AOU AL Azienda Ospedaliero Universitaria di ALESSANDRIA

Working Paper of Public Health 2025; volume 13:10190

Original Article

Educational group intervention as part of the multidisciplinary approach in cardiac rehabilitation: the experience of the Alessandria University Hospital

Intervento di gruppo educativo nell'ambito dell'approccio multidisciplinare nella riabilitazione cardiologica: l'esperienza dell'Azienda Ospedaliera Universitaria di Alessandria

Valter De Michelis,[1] Patrizia Valorio,[2] Stefano Migliorisi,[3] Cristiana Bacchetta,[1] Silvia Bona,[3] Carolina Pelazza,[4] Antonio Maconi[4]

[1]SSD Riabilitazione Cardiologica, Azienda Ospedaliero-Universitaria SS. Antonio e Biagio e Cesare Arrigo, Alessandria; [2]SSA Psicologia, Azienda Ospedaliero-Universitaria SS. Antonio e Biagio e Cesare Arrigo, Alessandria; [3]SC Medicina Fisica e Riabilitazione, Azienda Ospedaliero-Universitaria SS. Antonio e Biagio e Cesare Arrigo, Alessandria; [4]Dipartimento Attività Integrate, Ricerca, Innovazione (DAIRI), Azienda Ospedaliero-Universitaria SS. Antonio e Biagio e Cesare Arrigo, Alessandria, Italy

Key words: cardiac rehabilitation, multidisciplinary team, patient-centered care, lifestyle modifications, psychological support.

ABSTRACT

Background: cardiovascular diseases remain a major cause of morbidity and mortality worldwide. A multidisciplinary approach to cardiovascular rehabilitation is essential to improve patients' recovery and quality of life after a cardiac event.

Materials and Methods: this paper describes the experience of the Alessandria University Hospital in implementing a multidisciplinary approach in Cardiac Rehabilitation. A team composed of rehabilitation cardiologists, physiotherapists, nurses and psychologists provides comprehensive and integrated patient care. Reference is made to the establishment of an educational group intervention on secondary prevention, centred on the person and on communication and relational aspects. The meetings of this multidisciplinary group focus on lifestyle modification, healthy eating, exercise, and psychological well-being. By addressing both physical and psychosocial factors, the aim is to reduce the risk of future cardiac events, improve functional capacity, and increase adherence to rehabilitation projects.

Conclusions: future perspectives are discussed to foster in the person an increasing awareness of his or her state of health and a proactive attitude toward self-care.

Background: le malattie cardiovascolari rimangono una delle principali cause di morbilità e mortalità in tutto il mondo. Un approccio multidisciplinare alla riabilitazione cardiovascolare è fondamentale per migliorare la ripresa dei pazienti e la qualità della vita dopo un evento cardiaco.

Materiali e Metodi: il presente contributo descrive l'esperienza dell'Azienda Ospedaliero Universitaria di Alessandria nell'implementazione di un approccio multidisciplinare in riabilitazione cardiologica. Un team composto da cardiologi riabilitatori, fisioterapisti, infermieri e psicologi fornisce in modo integrato un'assistenza completa ai pazienti. In particolare si fa riferimento alla costituzione di un intervento educativo di gruppo sulla prevenzione secondaria, incentrato sulla persona e sugli aspetti comunicativi e relazionali. Gli incontri di questo gruppo multidisciplinare sono focalizzati sulla modifica dello stile di vita, sulla sana alimentazione, sull'esercizio fisico, e sul benessere psicologico. Affrontando sia i fattori fisici che psicosociali si vuole ridurre il rischio di futuri eventi cardiaci, migliorare la capacità funzionale ed aumentare l'aderenza ai progetti riabilitativi.

Conclusioni: vengono discusse le prospettive future per favorire nella persona una sempre maggiore consapevolezza del suo stato di salute e un atteggiamento proattivo verso la cura di sé.

Introduction

Cardiovascular Diseases (CVD) remain a major cause of morbidity and mortality worldwide, representing a significant burden on healthcare systems and societies. Ischemic heart disease, valvular heart disease, and heart failure are among the most common cardiovascular diseases, sometimes characterised by distinct pathophysiological mechanisms but often sharing common risk factors and clinical presentations.

