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## Ways and Strategies for Coping with Stress and Rosacea

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### **Abstract:**

Rosacea is a chronic and inflammatory facial dermatosis, which etiology still remains unknown. The pathogenetic factors of the somatic basis of this disorder have also its psychological causes.

The main aim of the current research was the analysis of the strategies of coping with stress and disease applied by persons suffering from rosacea. The research was exploratory; conducted in two groups. The control group consists of 50 healthy persons, whereas the experimental group consists of 50 patients with rosacea. Both groups were similar in the socio-demographic characteristics. The study used the new and innovative questionnaire, Coping Responses Inventory (CRI) developed by Moos (Moos, R. H., 1986; Moos, R. H., Holahan, Ch. J., 2003). The research data revealed that patients with rosacea use mostly avoidance strategies focused on emotions.

Keywords: rosacea, disease, stress, coping strategies, avoidance strategies

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### **Streszczenie:**

Trądzik różowaty to przewlekła, zapalna dermatoza skóry twarzy, gdzie mechanizmy rozwoju procesu chorobowego nie zostały dobrze poznane. W genetyce zabu-

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rzenia dermatologów obok bodźców patogennych podłoża somatycznego wskazują także na czynniki natury psychicznej.

Celem pracy była analiza procesu radzenia sobie ze stresem i chorobą u pacjentów z trądzikiem różowatym. Badanie miało charakter eksploracyjny; przeprowadzono je w dwóch 50-osobowych grupach (chorych z trądzikiem różowatym i zdrowych ochotników). Obie grupy zostały wyrównane pod względem czynników socjodemograficznych.

Uzyskane dane pokazały, że chorzy z trądzikiem różowatym w sytuacjach stresowych przede wszystkim posługują się sposobami i strategiami unikowymi skoncentrowanymi na emocjach.

Słowa kluczowe: trądzik różowaty, choroba, stres, sposoby radzenia sobie ze stresem, strategie unikowe

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## **Introduction**

Rosacea is a facial skin disease, whose mechanism and development still remain unclear. Stress and emotional factors such as fear or embarrassment are often mentioned in the constellation of pathogenic factors (Wilkin, 1994; Webster, 2001; Schmid-Ott, Stephan & Werbel, 2003). This means that stressful transactions are perceived as threatening, causing strong, negative emotions, and thus become important symptoms of rosacea. It is well known that emotional reactions (chronic or intensive) in conjunction with biological predispositions, underlie the pathological changes in organs and internal systems, and shape immune system efficiency (Kiecolt-Glaser, McGuire, Robles & Glaser, 2002).

The skin of the body, and particularly the face, resonates in varying degrees with mental and emotional processes. During fear or anxiety, a severe narrowing of the cutaneous blood vessels occurs, while in the case of guilt or embarrassment blood vessels suddenly dilate, which causes redness (Dethefsen & Dahlke, 1996). The skin is, therefore, a large projective surface, which is affected by both our somatic and mental processes. Moreover, its subtle three-layer structure indicates that it is the largest sensory organ that sets the boundaries of the "physical self." Often it is the final organ of excessive stimulation, because mental experiences have a direct effect on the skin via the autonomic nervous system (Layton, 2001), and in conjunction with their joint ektodermal origin (epidermis) they remain in close functional configuration with the central nervous system and sensory organs.

Rosacea, due to the characteristic erythematous reaction associated with overactive facial blood vessels, can be included as a vascular skin neurosis (Wilkin & Webster, 2001). This means that its clinical symptoms are undoubtedly associ-

ated with the microvascular dysfunction of this organ. Blood vessels supplying blood to the skin of the face are very richly innervated by the autonomic nervous system's sympathetic fibers; they are also characterized by a special construction and the fact that they occur in an exceptionally large quantity in comparison to the skin of other parts of the body (Otani, Otani & Carlson, 1994; Sobotta, 2010). This structural-functional system due to strong stimuli -- also to psychosocial ones -- can trigger a very distinct vascular response in this particular area of the skin. Throughout the circulatory system, the consequences of psychological stress are particularly marked because the sympathetic nervous system has been stimulated (Panconesi, 1984; Gupta & Gupta, 2003). Therefore, the consequences of stress can contribute to adverse changes in the facial skin. Blood vessels due to stimuli from the sympathetic nervous system and other factors undergo initially a transitional and then a sustainable dilation, which leads to an increase in their permeability and lasting lesions of erythema, papules and pustules (Wilkin, 1994; Gupta & Gupta, 1996; Picardi, Abeni, Melchi, Puddu & Pasquini, 2000; Smithard, Glazebrook & Williams, 2001; Webster, 2001). These visible disease symptoms are particularly acute for people suffering from acne rosacea, as their appearance makes these individuals stand out from the canon of acceptability in today's world - they are not perfect, they are not good-looking, and are sometimes even ugly.

