



Coping strategies and their relationship with emotional intelligence in patients with epilepsy referred to Isfahan Epilepsy Society in 2017

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ARTICLE INFO

Article history:

Received 3 November 2018

Revised 16 December 2018

Accepted 31 December 2018

Available online 23 January 2019

Keywords:

Epilepsy
Coping strategies
Emotional intelligence
Iran

ABSTRACT

Introduction: Epilepsy is a common neurological disorder, and the patients with epilepsy are heavily influenced by the psychological and social aspects of the illness. Therefore, patients try to use coping strategies to control their stress and tension in this situation. Given the importance of the issue of adaptation and coping with stress in patients with epilepsy, as well as the different factors affecting coping strategies in these patients, the present study aimed to investigate the relationship between coping strategies and emotional intelligence in patients with epilepsy.

Methods: This descriptive-analytic study conducted on 134 male and female patients with epilepsy referred to the Epilepsy Society of Isfahan, Iran. The consecutive sampling method was applied in this study. The data collection tool included a three-section questionnaire: the Demographic information, the Coping Inventory for Stressful Situations (CISS), and the Bar-On Emotional Quotient Inventory (EQ-i).

Results: The emotion-focused coping strategy was mostly used by 53.7% of the samples. The mean and standard deviation of the total score of emotional intelligence was 285.6 ± 39.5 . Moreover, Pearson correlation test showed a significant difference between emotional intelligence variables and coping strategies ($p < 0.001$).

Conclusion: According to the relationship between emotional intelligence and coping strategies, it is suggested to consider ways to improve the emotional intelligence of patients with epilepsy in order to use more adaptive coping strategies.

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1. Introduction

Epilepsy is a common neurological disorder characterized by recurrent seizures. It is a spectrum of disorders with a range of severities, widely different seizure types and causes, an array of coexisting conditions and varying impacts on individuals and families [1]. The incidence rate of epilepsy is 0.5–3% in the world, and this amount has been reported to be about 5% in Iran [2–4]. In general, about 65 million people in the world are suffering from this disease, and 100,000 new cases are added to this population each year [5].

As compared with other persons, patients with epilepsy are heavily influenced by the psychological and social aspects of the illness, including psychiatric disorders such as depression and anxiety, lower self-esteem, lower annual income, lower quality of life, and level of education [6–9]. The presence of these factors along with some other factors, such as seizures, the probability of physical injuries, emotional disabilities, and social embarrassments are among the stressors in their daily life that increase anxiety level [10]. This is, while emotional stress is the strongest, the most effective and in some cases, the most common cause of epileptic seizures [11,12]. In addition, similar to other chronic diseases, high level of

psychological responses, such as anger and stress, has been reported in these patients. Accordingly, this has led to a considerable increase in the study of psychological disorders in patients with epilepsy from the clinical point of view in recent years [10].

Although taking antiepileptic drugs can control the attacks and epilepsy is not necessarily associated with mental and behavioral disorders, patients with this disease encounter problems in their daily lives due to limitations and changes in their interpersonal relationships, and this illness is usually accompanied by a feeling of tension [13]. Tensions and crises are threats to physical and mental health, and they are inevitable in everyday life, but what is important is how to cope with this situation [14]. Therefore, patients try to use coping strategies to control their stress and tension in this situation.

According to Folkman and Lazarus, coping strategies are cognitive, behavioral, and emotional skills for the “management” of stressful situation [15]. Endler and Parker [16,17] introduced the following three dimensions of coping strategies: task-oriented, emotion-oriented, and avoidance-oriented coping strategies. The task-oriented coping strategy focuses on ways that reduce or eliminate stressors. In the emotion-oriented coping, efforts are directed at altering the emotional responses to stressors in order to reduce unpleasant feelings. The avoidance-oriented coping strategy or escape coping involves avoidance mechanisms to deal with stressors [16,17]. Studies have shown that

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individuals who focus on problem-solving skills are less likely to experience distress than those who use emotion-focused confrontation and avoidance confrontation. Also, they have more control over stressful situations and can better adapt to difficult situations [18].