Following a cardiovascular event, patients may experience a decline in quality of life, both physically and emotionally. The physical limitations imposed by CVD can lead to a reduction in functional capacity and to experiencing pain and fatigue.[1] In addition, the psychological impact of a heart attack or severe heart failure can be profound, manifesting in anxiety, depression, and fear of recurrence.[2] The social consequences of CVD are also significant, including increased healthcare costs, loss of productivity, and stress for family members and caregivers. The growing need for cardiac

rehabilitation services is driven by an aging population and the increasing incidence of cardiovascular events. As life expectancy rises and lifestyle-related risk factors become more prevalent, the demand for effective rehabilitation programs continues to grow.

To address the complex needs of patients with CVD, a multidisciplinary approach to rehabilitation is essential. A well-coordinated team, including rehabilitation physicians, organ specialists, psychologists, nurses, physiotherapists, and other dedicated figures, can promote a comprehensive recovery process. Each team member brings unique expertise and contributes to the overall goals of cardiac rehabilitation, which include improving functional capacity, reducing symptoms, preventing future events, and improving quality of life.[3]

This paper aims to describe the multidisciplinary approach in the Cardiological Rehabilitation SSD of the Alessandria University Hospital (AOUAL). Particular attention will be paid to the importance of communication regarding the secondary prevention of cardiovascular events carried out, in an integrated manner, through a group intervention involving all the figures of the treating team. Finally, some lines of future development will be proposed which, starting from the interventions already implemented, it would be interesting to implement in order to favour an increasingly interdisciplinary care of the cardiopathic patient.

The role of multidisciplinary patient care in cardiac rehabilitation

Given the complexity of the cardiac patient, it is important that a global approach is implemented, involving different professional figures. This integrated and multidisciplinary approach aims to slow down or even reverse the progress of the disease.[3,4]

In the rehabilitation team, the rehabilitation cardiologist supervises patient care and provides medical indications, integrating them with the interventions of the other team members. To manage risk factors and prevent complications, pharmacological interventions, such as anti-platelet agents, beta-blockers and statins, are often prescribed.

Physicians are supported by physiotherapists, who are fundamental to the development of exercise programs, with both a technical evaluative and habilitative-rehabilitative role. Physiotherapeutic rehabilitation after cardiac surgery or a heart attack often starts with early and gradual mobilisation, which is essential to prevent complications such as venous thrombosis or pneumonia. Following this, specific personalized rehabilitation programs are introduced to improve cardiorespiratory performance. Physical activity is essential in cardiac rehabilitation and offers numerous benefits to patients with CVD. Regular exercise can improve cardiac function, increase exercise tolerance, reduce symptoms, and improve general well-being. Individualized exercise programs supervised by qualified professionals can be implemented safely and effectively in most patients.[5]

Other prominent figures in the rehabilitation team are nurses and social health workers who, in addition to providing daily care to the patient, ensure that the patient and the caregiver convey and understand the messages concerning adherence to treatment and self-care.

Parallel to physical rehabilitation, appropriate education on healthy lifestyles is essential. In this regard, nutritional counselling can be useful to provide personalised dietary advice, which is essential to control risk factors such as hypertension and cholesterol, or to improve nutritional status. In fact, a healthy diet is another essential component of secondary prevention. The Mediterranean diet, characterised by a high intake of fruit, vegetables, whole grains, and healthy fats, has been shown to reduce the risk of cardiovascular events. Dietary changes should focus on reducing sodium intake, limiting saturated fats, and increasing fibre intake.[6,7]

Cardiovascular events also have a profound impact on individuals, families, and society. In particular, there is growing evidence that patients who have suffered cardiovascular events also have to deal with the consequences of their disease from a psychological point of view.[8] It has been shown that heart patients are more likely to suffer from anxiety, depression, and post-traumatic stress disorder.[9,10] In addition, when the individual is subjected to excessive or too prolonged stress, his or her adaptive capacities can be overwhelmed; this can cause a state of imbalance, resulting from a real or perceived disparity between the demands of the surrounding environment and the personal ability to withstand these demands.[4] A poor social support network, and lack of friendships or recreational activities (hobbies, sports, interests) may reduce the subject's resilience, increasing the risk of cardiovascular events.[11] For these reasons, a key role is also played by the psychologist, who offers fundamental emotional support to face the challenges related to the disease. The psychologist helps the patient to manage anxiety, depression, and other emotional states that may arise following a cardiac event. Furthermore, he/she promotes adherence to therapies, and lifestyle modification and fosters effective communication between the patient and the various healthcare professionals. He/she can support the patient in identifying and managing risk factors, promoting sustainable lifestyle changes, focusing on the individual's resources and coping skills, and implementing the correct self-management of rehabilitation treatments based on individual characteristics. Thanks to his/her intervention, the patient can better process the trauma of the event and customise his own treatment pathway.[12]

