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## **The influence of maladaptive psychological processes on inflammatory bowel disease**

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The negative impact of inflammatory bowel disease-related symptomatology on patients' quality of life and level of psychopathology has been reported by several studies. Indeed, IBD is known to hold detrimental effects on the physical and psychosocial functioning of the patients, even when the disease is inactive. Nevertheless, the analysis of the psychological mechanisms that may underlie these effects is yet scarcely developed, even though it has been considered an especially relevant field. We have therefore explored the role of maladaptive psychological processes in IBD using samples of Portuguese patients with Crohn's Disease and Ulcerative Colitis. Our findings have demonstrated that experiential avoidance i.e., one's unavailability to accept internal events such as sensations, thoughts or emotions while trying to control them, mediates the relationship between IBD symptomatology and physical and psychological quality of life. That is, it seems that when patients try to control or avoid sensations like pain or discomfort or thoughts related to the illness or its symptoms, this strategy holds a paradoxical nature and heightens the effect of those internal experiences on patients' well-being. Furthermore, we have also recently found that cognitive fusion (the excessive attachment to the content of one's thoughts) and brooding (a form of rumination defined as the repetitive focused attention on one's distress and on its possible causes and consequences) act as significant exacerbators of the association between symptomatology and depression. In fact, for the same level of IBD symptomatology, patients who presented higher levels of those maladaptive processes revealed a significantly higher incidence of depressive symptomatology. These findings suggest that rather than focusing solely on a physical and objective evaluation and approach of patients' IBD symptomatology, clinicians should also focus on the way patients deal with their symptoms in order to be able to identify maladaptive emotion regulation processes (e.g., persistent patterns of inflexible thoughts relating to the limitations and consequences of the disease and or its symptoms; inflexible efforts to avoid or control inner experiences). Furthermore, our results also highlight that psychological interventions that focus on the promotion of adaptive emotion regulation processes to deal with adverse and stressful events should be developed and implemented in IBD patients' health care.

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## **Novel non-invasive diagnostic biomarkers of inflammatory bowel disease**

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Diagnosis of inflammatory bowel disease (IBD) requires complex and invasive investigations and places a heavy burden, both on healthcare resources, because of the cost, and on the individual, in times of disease-related disability and poor quality of life. Recently, there has been increasing interest in non-invasive biomarkers to diagnose and monitor the disease activity. Since the introduction of biological therapies, an increasing number of studies have focused on the utilization of non-invasive biomarkers of inflammation. Among the more extensively investigated are standard serum markers such as CRP, and faecal biomarkers, such as faecal calprotectin (FC) and lactoferrin (FL). In general, although there are some limitations as these markers are also raised in systemic infection / inflammation, colorectal cancer, NSAID-induced bowel inflammation and polyps. The development of sophisticated analytical techniques has enabled the study and interpretation of changes in the faecal volatile organic metabolites (VOMs) and its correlation with the pathophysiological mechanisms in the gut. VOMs are the chemicals that are the products and intermediates of metabolism and may be altered in different bowel diseases. Changes in faecal VOMs should reflect GI disorders and could potentially provide diagnostic information about these conditions. Multiple studies reported the differences in VOM profiles of healthy controls vs. patients with active and inactive IBD. VOM profiles have been used to segregate patients by disease activity and, in the case of colitis, the type of disease. The correlation of VOMs with microbiota is interesting and supports the hypothesis of gut microbial dysbiosis in the etiology of IBD. This provides an important platform to explore the role of dysbiosis in IBD pathogenesis and development of novel therapeutic targets. In future, further understanding of faecal VOMs may lead to the development of a rapid and simple point of care diagnosis and monitoring of IBD.

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