Human consciousness has long believed that there is a relationship between life stresses and an increased probability of somatic diseases occurring in a later period (Kiecolt-Glaser et al., 2002). These events are recognized as reactions between a person and one's environment (Rosenbaum, 1990; Wolfradt & Engelmann, 1999; Barozzi, 1997; Leseho & Maxwell, 2007; Taylor, 1990), which violently destroy this system, causing its destabilization and chronic stress. A large number of these events, their excessive concentration in time combined with their negative assessment (Rahe, 1987; Barozzi, 1997; Holahan, Holahan & Wonacott, 1999; Wolfradt & Engelmann, 1999; Leseho & Maxwell, 2007) contribute to various somatic diseases, including the dermatological ones (Ogden, 2000). Perhaps critical life events may also be associated with the onset of rosacea (Gupta & Gupta, 1998). In the genesis of this disease, dermatologists attribute an important meaning to stress, to its mental or emotional factors; however, they do not clarify these concepts and do not determine their origin. This ambiguity raises many doubts about the nature and extent of its involvement in rosacea's etiology. Therefore, it seems reasonable to focus on the relationship between stress caused by critical life events and acne rosacea, in order to better determine how psychological factors contribute to the rise and development of this illness.

Throughout their lives, people experience a broad spectrum of events, from insignificant to highly stressful. Many different scientific studies, not only in psy-

chology, deal with individual differences in experiencing difficult events. Extremely important, both for theoretical and practical reasons, is explaining what constitutes coping with stress. The basis for these considerations is the thesis that a person does not remain helpless even in the most debilitating situations. One possesses specific capabilities, thanks to which one is able to meet the requirements or minimize the unpleasant psychological consequences of stress (Bolger, 1990; Rosenbaum, 1990; Rohde, Lewinsohn, Tilson & Seeley, 1990; Lazarus, 1993a; Krohne, 1996; Barozzi, 1997; Wolfradt & Engelmann, 1999; Leseho, Beutler & Moos, 2003; Maxwell, 2007). All human mental characteristics, as well as one's experiences, can be classified as mental resources if they contribute to stress reduction (Lazarus & Folkman, 1984; Swindle, Cronkite & Moos, 1989; Hobfoll, 1998; Hobfoll, Freedy, Greek & Salmon, 1996).

In the literature a position emerges showing that coping with stress is a problem about individual differences (Arnold, 1960). This raises broader implications: namely, that we should assign activity to an individual rather than to his/her environment (Bolger, 1990), since a person is equipped with a peculiar and unique repertoire of dispositions, opportunities, or skills used to cope with various life situations as well as those which threaten one's own "self" integrity (Speisman, Lazarus, Mordkoff & Davidson, 1964; Rosch, 1983; Endler & Parker, 1990; Matheny, Aycock, Curlette & Junker, 1993; Endler & Parker, 1994; Strelau, 1987; 2008).

Reflections on psychological stress revolve around human activities, which are characterized by relative constancy and also artful adaptability in difficult situations. Dealing with stressful confrontation stimulates the activity oriented towards "coping with stress" (Antonovsky, 1987).

The category "coping" is an arbitrary and free theoretical form, created to facilitate describing and classifying possible human adaptation mechanisms. The conceptual area is extensive and has three references: process, strategy, and style. These terms are not exclusive but rather complementary. The first one, process, refers to all acts operant in a given stressful situation. Coping so understood is dynamic, complex and variable (Shontz, 1975; Folkman & Lazarus, 1985; Lazarus, 1993a; 1993b). According to many researchers it takes two complementary forms. One focuses on emotions, that is, on reducing emotional tension, and the other focuses on solving problems, on transforming a stressful situation into one that changes the forms of action or elements in the individual's environment (Fleming, Baum & Singer, 1984; Lazarus & Folkman, 1984; McCrae & Costa, 1986; Strelau & Eysenck, 1987; Bishop, 1994).