It is, therefore, clear that a multidisciplinary approach to rehabilitation, combined with effective secondary prevention strategies, is essential to optimise outcomes and improve patients' quality of life. By addressing the physical, psychological, and social consequences of these events, healthcare professionals can help patients live longer and healthier. The various professionals involved work together to rehabilitate the person in its various components. Therefore, participating in a rehabilitation program after cardiac surgery or a heart attack offers numerous benefits for the person's health.[3,13]

Materials and Methods

The experience of the multidisciplinary educational group in the Cardiology Rehabilitation Department (Borsalino Hospital), Alessandria University Hospital

The cardiological rehabilitation project proposed by the AOUAL aims to promote a global and multidisciplinary approach to the patient.

In addition to the individual interventions of the various professional figures of the treating team, since the opening in 2010 of the SSD Cardiorespiratory Rehabilitation in Borsalino Rehabilitation Centre, an integrated and multidisciplinary approach to the patient has been implemented by organizing educational groups for patients, involving the various figures of the treating team, also open to families. In the early years, group meetings included external volunteers from the heart patients' association, together with the department's cardiologist, psychologist, and physiotherapists. In addition to the

group activities, an «information brochure for cardiology rehabilitation patients» was also drawn up.

In addition to the group intervention, a psychological screening has been carried out on patients to assess their levels of anxiety and depression, through scales such as the Hospital Anxiety and Depression Scale (HADS)[14] and further psychological interviews on issues such as perception of illness, coping and self-efficacy resources, social and/or family support, propensity to adhere to rehabilitation indications, and expectations regarding return to daily life.

To date, the group intervention has been increasingly structured and integrated within the SSD Cardiology Rehabilitation, involving all members of the treating team. It is carried out every two weeks, with an average of eight patients participating per session. The multidisciplinary group has continued to take place until now, except for the emergency period due to the COVID-19 pandemic.

A distinctive feature of the multidisciplinary group lies in the attention given to the relationship and communication dynamics with respect to secondary prevention, with the aim of providing information and in-depth education on cardiovascular diseases. Through the group meetings, patients can learn about the distinct types of heart diseases, their causes, and how they affect daily life. An important focus is placed on modifiable risk factors, such as hypertension, high cholesterol, smoking, and diabetes. This empowers patients to effectively manage these conditions and reduce the risk of future complications. Another pillar of the multidisciplinary team is physical activity. Personalised, safe, and effective exercise plans are proposed, which can be incorporated into each patient's routine to improve cardiovascular health and quality of life. At the same time, we promote a healthy lifestyle, providing guidance on proper nutrition, stress management, and other heart-healthy habits that can help prevent future cardiovascular events. Finally, ample space is dedicated to psychological well-being. Patients are helped to become aware of their emotions and resources and to develop effective coping strategies to face daily challenges.

In summary, the aim of the multidisciplinary group is to provide people who participate with the knowledge and tools necessary to better manage their cardiovascular health and improve their quality of life.

This group meeting involving the various figures of the rehabilitation team also allows for the creation of a more significant relationship between the patient and his or her caregivers. In the days following the group, it will be possible to individually discuss with each professional figure in the team, the specific aspects that the person wishes to deepen regarding his or her current clinical and rehabilitation situation.

During the morning rounds, cardiologists and nurses can provide further information regarding the progression of the clinical and rehabilitation status, answering any doubts and fears that the person may express with respect to both his or her current condition and recovery prospects.

In gym sessions with physiotherapists, on the other hand, it is possible to investigate issues concerning functional recovery and exercise, also with respect to the levels of impact on autonomy in daily life.

With regard to the psychological aspects, further individual psychoeducational meetings are proposed to help patients cope with the event that has occurred and the psychological adaptation to the new condition, through stabilisation techniques in the here and now and stress management (such as deep breathing and some mindfulness and compassion meditation practices).[15-17] This helps to modulate the hyperactivation of the threat-protection system (such as distress and anxiety), to observe one's own needs and ways of responding to the stress related to the critical event that has occurred, and to identify all those resources of positive affectivity[18-20] and activation of the calming system[21] that are useful to face the present moment with awareness and self-compassion.

