



## Psychosocial and organic alarm as a method for early differentiation of colorectal cancer symptoms from functional disorders: preliminary results

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### Summary

Functional gastrointestinal disorders (FGIDs) are a major burden in primary health care. Clinicians recognize organic alarm symptoms, but often overlook psychosocial alarm factors in daily practice.

*Objective:* To present preliminary results on the importance of psychosocial alarm in patients with FGIDs and to emphasize its importance in primary care for early identification of vulnerable patients in terms of differentiating functional disorders in relation to early detection of colorectal cancer in primary health care.

*Methods:* This study is based on longitudinal clinical and epidemiological data collected in primary health care settings. Psychosocial distress was assessed using structured clinical interviews and standardized questionnaires addressing stress, anxiety, depressive symptoms, social vulnerability, and health-related quality of life. It is important to distinguish functional disorders from early symptoms of colorectal cancer in a timely manner. The questionnaire for alarm is a tool for early warning, used in conjunction with occult blood testing (Hemoccult/Hemognost), and is one of the initial methods for early detection of colorectal cancer.

*Results:* Patients with FGIDs often showed pronounced characteristics of psychosocial distress, including increased psychological distress, impaired coping mechanisms, and increased health care utilization. Psychosocial distress factors often preceded or followed gastrointestinal symptoms and significantly influenced symptom severity, chronicity, and patients' perception of their illness. Primary care physicians are responsible for promptly distinguishing functional disorders from early symptoms of colorectal cancer.

Psychosocial alarm is a key part of assessing FGIDs and should be standard in primary care. Early recognition allows timely psychosocial intervention and may prevent unnecessary tests and chronic disease progression. Our main goal is to separate functional disorders from early colorectal cancer signs.

**KEYWORDS:** *psychosocial alarm, functional gastrointestinal disorders, colorectal cancer, primary health care*

### INTRODUCTION

Functional gastrointestinal disorders (FGIDs) are one of the most frequent reasons for consultation in primary care. They include irritable bowel syndrome, functional dyspepsia, and functional constipation. These conditions are marked by

chronic or recurrent symptoms. No identifiable structural or biochemical abnormalities are present(1-4). Despite being benign in organic terms,

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FGIDs cause substantial quality-of-life impairment, high healthcare use, and major socio-economic burden(5–7).

In clinical practice, much attention is given to organic alarm symptoms. These include unintended weight loss, gastrointestinal bleeding, anaemia, or a family history of malignancy. Such signs guide urgent diagnostic procedures to exclude serious disease(8,9). Psychosocial alarm factors receive far less systematic attention, despite evidence that psychological distress, social vulnerability, and poor coping are key in FGID onset, persistence, and severity(1,5–7).

Psychosocial alarm means psychological and social signs of increased patient vulnerability. These include risk of chronic symptoms, poor treatment response, and excessive medical use. Indicators include anxiety, depression, chronic stress, isolation, trauma, and lower quality of life(5-7). Ignoring psychosocial alarm can lead to repeated diagnostics, inappropriate medication, and frustration for both patients and physicians(8-10).

In recent decades, the biopsychosocial model has become the dominant framework for understanding FGIDs. According to this model, gastrointestinal symptoms arise from a complex interaction between gut physiology, central nervous system processing, psychological factors, and social context(1). Psychosocial alarm is therefore not a secondary phenomenon but an integral part of disease expression and progression(1,5–7).

In primary health care, psychosocial alarm is rarely assessed in a structured way. Most clinicians rely on intuition rather than standard methods. This increases the risk of psychosocial alarm being missed, especially in patients with predominantly physical complaints(5–7).

The aim of this preliminary study is to highlight the importance of psychosocial alarm in FGID patients and show its clinical relevance for early identification of vulnerable individuals in primary health care. This paper describes results, raises awareness, and provides a framework for integrating psychosocial alarm into clinical assessment. The goal is to quickly distinguish functional disorders from early signs of colorectal cancer, without burdening physicians with complex algorithms or extensive diagnostic tools(1,10,11).

This work is a first step toward a more complete model. Later phases will include detailed

quantitative analyses, scoring systems, and clinical algorithms. For now, the aim is clarity, feasibility, and immediate use in daily practice.

