 4). To construct the reverse model, the paths between latent variables were assumed reverse. Results showed that all path coefficients between latent variables were insignificant. The fit indices of the reverse model ($\chi 2=144.9$ df=52, RMSEA=0.11; SRMR=0.10; TLI=0.85; and CFI=0.84) were not satisfactory. Thus, the reverse model rejected. This finding showed that the direction of the assumed paths in the 'hypothesised model' is correct, and the reverse paths between the main variables of the study are not correct. For example, social support distress is a predictor of PTG, while PTG is not a predictor of perceived social support.

4. Discussion

This study was intended to investigate the occurrence of PTG and level of spiritual well-being and social support among burn survivors. In addition, this is the first study on the concept of PTG in Iranian burn survivors. Their level of PTG was moderate to high. The findings showed that positive changes do occur among burn survivors. The level of PTG in our research is in line with the results of Rahmani et al. [22]. However, literature demonstrates that burn survivors from Western countries experience a moderate to a low level of PTG [15,36]. These findings support the notion that PTG in the burn survivors of the eastern countries is possibly higher than that in western countries. Some previous studies stated that the cultural background is likely to be a significant predictor of PTG. [37]. We realised that the mean scores of PTGI were significantly correlated with TBSA and level of education. Similar to our results, the results given in Baillie et al. and Martin et al. showed that there is a positive association between TBSA scores and PTGI scores [15,36]. Previous studies that have examined the relationship between PTG and education levels have shown different results. Some studies showed a negative association and others have shown a positive relationship [38,39]. There was no significant relationship between gender and PTG in the current study, which is in line with the results of Baillie et al. [15] and in contrast with the findings of Rosenbach and Renneberg [40].

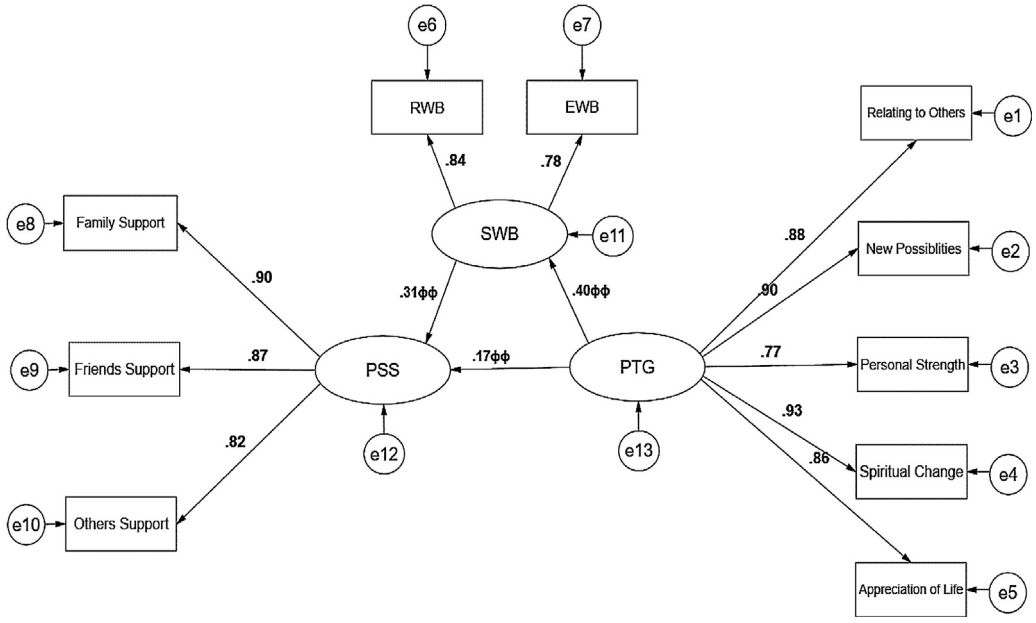

Fig. 4 – The reverse model (n = 102). Note: Factor loadings are standardised (P < 0.01). EWB, Existential Well-being; PSS, Perceived Social Support; PTG, Posttraumatic growth; RWB, Religious Well-being; SWB, Spiritual well-being. Note: ϕϕ are non-significant paths.

Research findings on social support are considerably similar to those of Waqas and colleagues [41]. The mean scores of both studies are almost equal. As Iran and Pakistan are two neighbouring countries and have many cultural commonalities, the level of social support in both studies was higher than that in other countries [42,43]. As an Iranian society is family oriented and, in addition, friends have a significant role in the life of an individual in this society, they provide further support to the individual in the event of an illness/injury and this support is continued for a long time [27,44].

Our results showed that spirituality among Iranian burn survivors was at a moderate to a high level. It should be noted that most Iranian people are spiritual and religious. This spirituality of the Iranians is also more because of their Islamic cultural background [45]. Our results on the level of spiritual well-being are similar to the findings of Soleimani et al. in Iranian survivors of acute myocardial infarction [46]. They also found that social support was a strong predictor of spiritual well-being.

As assumed, burn survivors who perceived a higher level of social support experienced greater PTG, which is consistent with the results of earlier research [15,47,48]. The finding also indicated that perceived social support was significantly associated with the development of PTG, which proposes that perceived social support is a key element for the psychological adjustment of burn survivors. This result backed up the correctness of the social-cognitive processing model of adjustment to trauma and the important effect of social interactions in easing cognitive adaptation processes [49].

The current research revealed that spiritual well-being was positively associated with PTG and predicted it, which is in line with earlier studies [16,50]. This finding supports the notion that spiritual individuals experience greater PTG in response to traumatic incidents [51]. A probable explanation for the positive association between spirituality and PTG is that spirituality favours and augments life's meaning, acceptance of struggles and difficulties as part of a structured belief system, with a positive effect on emotional well-being [52].

The partial mediation effect of spiritual well-being on perceived social support and PTG showed that burn survivors with high levels of perceived social support had greater spirituality and therefore experienced more PTG. It was in line with the results of previous studies that a high level of social support was positively related to spirituality [20], which was in turn related to positive feelings and changes [53]. The mediating role of spirituality should deliver new visions for the augmentation of PTG in burn survivors. Indeed, spirituality is a factor that can be addressed and enhanced. Cognitive techniques and behavioural strategies could be effectively used to assist burn survivors to enhance their spiritual well-being [54].

4.1. *Limitations and recommendations for future studies*

As the study was conducted in a state hospital of Urmia in Western Azerbaijan Province of Iran, cautions should be exercised in generalisation of the results for other burn survivors. Future studies should be conducted using a larger sample size and in a broader geographic area. We could not make causal inferences about the main variables because of the cross-sectional design of the current study. Longitudinal studies can better illustrate the causal relationships between latent variables. Another limitation of the present research is that the basis of data collection is self-report questionnaires. This kind of data gathering is susceptible to common method biases [55]. Hence, guaranteeing participant's confidentiality and counterbalancing the questionnaire items were employed to minimise the bias. In this research, PTGI was used to measure PTG, which is a general questionnaire. The use of a

specific questionnaire to assess the level of PTG in burn patients is recommended.

5. Conclusion

Moderate to high PTG was found in Iranian burn survivors. Our results show that burn survivors who perceived higher levels of social support would experience greater PTG. The mediating role of spirituality should provide new insights for the improvement of PTG. The most important implication of this study was that improving social support and spiritual well-being might be scientific intervention strategies for enhancing PTG among burn survivors.

Conflict of interest

The researchers have no conflict of interest with any individual or organisation.

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