Available resources on coping strategies used by patients with epilepsy are limited. Some studies have shown that patients with epilepsy often use emotion-focused coping patterns, especially those with refractory epilepsy [19]. The results of a study conducted in Iran also showed that people with epilepsy use emotion-focused approach at a higher level [20]. However, some other studies showed that those who evaluate their health condition better use more problem-solving strategies [21,22]. In general, the findings of previous studies showed the importance of evaluating coping methods and their impact on the reduction of stress and quality of life in patients [23]. Therefore, given the importance of coping strategies in dealing with stress in patients with epilepsy, the consideration of coping strategies and an attempt to identify their related factors can play an effective role in reducing stress and promoting coping skills in these patients. In this regard, one of the important and effective factors affecting the quality of coping strategies in patients with epilepsy is emotional intelligence.

Based on the Bar-On model, emotional intelligence includes emotionally- and socially-related capabilities and skills that determine how to understand and express yourself, understand others and communicate with them, and deal with daily demands [24]. In other words, emotional intelligence refers to a set of skills that allow individuals to adapt to the surrounding environments; it helps individuals to perceive, understand, and regulate their mood and use emotional information to improve the cognitive resources [25]. Gohm et al. in their studies found that individuals with higher level of emotional intelligence would manage stressful events more effectively and this would reduce their stress [26]. In a study conducted by Holinka on the role of emotional intelligence in stress management and mental health, the results showed that some forms of emotional intelligence would protect individuals from stress and lead to better adaptation [27]. Moreover, Campbell and Ntobedzi showed that emotional intelligence would predict coping styles and strategies [28].

Therefore, given the importance of the issue of adaptation and coping with stress in patients with epilepsy and the high prevalence of this disease in Iran, as well as the different results obtained from previous studies on factors affecting coping strategies in these patients, and also the limited number of studies conducted in this regard in Iran, the present study aimed to investigate the relationship between coping strategies and emotional intelligence in patients with epilepsy.

2. Materials and methods

This is a descriptive-analytic study conducted on 134 male and female patients with epilepsy referred to the Epilepsy Society of Isfahan. The sample size was determined according to the census method, and the sampling method was a sequential nonprobability sampling, so from the onset of the study, all the patients who had inclusion criteria were selected as participants. Inclusion criteria were as follows: having diagnosis of grand mal epilepsy, not having a traumatic brain injury (TBI) or brain tumors or etc., having the diagnosis of the disorder for at least 6 months, having the age range between 18 and 60 years, giving informed consent to participate in the study, having no history of specific physical or mental disorders, and having the ability to read and write. Inclusion criteria were the uncompleted response to the tools' question.

The data collection tool included a three-section questionnaire; the first section comprised the demographic information including 6 questions on age, sex, marital status, educational level, occupation, and duration of the illness.

The second section was associated with the Coping Inventory for Stressful Situations (CISS) questionnaire developed by Endler and Parker [16] consisting of 21 items. Each is based on the 5-point Likert scales from never (1), rarely (2), sometimes (3), often (4), and usually (5). This tool

measures the task-oriented, emotion-oriented, and avoidance-oriented coping strategies. In Iran, Hosseini Dowlatabadi et al. have reported the reliability of this questionnaire on a 15-day interval for the subscales of task-oriented, emotion-oriented, and avoidance-oriented to be 0.77, 0.77, and 0.71, respectively [29].

The third section included the Bar-On Emotional Quotient Inventory (EQ-i) used to measure emotional intelligence. This questionnaire consisted of 90 items and 15 subscales; each item was scored based on a 5-point Likert scale from 5 to 1 (completely agree (5) to completely disagree (1)), and in some cases, the items were scored with negative or inverse content. In recent years, numerous studies have been conducted in Iran using this questionnaire, indicating the high reliability and validity of this questionnaire; it has been normed for Iranian students, and the number of items has been decreased to 90 [30].

2.1. Ethical consideration

The Ethics Committee of Isfahan University of Medical Sciences approved the study (no. 397138). Formal authorization was obtained from College of Nursing and Midwifery of Isfahan University of Medical Sciences and the Epilepsy Society of Isfahan for both sampling and the study. Both the purpose and method of the research were described for the participants, and informed consent to participate in the study was received from all of them.

After the data collection, they were analyzed using SPSS 22 through the descriptive statistics, the statistical tests of analysis of variance (ANOVA), *t*-test, and Pearson correlation coefficient.

