The Relationship Between Proactive Coping and Myocardial Infarction Patients Quality of Life: A Study Through Cardiac Psychology.

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Abstract: The presented study aims to explore the relationship between proactive coping and quality of life in patients with myocardial infarction (MI), the current study examined a sample of 42 MI patients in Mustapha Bacha Hospital, Algiers. We made use of descriptive and correlative approach in data collection and data analysis using the following research tools: Interviews, Proactive Coping Inventory (PCI) and World Health Organization Quality of Life (WHOQOL-BREF), The results were analyzed using the Pearson correlation coefficient to study the relationship between the variables and the T test to study the differences of proactive coping and quality of life in heart patients of both types. The results of the study concluded that: There is a strong positive correlation between proactive coping and health-related quality of life in patients with myocardial infarction type II ST (STEMI), where the correlation score was estimated at r = 0.604, which is a function value at the significance level α=0.01. Whereas: there is no correlation relationship between proactive coping and health-related quality of life in patients with myocardial infarction type I (1) Non-ST (Non-STEMI). As well as the absence of statistically significant differences in the proactive coping attributed to the sex factor, it can be said that proactive coping in patients with myocardial infarction of both types is not affected by the sex factor.

Keywords: Proactive Coping; Quality of Life; Myocardial Infarction; Cardiac Psychology; Self-efficacy

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I- Introduction :

Throughout history and at various times the heartbeat represented a sign of life itself even before we realized the function of this organ in itself. From the very beginning, humans have noticed clear changes in their heart rate when they are exposed to certain situations, so the number of heartbeats increases when we feel danger or are under a certain pressure. Heart disease over time has been directly linked to death.

About 17.7 million people died from cardiovascular diseases in 2015, accounting for 31% of all deaths that occurred in the world in the same year, that is, more deaths from these diseases than from any other cause. (WHO, 2022)

For instance, heart disease is the leading cause of death for men, women, and people of most racial and ethnic groups in the United States. One person dies every 34 seconds in the United States from cardiovascular disease. About 697,000 people in the United States died from heart disease in 2020—that's 1 in every 5 deaths. Heart disease cost the United States about $229 billion each year from 2017 to 2018.3 This includes the cost of health care services, medicines, and lost productivity due to death. Coronary heart disease is the most common type of heart disease, killing 382,820 people in 2020. (CDCP, 2022)

Algeria is also not isolated from this, cardiovascular diseases are the number one cause of death representing 34 % per year, according to figures from the National Institute of Public Health. (Ministry of Health, 2022)

It should be noted that our country counts about: 279 deaths per year per 100 thousand males, and 275 heart attacks for females due to complications of heart disease and arterial embolism, which is the first and main reason for the high death rates in Algeria every year, and thus constitutes 52% of the death rates. Approximately 3 out of every 1000 people are at risk of heart attack due to the lack of necessary health measures. (Ministry of Health, 2022)

So, here this assumption is refuted: "Cancer is the biggest threat to health," in the light of terrible huge statistics and figures: "Heart disease is the first threat to human health," because the heart is the engine of life.

This is why it is mandatory that most of the studies focus on integrating various factors in order to find out the huge escalation in the number of patients, especially after the emergence of the multifactorial contractual model in the interpretation of health and disease of Bruchon Schweitzer.

The epidemic of cardiovascular disease (CVD) is a global phenomenon, and in the current environment, the magnitude of this increase in incidence and prevalence in the developing world and newly industrialized nations has potentially major complications for those high-income nations that characterize much of the developed world. The early half of the 20th century witnessed a rapidly growing epidemic of CVD as a result of industrialization, urbanization, increased prosperity. (Bernard J Gersh, Karen Sliwa, Bongani M Mayosi, Salim Yusuf, 2010, p. 642)

As result of the research Type A behavior pattern was introduced as a risk factor for cardiovascular disease. (Dornelas, 2012 , p. 168)

But over the past few years, researchers have abandoned the personality traits of the Type A Behavior Pattern (TABP), focusing too much on anger and hostility.

