

A Systematic Study of Resilience in Patients with Chronic Physical Diseases

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Abstract

Context: Considering the high prevalence of psychological distresses among patients with chronic physical diseases, the question is why do some of these patients not experience any disorders and cope better with their disease?

Objectives: The current study aims at reviewing the researches on resilience in adult patients with chronic diseases.

Data Source: In the present systematic review, articles published in English on resilience from March 2000 to July 2015 were searched using the keywords: Resilience OR Resiliency AND Illness OR Disease OR Chronic Disease in databases such as Google Scholar, Science Direct, PubMed, PreQuest, Scopus, and PsycINFO.

Study Selection: The process of screening and the initial selection of articles were based on systematic reviews and meta-analyses (PRISMA) guidelines. The methodological quality of the articles was studied using a modified version of quality of life index form. Eventually, 17 qualified studies were selected for the review.

Data Extraction: The form used to extract information included the variables of the first author of the article, the publication year, the place of the study, the type of the study, sample size, the data collecting instruments, and the most important findings.

Results: The results included resilience outcomes, protective factors and resilience-related risk factors. Psychological distresses were the most common risk factors, and self-efficacy and adaptive coping constituted the most common resilience-related protective factors. The findings showed that the protective factors, by mediating risk factors, resulted in positive outcomes such as proper treatment adherence, better quality of life, psychological well-being, and self-care behaviors.

Conclusions: Resilience is a balance between risk factors and protective factors, and it develops or disappears through changes in the protective and risk factors. Patients with high resilience tend to enhance their protective factors and manage their everyday life in spite of disease-related limitations.

Keywords: Resilience, Risk Factors, Protective Factors, Chronic Physical Disease

1. Context

Over 125 million people have at least one chronic illness, while 75 million of them have 2 or more (1). Chronic diseases are highly widespread in such a way that half of the Americans have a chronic disease. Due to their long-lasting course, lack of a full cure, repeated hospitalization, and the need for health and medical care, chronic diseases have an impact on the physical, psychological and social aspects of the patients (2, 3). Patients with chronic diseases experience a lot of stress due to the need for coping with disease conditions, threats to the whole body, independence, playing familial, social, and professional roles, future goals and plans, and economic problems (4). After the diagnosis of the disease, patients encounter a new situation that challenges the ordinary coping strategies, and thus they should find new coping methods to mediate the

new situation (5). Needless to say that different people respond differently to problems and stresses (6). Although people purposefully respond to stress, they do not necessarily choose the best responses (7).

Resilience refers to a group of phenomena whose main feature are positive adaptation in the face of problems such as injuries, threats, tragedies, interpersonal and family problems, financial problems, professional problems, health problems and diseases, and mediating the negative impacts of stress (8-11). Resilience is the successful result of coping skills; when the coping skills result in a good outcome, the person is considered resilient (2). Resilience is a personal, cultural, dynamic, and context-related phenomenon; people might not show resilience in all aspects of their lives, i.e., they might be resilient to some risk factors but susceptible to others (12, 13). The results of some

studies show that resilience in people with chronic physical diseases is related to factors such as self-care, medication adherence, health-related quality of life, conception of disease and pain, adherence to non-medicinal diet, enhancing empowerment and self-efficacy, decrease in depression, anxiety and stress, increase in optimism, and decrease in pessimism (14-17).

The current study aims at answering these questions: "Why do some patients deal with their disease better and experience less disorder? What makes this psychological safety possible?"

2. Objectives

In the present study, all studies dealing with resilience in patients with chronic physical diseases, published in English from March 2000 to July 2015, were systematically reviewed using systematic reviews and meta-analyses (PRISMA) guidelines. PRISMA is a 27-item checklist used in the critical appraisal of articles in systematic review studies and meta-analysis (18).

3. Data Source

The articles published in Google Scholar, Science Direct, PubMed, ProQuest, Scopus, and PsycINFO were extracted. The keywords Resilience OR Resiliency AND Illness OR Disease OR Chronic Disease and their combinations were used to search for articles. To gain access to more articles, the word resilience along with the names of prevalent diseases such as cardiovascular diseases and diabetes were searched. Also, the resources and references of the collected articles were reviewed. At the end, 17 studies were selected.