The experience gained over the years through the performance of multidisciplinary groups has led us to observe some recurring themes. First of all, the patients we meet in the group often report a state of confusion about what happened to them and states of worry and anxiety inherent in being able to safely resume the activities carried out previously. In these cases, communication that focuses on restrictions/limitations and the register of self-criticism could amplify threat protection and alarm mechanisms.[22] For this reason, in the group, we tend to adopt an approach aimed at promoting motivation for self-care through the strengthening of the calming system. An attitude of trust and openness to questions and fears is fostered, and a communicative register aimed at self-compassion is used. This allows pragmatic learning of actions that the person can implement to promote the improvement of his or her condition. We have noticed that this type of approach allows patients to facilitate the transition from the first phase of reaction to the critical event, characterised either by confusion and a passive attitude, or by hyperactivity and alarm, to a state of greater centredness, awareness and openness to sharing. This allows the person to integrate the information received and perceive greater coherence and predictability with respect to their condition. This fosters the exploration of new and more functional ways of adaptation, that allow one to cope with the impact of the event and subsequently learn to live with what has happened.[23]

By combining multidisciplinary patient education with individual rehabilitation programs, our cardiological rehabilitation group project in Alessandria aims to facilitate greater patient knowledge of their health condition, which is not just "information" but promotes an "awareness" of their needs and resources and more active control of their health.

Critical issues and future perspectives

In rehabilitation projects, the enhancement of the aspects of information, education, and humanization of care is supported by evidence and guidelines.[3,12,24]

It is important that the approach to the person in cardiac rehabilitation is characterised by a transversal and multidisciplinary approach to care, which requires not only technical skills but also communication and interpersonal skills.

On the other hand, the complexity and heterogeneity of the needs of people arriving in rehabilitation poses critical issues to be considered when taking charge.

From a medical point of view, the arrival in rehabilitation of patients at an early stage can lead to a greater risk of clinical instability, necessitating different approaches of intensity of care. This may imply, for the healthcare staff, the need to frequently readjust the rehabilitation project and, for the patients, the impossibility of following the programmes continuously.

Similarly, the increasing fragility of hospitalised patients and advanced age are other factors that can interfere with learning, due to cognitive limitations, and with the adherence to individual rehabilitation programs.

Population aging, coupled with a rise in cardiovascular events among an increasingly frail and comorbid population, needs expanded resources for inpatient rehabilitation. This includes more beds,

healthcare workers, and physicians. The lack of staff resources, which increases the workload, sometimes makes continuous and customised intervention difficult, also creating potential priority problems. These demands are particularly challenging in the context of economic constraints and resource limitations. The healthcare system operates within the constraints imposed by limited public health budgets, which can impose restrictions on the funding available for specialised programs such as cardiac rehabilitation. Governments often prioritize acute care over preventive and rehabilitative services, resulting in underfunding for the latter. The excessive costs associated with cardiac care, including advanced medical treatments, medications, and human resources, place a substantial financial burden on healthcare systems. This burden can limit the allocation of resources for comprehensive rehabilitation programs. Inpatient rehabilitation facilities often struggle with space limitations, which restrict the number of beds available for cardiac rehabilitation patients. This can result in longer wait times and reduced access to necessary care. It is imperative that rehabilitation centres have access to the most advanced medical technology and exercise equipment in order to ensure effective treatment. However, the costs associated with procuring and keeping advanced equipment can be prohibitive. A critical shortage of healthcare workers poses a significant challenge to delivering high-quality cardiac rehabilitation.

Moreover, socioeconomic disparities can impact patients' ability to access cardiac rehabilitation services. Economic constraints and staff shortages often result in a higher focus on inpatient care, leaving outpatient rehabilitation services under-resourced. This imbalance has the potential to hinder the provision of ongoing support and monitoring to a significant number of patients following their initial period of hospitalisation. This underscores the need to identify alternative solutions, such as telemedicine and Artificial Intelligence (AI), allowing patients who do not require inpatient rehabilitation to undergo rehabilitation at home with remote healthcare supervision through applications.

Another critical issue is that the team might use different languages, terminologies, and communication styles, leading to misunderstandings and misinterpretations of the messages conveyed. Coordinating programs and treatment plans among different specialists may be complex, leading to delays or inconsistencies in patient care. Staff and patients may not be clear about the specific roles and responsibilities of each team member, leading to confusion and inefficiencies.