Several studies have reported that episodes of anger are associated with a transiently higher risk of myocardial infarction (MI), acute coronary syndrome (ACS), ischaemic and haemorrhagic stroke and arrhythmia. (Elizabeth Mostofsky, Elizabeth Anne Penner, Murray A. Mittleman, 2014, p. 1404)

The psychosocial factors likely to affect the heart are many and varied. However, in everyday conversation it is the words stress that is almost always used. The word stress is undoubtedly one of the most pronounced in the world. (Houppe, 2015, p. 104)

Stress is a fact of life, it is here to stay, for loss, for conflict, for uncertainty, for loneliness, for health challenges, for competition, for deadlines, for financial pressures and these are things that we all experience. (Sapolsky, 2004)

Stress is widely recognized as a contributor to cardiovascular illness and decreased quality of life; however, cardiac patients are often challenged in their efforts to reduce stress and change lifestyle. (Dornelas, 2012 , p. 3)

Coping with stress is subject of many articles and books. attention has been focused on coping strategies and the way in which they can alleviate stress levels and promote higher quality of life. while in the past coping was seen mainly as reactive, a strategy to be used once stress has been experienced, more recently coping is being seen as something one can de before stress occurs. Increasingly, coping is seen as having multiple positive functions. The idea that coping can have positive beliefs in the promotion of health. Proactive coping incorporates a confirmatory and positive approach to dealing with stressors. (Frydenberg, 2003, p. 37)

In the past, coping was viewed as an adaptive reaction to stressful experiences and was regarded as reactive, a strategy to be used once stress had been experienced. Reactive coping refers to the coping model put forth by Lazarus and Folkman. (Esther R. Greenglass, Lisa Fiksenbaum, 2009, p. 29)

Thus, proactive coping is an important development in the coping literature that emphasises the individual's role in planning so as to maximise outcomes for events that are yet to happen. (Frydenberg, 2019, p. 22)

In proactive coping, the distinctions between the two sets of processes blur because stressful events have not yet occurred or have not progressed to levels where resources are taxed. (Lisa G Aspinwall, Shelley E Taylor, 1997, p. 419)

Adaptation to chronic disease is largely dependent on the evaluation of the stressor by the individual, the effectiveness of coping behavior, and the social support the patient will receive in attempts to gain control over the stressor. (Moshe Zeidner, Norman S Endler, 1996, pp. 222,223)

This is the result of a study by ZENAD Dalila and AOUALI Aicha (2019); entitled: Perceived Social Support and Health-related Quality of Life in Myocardial Infarction Patients. The descriptive approach was based on a sample of sixty (60) patients with myocardial infarction. The results confirmed the existence of statistically significant results between perceived social support and health-related quality of life in patients with myocardial infarction. (دليلة زناد، عائشة عوالي، 2019، صفحة 43)

In general, chronic diseases are defined as those that persist indefinitely, cannot be prevented by vaccines, and cannot be cured by medication. Such prolonged illness leads to ongoing pain, suffering, disability, and diminished quality of life. (Bret A. Boyer, M. Indira Paharia, 2008, p. 55)

Quality of life comprises, among other elements, the sense of mental and physical well-being, opportunities for personal development, material status, social relationships, and functioning in the immediate environment. The context of a somatic disease broadens this definition with the character of ailments associated with the disease and the burden imposed by them on the patient, restrictions related to the disease, access to treatment, and assessment of the rehabilitation process. The manner in which individuals respond to the disease largely depends on their adaptive capabilities, the processes of coping with the disease, and the pathology's specific properties. (Karolina Gierlaszyńska, Robert Pudlo, Izabela Jaworska, Kamila Byrczek-Godula, Mariusz Gąsior, 2016, p. 78)

Confirmation of this came in the study of Agnieszka Burnos, Maria Wrzosek (2022); entitled: Quality of Life After Myocardial Infarction as a Function of Temperamental Traits, Stress Coping Styles, and Posttraumatic Stress Disorder Symptoms, on a sample consisting of Ninety-six (96) participants, including (51) female and (45) males aged (24-85) years who survived ST-elevation myocardial infarction. According to the obtained results, a lower level of briskness and sensory sensitivity, as well as a higher level of perseverance and endurance, correlates with a higher level of emotion-oriented coping, whereas a higher level of perseverance, endurance, and activity correlates with a higher level of avoidant-distracted coping. Moreover, a higher level of briskness and activity is correlated with a higher level of avoidant-social coping. A higher level of emotion-oriented and avoidant-distracted coping is, in turn, associated with a higher intensity of PTSD symptoms, whereas a higher level of avoidant-social coping correlates with lower intensity of PTSD symptoms. The meaning of other temperamental traits, however, is more ambiguous. Nevertheless, the findings support the model of psychological processes in which the subsequent stages are temperament, coping, PTSD, and quality of life. (Agnieszka Burnos, Maria Wrzosek, 2022 , p. 1)

Based on all this, in line with the above, we are conducting this study to find out the relationship between proactive coping in myocardial infarction patients and how it affects their health-related quality of life. Hence, the dimensions of the research problematic are summarized as follows:

- Is there a correlation between proactive coping and health-related quality of life in patients with myocardial infarction type I (1) Non-ST (Non-STEMI)?