## PARTICIPANTS AND METHODS

Standardized and validated instruments were used to assess functional gastrointestinal disorders and organic and psychosocial alarm features. Diagnostic groups (functional dyspepsia, irritable bowel syndrome, and functional constipation) were defined using standardized criteria and classified according to the corresponding scoring algorithms(12-16). Organic alarm was assessed using a structured alarm-symptom questionnaire(8,9). Psychosocial alarm was assessed using standardized questionnaires covering stress, anxiety, depressive symptoms, social vulnerability, and health-related quality of life(5–7).

In gastroenterology, an alarm questionnaire is used to identify alarm features (or symptoms) that distinguish functional gastrointestinal disorders (such as irritable bowel syndrome) from organic diseases (such as cancer, inflammatory bowel disease, or ulcers). The purpose is to determine whether the patient requires an urgent referral or a further diagnostic workup (e.g., endoscopy). Key warning symptoms include rectal bleeding, iron deficiency anaemia, unexplained fever, nocturnal symptoms, and unintentional weight loss. The Rome criteria for irritable bowel syndrome include them in the diagnostic questionnaire to exclude serious organic causes. The study used the Rome III Psychosocial Alarm Questionnaire(11).

A t-test was used for statistical analysis, with a significance level of  $p < 0.05$ .

The study included 2,024 respondents who returned a completed questionnaire on functional disorders: functional dyspepsia, irritable bowel syndrome, and functional constipation. Participation was voluntary and anonymous. All procedures followed ethical principles for human research and were approved by the Ethics Committee of the Faculty of Medicine in Osijek, in line with the Declaration of Helsinki (1975, revised 2000). The research took place from January 2022 to December 2024.

## RESULTS

A total of 2,700 questionnaires were distributed (900 per functional disorder: functional dyspepsia, irritable bowel syndrome, and functional constipation). Overall, 2,024 questionnaires were returned (75.0%). The response rates by group were: functional dyspepsia, 663/900 (73.66%); IBS, 703/900 (78.11%); and functional constipation, 658/900 (73.11%). Sex distribution was balanced across groups: dyspepsia, 317 men (47.81%) and 346 women (52.19%); IBS, 346 men (49.22%) and 357 women (50.78%); constipation, 309 men (46.96%) and 349 women (53.04%).

### Prevalence (Rome III)

Using Rome III criteria and the standard scoring algorithm, the highest prevalence was recorded for IBS, while the lowest was recorded for dyspepsia:

- Dyspepsia: 110/663 (16.56%); men 50/317 (15.77%), women 60/346 (17.34%).
- IBS: 205/703 (29.16%); men 74/346 (21.39%), women 131/357 (36.69%).
- Functional constipation: 146/658 (22.19%); men 75/309 (24.27%), women 71/349 (20.34%).

No statistically significant sex difference was observed for dyspepsia or constipation, while IBS was more prevalent in women.

### Organic alarm (Alarm Questionnaire)

The presence of at least one alarm symptom was significantly associated with symptoms of each disorder:

- Dyspepsia: alarm symptom presents in 32/110 (29.1%) vs 73/553 (13.2%) without dyspepsia symptoms ( $p < 0.05$ ).
- IBS: alarm symptom presents in 47/205 (22.9%) vs 48/498 (9.6%) without IBS symptoms ( $p < 0.05$ ).
- Constipation: alarm symptom presents in 33/146 (22.6%) vs 50/512 (9.8%) without constipation symptoms ( $p < 0.05$ ).

Based on t-test analyses of alarm symptom ratings, participants with dyspepsia symptoms had significantly higher mean scores for: blood in stool (1.218 vs 1.061;  $p = 0.002$ ), black stool (1.291 vs 1.080;  $p < 0.001$ ), and dysphagia (1.427 vs 1.114;  $p < 0.001$ ).

Participants with IBS symptoms had higher mean scores for: blood in stool (1.122 vs 1.048;  $p = 0.008$ ), black stool (1.220 vs 1.070;  $p < 0.001$ ), and dysphagia (1.229 vs 1.070;  $p < 0.001$ ).