3. Results

The mean age of subjects was 33.6 ± 9.7 , among whom 56% were female and 44% were male. The duration of the disease was 20.1 ± 10.6 years, and the percentage frequency of jobs for housekeepers was 39.6%, governmental jobs was 11.9%, self-employment was 13.4%, and unemployed was 35.1%. Single people comprised 41.1%, married were 55.2%, divorced were 2.2%, and widowed were 1.5%. As regards education, 50% were under diploma, 32.1% had a diploma, 7.5% had an associate degree, 8.2% had a bachelor's degree, and 2.2% had a master's degree or higher. The mean and standard deviation of duration of the disorder were 20.07 ± 10.64 years.

Based on the findings of the study, the mean and standard deviation of the scores obtained from the sample in the coping strategies' questionnaire were as follows: the problem-focused coping strategy was 21.6 ± 6.1 ; the emotion-focused coping strategy was 23.7 ± 5.9 ; and the avoidance-focused coping strategy was 17.0 ± 5.1 (Table 1). This indicates that the most strategy used by the samples was the emotion-focused coping strategy. Moreover, considering the frequency of using coping strategies, 53.7% of samples mostly used the emotion-focused coping strategy (Table 2).

The results also showed that the mean and standard deviation of the total score of emotional intelligence in the samples was 285.6 ± 39.5 . As regards the investigation of the emotional intelligence components, the results showed that the highest score obtained in emotional intelligence components was related to empathy with a mean and standard deviation of 23.4 ± 3.4 and the lowest score belonged to the component

Table 1

Description of the scores obtained from the coping strategies' questionnaire and its components.

Component	Mean \pm standard deviation	The least	The most
Task-focused coping strategy	21.6 ± 6.1	7.0	35.0
Emotion-focused coping strategy	23.7 ± 5.9	8.0	35.0
Avoidance-focused coping strategy	17.0 ± 5.1	7.0	32.0
Total score of coping strategy	62.3 ± 10.5	30.0	88.0

Table 2
Frequencies of the coping strategies used by the samples.

Type of coping strategies	Number (percent)		
	Low	Medium	High
Task-focused coping strategy	12 (9.0)	68 (50.7)	54 (40.3)
Emotion-focused coping strategy	7 (5.2)	55 (41.0)	72 (53.7)
Avoidance-focused coping strategy	29 (21.6)	89 (66.4)	16 (11.9)
Total score of coping strategy	1 (0.7)	107 (79.9)	26 (19.4)

“self-control or impulse control” with a mean and standard deviation of 14.9 ± 5.1 (Table 3).

Moreover, the present study compared the mean score of emotional intelligence and its components with coping strategies and its components. Pearson correlation test showed a significant difference between emotional intelligence variables and coping strategies ($p < 0.001$) (Table 4).

Finally, the results of this study showed that there was a significant difference between coping strategies scores and marital status by using the one-way ANOVA ($p = 0.015$). However, there were no significant associations between sex ($p = 0.182$), age ($p = 0.692$), job status ($p = 0.607$), education level ($p = 0.838$), duration of the illness ($p = 0.511$), and coping strategies' scores.

4. Discussion

As a chronic and debilitating disorder, epilepsy affects almost all aspects of the life of patients, and on this basis, these patients face numerous challenges and stresses. In this regard, people attempt to use coping strategies in response with these stresses. The use of coping strategies is affected by several factors, one of which is emotional intelligence known to be one of the effective variables on the quality of strategies for coping stress and people's temper. Considering the limited research on the relationship between coping strategies and emotional intelligence, and based on the significance of investigating these two variables in patients with chronic disorder such as epilepsy, the present study attempted to investigate the status of coping strategies and emotional intelligence, as well as the relationship between these two components, in a sample of patients with epilepsy.

The investigation of the coping strategies in patients showed that the highest score obtained by the samples was related to the “emotion-focused coping strategy” with a mean and standard deviation of 23.7 ± 5.9 and then “problem-focused coping strategy” with a mean and standard deviation of 21.6 ± 6.1 . The lowest score obtained was related to the “avoidance-focused coping strategy” with a mean and standard deviation 17.0 ± 5.1 . These findings suggest that patients with

Table 3
Describing the scores obtained from the emotional intelligence questionnaire and its components.