- Is there a correlation between proactive coping and health-related quality of life in patients with myocardial infarction type II (2) ST (STEMI)?

- Are there any significant differences between females and males in proactive coping in patients with myocardial infarction type I (1) Non-ST (Non-STEMI), and patients with myocardial infarction type II (2) ST (STEMI)?

- **Hypotheses:**

- There is a correlation between proactive coping and health-related quality of life in patients with myocardial infarction type I (1) Non-ST (Non-STEMI).

- There is a correlation between Proactive Coping and health-related quality of life in patients with myocardial infarction type II 2 ST (STEMI).

- There are significant differences between females and males in proactive coping in patients with myocardial infarction type I (1) Non-ST (Non-STEMI) and patients with myocardial infarction type II 2 ST (STEMI).

- **Define the procedural concepts of the study:**
  - **Proactive coping:** Is a stress-management strategy that reflects efforts to build up resources that facilitate promotion toward challenging goals and personal growth. In the sense of efforts made before a potentially stressful event to prevent it from happening or to modify its form before it occurs in a situation that allows it to be controlled. We call these individuals proactive individuals who are committed to high standards to face challenges. Proactive individuals plan for the distant future because they see the demands and opportunities there and embark on a constructive course of action towards it. Stress is interpreted as eustress—that is, productive arousal and vital energy—and coping thus becomes goal management instead of risk management.
  - **Patients with myocardial Infarction (MI):** They are people who are hospitalized, due to myocardial infarction, which is one of the types of acute coronary syndrome, occurs when there is a blockage in the coronary arteries, whether the blockage is partial (Type I) or total (Type II), and not enough oxygen reaches the heart muscle. Myocardial infarction is caused by a blockage in the arteries supplying the heart muscle, which leads to tissue damage due to lack of oxygen, so a heart attack occurs.
  - **Health-related quality of life:** It is the individual's enjoyment of his life, his feeling of happiness, optimism, enjoyment of physical, psychological, positive health and satisfaction with his life in its various aspects, physical, health, environmental and ability to time, which makes his life full of positive meanings. The quality of life of heart patients is: their emotional, spiritual state, professional, social and family status. The main aspect is a question of adaptation to the challenges of new conditions that lead to a change in the level of quality of life due to a disease that expresses a life-threatening factor.

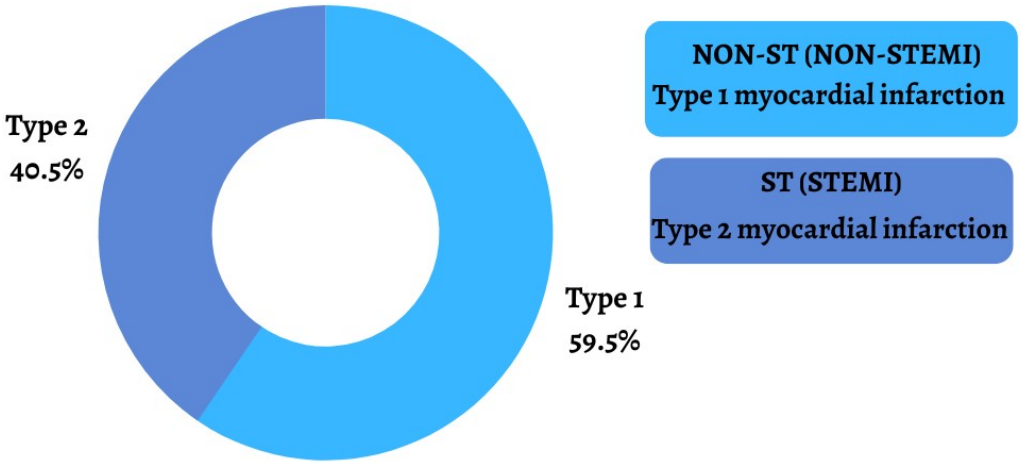
II– Methods and Materials:

II.1 The sample:

The research sample consists of 42 patients with myocardial infarction: Type I (1) Non-ST (Non-STEMI), and Type II (2) ST (STEMI). Divided: 32 men 10 women. The following two tables (1,2) & two figures (1,2) show the quality characteristics of the sample:
Table 1: Shows the characteristics of the sample by myocardial infarction.