4. Study Selection

As an inclusion criteria for the study, articles had to be published in English; they had to be interventional or observational studies with their full text available; they had to be published from 2000 to July 2015, and finally they had to be carried out on adult patients aged over 18 with chronic physical diseases. This 15-year period was chosen due to the fact that most resilience studies had been carried out in this period. Studies conducted on children and patients with mental or psychological diseases, gray literature (reports, dissertation, and conferences); studies on specific symptoms of chronic illnesses such as disability and pain were excluded. Since the current study aims at reviewing resilience in physical diseases, only those articles that

had studied resilience in some specific and defined diseases were reviewed. Therefore, resilience in the prevalent symptoms of indefinite diseases such as chronic pains was not included in the systematic review. Studies with a low methodological quality (a score of 4 or lower based on the form used in the current study) were excluded. Based on the inclusion/exclusion criteria, the selected articles were reviewed by 2 reviewers (RGG and AD) independently, in terms of the title, abstract and full text of the article, and any disagreement was resolved by a second reviewer (AE).

5. Data Extraction

The form used to extract information included the characteristics of the first author of the article, the publication year, the place of the study, the type of the study, sample size, data collecting instruments, and the most important findings. The data were extracted by 2 reviewers (RGG and AD) independently, and in case of any disagreement, the article was refereed by a second reviewer (AE). The quality of the studies was examined by 2 reviewers (RGG and AD) and disagreements were resolved by the corresponding author (KNT). To evaluate the quality of the studies, a modified version of Quality of Life Index form by Tsimicalis et al. was utilized. This form is used in different studies (19, 20). This form evaluates the quality of studies on the basis of the following 5 parameters: Study design, samples and recruitment method, comparison group, the number of samples and psychometric properties of instruments, and measurement outcomes. The score of each parameter was based on ratings from 0 to 3, and the overall range of scores fell between 0 and 15 (20). Thus, 2 articles were considered very weak and were excluded from the systematic review.

6. Results

Of all the 760 articles found in the initial search, 17 articles were eligible for the study. The screening, selection and review process of the relevant articles is presented in the PRISMA flow diagram in Figure 1.

Ten studies (58.8%) were descriptive and the rest were cross-sectional. Six studies had been conducted in the US (21-26), 5 in Asia (27-31), 4 in Europe (32-35), and 2 in Australia (16, 36). The overall sample size of the studies included in the current systematic review was 3547 (a mean of 209 people per study). The sample size varied from 40 to 1828 people; 13 reviewed studies had a sample size of more than 100 people.

The studies dealt with resilience in patients with different chronic diseases, including cancer (5 studies) (26,