People who effectively cope with stress usually carry out actions which serve both functions; in other words, they aim at resolving a difficult situation, and attempt to self-regulate unpleasant emotions. "Effective coping often requires both

mastery of emotions, for example, through flight-avoidance behaviours or denial in the face of perceived threats and efforts, thanks to which the stressful transaction changes into a beneficial one from the standpoint of a person participating in it. Often without self-soothing, it is impossible to take actions changing the situation, one's own beliefs or the way of behaving" (Swindle et al., 1989).

The literature showed that modern concepts for coping with stress and critical events assume both the individual's behavioural and intramental responses, which include defence mechanisms in their range (Antonovsky, 1987; Carlson, Butcher & Mineka, 2000; Jones, Norman & Wier, 2010). All activities by which the individual overcomes stress are among those coping skills.

Coping, which usually has a fairly complex structure, to a large extent is a conscious action. The individual selects those strategies from among those he/she has developed and that are effective in tackling a specific challenge (Aldwin, 1994; Moos, Brennan, Fondacaro & Moos, 1990; Doyle & Slaven, 2004). Coping strategies are dynamic cell units that are used in a specific time period. The literature showed that in a stressful situation, people use the following types of strategies: confrontational and avoidance (Endler & Parker, 1994; Holahan, Moos & Schaefer, 1996; Strelau, 2008); or as Zeidler and Saklofske state, coping that is oriented either towards or away from the problem or emotions (Zeidler & Saklofske, 1996).

According to Lazarus (Lazarus, 1993), the basic ways to cope with stress are seeking information, employing direct action, or ceasing those actions which undermine or are contrary to accepted principles and intrapsychic remedial methods, in other words, through using psychical processes to control emotions, including defense mechanisms (e.g., denial, projection and feigned reaction). These methods are oriented both towards the environment and towards one's own "self", and refer to the past, present, and future.

According to Endler and others, using various methods and their appropriate adaptation makes people cope more effectively with stress (Endler & Parker, 1994).

Moos made significant contributions to coping with stress (Moos, 1986; Moos & Holahan, 2003), belonging to the same paradigm as Lazarus' transactional stress concept. However, Moos, unlike Lazarus, focused primarily on the concept of crises and critical events. Adopting the thesis about the subjective need to maintain psychological and social equilibrium shows that in critical times (when experiences are unknown) or critical life events (e.g., burdensome, chronic dermatological diseases), a person must mostly take actions oriented towards developing a qualitatively different solution, since the hitherto, habitual reactions are already inadequate. This solution can be of two types: adaptive, that is, leading to positive

health effects, but also be negative – deadaptive (Rosenbaum, 1990). Important for a person in coping with a difficult, cumbersome situation are cognitively appraising the situation, defining how to adapt, and selecting a coping method or strategy.

Moos distinguished five sets of adaptive tasks that occur in crisis situations. They are:

- determining the meaning and understanding the properties of the situation,
- confronting the reality and answering the posed requirements,
- maintaining relationships with other people,
- maintaining an optimal emotional balance,
- maintaining a positive self-image and sense of competence.

Ways of coping, which were highlighted by the author are as follows:

1. logical analysis -- cognitive attempts to understand and choose possible actions and foresee their consequences;
2. positive revaluation - cognitively reconstructing the situation, that is, selecting positive elements from it by taking into account the situational realities;
3. searching for information and support;
4. actions aimed at solving the problem, namely, behavioral interventions aimed directly at the problem;
5. cognitive avoidance - not taking a realistic solution to the problem, denial;
6. acceptance - resignation, i.e., cognitive attempts to deal with the problem by coming to terms with the situation;
7. seeking alternative gratification, i.e., behavioral interventions aimed at emotional discharge - expressing negative feelings in an attempt to reduce behavioral tension.
8. emotional discharge, -- expressing negative emotions as an attempt to reduce tension
9. Moos and Holahan (Moos, 1986; Holahan, 1996; Beutler, Moos & Lane, 2003; Moos & Holahan, 2003) incorporate the highlighted and classified ways of coping into larger categories that are recognized as strategies for coping with stress. They are:

- a) active – cognitive strategies focused on evaluation (ways 1, 2 and 5)
- b) active – behavioural strategies focused on the problem (ways 3, 4 and 7)
- c) avoidance strategies focused on emotions (ways 6 and 8)

From the above-mentioned coping strategies two emerge, according to the author, as the main criteria for measuring responses: cognitive techniques (behavioural), and techniques for focusing on the problem and emotions (Lazarus & Folkman, 1984; Lazarus, 1993).

