THE IMPORTANCE OF AUTONOMIC DISORDERS IN THE PATHOGENESIS OF IRRITABLE BOWEL SYNDROME IN MEDICAL WORKERS

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Abstract. This study investigates the prevalence and clinical characteristics of irritable bowel syndrome (IBS) among healthcare workers, a group often exposed to high levels of stress and irregular work schedules. A total of 60 individuals were examined, and IBS symptoms were identified in 83.3% of them. The most common subtype was diarrhea-predominant IBS, followed by mixed and constipation-predominant types. Heart rate variability analysis revealed signs of autonomic nervous system dysfunction in all IBS subtypes, with the most significant imbalances observed in the mixed-type group. The study also found a strong correlation between autonomic imbalance and the severity of IBS symptoms. These findings highlight the importance of addressing psycho-emotional stress and autonomic regulation in the prevention and management of IBS, especially in healthcare professionals.

Keywords: irritable bowel syndrome, autonomic dysfunction, healthcare workers, stress.

Introduction. Irritable Bowel Syndrome (IBS) is one of the most widespread functional gastrointestinal disorders, characterized by chronic or recurrent abdominal pain associated with defecation, and changes in bowel habits without any detectable organic pathology. According to the Rome IV criteria, IBS is diagnosed when abdominal pain occurs on average at least one day per week over the past three months and is associated with two or more of the following: related to defecation, a change in the frequency of stool, and/or a change in the form (appearance) of stool.

Recent studies indicate a significant role of the autonomic nervous system (ANS) in the pathogenesis of IBS. The balance between the sympathetic and parasympathetic divisions of the ANS is responsible for regulating gastrointestinal motility, secretion, and blood supply. Under the influence of chronic stress, particularly in professional environments with high responsibility and psychoemotional load (such as among healthcare workers), the regulatory mechanisms of the ANS can be disrupted, leading to the development or exacerbation of functional gastrointestinal disorders, including IBS.

The urgency of studying this issue lies in the increasing prevalence of functional bowel disorders among medical personnel, which negatively affects both their quality of life and work capacity. This necessitates the search for effective diagnostic markers and the development of individualized therapeutic and preventive strategies.

Materials and methods of research. The study was conducted based on the examination of 60 mid-level healthcare workers aged between 25 and 50 years who complained of recurrent abdominal pain, discomfort, and bowel movement disorders. The diagnosis of IBS was established according to the Rome IV criteria.

Participants were divided into three subgroups based on clinical presentation:

- IBS with diarrhea (IBS-D) 23 individuals (38.3%)
- IBS with constipation (IBS-C) 16 individuals (26.6%)
- Mixed type IBS (IBS-M) 21 individuals (35.0%)

To assess autonomic nervous system functioning, both subjective and objective diagnostic methods were employed. Subjective evaluation was performed using the Autonomic Symptom Questionnaire (Veyn's questionnaire), which allowed determination of the level and type of autonomic dysfunction. Objective assessment included heart rate variability (HRV) analysis using a

"CardioLab" hardware-software complex. This enabled us to evaluate the LF (low frequency) and HF (high frequency) components, as well as the LF/HF index, reflecting the balance between sympathetic and parasympathetic influences.

Psycho-emotional status was assessed using the Spielberger State-Trait Anxiety Inventory and the Maslach Burnout Inventory, which provided insight into anxiety levels and signs of professional burnout. The collected data were processed using standard methods of statistical analysis. Correlation coefficients were calculated, and statistically significant differences were considered at p < 0.05.

Results and discussion. According to the analysis, signs of IBS were detected in 83.3% of the examined healthcare workers, confirming the high prevalence of functional gastrointestinal disorders in this professional group. The distribution of IBS subtypes was relatively even, with a slight predominance of the diarrhea-predominant type.

Table 1 shows the distribution of IBS types among the study participants.

Table 1.

Distribution of IBS types among healthcare workers (n=60)

IBS Type	Number of Patients	Percentage (%)
IBS with diarrhea (IBS-D)	23	38.3%
IBS with constipation (IBS-C)	16	26.6%
Mixed type (IBS-M)	21	35.0%
Total	60	100%

This finding suggests that professional activity in healthcare, particularly in stressful and emotionally demanding settings, may contribute to the development and aggravation of bowel disorders. Assessment of autonomic regulation revealed a clear imbalance between the sympathetic and parasympathetic divisions of the autonomic nervous system. In patients with IBS-D, a predominance of sympathetic activity was observed, reflected in increased LF values and an elevated LF/HF index. Conversely, in those with IBS-C, parasympathetic dominance was more pronounced. These indicators are detailed in Table 2.

Table 2.

Indicator	IBS-D (n=23)	IBS-C (n=16)	IBS-M (n=21)	Normal Range
LF (ms ²)	57.2 ± 4.8	41.3 ± 3.7	48.5 ± 4.2	45–60
HF (ms ²)	33.4 ± 3.9	51.7 ± 4.5	37.1 ± 4.0	35-50
LF/HF ratio	1.71 ± 0.15	0.79 ± 0.08	1.31 ± 0.12	1.0-1.5

Heart Rate Variability (HRV) Indicators by IBS Type

Heart rate variability analysis showed reduced total HRV in all groups, indicating general autonomic dysfunction. The most pronounced imbalance was recorded in the mixed-type group (IBS-M), where fluctuations in autonomic regulation were particularly unstable.

Subjective assessment using the Veyn's autonomic symptom questionnaire revealed high scores of functional autonomic disturbances in all subgroups. Most frequently reported symptoms included sweating, palpitations, gastrointestinal discomfort, and a tendency toward fluctuations in blood pressure. Correlation analysis showed a strong positive association between the severity of autonomic dysfunction and the intensity of IBS symptoms. The detailed results are shown in Table 3.

Table 3.

Correlation Between Autonomic Dysfunction and IBS Symptom Severity

Parameter	Correlation Coefficient (r)	Significance (p)
LF/HF ratio & IBS symptom score	0.62	p < 0.01
Anxiety score & IBS severity	0.68	p < 0.01

These results emphasize the essential role of chronic psycho-emotional stress and autonomic dysregulation in the pathogenesis of IBS. For healthcare professionals, particularly those exposed to irregular working hours, emotional overload, and high responsibility, these factors are particularly relevant.

Conclusion. The results of this study demonstrate a high prevalence of irritable bowel syndrome among healthcare workers, most likely linked to chronic stress, emotional strain, and irregular work patterns. The predominance of the diarrhea and mixed IBS subtypes, along with observed autonomic dysfunction, points to a significant role of the autonomic nervous system in the pathogenesis of IBS. A clear correlation between the severity of symptoms and autonomic imbalance suggests that effective treatment should not only address gastrointestinal symptoms but also aim to regulate autonomic function and reduce psychological stress. These findings underscore the need for early diagnosis, lifestyle adjustment, and integrated therapeutic approaches tailored to high-risk groups such as medical personnel.

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