Emotional intelligence component	Mean \pm standard deviation	The least	The most
Problem solving	20.7 ± 3.6	12.0	29.0
Happiness	18.9 ± 5.4	6.0	30.0
Independence	18.0 ± 4.5	6.0	29.0
Stress tolerance	16.5 ± 3.2	9.0	26.0
Self-actualization	19.2 ± 4.6	8.0	30.0
Emotional self-awareness	18.6 ± 3.6	8.0	30.0
Reality testing	17.7 ± 3.8	6.0	27.0
Interpersonal relationship	22.3 ± 4.1	11.0	30.0
Optimism	20.1 ± 4.2	11.0	30.0
Self-reliance	20.0 ± 4.6	8.0	30.0
Impulse control	14.9 ± 5.1	6.0	30.0
Flexibility	16.8 ± 4.0	6.0	26.0
Social responsibility	21.9 ± 2.4	16.0	28.0
Empathy	23.4 ± 3.4	14.0	30.0
Assertiveness	16.5 ± 3.0	9.0	26.0
Total emotional intelligence score	285.6 ± 39.5	203.0	397.0

epilepsy use emotion-focused coping strategy more than other strategies when faced with stress. The findings of the present study are closely in line with the results obtained by Piazzini et al. [31]. This study showed that drug-resistant patients and nonseizure patients adopted different coping strategies in dealing with their clinical conditions. Besides, patients with severe epilepsy were more likely to fall back on maladaptive strategies. Also, drug-resistant patients mostly adopted the strategy of “denial” and “exclusion,” while nonseizure patients used a “control” strategy [31]. In addition, the use of emotional-focused coping styles by chronic patients seems to be more common. For instance, in a study conducted by Forat Yazdi et al., the results showed that the highest score obtained by cancer cases was related to the “emotion-focused coping strategy”, followed by “problem-focused coping strategy” and “avoidance-focused coping strategy” [32].

As pointed out by Folkman and Lazarus, coping is a dynamic phenomenon that shows the cognitive and emotional aspects of an individual's emotional and cognitive actions in facing stressors or its consequences and, on the other hand, controlling the inner needs and certain exterior expectations, especially when the need is beyond the individual's ability and challenges his/her capability [33]. In other words, coping responses are attempts made by the individual to restore balance or eliminate confusion, the consequence of which is solving a problem, adapting to the problem, or lacking of achievement to the solution [34]. Lazarus holds that, instead of simply considering coping to be synonymous with problem solving, it can be considered to be based on the individual, the environment, and their interaction in threatening situations, and refers to the central role of cognition on emotional outcomes [35].

However, further use of patients with epilepsy in the study of emotional-focused coping strategy should be investigated from a variety of perspectives, including its effect on adaptability. The relationship between adaptability level and mental health has been evaluated using coping strategies in several studies and in some presented contradictory results. In a number of these studies, it has been reported that problem-focused coping strategy is more related to mental health than emotional-focused strategy and usually people who use problem-focused strategies are better adapted to stressful situations [35,36]. Other studies also suggest that emotional-focused coping is maladaptive and can increase stress [37–39], while Frydenberg reported that both emotion-focused and problem-focused coping styles are adapting styles and contributing to the adaptability process of individual with stressful situations [40]. Moreover, Bryant and Harvey argued that inefficient coping (negative emotion-focused) is a short-term strategy that, in the long term, prevents psychological adaptation and increases symptoms of desperation, namely, depression [41]. By adopting an intermediate approach, Folkman and Lazarus argued that problem-focused coping is not always a more proper strategy, and seemingly, emotion-focused strategies are more effective in the short term; however, the problem-focused strategies are more appropriate in the long term [36].

Among the other cases studied was investigating the emotional intelligence status of the samples. The results showed that the mean and standard deviation of the total score of emotional intelligence was 285.6 ± 39.5 . The highest score in emotional intelligence components was related to empathy and the lowest score belonged to the component “self-control or impulse control”. Also, the results showed that most of the samples (82.2%) had moderate emotional intelligence.