The theoretical basis for the presented studies is the paradigm of coping with the stress of life's critical events according to Moos (also compatible with Lazarus's concept). The starting point here, primarily, is concerned with the subjective need to maintain psychological and social balance. When disharmony emerges, the subject refers to habitual strategies, consistent with one's proper patterns of thinking and behavior that allow him or her to return to equilibrium. However, the critical event - illness - is a new and unfamiliar experience, requiring other solutions. These past-habitual responses are insufficient; therefore, the subject cognitively assesses the arisen situation and chooses a way or strategy to cope, since a person is vulnerable to sustained stress. There are only differences in the availability and choice.

The disease, acne rosacea, reveals a wide spectrum of disease symptoms that stigmatize and disfigure the patient.

At present, there is a "demand" for the perfect person, emanating from flawless beauty regardless of age. The patient's face with symptoms of rosacea is not located in this canon.

The research goal was to present a strategy for coping with stress caused by illness in patients suffering with rosacea. Also, attention was brought to the differences in the choice of methods or strategies for coping with difficult situations in rosacea patients and in healthy subjects within the study.

In the literature, (among others, a review was conducted with the help of the Medline electronic system) there is a very small number of works that show strategies for coping with rosacea as a critical life event and for coping with difficult social situations concerned with morbidity. None directly relate to issues of the present study. Therefore, the present study was exploratory in nature. It did not pose a specific hypotheses; only the following research problem was made:

Did distinct differences occur in the selection of preferred ways or strategies to cope with stress and illness in people suffering from rosacea?

## **Research participants**

The studies were conducted in two groups in the Clinic and Department of Dermatology and Venereal Diseases PUM in Szczecin. The first 50-person group were patients with rosacea (women and men aged 25 to 73 years). The second 50-person control group consisted of healthy individuals (also women and men) adequately matched sociologically and demographically, including gender, age, marital status, family status, education, financial income, and housing.

In each group, the number of women and men were the same - 34 women (68 %) and 16 men (32 %).

Taking into account marital, family and educational status, both groups were homogeneous. Marital status distribution was as follows: there were 8 single (16 %) patients and 42 (84 %) married individuals. When applied to test differences between the two groups the Test  $\chi^2$  Pearson showed that there were no statistically significant differences  $\chi^2(1, N=100) = 0.00, p = 1.00$ .

On the other hand, family status distribution showed that seven persons from both the rosacea patients and healthy volunteers did not have children (14 %). The number of persons who had children were the same in each group - 43 (86 %). The differences between groups were checked by the  $\chi^2$  Pearson Test. It showed that there were no statistically significant differences between the group of patients and the group of healthy individuals  $\chi^2(1, N = 100) = 0.00, p = 1.0000$ .

Education distribution was as follows: three in each group had an elementary education (6 %), ten vocational (20 %) 21 patients in the rosacea group had a high school education (42 %), 22 individuals among the healthy volunteers had higher education (44 %), with, in the patients group 16 (32 %) had higher education. The  $\chi^2$  Pearson test showed that there were no statistically significant differences between the two groups  $\chi^2(3, N=100) = 0.06, p = 0.99658$ .

The respondents' ages ranged from 25 to 73 years for both rosacea group ( $M=49.92, SD=11.86$ ) and for healthy volunteers ( $M=49.86, SD=11.98$ ). To check the differences between the two groups for continuous variables, the Mann-Whitney U test was used ( $z = 0.04; p = 0.96701$ ), which showed that there were no significant statistical differences.