Ensuring that patients are actively involved and motivated in their rehabilitation process can be difficult, especially if they are dealing with emotional or psychological problems.

Different backgrounds can lead to cultural and language barriers, affecting the effectiveness of educational and rehabilitation efforts.

Addressing informational, emotional, and psychological needs is therefore fundamental but can be difficult, especially if specialised support is lacking. The role of the psychologist within a rehabilitation team is, therefore, fundamental and goes far beyond mere psychological assistance to the person. He or she is a figure who acts as a bridge between the physical and emotional worlds, facilitating communication and mutual understanding between all the actors involved: patient, family, and healthcare professionals.

The psychologist does not merely assess and support the patient from a psychological point of view but becomes a real mediator. He translates the patient's fears, anxieties, and needs into a language that the doctors can understand and vice versa, making medical information and therapeutic choices clearer for the patient. In this way, the psychologist contributes to creating a climate of trust and collaboration within the team, facilitating the construction of a personalised and more effective rehabilitation pathway. Furthermore, he or she helps the patient deal with the emotional challenges related to the disease, promoting a healthier adaptation and an improvement in quality of life. It also supports family members, who often face a very intense emotional burden, by offering them tools to better manage this situation.

However, there are still some obstacles that limit the integration of psychologists into healthcare teams. Sometimes, medical priorities may prevail over the psychological component, especially in emergency situations or when resources are limited. Moreover, the risk of an "on-call" psychological intervention may be that it is understood by the sender from a predominantly "biomedical" perspective, with the expectation of identifying psychopathological aspects to set up a psychopharmacological treatment.

Overcoming these limitations requires a joint effort by all the actors involved, from health institutions to health professionals. It is essential to invest in training, promote collaboration between the various professional figures, and develop innovative organisational models that enhance an interprofessional approach of all the figures involved.[25]

In the specific field of cardiological rehabilitation within the Borsalino Hospital, it would also be interesting to implement other interventions, in addition to the educational multidisciplinary group, both for therapeutic purposes in the psychological field and for promoting the humanisation of care.

In the first case, psychological groups could be designed to offer patients a space to share their concerns, fears, and doubts, but also to identify resources and effective adaptation strategies that consolidate skills and attitudes of self-care and self-compassion.[26,27]

In the second case, medical humanities interventions could be increasingly favoured, facilitating the process of reliance, decompression with respect to distress, and feeling of being in a welcoming environment.[28] At the moment, in the cardiology rehabilitation ward, there is a living room that is also used as a library, but it would be desirable to implement the use of this space, giving the possibility of listening to music, watching films in a group, setting up an area with board games, and allowing the consultation of information leaflets with respect to all those topics that are already addressed in the educational multidisciplinary group. In addition, it would be desirable to extend the rehabilitative interventions also in the external environment of the Borsalino Hospital, for example by using the Sensory Garden. In fact, it is increasingly evident how therapeutic green and outdoor activities bring benefits to the cardiac rehabilitation process.[29]

Finally, given the increasing complexity of patients undergoing cardiac rehabilitation, it would be important to design follow-up interventions to monitor their psychophysical state after their return to life at home, perhaps also using means such as telemedicine and narrative medicine.[30-32]

In this regard, our department is exploring the implementation of a tele-rehabilitation program, an approach successfully adopted in other medical centres. Such a program would broaden the scope of cardiac rehabilitation for post-discharge patients through the use of mobile health technologies. Patients would receive wearable sensor devices, including pulse oximeters, blood pressure monitors, and ECG-enabled smartwatches, after comprehensive training. At home, exercise routines guided by video tutorials would be complemented

by physiological data transmission from the wearables to a centralized monitoring hub, enabling physicians to remotely track patient progress and conduct virtual consultations as necessary. The program may also include a structured three-month follow-up period featuring telemedicine reassessments culminating in a final in-person evaluation.

