

Evaluation of admissions and inappropriate referrals to pediatric gastroenterology, hepatology and nutrition outpatient clinics

Gül Çirkin¹, Özhan Orhan²

¹Department of Pediatric Gastroenterology, Tepecik Training and Research Hospital, İzmir, Türkiye; ²Department of Pediatrics, Faculty of Medicine, Artuklu University, Mardin, Türkiye

ABSTRACT

Objectives: The aim of this study was to examine the diagnostic profiles of patients admitted to pediatric gastroenterology, hepatology, and nutrition outpatient clinics within the scope of the state service obligation and to determine the reasons for inappropriate referrals.

Methods: A total of 10,235 patients admitted to the pediatric gastroenterology, hepatology and nutrition outpatient clinics of Mardin Training and Research Hospital between 2022 and 2023 were retrospectively analyzed. Data were analyzed using SPSS 26.0 software according to demographic and clinical variables such as age, gender, reasons for admission and diagnoses.

Results: Of the patients examined, 49.1% were girls and 50.9% were boys, and the most common reason for presentation was inadequate weight gain with a rate of 46%. However, malnutrition or another nutritional disorder was not detected in 28% of the patients referred with a diagnosis of inadequate weight gain. Malnutrition was diagnosed in a total of 1,710 cases, of which 8.2% were mild malnutrition, 5.3% were moderate malnutrition, and 4.2% were severe malnutrition. No pathological findings were found in 40.8% of the applicants. It was also found that most of the complaints of constipation and diarrhea, which are common reasons for admission, can be effectively treated in primary and secondary health care services.

Conclusions: The results of the study show that a significant proportion of referrals to pediatric gastroenterology outpatient clinics are unnecessary and that referrals can be reduced by evaluating these patients in primary and secondary care, thereby increasing the efficiency of health care services.

Keywords: Pediatric gastroenterology, inappropriate referral, inadequate weight gain, constipation, diarrhea

Effective delivery of health services in Turkey is of great importance in terms of correct patient management and prevention of unnecessary referrals, especially in outpatient services provided under the public service obligation. The quality of outpatient services is directly related to the accurate diagnosis and treatment of patients. However,

the absence of pathological findings in a significant number of patients presenting to pediatric gastroenterology, hepatology and nutrition outpatient clinics, in particular, leads to unnecessary congestion in these clinics and prolongs the examination times of patients who really need treatment.

The general pediatric gastroenterology evaluation

Corresponding author: Özhan Orhan, MD., Assist. Prof.,
Phone: +90 482 213 40 02, E-mail: ozhan.orhan@hotmail.com.tr

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includes a comprehensive assessment of the child's gastrointestinal health, growth parameters, and nutritional status. The goal of this evaluation is to identify any gastrointestinal disorders and related problems that affect growth, digestion, and overall health. This process includes a medical history, physical examination, laboratory and imaging studies, and nutritional assessment [1].

Nutritional assessment is of great importance in the field of pediatric gastroenterology as one of the fundamental elements of a child's overall health. Since childhood is a period of rapid physical and mental development, ensuring a balanced and adequate diet has a significant long-term impact on both physical development and cognitive abilities [2]. A proper nutritional assessment not only identifies the cause of the presenting symptoms, but also helps prevent future complications by improving the child's overall health [3].

This retrospective study aims to identify the diagnoses that lead to inappropriate referrals by reviewing the diagnoses of patients admitted to pediatric gastroenterology outpatient clinics as part of mandatory service.

METHODS

This retrospective study included data of patients admitted to the Pediatric Gastroenterology, Hepatology and Nutrition Outpatient Clinic of Mardin Training and Research Hospital between 2022 and 2023. A total of 10235 patients were analyzed and their demographic characteristics, reasons for admission and outcomes were evaluated in detail. Cases were classified according to sex, age, reasons for admission and diagnoses, and inappropriate referral rates and pathological conditions detected in the outpatient clinic were also analyzed.

Ethical approval was obtained from Mardin Artuklu University Non-Interventional Clinical Research Ethics Committee for this study (Date:10.09.2024, Decision no: 2024/9-6).

Statistical analysis

Statistical analysis of study data was performed using the SPSS software package, version 21. Descriptive statistics include numbers (n) and percentages (%).

RESULTS

The distribution of complaints and diagnoses of patients admitted to Paediatric Gastroenterology, Hepatology and Nutrition Outpatient Clinics is shown in Table 1. Five thousand twenty (49.9%) of the patients were female and 5215 (51.1%) were male.

The most common complaint among patients presenting to the outpatient clinic was inadequate weight gain, which was noted in 4719 cases (46%). No evidence of malnutrition was found in 2896 patients (28%) who presented to the outpatient clinic with a complaint of inadequate weight gain, and these patients were referred to appropriate pediatric specialists for evaluation. Malnutrition was identified in 1710 cases. Mild malnutrition was detected in 844 (8.2%), moderate malnutrition in 542 (5.3%) and severe malnutrition in 436 (4.2%) of these cases. Enteral nutrition support was initiated in patients with malnutrition; percutaneous endoscopic gastrostomy [PEG] was recommended in 7 patients with severe malnutrition and cerebral palsy. All these patients were included in the regular follow-up program.

