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INVITED EDITORIAL

Cardiovascular disease and mental health: a dangerous duo?

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This editorial refers to 'Screening for anxiety and depression in clinical practice: translating scores from World Health Organization-5/Anxiety Symptom Scale-2/Major Depression Inventory-2 to Hospital Anxiety and Depression Scale', by N.F. Johnsen *et al.*, https://doi.org/10.1093/eurjpc/zwad180.

Psychiatric disorders represent a major healthcare burden, affecting as many as one of five adults during their lifetime, with relevant consequences on cardiovascular care. Indeed, on top of being extremely prevalent among patients with cardiovascular disease, significantly impacting on quality of life and representing a major cause of morbidity, mental disorders constitute a major risk factor for developing major adverse cardiovascular events.[1–3] Major depression, in particular, is associated with reduced quality of life and increased mortality, and even more so among individuals with established cardiovascular disease.[4]

Notably, among patients who suffered from myocardial infarction, major depression is as prevalent as 20%,[5,6] being associated with significantly worse outcomes.[7] Furthermore, those with established cardiovascular disease and also receiving a diagnosis of major depression have a 2–4 times higher risk of recurrent adverse cardiovascular event at follow-up.[7–10] Anxiety disorder as well is a widespread condition with a roughly 20% prevalence in the general population. The detrimental role of such specific psychiatric condition with respect to cardiovascular health has been demonstrated by a recent meta-analysis, showing that anxious persons have a risk of cardiac death roughly double with respect to general population.[11]

Among the mechanisms able to explain the interaction among psychiatric and cardiac disorders, a pivotal role is thought to be played by dysregulation both of autonomous nervous system and the hypothalamic-pituitary-adrenal axis, with increasing levels of cortisol and cathecholamines, both plasmatic and urinary, and a decreased heart rate variability, with higher mean and average daily heart rate. Alongside such detrimental effects on physiology, it is worth mentioning the behavioural effect of major depression and anxiety, with higher tendency of the patient towards unhealthy lifestyles such as cigarette smoking, poor dietary habits, lack of physical activity, and low adherence to medical therapy. Such amount of evidence led American Heart Association in 2014 to mention depression among risk factors related to poor prognosis after acute coronary syndrome.[12]

Despite the prevalence and relevance of such disease, a recent questionnaire showed how diagnosing and treating depression is often felt as beyond the scope of everyday clinical practice, as nearly half of the colleagues felt not comfortable with making diagnosis of depression during clinical practice as well as treating depression. Nonetheless, screening for depression in cardiovascular patients has been advocated in recent international guidelines,[13,14] and given the availability of efficacious treatment, is a worthy target to be pursued for the sake of improving patient's quality of life.

To this purpose, Johnsen *et al.* report in this issue of the Journal a timely and important study addressing the relevant issue on how to effectively screen patients with cardiovascular disease for anxiety and depression.[15] As a matter of fact, the adoption of an effective screening tool should represent a trade-off between diagnostic accuracy and ease of use. Over 10 000 patients with a cardiovascular diagnosis (either atrial fibrillation, heart failure, heart valve disease, or ischaemic heart disease) from the Danish National Patient Register were offered a dedicated survey including 51 questions, comprising validated questionnaires such as Anxiety Symptom Scale-2 (ASS-2), Hospital Anxiety and Depression Scale (HADS), Major Depression Inventory-2 (MDI-2), and World Health Organization-5 (WHO-5), thanks to the cooperation of several healthcare providers. After pilot testing, the questionnaire in 1% of the sample was sent over, receiving over 4000 responses. Such a strenuous effort made it possible to obtain conversion tables enabling cross-walk among HADS-A and WHO-5/ASS-2, on one hand, and HADS-D and WHO-5/MDI-2, on the other. Using bi-factor confirmatory factor analysis, it was possible to obtain translation tables to estimate HADS values specific to each cardiovascular condition, starting from different combinations of ASS, MDI-2, and WHO-5 (*Figure 1*).

Despite being clinically validated, with higher score values clearly linked to worse cardiovascular prognosis; HADS is worldwide protected by copyright laws, a feature that has severely limited its use. The availability of a questionnaire relatively easy to administer might certainly contribute to a more widespread use of such an important tool, minimizing the percentage of cardiovascular patients suffering from psychiatric disorders, with a significant impact both on quality

