



The Evaluation of Consultations Performed by the Internal Medicine Clinic of a Tertiary University Hospital: Single Center Study

Üçüncü Basamak Bir Hastanede Değerlendirilen İç Hastalıkları Konsültasyonlarının Gözden Geçirilmesi: Tek Merkezli Çalışma

 Hakan Sivgin

Department of Internal Medicine, Faculty of Medicine, Tokat Gaziosmanpasa University, Turkey

ABSTRACT

Aim: To identify the general characteristics of patients who presented to our hospital's outpatient clinic and services, and for whom internal medicine consultation were requested

Material and Method: Patients aged 18 years and above who underwent internal medicine consultation between June 1, 2022, and June 1, 2023, in Gaziosmanpasa (GOP) University Hospital were retrospectively evaluated.

Results: It was found that during the period, internal medicine consultation was requested from 2.559 patients in our hospital whose consultation texts and diagnoses were fully comprehensible. The mean age of the patients who underwent consultation was 61.54 ± 18.91 (62; 18-97) years, with 51.1% (1307) being male and 48.9% (1252) being female. The services that requested consultation most often were emergency and surgery services, respectively (48.1%, 30.3%). Consultation was requested most frequently for general internal medicine reasons such as general malaise, edema and heart failure (27.6% - 699); gastrointestinal reasons such as gastrointestinal hemorrhage, acute pancreatitis and liver function test abnormalities (26.9% - 693); and nephrological reasons such as elevated BUN and creatinine levels and electrolyte imbalances (21.7% - 599).

Conclusion: Identifying profiles of patients for whom internal medicine consultation is requested will be useful in shaping training programs at institutions that educate professionals in this field of residency and improving the quality of health services.

Keywords: Clinic, consultation, internal medicine

ÖZ

Amaç: Hastanemiz poliklinik ve servislerine başvuran ve iç hastalıkları konsültasyonu istenen hastaların genel özelliklerinin belirlenmesidir.

Gereç ve Yöntem: 01.06.2022 -01.06.2023 tarihleri arasında üçüncü basamak hastane bünyesinde iç hastalıkları konsültasyonu istenen 18 yaş ve üstü hastalar değerlendirilmeye alınmıştır.

Bulgular: Bu süreçte hastanemizde konsültasyon metinleri ve tanıları tam anlaşılır 2559 hastadan iç hastalıkları konsültasyonu istenmiştir. Konsültasyon istenen hastaların yaş ortalaması 61.54 ± 18.91 (62; 18-97) yıldır ve %51.1'i (1307) erkek, %48.9'u (1252) kadındır. En sık konsültasyon isteyen servisler sırasıyla acil ve cerrahi servislerdir (%48.1, %30.3). En sık genel durum bozukluğu, ödem, kalp yetmezliği gibi genel dahili sebepler (%27 - 699); gis kanama, akut pankreatit, karaciğer fonksiyon testleri bozukluğu gibi gastroenterolojik sebepler (%26.9 - 693) ve BUN, kreatinin yüksekliği, elektrolit dengesizliği gibi nefrolojik sebepler (%21.7 - 599) için konsültasyon istenmiştir.

Sonuç: İç hastalıkları konsültasyonu istenen hastaların profillerinin belirlenmesi, bu uzmanlık dalında eleman yetiştiren kurumlarda eğitim programlarının şekillenmesinde ve sağlık hizmet kalitesinin artırılmasında faydalı olacaktır.

Anahtar Kelimeler: Klinik, konsültasyon, iç hastalıkları

Corresponding Author: Hakan SIVGIN

Address: Gaziosmanpasa University School of Medicine Department of Internal Medicine, Tokat, Turkey