	Types of MI	N	%
Patients with myocardial infarction	Type 1 MI Non-ST (Non-STEMI)	25 patients	60%
	Type 2 MI ST (STEMI)	17 patients	40%
	∑	42 patients	100%

Figure 1: Sample ratio by heart infarction disease.

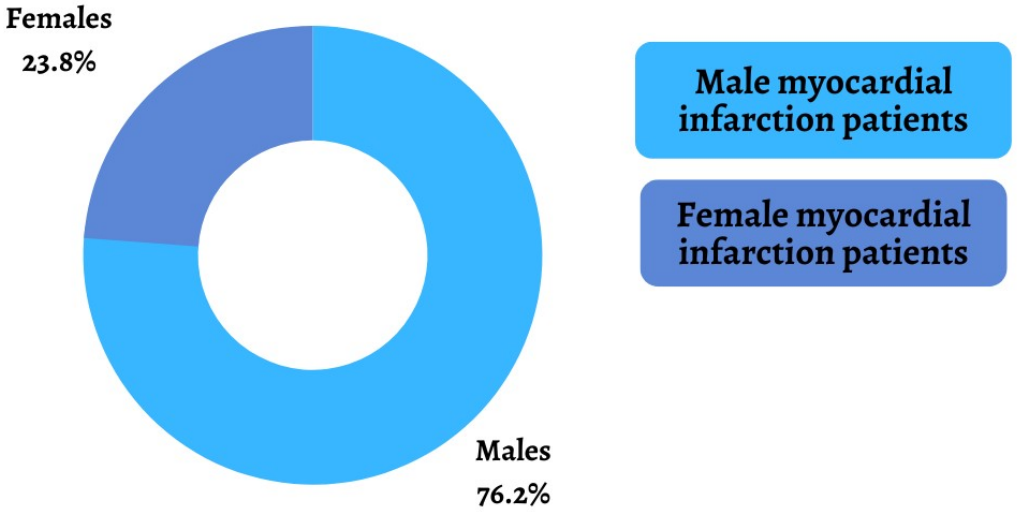


- We note that the incidence of Type 1 myocardial infarction Non-ST (Non-STEMI) is bigger than the incidence of Type 2 myocardial infarction ST (STEMI).

Table 2: Shows the characteristics of the sample by sex.

	SEX	N	%
Patients with myocardial infarction	Males	32 patients	76%
	Females	10 patients	24%
	∑	42 patients	100%

Figure 2: The ratio of the sample by sex.



- We note that the incidence of myocardial infarction in males is higher than in females.

II.2 Assessment and tools:

The nature of the study and its hypotheses requires determining the approach that is appropriate to it and serves it in the analysis of its results, which is: the descriptive statistical approach that is commensurate with the objectives of the study and its limits.

II.2.1 The interview:

The clinical interview is the sine qua non of assessment and the most common form for gathering information. It is generally the initial (and often the only) source of current and historical data across all domains (e.g, physical, affective, cognitive, behavioral) and environments. The interview is also the initial step in forming what may be a working treatment relationship with the patient. The format of the interview will vary depending on the assessment purpose and will range from unstructured to semi-structured to highly structured. The most common elements of the clinical interview include the presenting problem (e.g., symptoms, impact on function), history, occupational function, and some form of a mental status examination. (Frank Andrasik, Jeffrey L. Goodie, Alan L. Peterson, 2015, pp. 13, 14)

II.2.2 The Proactive Coping Inventory (PCI):

PCI is a 55-item instrument designed to measure a positive facet of coping, namely the setting of and striving for goals. The PCI takes a multidimensional approach to coping in that integrates process of personal quality-of-life management with those of self-regulatory goal attainment. Specifically, the PCI consists of seven subscales, including proactive coping, preventive coping, reflective coping, strategic planning, instrumental support-seeking, emotional support-seeking, and avoidance coping. (Catherine Simmons, Peter Lehmann, 2012, p. 239)

II.2.3 World Health Organization Quality of Life (WHOQOL-100):

The 100-item World Health Organization Quality of Life (WHOQOL-100) and the 2-item brief WHOQOL-BREF were created by the World Health Organization (WHO) and 15 collaborating agencies to measure quality of life. Both of the WHOQOL instruments were designed to measure not only frequency and severity of disease, but also the complex way a person's physical health, psychological state, level of independence, social relationships, and personal beliefs are salient to features of the environment in which they live. (Catherine Simmons, Peter Lehmann, 2012, p. 147)

III- Results and discussion :

III.1 Results:

III.1.1 Results of the first (1st) hypothesis of the study:

The first hypothesis came about according to which:

- There is a correlation between proactive coping and health-related quality of life in patients with myocardial infarction type I (1) Non-ST (Non-STEMI).