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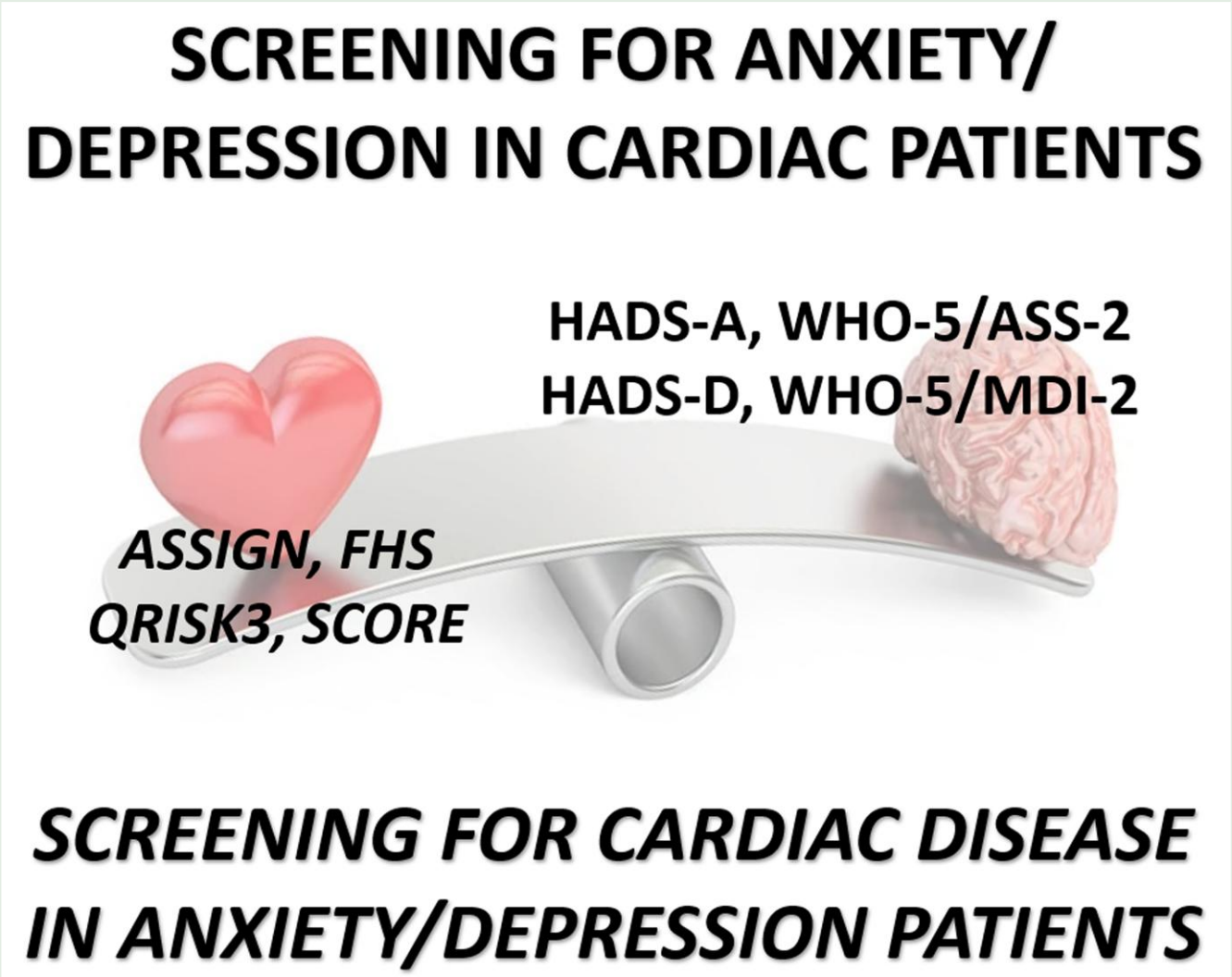

Figure 1 Balancing screening for anxiety or depression among patients with or at risk of cardiovascular disease, and screening for cardiovascular disease among individuals with or at risk of anxiety or depression. ASS-2, Anxiety Symptom Scale-2; FRS, Framingham Risk Score; HADS, Hospital Anxiety and Depression Scale; MDI-2, Major Depression Inventory-2; WHO-5, World Health Organization-5.

of life and prognosis. As the authors clearly acknowledge, the proposed test is the result of the combination of three different questionnaires, two of which are negatively phrased with the other one positively phrased, making it necessary for healthcare providers to avoid misunderstandings while administering the questionnaire. Other tools are available as well: whereas the European Society of Cardiology does not mention a specific questionnaire for depression and anxiety screening,[12] the American Heart Association endorses screening of all patients with coronary artery disease with Patient Health Questionnaire (PHQ)-2, and to test with 9-item PHQ-9 only those who test positive.[13,14] Regardless of the chosen test, further effort is required in those cases in which the test results positive in order to properly provide high-quality psychiatric support: a multidisciplinary approach should be considered with referral of patients to mental health specialists, especially if there is substantial risk of harm either to self or others.

In conclusion, the improvement of survival and quality of life after diagnosis of cardiovascular disease has been made possible at the expense of a path that the patient has to go through, comprising repeated medical consultations, rigorous control of risk factors, and strict adherence to medical therapy, as even the most sophisticated drugs do not work if not assumed by the patient. Good mental health and positive patient–physician relationship are key to boost outcomes, benefiting the most from therapeutical advances in the cardiovascular field, and this holds even truer in the current pandemic era.[16] For this reason, screening for depression and anxiety in cardiovascular patients is beneficial. Several validated clinical questionnaires are already available, and the study by Johnsen *et al.* adds a novel, free-to-use tool that might be implemented in everyday clinical practice, aiming to a patient-centred, holistic approach in the treatment of cardiovascular diseases.

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