This model provides a scalable solution for continuous cardiac care post-hospitalization, effectively reducing the reliance on on-site resources. We are also considering hybrid pre-rehabilitation strategies which integrate in-person sessions with remote telemedicine interventions to optimize surgical outcomes. These programs would encompass exercise regimens, patient education, and remote physiological monitoring, aiming to enhance functional capacity, alleviate anxiety, manage comorbidities, shorten hospital stays, improve postoperative recovery, and maximize rehabilitation outcomes. Telemedicine enhances both the accessibility and personalization of care. We plan to utilize Artificial Intelligence to refine patient education on health-promoting lifestyle choices. We advocate for patient-centric interventions that foster active participation and a humanistic approach to care. Our centre remains committed to delivering comprehensive and innovative cardiac rehabilitation. Through the integration of cutting-edge telemedicine solutions and AI, we aim to elevate patient care and ensure long-term wellness. Ultimately, we seek to emphasize the importance of adopting experimental paradigms that leverage technological advancements to improve patient outcomes.

Conclusions

To conclude, we would also like to emphasise the need to implement experimental research projects that make evident and quantify the benefits, for patients and caregivers, resulting from the adoption of a model of global care of the person within the cardiological rehabilitation centre of the Borsalino Hospital.

References

1. Visseren FL, Mach F, Smulders YM, et al. 2021 ESC Guidelines on cardiovascular disease prevention in clinical practice: developed by the task force for cardiovascular disease prevention in clinical practice with representatives of the European Society of Cardiology and 12 medical societies with the special contribution of the European Association of Preventive Cardiology (EAPC). European Heart Journal 2021;42:3227-337.
2. Celano CM, Villegas AC, Albanese AM, et al. Depression and anxiety in heart failure: a review. Harvard Review of Psychiatry 2018;26:175-84.
3. Ambrosetti M, Abreu A, Corrà U, et al. Secondary prevention through comprehensive cardiovascular rehabilitation: from knowledge to implementation. 2020 update. A position paper from the Secondary Prevention and Rehabilitation Section of the European Association of Preventive Cardiology. European Journal of Preventive Cardiology 2021;28:460-95.
4. Giannuzzi P, Temporelli PL, Marchioli R, et al. Global secondary prevention strategies to limit event recurrence after myocardial infarction: results of the GOSPEL study, a multicenter, randomized controlled trial from the Italian Cardiac Rehabilitation Network. Archives of Internal Medicine 2008;168:2194-204.
5. Dibben GO, Faulkner J, Oldridge N, et al. Exercise-based cardiac rehabilitation for coronary heart disease: a meta-analysis. European Heart Journal 2023;44:452-69.
6. Sofi F, Abbate R, Gensini GF, Casini, A. Accruing evidence on benefits of adherence to the Mediterranean diet on health: an updated systematic review and meta-analysis. The American journal of Clinical Nutrition 2010;92:1189-96.
7. Vassiliou VS, Tsampasian V, Abreu A, et al. Promotion of healthy nutrition in primary and secondary cardiovascular disease prevention: a clinical consensus statement from the European Association of Preventive Cardiology. European Journal of Preventive Cardiology 2023;30:696-706.
8. Wels J, Korda RJ, Joshy G, et al. Psychological distress and ischaemic heart disease: cause or consequence? Evidence from a large perspective cohort study. J Epidemiol Community Health 2017;71:1084-9.
9. Akosile W, Colquhoun D, Young R, et al. The association between post-traumatic stress disorder and coronary artery disease: a meta-analysis. Australasian Psychiatry 2018;26:524-30.
10. Peter RS, Meyer ML, Mons U, et al. Long-term trajectories of anxiety and depression in patients with stable coronary heart disease and risk of subsequent cardiovascular events. Depression and Anxiety 2020;37:784-92.
11. Sommaruga M. Positive affectivity and cardiovascular health. Monaldi Arch Chest Dis 2010;74:1-8.
12. Gruppo tecnico di lavoro "Psiche e cuore". Interventi psicologici in cardiologia. Indicazioni per la pratica professionale e per un nuovo approccio normativo. Quaderno CNOP, 2024, Roma, Italy. Available from: https://www.psy.it/wp-content/uploads/2024/09/CNOP-N_11.pdf
13. Taylor RS, Fredericks S, Jones I, et al. Global perspectives on heart disease rehabilitation and secondary prevention: a scientific statement from the Association of Cardiovascular Nursing and Allied Professions, European Association of Preventive Cardiology, and International Council of Cardiovascular Prevention and Rehabilitation. European Heart Journal 2023;44:2515-25.
14. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. Acta Psychiatrica Scandinavica 1983;67:361-70.
15. Loucks EB, Schuman-Olivier Z, Britton WB, et al. Mindfulness and cardiovascular disease risk: state of the evidence, plausible mechanisms, and theoretical framework. Current Cardiology Reports 2015;17:1-11.
16. Izanloo M, Peyvandi P, Borjali A, et al. Comparison of the effectiveness of compassion-focused therapy and mindfulness-based stress reduction on cognitive emotion regulation among patients with coronary heart disease. Journal of Vessels and Circulation 2020;1:31-9.
17. Morgenroth O, Petersen LE, Frey N, Reinecke A. The predictive value of self-compassion for psychological adjustment in left ventricular assist device patients: an observational study. ESC Heart Failure 2022;9:2378-87.
18. Davidson KW, Mostofsky E, Whang W. Don't worry, be happy: positive affect and reduced 10-year incident coronary heart disease: the Canadian Nova Scotia Health Survey. European Heart Journal 2010;31:1065-70.
19. Huffman JC, Mastromauro CA, Boehm, JK, et al. Development of a positive psychology intervention for patients with acute cardiovascular disease. Heart International 2011;6:hi.2011.e13a.
20. Huffman JC, Beale EE, Celano CM, et al. Effects of optimism