To verify the validity of this assumption was used Pearson correlation coefficient, and the following table 3 shows the results obtained:

Table 3: The results of Pearson correlation coefficient.

	PCI	WHOQOL-BREF	Semantic Level
PCI	1	0.163	/
WHOQOL-BREF	0.163	1	/

It is shown by table 3 of the Pearson correlation coefficient between the scores of the research sample in the PCI and the abbreviated WHOQOL-BREF: that there is no relationship between the two variables, as the degrees of correlation were estimated to be r=0.163, which are non-functional values at the significance level α=0.01 and α=0.05. And from that we say:

- There is no correlation between Proactive Coping and Health-Related Quality of Life in patients with MI type I (1) Non-ST (Non-STEMI).

III.1.2 Results of the second (2nd) hypothesis of the study:

The second hypothesis came about, according to which:

- There is a correlation between Proactive Coping and health-related quality of life in patients with myocardial infarction type II 2 (STEMI) ST.

To test the validity of this assumption, the Pearson correlation coefficient was used, and the following table 4 shows the results obtained:

Table 4: The results of Pearson correlation coefficient.

	PCI	WHOQOL-BREF	Semantic Level
PCI	1	0.604	α= 0.01
WHOQOL-BREF	0.604	1	α= 0.01

It is clear from the results of the statistical analysis in Table 4 of the Pearson correlation coefficient between the scores of the research sample in PCI and WHOQOL-BREF scale. That there is a strong positive relationship between the two variables, where the degree of correlation was estimated at r=0.604, which is a statistically significant a function value at the significance level α=0.01.

Based on this, we say:

-There is a strong positive correlation between proactive coping and health-related quality of life in patients with MI type II (2) ST.

III.1.3 Results of the third (3rd) hypothesis of the study:

The third hypothesis, which states that:

- There are significant differences between females and males in proactive coping in patients with myocardial infarction type I (1) Non-ST (Non-STEMI) and patients with myocardial infarction type II 2 (STEMI) ST.

To verify the validity of this hypothesis, -T- Test was used to study the differences between two independent groups, and after calculating F and then determining the -T- test for two independent and homogeneous groups.

Table 5: results -T- test for the study of differences.

Variants	Sample	F Test	Semantic Level	Significance
Females	10	4.409	Does not exist	Not significant
Males	32			
Proactive Coping	42			

It is clear from table 5 that there are no statistically significant differences at 0.03 or 0.01 in the proactive coping due to the gender factor.

III.2 Discussion :

III.2.1 Discussion of 1st results hypothesis of the study:

This hypothesis did not follow the course of previous studies in this field, such as the study of ZENAD Dalila and AOUALI Aicha, (2019) entitled: Perceived Social Support and Health-related Quality of Life in Myocardial Infarction Patients. The difference in these results may be due to the nature of the disease, which is expressed by primary symptoms, in addition, the patients were not at direct risk of cardiac arrest, which led to the absence of a relationship between proactive coping and health-related quality of life. Also, the fact that the hypothesis does not come true does not mean that it is wrong, but this hypothesis remains in place until research comes confirming this relationship.

III.2.2 Discussion of 2nd results hypothesis of the study:

The results of the second hypothesis showed a strong positive correlation between proactive coping and health-related quality of life in patients with myocardial infarction type 2 ST (STEMI).

This is consistent with a study by Agnieszka Burnos, Maria Wrzosek (2022); titled: Quality of Life After Myocardial Infarction as a Function of Temperamental Traits, Stress Coping Styles, and Posttraumatic Stress Disorder Symptoms, according to the results obtained, the results support the model of psychological processes in which the subsequent stages are: mood, adaptation, PTSD, quality of life.

This strong positive result indicates a close correlation between proactive coping variables and quality of life in patients with MI type II (2) ST.

Why is this correlation and how does it happen?

When a person experiences the cardiac accident of myocardial infarction, this sudden event causes a constant threat to life, which is associated with the nature of the causal event experienced by the patient, which is "death". The painful experience he survived was absorbed by the patient himself, because the trauma represented by the pains before the heart attack had their origin mainly in the body. In a sense, the person himself becomes the focus of danger and the center of a permanent stressful event, and this is what makes the possibility of being infected again a reality that lives with him throughout life and the equation changes to become as follows:

Body → Danger.