A total of 1885 patients (18.4%) who presented to the outpatient clinic with complaints of abdominal pain were evaluated; constipation was diagnosed in 1561 (15.3%) of these patients, and no pathological condition was diagnosed in 324 (3.1%) of these patients.

Dietary recommendations and medication were given to 1325 patients who presented to the outpatient clinic with dyspeptic complaints. During the follow-up period, 564 patients (5.5%) underwent endoscopy. Acute gastroenteritis was diagnosed in 956 patients (9.3%) who presented to the outpatient clinic with diarrhea as another reason for presentation. Further investigations were performed in 341 (3.3%) of these cases, and endoscopy and colonoscopy were performed in 128 (1.2%) patients.

Other causes of presentation included elevated transaminases, proctocolitis, gallstones and pancreatitis. These cases were considered as diseases that should be followed up specifically in the gastroenterology subspecialty.

One of the remarkable findings of the study was that 40.8% (4176) of the patients admitted did not have any pathologic findings. This shows that the rate of inappropriate referral is quite high.

Table 1. Distribution of complaints and diagnoses of patients admitted to the Paediatric Gastroenterology, Hepatology and Nutrition Outpatient clinics

Variables		n (%)
Gender	Male	5215 (50.9)
	Female	5020 (49.1)
Total cases	Pathological findings detected	5527(54)
	No pathological findings	4708(46)
Inadequate weight gain	No insufficient weight gain	2835 (28)
	Mild malnutrition	844 (8.2)
	Moderate malnutrition	542 (5.3)
	Severe malnutrition	436 (4.2)
Abdominal pain	No pathological findings	324 (3.1)
	Constipation	1561 (15.3)
Dyspeptic complaints	Dietary recommendations and medication	761 (7.4)
	Endoscopy performed	564 (5.5)
Diarrhea	Acute gastroenteritis	956 (9.3)
	Chronic diarrhea	341 (3.3)
	Endoscopy and colonoscopy performed	128.2)

DISCUSSION

This study provides important insights for improving the efficiency of outpatient services by examining the diagnoses and inappropriate referral rates of patients admitted to pediatric gastroenterology, hepatology, and nutrition outpatient clinics. The results show that a large proportion of referrals from primary and secondary care are unnecessary. This increases the workload of outpatient clinics and prolongs the waiting time for patients who really need care. Most referrals are not for organic pathologies, but for reasons such as poor eating habits or defecation disorders. Therefore, it is important to prevent inappropriate referrals for efficient use of the health system.

The most common pathological condition detected was inadequate weight gain, and malnutrition was detected in 46% of cases. Malnutrition remains a global problem. Worldwide, 7.3% of children under 5 years of age have a weight-for-height z-score of less than -2, indicating acute malnutrition. The rate of acute malnutrition is highest in South Asia, at 15.2% [4]. Children with mild malnutrition often go unrecognized, and the degree of malnutrition may progress if

the necessary precautions are not taken. In this group, with a Z-score between -1 and -2, the risk of death is twice that of healthy children. Especially if it occurs in the first two years of life, it can cause various health problems, such as permanent growth and developmental retardation [5]. In another aspect of the study, 28% of the patients referred for inadequate weight gain were not found to be malnourished. It is believed that in these cases, the correct anthropometric measurements were not taken. It is extremely important to take anthropometric measurements at every examination and to interpret these measurements accurately. Before chronic malnutrition develops, these children should be referred to the appropriate services and followed up regularly [6].

Constipation is one of the most common problems in childhood and in our study constipation was found in 15.3% of cases. In the pediatric population, constipation is a common health problem affecting 0.7% to 29.6% of children worldwide [7]. The results of our study show that many patients presenting with constipation complaints are not questioned about their detailed dietary habits and are therefore exposed to unnecessary treatments. Correcting dietary habits that

lead to constipation will improve patients' quality of life in the long term and reduce unnecessary medication use [8].

The majority of patients who presented to the outpatient clinic with dyspeptic complaints experienced remission with dietary recommendations and medical treatment. Endoscopic examination was performed in 5.5% of patients whose symptoms persisted and who developed additional complications during follow-up. The literature reports that only one third of dyspeptic patients have an underlying organic pathology [9].

Of the cases diagnosed with acute gastroenteritis, 9.3% presented to the outpatient clinic without being evaluated by a pediatrician or without waiting for the end of treatment. Further evaluation was considered necessary in only 3.3% of these cases. Only 1.2% of diarrhea cases were considered chronic diarrhea. Acute diarrhea is one of the most common presentations in pediatric outpatient clinics. However, referral of diarrhea cases of less than four weeks' duration without detailed evaluation increases the workload of outpatient clinics and leads to unnecessary investigations. In these cases, the duration, severity, and general condition of the patient should be carefully evaluated and follow-up should be performed with simple interventions and supportive care, as appropriate [10-12]. Another striking finding of our study was that no pathological findings were found in 40.8% of the outpatient visits. This suggests that unnecessary referral of most of these patients could be avoided if a more comprehensive evaluation was performed in secondary care [13, 14].