and gratitude on physical activity, biomarkers, and readmissions after an acute coronary syndrome: the gratitude research in acute coronary events study. Circulation: Cardiovascular Quality and Outcomes 2016;9:55-63.
21. Gilbert P, Simos G (eds.). Compassion-focused therapy: clinical practice and applications. Routledge, Abingdon-on-Thames, UK, 2022.
22. Gilbert P. The compassionate mind. Robinson, London, UK, 2009.
23. Giannantonio M. Psychotraumatology: fundamentals and operational tools. Edi.Ermes, Milan, Italy, 2009.
24. Dusseldorp E, Van Elderen T, Maes S, et al. A meta-analysis of psychoeducational programmes for coronary heart disease patients. Health Psychology 1999;18:506.
25. Lazzari D. Health psychology and chronic illness. Evidence-based interventions and disease management. Pacini Medica, Pisa, Italy, 2011.
26. Zou H, Cao X, Chair SY. A systematic review and meta-analysis of mindfulness-based interventions for patients with coronary heart disease. Journal of Advanced Nursing 2021;77:2197-213.
27. Neff KD. Self-compassion: theory, method, research, and intervention. Annual Review of Psychology 2023;74:193-218.
28. Burrai F, Micheluzzi V, Apuzzo L. Humanisation of care: innovation and care model. Journal of Clinical Nephrology and Dialysis 2020;32:47-52.
29. Shukor SFA, Amat NSA, Maulan S, Sa'Ari MY. The use of green outdoor environments for cardiac survivors' rehabilitation therapy. In: Bridging the Gap. ECLAS Conference, Rapperswil, Switzerland, 2016.
30. Milota MM, Van Thiel GJ, Van Delden JJ. Narrative medicine as a medical education tool: a systematic review. Medical Teacher 2019;41:802-10.
31. Fioretti C, Mazzocco K, Riva S, et al. Research studies on patients' illness experience using the Narrative Medicine approach: a systematic review. BMJ Open 2016;6:e011220.
32. Charon R. Narrative medicine: a model for empathy, reflection, professionalism, and trust. JAMA 2001;286:1897-902.

Correspondence: Stefano Migliorisi, Ospedale Borsalino, Piazzale Ravazzoni 3, 15121 Alessandria (AL), Italy.
E-mail: migliorisi.stefano@gmail.com

Authors' contributions: all the authors made a substantive intellectual contribution. All the authors have read and approved the final version of the manuscript and agreed to be held accountable for all aspects of the work.

Conflict of interest: the authors declare no potential conflict of interest.

Funding: none.

Ethics approval and consent to participate: all procedures performed in studies involving human participants were in accordance with the ethical standards of the Institutional Research Committee and with the 1964 Helsinki Declaration and its latest amendment.

Informed consent: written informed consent was obtained from legally authorized representative(s) for anonymized patient information to be published in this article.

Availability of data and materials: all data generated or analyzed during this study are included in this published article.

Received: 18 November 2024.
Accepted: 11 March 2025.

Publisher's note: all claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article or claim that may be made by its manufacturer is not guaranteed or endorsed by the publisher.

Licensee PAGEPress, Italy
Working Paper of Public Health 2025;13:10190
doi:10.4081/wpph.2025.10190