What is happening here is a cognitive reconstructing of a special kind, the cardiac event came on the contents and components of the internal and external personality of the sources of planning, evaluation and adoption of strategies.

What has already happened is a process of destructing all the knowledge and past gains about health in particular and about the quality of life in general.

This is called: The Health Action Process Approach (HAPA) according to: Ralf Schwarzer, here it is proposed that the patient adopt, initiate and maintain healthy behaviors, but in this case (MI patients) is forced, it should be explicitly viewed as a process consisting of at least a motivation phase and a will phase. The motivation here is to come back to life after a sudden cardiac event.

Stimulation → Reanimation → Return to life.

According to this process. This is confirmed by Bandura by saying that the stimulation phase can be divided into:

Planning phase → Action phase → Maintenance phase.

Perceived Self-efficiency plays a crucial role at all stages along with other perception. So self-efficacy is a direct and close indicator of intention and behavior in patients. Just Social Cognitive Theory (SCT) for Bandura, a personal sense of control facilitates healthy behavior change because it relates to the self-efficacy of feeling in control of one's environment and behavior.

All this is called planning to avoid a cardiac event again. So, we find that proactive coping is not a result, but rather a strategy, unlike the quality of life, which is a result and achievement of using proactive coping, so the relationship was strongly positive:

Proactive coping → High quality of life → Avoiding the inevitable threat of disease (death).

The relationship was so strong because: proactive individuals possess beliefs rich in the possibilities of change especially in ways that will lead to self-improvement, environment and health-related quality of life HRQOL.

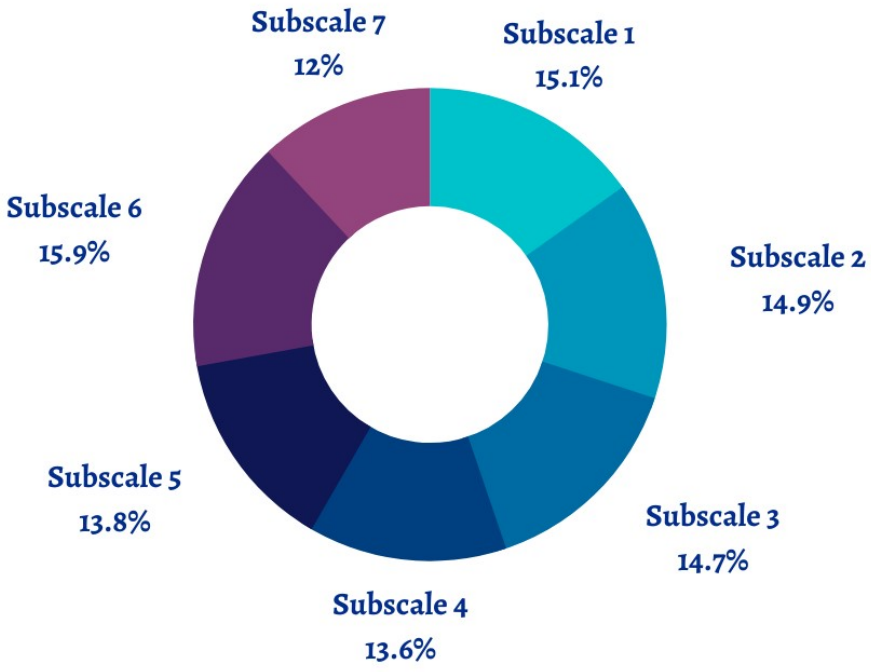
Through the social network, patients are looking for emotional support-seeking, and this is highlighted by the result of responses in all sub-scales of the PCI, which we review in the following table 6:

Table 6: Results of the responses of the seven sub-scales to the PCI for all sample 42 members.

The 7 Subscales of the PCI	Response rate
1- Proactive coping	3.35%
2- Preventive coping	3.30%
3- Reflective coping	3.26%
4- Strategic planning	3.00%
5- Instrumental support-seeking	3.06%
6- Emotional support-seeking	**3.51%**
7- Avoidance coping	2.65%

We note from Table 6 that the most used sub-scale is sub-scale (6) Emotional support-seeking with an average of: 3.51%.

Figure 3: Ratio of response of each sub-scale to PCI.