Another criterion of selection was socioeconomic status, namely financial income and housing. In patients with rosacea five people (10 %) were very bad off financially; five people (10 %) – bad; 27 (54 %) – average; 12 (24 %) – good, and one person (2 %) was very well off financially. But in the healthy volunteer group of, 1 person (2 %) had a very bad financial condition; four (8 %) – bad; 28 (56 %) – average; 15 (30 %) – good; 2 (4 %) – very good. To test the differences between the groups, the Pearson  $\chi^2$  test was used for discrete variables  $\chi^2(4, N=100) =$



3.46,  $p = 0.48359$  and Spearman's R rank Test;  $t(-0.14) = -1.418$ ,  $p = 0.15943$ . Both tests showed that the groups were homogeneous.

Concerning housing conditions, the distribution sample was as follows: in rosacea patients one person (2 %) had very bad housing; two persons (4 %) – bad; 13 (26 %) – average; 18 (36 %) - good; and 16 (32 %) - very good. Among the healthy volunteers – one person (2 %) had poor housing conditions; 18 (36 %) – average; 18 (36 %) – good; 13 people (26 %) very good. Pearson's  $\chi^2$  test ( $\chi^2(4, N=100) = 2.45$ ,  $p = 0.65359$ ) and the Spearman R test showed that the groups were homogeneous. Participation was voluntary and conducted by a psychologist who interviewed each person in the study.

## **Research method**

The study used the Coping Responses Inventory (CRI). This questionnaire, developed by (Moos, 1986; Moos & Holahan, 2003), is used to study ways and coping strategies that people use in moments which are particularly difficult, new for them, or clearly threatening. The position presented by Moos is very similar to other coping approaches found in literature (Seiffge-Krenke, 2000; Jopp & Schmitt, 2010). Moos' CRI (Coping Responses Inventory), has eight subscales designed to measure the degree of use of specific coping strategies or ways to counter stressful situations caused by critical life events (e.g., illness). These are the following strategies: 1) logical analysis, 2) positive reevaluation, 3) seeking support and information, 4) actions addressing the problem, 5) cognitive avoidance, 6) acceptance - resignation, 7) seeking alternative gratification, and 8) emotional discharge. We combined these subscales into primary categories (Moos, 1986) and as a result three categories of strategies were created:

1. Active-cognitive strategies focused on evaluation (which combined subscales 1, 2 and 5).
2. Active-behavioural strategies focused on the problem (sub-scales 3, 4 and 7).
3. Avoidance strategies focused on emotions (sub-scales 6 and 8).

The measures of these variables were the results obtained by each person we studied in the relevant subscales of Moos' CRI Questionnaire (Coping Responses Inventory). Persons from the rosacea group were asked to specify how often they displayed a specific behavior when coping with difficult situations in the course of the disease (critical life events), and healthy participants with situations in a psychological study.

Each of the eight subscales consisted of six items. Persons participating in the study, both from the first and the second group, were asked to evaluate each item by selecting it on a four-point scale, from “0” (never) to “3” (very often) to indicate how often a particular coping behaviour is manifested in a critical event (here: the patient suffering from rosacea or for the healthy participants in a psychological examination). In addition, the questionnaire contains ten questions, each of which evaluates the event and its consequences. Responses to this part of the research are limited to either yes or no). The CRI Questionnaire (Coping Responses Inventory) is intended for persons who are at least 18 years of age.

The results represented a tendency of the respondents in each group to use a coping strategy in situations they experienced and evaluated as particularly difficult. A higher result indicated a much greater willingness to use just this and not another strategy. Averaging the results provided the researchers an opportunity to compare the intensity with which a strategy was used. In addition, the average global index was calculated for using the strategy (the sum of the results was divided by 8) to cope with difficult life events.

## **Results**

Continuous variables such as the participant’s age was examined with the Kolmogorov-Smirnov test. Continuous variables were described by their means, medians, minimum and maximum values, 25% and 75% quartiles, and standard deviations. To check the statistical differences between the two groups, the Student’s – t test or the Mann-Whitney test was used.

The next variables – intermittent, such as gender or marital status -- were described by their number and frequency. The  $\chi^2$  test was used to study the statistical homogeneity in the groups and the correlations between the intermittent variables.

Statistically significant differences were considered as  $p < 0.05$ . In the indications and Tables, three levels of  $p$  were used:  $p < 0.05$ ;  $p < 0.01$  and  $p < 0.001$ .

The results of those participating in the study, which were obtained using the Coping Responses Inventory (CRI) written by Moos, showed which methods and coping strategies were used by them in a situation of stress or illness (Table 1).