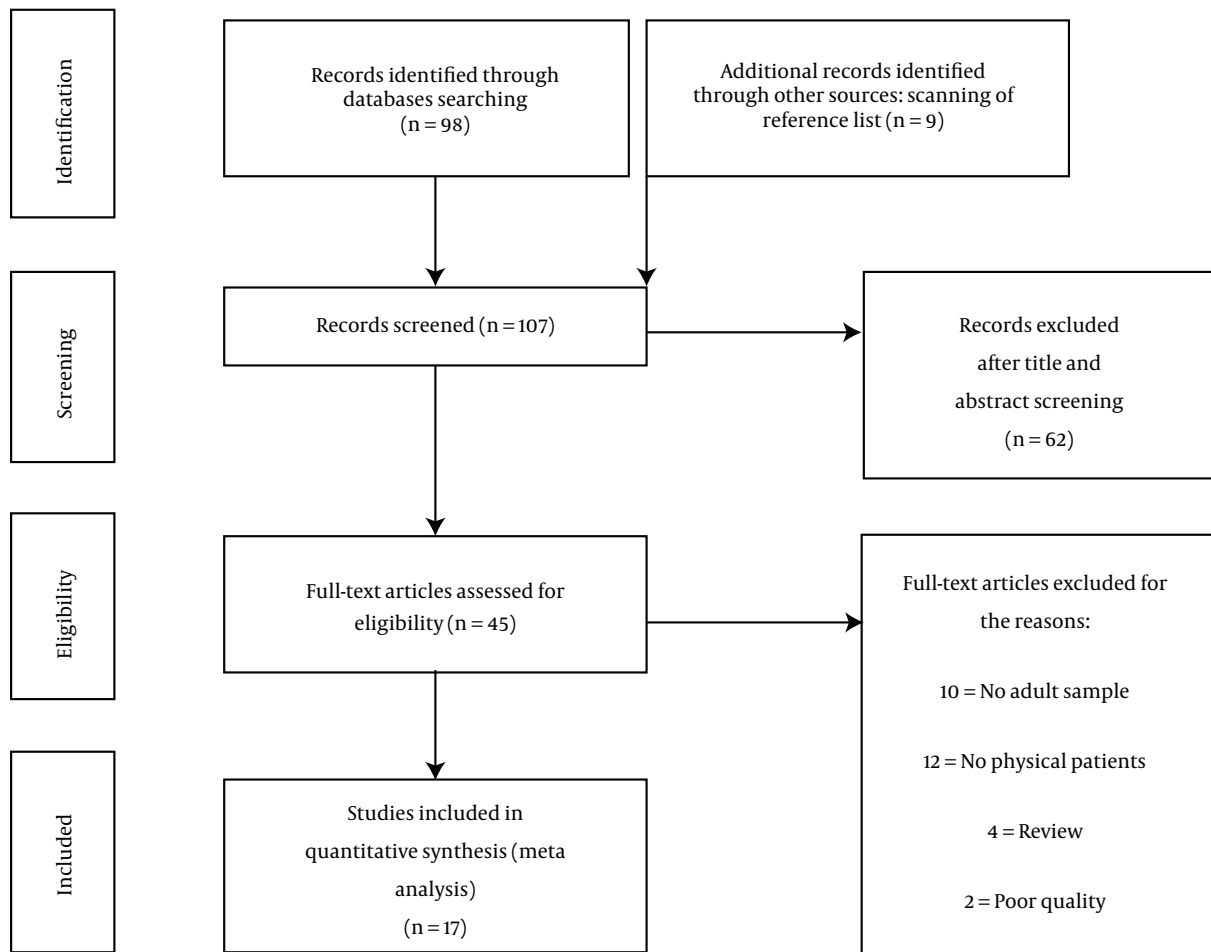


Figure 1. Flow Chart of Selected Articles

28, 31, 32, 35), cardiovascular diseases (3 studies) (27, 29, 34), AIDS/HIV (21, 22), spinal cord injuries (16, 36), diabetes (24, 25), kidney diseases (30), systemic lupus erythematosus (23), and other chronic diseases (33). In 7 studies, resilience had been measured on the basis of resilience scale (RS-25) (23, 28-30, 33-35), in 4 studies on the basis of the 10-item version of the connor-davidson resilience scale (CD-RIS10) (16, 21, 26, 36), in 3 studies on the basis of a set of resilience factors (24, 25, 27), in 2 studies on the basis of the 10-item version of the connor-davidson resilience scale (CD-RISC 25) (31, 32) and in 1 study it had been measured on the basis of dispositional resilience scale (DSR) (22). The mean score of the quality of these studies, based on an adapted version of the quality of life index appraisal tool, was 7; the score of the methodological quality of articles ranged from 4 to 10. Three studies had a low quality (16, 23, 31, 36) and the rest had moderate quality (21, 22, 24-30, 32-35).

The results of resilience in patients with chronic phys-

ical diseases could be categorized into 3 classes of protective factors, risk factors, and the outcomes of resilience that could affect resilience. Risk factors and protective factors are the 2 sides of a balance in patients; if protective factors are more than risk factors, the resilience would increase in the patient and vice versa.

6.1. Protective Factors

Overall, 24 protective factors were pointed out in 11 articles. Self-efficacy was reported as the most prevalent protective factor among patients with heart disease, cancer and spinal cord injury (16, 34, 35).

Then, attention was focused on demographic variables as a prerequisite for resilience. Age (28, 30), gender (21, 28), occupation (23, 30), higher education and low income (21) were reported as protective factors. There were some disagreements about the variables of age and gender; both

older age (cancer) (28) and younger age (patients with kidney diseases) (30), and male gender (cancer) (28) and female gender (AIDS) (21) were pointed out as protective factors. The largest number of protective factors belonged to Dale's study (female gender, education, and income) conducted on patients with HIV (21).

Mental health (29), understanding the disease, search about the disease (23), self-esteem and self-compassion (36), social performance (35), proper nutrition and stress management (30), locus of control (16), benevolence of the world, benevolence of people and luck (22), and coping (25) constituted the protective factors of resilience in adults with chronic physical diseases.

6.2. Risk Factors

Twenty-six risk factors were referred to in 13 articles, with mental distresses (3 articles) (22, 24, 31), depression (4 articles) (16, 29, 35, 36), stress (16, 26, 36), anxiety (16, 35, 36) (each 3 articles) and emotional distress (1 article) (28), under the general title of mental distresses, as the commonest risk factors. Depression, stress, and anxiety were, respectively, reported higher in patients with spinal cord injuries (16, 36) and cancer (26, 35) than in other patients. Disease progression (kidney disease) (30), physiological, caring, physical and informational needs, disease aggravation and attack (cancer) (32), disease duration and treatment (systemic lupus erythematosus) (23), age (lupus and cancer) (23, 32) and silencing the self (AIDS) (21), and disorder in mental health (cancer) (26) comprised the other risk factors. Of the above-mentioned variables, age was a controversial risk factor, that is older age in patients with lupus (23) and younger age (32) in patients with cancer were highlighted as risk factors.