E-mail: sivginhakan@gmail.com

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INTRODUCTION

Consulting physicians in other relevant specialty fields on a specific issue that concerns the patient in diagnosis and treatment stages is called consultation (1). The consulting physician need to precisely convey the information about to the patient, both verbally and in writing, to the physician following the patient and perform the most necessary procedure for the benefit of the patient first. The ethical approach is to adhere to the recommendations of the consulting physician. Internal medicine consultation is requested from almost all clinical branches for the purpose of diagnosing, treating, following or preoperative assessment of many chronic diseases. General internal medicine is one of the specialties where consultation is most frequently requested due to its broad scope and the high frequency of accompanying internal diseases in patients presenting to other medical specialties with a narrower scope (2, 3). There exists a quite limited number of studies that evaluate consultations in the literature. These studies are those usually conducted by emergency service physicians. The objective of the present study is to determine the epidemiological characteristics of patients from the outpatient clinics and inpatient services who presented to the research and application center at GOP University Hospital and underwent internal medicine consultation, identify specialty branches requesting consultation and the reasons for consultation and contribute to the creation of necessary preparations for consultation operating system for future.

MATERIAL AND METHOD

The study received ethical approval from Gaziosmanpasa University Non-interventional Clinical Research Ethics Committee (Date: 22.06.2023, Decision No: 23-KAEK-154). All study procedures were conducted complying with the ethical guidelines and principles stated in the Declaration of Helsinki.

This cross-sectional and retrospective study was carried out using the consultation texts recorded between June 1, 2022, and June 1, 2023, in the hospital information management system (ENLIL HBYS) of GOP University Hospital. Patients aged over 18 years who received consultation at internal medicine outpatient clinic for outpatients and at the internal medicine clinic for inpatients during the specified date interval were included to the study. Consultation records requested for the internal medicine clinic were reviewed through ENLIL HBYS. Consultations requested due to the demand for daily hemodialysis among inpatients from other clinics, repetitive consultations made by mistake

and those for which an official response was not provided through the system were excluded from the study. The demographic data of the patients and the departments that requested consultation were recorded (**Table 1** and **Table 2**). The patients were categorized based on their age: under 50, 50-65, 66-75 and over 75 years. The consultation texts were divided into two groups: emergency branches and non-emergency branches. The reasons for consultation requests were categorized based on the departments in the framework of the internal medicine department. The SPSS 22.0 software package was used in the data analysis. The descriptive statistics employed were mean, standard deviation, median, minimum, maximum, frequency and ratio value.

Table 1. Characteristics of Included Patients

	Mean/n	Sd/%
Age group (Years)		
<50	651	25.4%
50-64	563	22.0%
65-75	631	24.7%
>75	714	27.9%
Gender		
Female	1252	48.9%
Male	1307	51.1%
Age (Year)	61.54	18.91
Emergency Departments		
Yes	1328	51.9%
No	1231	48.1%
Polyclinics/Clinics		
Polyclinics (outpatient)	295	11.5%
Clinics (inpatient)	2264	88.5%
Departments		
Emergency Department	1231	48.1%
Surgical Departments	772	30,30%
Medical Departments	555	21,60%
Preoperative Status		
Yes	409	15,90%
No	2150	84,10%
Diabetes Status		
Yes	422	16.5%
No	2137	83.5%
Malignancy		
Yes	210	8.2%
No	2349	91.8%
Hypertension		
Yes	534	20.9%
No	2025	79.1%
Coronary Arter Disease		
Yes	281	11.1%
No	2278	88.9%
SD: Standard deviation		

Table 2. Internal Medicine Consultations from Specialty Departments Categorized by Age