Research results (Table 1 and Figures 1 and 2) show that the rosacea patients are more likely to use only two ways to cope: 1 - acceptance-resignation (CRI6) ( $M = 9.54$ ,  $SD = 4.5$   $p < 0.01$ ); 2) - emotional discharge (CRI8) ( $M = 8.74$ ,  $SD = 4.08$   $p < 0.05$ ).

According to Moos (Holahan & Moos, 1987), coping can be assigned to three particular strategies. Data in Table 2, showed which categories are the preferred strategy in each group .

Statistical analysis, conducted with the help of Mann-Whitney U test, showed a statistically significant difference between the patients and healthy individuals with respect to coping strategies. Patients with rosacea generally used avoidance strategies focused on emotions ( $M = 9.14$ ,  $SD = 3.37$ ,  $p < 0.01$ ). However, healthy participants coped completely differently. They used strategies which did not constitute a greater burden for the proper functioning of the organism.

## **Conclusion**

In combating the difficulties and diminishing stress, a very important role is played by expectations and the assessment of potential threats. Relevant measures or strategies can block stressful situations and prevent further physiological consequences, which very often strengthen the symptoms and disease development.

Ways of coping in both groups are different (Table 1). Patients with rosacea more often use a) acceptance-resignation, and b) emotional discharge (Figures 1 and 2). Their choice by the participating in the study showed that patients, in especially difficult and painful situations, prefer to focus on discharging the onerous emotional tension which might interfere the right adaptive solution to life's problems. Distancing themselves from the problem and recognizing that they have few capabilities to address them, they turn their attention away from the source of stress. They also make attempts to reduce the residual tension by expressing strong negative feelings. This state probably exacerbates the illness and causes the dermatological treatment to deteriorate.

In the group of healthy subjects, no clear tendencies for choosing a preferred coping strategy was revealed. The subjects, in their struggles with the life's difficulties, utilized all available coping means.

According to the research procedure, the primary coping categories were isolated, namely, strategies for coping with stress-illness. The results (Table 2 and Figures 3, 4 and 5) showed that patients with rosacea largely triggered the avoidance strategies focused on emotions, completely differently from the healthy participants, who benefited from all three types of strategies: a) active-cognitive focusing on evaluation, b) active-behavioural on the problem, and c) avoidance on emotions.

Stress or illness coping strategies cannot be assigned unambiguously as either good or bad. Using a multidimensional repertoire of coping strategies and their adaptation to situational requirements determines the flexibility to cope, and has a significant impact on physiological stress reactions. High level strategies focusing on emotions (as other researchers have also found) is associated with a high incidence of somatic complaints (Greenglass, 1992; Bishop, 1994; Carver

& Scheier, 1994; Hobfoll, 1998). The rosacea patients mainly using avoidance strategies focused on emotions will cause negative emotions to intensify in difficult situations, especially if they believe that external events always have a clear, structured, and consistent character, and therefore are not subject to modifications. These results from personal studies are consistent with research on stress coping styles by Endler and Parker, which were conducted on rosacea patients in the Dermatology Clinic in Łódź (Gernat, Zboralski, Miękoś-Zydek, Czyż & Kaszuba, 2004).

Recalling Aristotle's adage that "beauty is a greater recommendation than any letter of recommendation" (Aronson, Wilson & Akert, 2010), it seems advisable to explore this area of research further, in order to facilitate adaptive ways for rosacea patients to cope with difficult life events and their own illness. Use non-adaptive coping strategies causes severe emotional-behavioural and physiological reactions. Such negativity contributes to the exacerbation of pathological changes in the facial skin. They are often very disfiguring and extremely difficult to accept by the patient (in the modern world there exists the demand for an eternally young and pristine beautiful person). Mindful that a person is always a social entity and in interpersonal contacts refers largely to other people's opinion and compares himself/herself to them, one ought to ask the question: Why do patients with visible rosacea and with an adverse self-image (Cotterill, 1981; Schmidt-Ott et al., 1999) have more difficulty in choosing the most appropriate coping strategies?

Perhaps these studies and doubts, painted on our research canvas, will inspire young psychology students, as well as dermatologists, to develop common, interdisciplinary cognitive therapies that will facilitate people with rosacea to function better socially.

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