Limitations

The limitations of our study are that it was conducted in a single center and retrospectively.

CONCLUSION

Reducing unnecessary referrals not only eases the burden on outpatient clinics, but also improves the efficiency of healthcare services and reduces costs. Assessing patients more comprehensively in primary and secondary care and planning referrals only when necessary is a critical step in improving the efficiency of healthcare services. In addition, the implementation of an effective triage system will support rapid patient

access to treatment by ensuring the correct use of resources. Our study highlights that preventing inappropriate referrals plays a fundamental role in improving the efficiency of the healthcare system.

Ethical Statement

Ethical approval was obtained from Mardin Artuklu University Non-Interventional Clinical Research Ethics Committee for this study (Date:10.09.2024, Decision no: 2024/9-6). All procedures were performed according to the Declaration of Helsinki.

Authors' Contribution

Study Conception: GÇ; Study Design: GÇ, ÖÖ; Supervision: GÇ, ÖÖ; Funding: N/A; Materials: GÇ, ÖÖ; Data Collection and/or Processing: GÇ, ÖÖ; Statistical Analysis and/or Data Interpretation: GÇ, ÖÖ; Literature Review: GÇ; Manuscript Preparation: GÇ, ÖÖ and Critical Review: GÇ, ÖÖ.

Conflict of interest

The authors disclosed no conflict of interest during the preparation or publication of this manuscript.

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REFERENCES

1. Walker WA, Durie PR, Hamilton JR, Walker-Smith JA, eds. Pediatric Gastrointestinal Disease: Pathophysiology, Diagnosis, Management. 4th ed. Hamilton, Ontario: B.C. Decker Inc.; 2004.
2. Kliegman R, St. Geme JW, Blum NJ, Shah SS, Tasker RC, Wilson KM, eds. Nelson Textbook of Pediatrics. 22nd ed. Part XIII: Gastrointestinal Disorders. Philadelphia, PA: Elsevier; 2024.
3. Mahan LK, Escott-Stump S. Krause's Food & the Nutrition Care Process. 14th ed. Philadelphia, PA: Elsevier; 2017.
4. Malnutrition rates remain alarming: stunting is declining too slowly while wasting still impacts the lives of far too many young children: UNICEF – WHO – World Bank Group joint child malnutrition estimates. Key findings of the 2019 edition. Accessed November 22, 2024. <https://data.unicef.org/topic/nutrition/malnutrition/>
5. Puntis JW. 1.2.1 Clinical evaluation and anthropometry. 1.2 Nutritional assessment. World Rev Nutr Diet. 2015;113:6-13. doi: 10.1159/000360311.
6. Rajindrajith S, Devanarayana NM. Constipation in children: novel insight into epidemiology, pathophysiology and management. J Neurogastroenterol Motil. 2011;17(1):35-47. doi:

10.5056/jnm.2011.17.1.35.

7. Grupo de Trabajo de Constipación del Comité Nacional de Gastroenterología Pediátrica. [Functional constipation in pediatrics, diagnosis and treatment]. *Arch Argent Pediatr.* 2021;119(1):s39-s47. Spanish. doi: 10.5546/aap.2021.s39.
8. Hyams JS, Di Lorenzo C, Saps M, Shulman RJ, Staiano A, van Tilburg M. Functional Disorders: Children and Adolescents. *Gastroenterology.* 2016;150(6):1456-1468. doi: 10.1053/j.gastro.2016.02.015.
9. Brady K. Acute gastroenteritis: evidence-based management of pediatric patients. *Pediatr Emerg Med Pract.* 2018;15(2):1-24.
10. Shankar S, Rosenbaum J. Chronic diarrhoea in children: A practical algorithm-based approach. *J Paediatr Child Health.* 2020;56(7):1029-1038. doi: 10.1111/jpc.14986.
11. Orhan Ö, Bulut M. Evaluation of pediatric patients installed due to acute gastroenteritis. *Eur Res J.* 2023;9(6):1392-1397. doi: 10.18621/eurj.1261344.
12. Flynn TG, Olortegui MP, Kosek MN. Viral gastroenteritis. *Lancet.* 2024;403(10429):862-876. doi: 10.1016/S0140-6736(23)02037-8.
13. Akbaş F. [The Spine of Training and Research Hospitals' Outpatient Care: Internal Medicine Outpatient Clinic and Its Misuse]. *Acibadem Univ Saglik Bilim Derg.* 2018;9(4):385-389. [Article in Turkish]
14. Turan İ. [Diagnostic approach to short stature in the pediatric endocrinology clinic and efficiency of green zone]. *Cukurova Med J.* 2021;46(3):1208-1214. doi: 10.17826/cumj.950240. [Article in Turkish]