Emotional intelligence is a variable which affects the physical and mental health of individuals, and plays a key role in their general health [42]. Several studies have shown that low levels of emotional intelligence lead to disability in coping and the ability to manage individual emotions, which can trigger many problems. In recent years, the interest in the role of emotional intelligence and the promotional programs has significantly increased to improve the emotional adaptation and reduce harmful behaviors. Thus, inability to control and manage emotions can endanger the mental health of individuals in the social and educational environments and somehow jeopardize the quality of life of a person in different dimensions [43]. Accordingly, consideration of the

Table 4
Results of Spearman's correlation test between emotional intelligence and its components with coping strategies and its components.

Emotional intelligence	Coping strategies							
	Avoidance-focused		Emotion-focused		Task-focused		Total	
	p	CC	p	CC	p	CC	p	CC
Problem solving	0.012	0.216	0.002	−0.270	<0.001	0.434	0.024	0.195
Happiness	<0.001	0.412	<0.001	−0.441	<0.001	0.339	0.136	0.130
Independence	0.009	0.225	<0.001	−0.433	0.001	0.292	0.526	0.055
Stress tolerance	0.016	0.208	<0.001	−0.535	0.004	0.246	0.630	−0.042
Self-actualization	<0.001	0.372	<0.001	−0.403	<0.001	0.489	0.013	0.215
Emotional self-awareness	0.006	0.236	<0.001	−0.377	<0.001	0.454	0.035	0.182
Reality testing	0.090	0.147	<0.001	−0.384	<0.001	0.377	0.329	0.085
Interpersonal relationship	<0.001	0.345	0.001	−0.296	0.012	0.215	0.271	0.096
Optimism	<0.001	0.315	<0.001	−0.399	<0.001	0.432	0.048	0.171
Self-reliance	<0.001	0.374	<0.001	−0.427	0.001	0.280	0.194	0.113
Impulse control	0.092	0.146	<0.001	−0.439	<0.001	0.308	0.876	0.014
Flexibility	0.117	0.136	<0.001	−0.321	<0.001	0.416	0.096	0.144
Social responsibility	0.837	−0.018	0.573	−0.049	0.861	−0.015	0.656	−0.039
Empathy	0.014	0.211	0.299	0.090	0.008	0.227	0.002	0.262
Assertiveness	0.238	0.103	0.008	−0.229	<0.001	0.315	0.313	0.088
Total emotional intelligence score	<0.001	0.363	<0.001	−0.519	<0.001	0.478	0.057	0.165

CC: the correlation coefficient.

emotional intelligence characteristics in chronic patients, including patients with epilepsy, is of remarkable significance.

In this regard, studies have shown that the mean score of emotional intelligence in patients with epilepsy is low. Walpole et al. [44] conducted a study and found that people with temporal lobe epilepsy had low or impaired emotional intelligence; they also reported that a more severe psychological disorder had a negative correlation with emotional intelligence. Moreover, they suggested that some of the psychosocial problems experienced by patients with temporal lobe epilepsy can be considered as the consequences of impaired emotional intelligence, which may be due to an epilepsy-related disorder in the temporal lobe function [44]. Studies in Iran on healthy subjects also showed a lower level of emotional intelligence in these patients than healthy subjects. For instance, in the study conducted by Dehghani and Nazari [45], the results showed that the mean and standard deviation of the total score of emotional intelligence in the healthy samples was 326 ± 42.6 . Also, as regards the components of emotional intelligence in healthy samples, the highest score was obtained for “empathy”, and the lowest score was also attributed to the “impulse control” component [45]. In the study conducted by Tamanaeifar et al., the results showed that the mean and standard deviation of total score of emotional intelligence in healthy girls was 316.68 ± 38.46 [46]. These scores differ from the scores obtained in the present study and could be indicative of lower emotional intelligence score in patients with epilepsy as compared with the general population.

Finally, in this study, the relationship between emotional intelligence and the use of coping strategies in patients with epilepsy was evaluated. Based on the results, the total score of emotional intelligence of the samples with problem-focused coping strategies ($r = 0.478$; $p < 0.001$), emotion-focused ($r = -0.579$; $p < 0.001$), and avoidance-focused ($r = 0.363$; $p < 0.001$) showed a significant relationship.