In participants with constipation symptoms, all evaluated alarm symptom ratings were significantly higher, including blood in stool (1.219 vs 1.041;  $p = 0.001$ ), black stool (1.377 vs 1.086;  $p < 0.001$ ), vomiting blood (1.130 vs 1.012;  $p = 0.015$ ), and dysphagia (1.274 vs 1.113;  $p = 0.002$ ).

Anaemia was significantly associated with symptoms of each disorder:

- Dyspepsia: 19/64 (29.7%) vs 91/599 (15.2%) ( $p = 0.003$ ).
- IBS: 29/61 (47.5%) vs 176/642 (27.4%) ( $p = 0.001$ ).
- Constipation: 20/50 (40.0%) vs 126/608 (20.7%) ( $p = 0.003$ ).

Unintended weight loss (>4.5 kg in the previous 3 months) was significantly associated with IBS ( $p < 0.001$ , confirmed with Yates correction), while no significant association was observed for constipation ( $p = 0.714$ ). For dyspepsia, formal testing was not feasible due to small cell counts.

Psychosocial alarm (Rome III Psychosocial Alarm Questionnaire)

Psychosocial alarm indicators were consistently more frequent among participants who met Rome III criteria for FGIDs (11–13).

## DISCUSSION

Irritable bowel syndrome (IBS) is one of the most common functional gastrointestinal disorders (FGIDs) with a prevalence of 10 to 20% in some developed countries. Studies in Croatia have found a prevalence of IBS of 29.2% (12,13). Studies on the demographic, anthropometric, and socio-economic characteristics of functional constipation have been conducted in Eastern Slavonia (14). Numerous factors influencing functional dyspepsia have been identified (15). When investigating digestive symptoms, it is important to keep in mind clinical guidelines that suggest colorectal cancer (16). The results of this preliminary study clearly show that psychosocial alarm represents an important and often underestimated dimension in patients with functional gastrointestinal disorders. While organic alarm symptoms remain

essential for excluding serious somatic diseases such as colorectal cancer, psychosocial alarm provides crucial information about the patient's vulnerability, coping capacity, and risk of chronic persistence of symptoms(1,8,9).

In everyday primary care practice, patients with FGIDs often present with a long history of symptoms, repeated consultations, and dissatisfaction with previous diagnostic and therapeutic approaches. Our findings suggest that this pattern is often associated with unrecognized psychosocial distress. Anxiety, depressive symptoms, chronic stress exposure, and social insecurity significantly shape symptom perception and exacerbate gastrointestinal distress through brain-gut axis mechanisms(1,5–7). In doing so, the primary care physician must be able to distinguish functional impairment from signs that indicate the potential development of colorectal cancer.

Psychosocial alarm should therefore not be seen as an additional burden for clinicians, but as a tool that enables more rational and humane medical decision-making, especially considering the key role in differentiating functional disorders from the first signs of colorectal cancer. Early recognition of psychosocial alarm can prevent excessive diagnostic procedures, reduce unnecessary pharmacological treatment, and facilitate timely referral to appropriate psychosocial interventions(8-10).

It is worth noting the importance of questionnaires for screening in early colorectal cancer detection. The alert questionnaire was designed as a tool for early warning of colon cancer in primary health care. It is primarily used in conjunction with a stool occult blood test, such as the Hemocult or Hemognost test, which detects occult blood in the stool. Together, the questionnaire and stool testing represent a simple, noninvasive, and practical first step in identifying individuals at increased risk who require further diagnostic procedures. In this way, the alert questionnaire contributes to early recognition of colon cancer and supports timely referral for colonoscopy.

This paper deliberately avoids complex algorithms, numerical scoring systems, and detailed statistical modelling. Its purpose is to re-establish psychosocial alarm as a clinically meaningful concept that can be recognized through careful medical interviewing and basic psychosocial assessment (5–7). This approach is particularly well-suited to

distinguishing functional disorders from organic malignancies. This is particularly important for raising awareness among physicians working in time- and resource-constrained settings.

Another important aspect is the educational value of the psychosocial alarm concept. Integrating this perspective into undergraduate and postgraduate medical education can significantly improve the quality of care for patients with gastrointestinal disorders. It promotes a holistic understanding of the disease and strengthens the doctor-patient relationship by validating the patient's emotional and social experience(1).