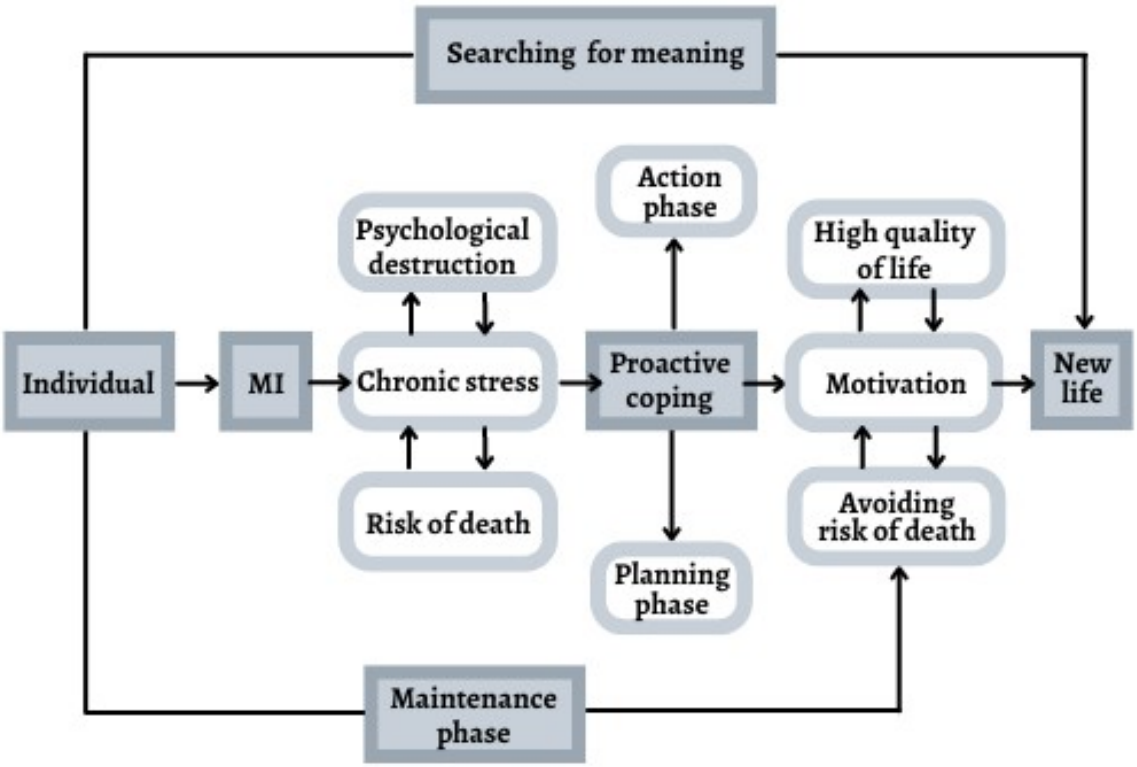
We can see from the figure 3 that the largest percentage is for the sub-scale (6) **Emotional support-seeking** by: **15.9%**.

These results confirm the search for emotional support-seeking by patients in order to regulate emotions and the search for accompaniment through the individual's social network, which is an

emotional internal self-organization with the help of individuals around them who are important for completing the life path.

This can be further illustrated by the following model in Figure 4:

Figure 4: Model illustrating the nature of the pathway between the relationship between proactive coping and quality of life in patients with myocardial infarction type (2) ST (STEMI).



III.2.3 Discussion of the 3rd results hypothesis of the study:

The results of the third hypothesis showed that there are no significant differences between males and females in proactive coping attributed to the sex factor, from which it can be said that:

There are no differences in the use of proactive coping in patients with MI of both types I and II. The reason for the absence of a difference may be the emotional state of patients of both sexes that they live after a cardiac event.

IV- Conclusion:

Based on the results of the current study, we found a strong positive correlation between proactive coping and the health-related quality of life (HRQOL) in patients with MI type II ST (STEMI) on a sample of 42 patients with MI, this result, which explains that patients make great efforts to manage the chronic stress they live as a result of inevitable death associated with social perceptions in Algeria, especially the belief of the absence of medical care and medical technology necessary to take care of patients.

A proactive individual is defined as resourceful, responsible and principled according to Ralf Schwarzer. Coping with a proactive individual is not one response, but one's view of oneself and one's world. It is an approach to life, an existential belief that things will work out not because of luck or other uncontrollable factors, but because the individual bears responsibility for the results. Proactive coping is distinguished from other forms of coping in that the patient integrates and uses social and non-social resources, employs visions of success, uses positive emotional strategies. Proactive coping involves setting goals and striving hard to achieve goals.