Mayer and Salovey argued that emotional empowerment can effectively identify emotional responses in relation to everyday events, correctly identification of events, expansion of the range of individual insights, and also creation of a positive attitude about them [47]. Bar-On and Parleer identified stress control and adaptability as two main elements of emotional intelligence, that is, adaptive and efficient coping allows people to grow up in a world full of challenges [48]. According to Mayer, emotional intelligence as a set of individual abilities in proper perceiving, managing, and expressing emotions can, in some circumstances, act as a type of coping strategy [49]. Trinidad and Johnson [50] and Riley and Schutte [51] also consider emotional intelligence as a coping mechanism, which leads to an effective and successful self-regulation in order to achieve the desired goals.

Different studies conducted on the relationship between emotional intelligence and use of coping strategies have confirmed the results of the present study. For instance, according to Austin et al., high stress levels are associated with low scores of emotional intelligence components and high scores of emotion-focused coping strategies [52]. Also, in the study of Alumran and Punamäki that investigated the relationship between emotional intelligence and adolescent coping styles in Bahrain, the results showed that there is a specific relationship between emotional intelligence components and coping styles, thus, the main components of emotional intelligence contributes to the success of dealing with surrounding people and coping with stress [53]. The research conducted by Hamidi [54] entitled “The relationship between emotional intelligence and coping styles in adolescent girls and boys in deprived areas” indicated that emotional intelligence in adolescent girls and boys in deprived areas is related to problem-focused coping style, that is, the higher the emotional intelligence score, the higher the score of the problem-solving style (and vice versa). There was also a reverse and significant relationship between emotional intelligence in adolescent girls and boys in deprived areas with an emotional-focused coping style, that is, the higher the emotional intelligence score, the lower the score of emotion-focused coping style, and vice versa [54].

The results obtained in a study by Sepehrian Azar showed that emotional intelligence had a positive and significant correlation with problem-focused coping strategies ($p \leq 0.001$) and a significant positive correlation with emotional-focused strategies ($p \leq 0.05$), that is, people with high emotional intelligence mostly use problem-focused stress coping strategies and vice versa, and people with lower emotional intelligence use more emotion-focused coping strategies, but there was no significant relationship between emotional intelligence and avoidance strategies [55]. In the study of Mohammadi et al. [56], it was found that there was a significant positive correlation between total emotional intelligence and its components with all three coping styles (and a number of strategies related to these three styles) ($p < 0.001$). Also, it was shown that emotional intelligence can significantly predict each of these three coping styles ($p < 0.001$) [56].

In explaining this finding, Bar-on and Parleer [48] stated that stress management and adaptability are considered as two significant components of emotional intelligence. In other words, adaptive coping may, in practice, be conceptualized as emotional intelligence [48]. Researchers attribute maladaptive coping to low emotional intelligence, which is reflected in the processing and regulation of emotions [57]. Salovey et al. claimed that nonadaptive coping may be as a result of problems in the processing of emotions, that is, the nonadaptive coping due to emotional intelligence is low [58].

5. Conclusion

Based on the findings of the present study, most patients with epilepsy use emotion-focused coping strategy to cope with stress. Also, the mean and standard deviation of the total score of emotional intelligence in the samples was 285.6 ± 39.5 , and most of the samples (82.2%) had moderate emotional intelligence. The results also showed that there is a significant relationship between the total score of emotional intelligence of the samples with problem-focused coping strategies ($r = 0.478$; $p < 0.001$), emotion-focused ($r = -0.519$; $p < 0.001$), and avoidance-focused ($r = 0.363$; $p < 0.001$). Based on the relationship between emotional intelligence and coping strategies, it is suggested to consider ways to improve the emotional intelligence of patients with epilepsy in order to use more adaptive coping strategies.

The strength of the study is simultaneously addressing two important concepts in the process of adjusting and adaptation, i.e., coping strategies and emotional intelligence. The limitations of this study included the small sample size, thereby limiting the generalized applicability of the results. Several other factors such as income and the psychological characteristics, including anxiety and depression of the patients, may also affect their coping strategies. Therefore, the findings of this study should be reassessed after similar studies have been replicated in other contexts.

Conflict of interest

The authors declare that they have no conflict of interest to disclose.

Acknowledgments

The authors would like to thank the research deputy of Isfahan University of Medical Sciences for the financial support of the study, and the adult population who cooperated with the researchers in conducting this research study.

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