This preliminary report also serves as a foundation for future research. In the next stages, psychosocial alarm will be quantitatively analyzed, combined with organic alarm parameters, and incorporated into structured diagnostic algorithms. Such models will enable the development of screening tools that are both clinically practical and scientifically sound, consistent with current guidelines for distinguishing functional disorders (irritable bowel syndrome, dyspepsia, constipation) from colorectal cancer(2-4,17,18).

## CONCLUSION

Psychosocial alertness is a key component in the assessment and treatment of functional gastrointestinal disorders. Its systematic recognition in primary health care enables early identification of vulnerable patients, supports individualized therapeutic strategies, and can reduce unnecessary diagnostic procedures in colorectal cancer detection. The integration of psychosocial alarm into routine clinical practice is a necessary step towards a truly biopsychosocial approach to FGIDs.

This preliminary publication aims to stimulate expert discussion and prepare the ground for more extensive research based on data obtained through scientific research.

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#### Sažetak

### **Psihosocijalni i organski alarm kao metoda za rano razlikovanje simptoma kolorektalnog karcinoma od funkcionalnih poremećaja: preliminarni rezultati**

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**Uvod:** Funkcionalni gastrointestinalni poremećaji (FGID) predstavljaju veliko opterećenje u primarnoj zdravstvenoj zaštiti. Iako su simptomi organskog alarma dobro prepoznati, uloga psihosocijalnih čimbenika alarma još uvijek je nedovoljno naglašena u svakodnevnoj kliničkoj praksi. Cilj: Prikazati preliminarne rezultate o važnosti psihosocijalnog alarma kod pacijenata s FGID-ima i naglasiti njegovu važnost u primarnoj zdravstvenoj zaštiti za rano identifikaciju ranjivih pacijenata u smislu razlikovanja funkcionalnih poremećaja od razvoja kolorektalnog karcinoma.

**Cilj:** Prikazati preliminarne rezultate o važnosti psihosocijalnog alarma kod pacijenata s FGID-ima i naglasiti njegovu važnost za razlikovanje funkcionalnih poremećaja u odnosu na rano otkrivanje kolorektalnog karcinoma u primarnoj zdravstvenoj zaštiti.

**Metode:** Ova studija temelji se na longitudinalnim kliničkim i epidemiološkim podacima prikupljenim u ustanovama primarne zdravstvene zaštite. Psihosocijalni stres procijenjen je korištenjem strukturiranih kliničkih intervjua i standardiziranih upitnika koji se bave stresom, anksioznošću, depresivnim simptomima, socijalnom ranjivošću i kvalitetom života

povezanom sa zdravljem. Važno je pravovremeno razlikovati funkcionalne poremećaje od ranih simptoma kolorektalnog karcinoma. Upitnik za uzbunu osmišljen je kao alat za rano upozorenje koji se koristi uz testiranje stolice na okultno krvarenje (Hemocult/Hemognost) i predstavlja jednu od prvih metoda za rano otkrivanje kolorektalnog karcinoma.

*Rezultati:* Pacijenti s FGID-ima često su pokazivali izražene karakteristike psihosocijalnog stresa, uključujući povećani psihološki stres, oslabljene mehanizme suočavanja i povećano korištenje zdravstvene skrbi. Čimbenici psihosocijalnog stresa često su prethodili ili slijedili gastrointestinalne simptome i značajno su utjecali na težinu simptoma, kroničnost i percepciju pacijenata o vlastitoj bolesti. Liječnici primarne zdravstvene zaštite odgovorni su za pravovremeno razlikovanje funkcionalnih poremećaja od ranih simptoma kolorektalnog karcinoma.

*Zaključak:* Psihosocijalni alarm predstavlja ključnu dimenziju u procjeni FGID-ova i treba ga sustavno integrirati u praksu primarne zdravstvene zaštite. Rano prepoznavanje omogućuje pravovremene psihosocijalne intervencije i može spriječiti nepotrebne dijagnostičke postupke i napredovanje kronične bolesti. U konačnici cilj je razlikovati funkcionalne poremećaje od početnih znakova kolorektalnog karcinoma.

**KLJUČNE RIJEČI:** *psihosocijalni alarm, funkcionalni gastrointestinalni poremećaji, primarna zdravstvena zaštita, kolorektalni karcinom*