6.3. Outcomes

Eleven resilience outcomes were alluded to in 6 articles. Improvement in the quality of life was the most important outcome of resilience reported in patients with cardiovascular diseases, cancer, and AIDS (22, 27, 35). Also, in 2 studies, laboratory changes such as glycated hemoglobin (24) and decrease in cholesterol level (27) were, respectively, reported as outcomes in patient with diabetes and cardiovascular disease. Medication regimen, participation in rehabilitation programs and posttraumatic growth (in patients with cardiovascular diseases) (27, 34), self-care behavior (in patients with diabetes) (24), adaptation to disease (in patients with cancer) (35) and self-actualization (30) (in patients with kidney diseases) were the other outcomes of resilience. More details are provided in Table 1.

7. Conclusions

A review of the collected articles in the current study showed that most resilience studies were carried out on families, children and people with psychological diseases, and resilience on adults with chronic physical diseases received less attention. It seems that measuring risk factors and protective factors facilitate resilience studies. Risk factors are good predictors of negative outcomes. Protective factors are the necessary characteristics or situations for resilience, mediating the impacts of encountering risks and enhancing the process or outcome of resilience (37, 38).

The results of the present study showed that psychological distresses were the most common risk factor of resilience in patients with chronic physical diseases. Patients with chronic diseases are susceptible to other diseases due to physical challenges, worsening health, pain, loss of function, reduced life span, and psychological challenges such as psychological distress, feeling of isolation, loss of self-esteem, and alterations in social roles (39). It seems that an increase in the emergence of negative outcomes, such as drug abuse and violence, and psychological distress results in the vulnerability of the patient, affects the quality of life of the patient and discourages him from medical follow-up. In the study by Ramirez-Maestre et al. resilience score had a significant negative association with the scores of distress and anxiety, which showed that resilience protected patients against psychological distress (40). The results of the study by Ma et al. on patients with kidney disease indicated that stress management was the strongest predictor of resilience (30). Resilience can reduce the pressure resulting from the negative impacts of chronic diseases by increasing patient's capacity to cope with problems and stress (23, 30).

Resilience cannot be regarded as a feature that some people possess, while some others lack. It is a collection of thoughts, actions and behavior that can be acquired and developed by anyone (41). Resilience offers patients a healthy way to live with their disease, allows them to adapt to changes in life, which might result from diseases, and helps them participate more efficaciously in their treatment programs. Patients with high resilience accept the disease-related limitations and develop their positive attitude (23). At the time of tension (when the disease is diagnosed) such patients allow themselves to express feelings such as grief, anger, loss, and confusion and thus do not let these emotions turn into permanent feelings (42).

Self-efficacy was the most common protective factor for resilience (2). By self-efficacy, the optimistic expectations of the individual of his merits and belief in the possibility of controlling new challenges by the acquired skills

Table 1. Criteria for Rating the Methodological Quality of Included Articles

Study Parameter	Rating	Criteria
Study design		
	3	Longitudinal prospective design
	2	Retrospective or mixed design
	1	Cross-sectional design
	0	Survey of did not report
Participants and recruitment		
	3	Description of the population (1), eligibility criteria for participants (2), precise details of the recruitment process (3) accounted for the numbers recruited (4), and lost follow-up (5)
	2	Minimal description of at least 4 criteria
	1	Two criteria missing
	0	More than 2 criteria missing
Comparison group		
	3	Healthy, age-appropriate comparison
	2	Reference sample
	1	Other comparison group
	0	No comparison group
Number of participants		
	3	N > 100
	2	N = 50 - 100
	1	N < 50
	0	Did not report
Instruments		
	3	Psychometrically sound report of generic or specific resilience measures
	2	Psychometrically sound report of generic and specific resilience measures
	1	Self-report generic or specific resilience measures with some psychometric data
	0	Investigator constructed clinical rating of resilience or resilience domains with no psychometric properties

are denoted (35). Self-efficacy is a cognitive process that evaluates the ability of people to promote a healthy behavior, and as a behavioral requirement, it affects the motivation of patients and encourages attempt and perseverance in behavior (43). Kilic et al. maintained that self-efficacy helps patients with the disease management (16). The justification is that patients with self-efficacious try to manage their disease by dispelling negative thoughts. Resilience offers patients a healthy way to live with their disease, allows them to adapt to changes in life, which might result from diseases, and helps them participate more efficaciously in their treatment programs. Patients with high resilience accept the disease-related limitations and develop their positive attitude (23).