Two elements are essential to a proactive belief system. First, for the proactive individual, a life course is determined by the individual not by external factors; the proactive individual takes responsibility for making things happen. Second, for the proactive individual, life is full of abundant resources. The proverbial glass is always half full rather than half empty. The proactive individual accumulates resources, takes steps to prevent resource depletion, and is capable of mobilizing resources when needed. Thus, the proactive individual also possesses highly developed social skills to mobilize resources. These factors have led to a strong correlation with health-related quality of life HRQOL.

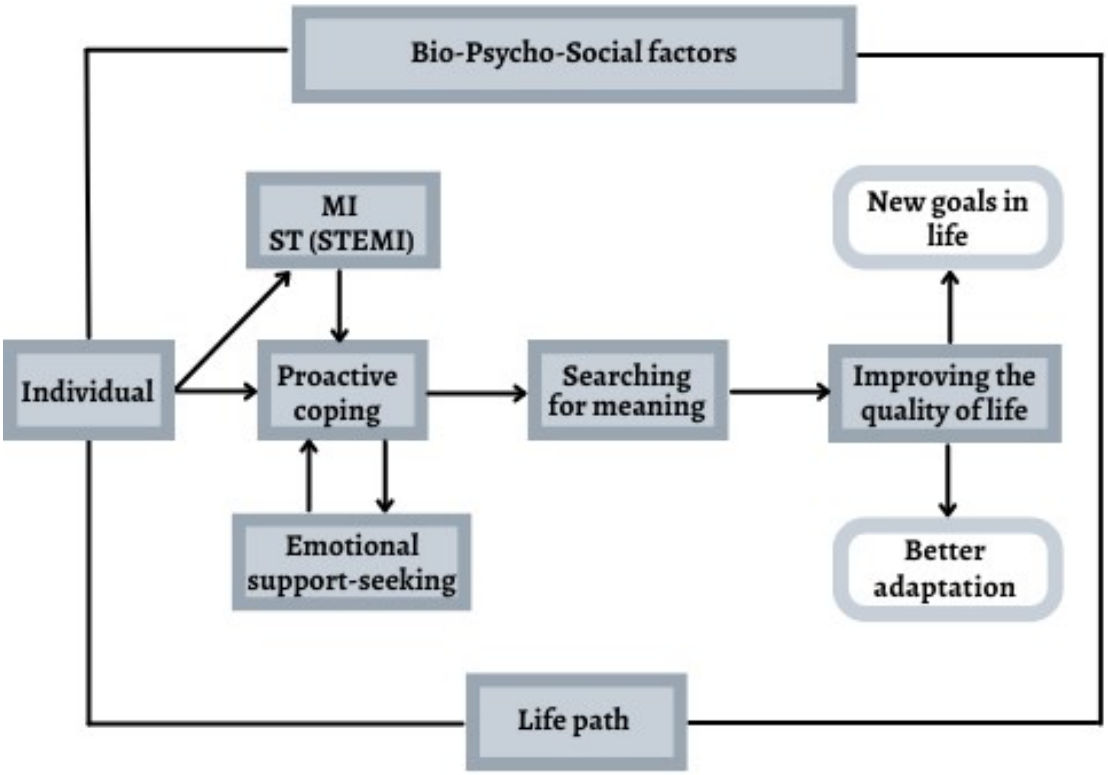
Therefore, after the cardiac event, the majority of patients search for meaning to prove self-efficacy again after the cardiac event and after the psychological destruction in order to broadcast the vital balance, this is what makes patients in a constant search for external resources, especially social support from family and relatives. This is confirmed by the results of PCI, where the average arithmetic mean of the sub-scale most used by patients was: sub-scale (6), with an estimated ratio of: 3.51, which is: Emotional Support Seeking. It aims to regulate the temporary emotional disorder by revealing the feelings of others, eliciting empathy and seeking companionship from the individual's social network. It is emotional self-regulation with the help of significant others.

In this current study, the researcher also tried to prove the existence of an associative relationship between proactive coping and the quality of life in patients with MI type I (1) Non-ST, as well as the search for the presence of significant differences between males and females in proactive coping, but these two hypotheses were not realized.

Thus, the results obtained in this research have opened up new horizons for other research, as it is the 1st research in Algeria that deals with the modern concept of coping, namely: **"Proactive Coping"**.

The following is an illustrative model of the correlative relationship between proactive coping and quality of life in patients with MI type II (2) ST (STEMI).

Figure 5: model of the correlation relationship between proactive coping and health-related quality of life in patients with MI type II (2) ST (STEMI).



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