Self-efficacy and other protective factors are different from coping; however, their role is coping with problems arising from diseases. In the review of domestic texts from Iran, coping and resilience were mostly used interchangeably. Although the concepts of resilience and coping both focus on responses to stress and the interaction between the individual and the environment, they are quite dis-

tinct from each other. Coping includes behaviors and skills used at the time of encountering stress without paying attention to their efficacy; not all coping skills are positive, they do not necessarily result in good outcomes, and sometimes they fail. Not everyone using coping methods is resilient; if coping skills do not lead to a good outcome, one is not considered with high resilience.

The relationship between income and resilience is a controversial one and different studies come up with different results. Dale, for example, found an association between low income and resilient behaviors (21), while in the study by Cheung, high income is associated with resilient behaviors (44). The reason for high resilience in low-income people can be associated with their higher self-reliance; some studies associated high income with resilience, though (44). Cohen et al. believes that individuals with a high salary, due to easier access to resources and facilities, display more resilient behaviors (28). Some protective factors of resilience might be different from each other in terms of gender, race and culture. For example, females become resilient through establishing caring rela-

tionships, while males build resilience through the active use of problem solution. In terms of stress, males are more vulnerable to distance and separation, while females show more vulnerability to family discord (12).

There are disagreements about the relationship between gender and resilience. Schumacher maintains that resilience, due to its dynamic nature, is not associated with gender and age (35). However, according to Yang, females, due to their better ability in establishing communication, are more resilient (45).

Age is a variable highlighted in the review of texts both as a protective factor and a risk factor. Since resilience develops over time, individuals' past experiences can have an impact on the development (growth) or weakening of resilience in subsequent stages of life (35).

Quality of life is the most important outcome of resilience, which is to a great extent influenced by supportive sources and protective factors (28). The relationship between resilience and the quality of life is reciprocal, meaning that a higher quality of life results in better coping, the emergence of adaptive approaches, and finally better resilience in people. Also, higher resilience can lead to an improvement in coping and eventually a better quality of life (46). Yazdi-Ravandi believes that resilience is a predictive of quality of life (47). Since the quality of life incorporates satisfaction with life, resilience can provide patients with a positive outlook and consequently satisfaction with life by impacting emotions and excitement, reducing stress, increasing their resistance to hardship, and suffering resulting from the disease.

Resilience is a motivational power with the aim of bringing about self-actualization, welfare and growth, and improving learning (39, 48). Resilient people, despite all difficulties, can retain their proper performance and, by accepting the limitations resulting from the disease, follow their medication regimen, and adapt to the disease (49). Focusing on resilience in patients with chronic physical diseases (not in those with a combination of physical and psychological diseases) and using an instrument to evaluate the methodological quality of the studied articles were among the strengths of the current study, differentiating it from similar studies by Cal et al. and Johnson et al. (50, 51). In the study by Cal et al. resilience was examined in all patients with physical and psychological diseases and the articles included in their study had not been examined in terms of methodological quality.

In the systematic review by Johnson et al. focus was on the definition of resilience and its relationship with the outcomes of resilience. Also, only studies with a sample size of larger than 100 people were included in their study. Although the studies were examined in terms of their methodological quality, no reference was made to

any kind of checklist for the quality of studies and the methodological quality of the studies was considered as an exclusion criterion.

Lack of access to the full text of some articles and databases, the exclusion of studies published in languages other than English, the exclusion of unpublished articles and gray literature, and the invalidity of instruments to examine the methodological quality of articles were the most important limitations of the present study.

Resilience is the balance between risk factors and protective factors, which develops or disappears through changes in such factors. Patients with high resilience tend to enhance their protective factors and manage their everyday life despite disease-related limitations. Protective factors, due to their dependence on context, may lead to different results. Protective factors may be beneficial to one person, while for another person in a similar situation they may be of no use; the protective factors that result in a healthy outcome for a person in a specific situation, may not lead to a healthy outcome for the same person in another situation. Since risk factors and protective factors have a dynamic nature, they are always changing and their interaction results in adaptation or maladaptation. When protective factors are more than risk factors, the level of resilience increases and one would show greater psychological safety in the face of disease. The current study findings can help to identify the factors affecting the psychological safety of patients and enhance resilience resources, protective factors, and reduce risk factors.

Supplementary Material

Supplementary material(s) is available [here](#).

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Footnote

Conflict of Interest: The authors declare no conflict of interest in this study.

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