	Age Group (Years)				All
	<50	50-64	65-75	>75	
Specialty Departments					
Emergency (n,%)	265 (41.3%)	237 (44.7%)	317 (54.5%)	413 (61.3%)	1232 (50.7%)
Orthopedics and Traumatology (n,%)	38 (5.9%)	32 (6.0%)	50 (8.6%)	69 (10.2%)	189 (7.8%)
Neurology (n,%)	46 (7.2%)	32 (6.0%)	43 (7.4%)	39 (5.8%)	160 (6.6%)
General Surgery (n,%)	44 (6.9%)	38 (7.2%)	42 (7.2%)	34 (5.0%)	158 (6.5%)
Cardiology (n,%)	10 (1.6%)	50 (9.3%)	46 (7.9%)	25 (3.7%)	131 (5.1%)
Dermatology (n,%)	67 (10.4%)	34 (6.4%)	13 (2.2%)	5 (0.7%)	119 (4.9%)
Neurosurgery (n,%)	24 (3.7%)	30 (5.7%)	24 (4.1%)	24 (3.6%)	102 (4.2%)
Gynecology (n,%)	72 (11.2%)	10 (1.9%)	4 (0.7%)	4 (0.6%)	90 (3.7%)
Urology (n,%)	15 (2.3%)	16 (3.0%)	20 (3.4%)	21 (3.1%)	72 (3.0%)
Anesthesiology (n,%)	15 (2.3%)	11 (2.1%)	14 (2.4%)	13 (1.9%)	53 (2.2%)
Pulmonology (n,%)	6 (0.9%)	14 (2.6%)	9 (1.5%)	15 (2.2%)	44 (1.8%)
Ophthalmology (n,%)	9 (1.4%)	11 (2.1%)	10 (1.7%)	7 (1.0%)	37 (1.5%)
Paliative (n,%)	2 (0.3%)	14 (2.6%)	8 (1.4%)	5 (0.7%)	29 (1.2%)
Infectious Dis. (n,%)	5 (0.8%)	13 (2.5%)	5 (0.9%)	5 (0.7%)	28 (1.2%)
Otorhinolaryngology (n,%)	10 (1.6%)	9 (1.7%)	5 (0.9%)	4 (0.6%)	28 (1.2%)
Cardivascular Surgery (n,%)	3 (0.5%)	10 (1.9%)	11 (1.9%)	3 (0.4%)	27 (1.1%)
Psychiatry (n,%)	14 (2.2%)	11 (2.1%)	1 (0.2%)	1 (0.1%)	27 (1.1%)
Physical Therapy and Rehabilitation (n,%)	3 (0.5%)	4 (0.8%)	4 (0.7%)	4 (0.6%)	15 (0.6%)
Plastic Surgery (n,%)	2 (0.3%)	2 (0.4%)	2 (0.3%)	6 (0.9%)	12 (0.5%)
Thoracic Surgery (n,%)	2 (0.3%)	2 (0.4%)	0	0	4 (0.2%)
Radiology (n,%)	0	0	0	2 (0.3%)	2 (0.1%)
Total (n,%)	651 (25.4%)	563 (22.0%)	631 (24.7%)	714 (27.9%)	2559 (100%)

RESULTS

Out of a total of 2559 consultations, 1231 (48.1%) were from the emergency service, 772 (30.1%) from surgical clinics, and 555 (21.7%) from internal medicine clinics. Of the consultations, 295 (11.5%) were from outpatient clinics, whereas 2264 (88.5%) were from emergency and inpatient services. The distribution of consultations by gender was 1307 (51.1%) male and 1252 (48.9%) female. The maximum, minimum and mean age of the patients were determined to be 18, 98 and 61.54 ± 18.91 years, respectively. The number of consultations made preoperatively was 409 (15.9%). In the patients who underwent consultation, 534 (20.9%) had hypertension, 422 (16.5%) had overt diabetes, 281 (11.1%) had coronary artery disease and 210 (8.2%) had malignancy (Table 1). The clinic requesting the most frequent consultations was the emergency department, accounting for 50.7%, followed by orthopedics, neurology, general surgery and cardiology departments, respectively (Table 2). According to age groups of the patients, there were 651 (25.4%) patients under 50 years, 563 (22.0%) patients between 50 and 65 years, 631 (24.7%) patients between 66 and 75 years and 714 patients (27.9%) over 75 years (Table 3). It was observed that 730 patients over the age of 65 years were consulted from the emergency department. When evaluated according to the sub-specialties of internal

medicine for which consultation was requested, the most frequently consulted sub-specialties were general internal medicine with 699 patients (27%), gastroenterology with 693 patients (26.9%), nephrology with 559 patients (21.7%), endocrinology with 249 patients (9.6%) and hematology with 230 patients, respectively. Based on the age groups of the patients, gastroenterology and nephrology consultations were most common in the patients under 65 years of age, whereas, general internal medicine consultations came first in the patients over 65 years of age (Table 4). Considering the reasons for consultation requests, general internal medicine reasons including problems such as general malaise, heart failure and respiratory failure were the most common, accounting for 27%. This was respectively followed by gastroenterological problems such as gastrointestinal bleeding, acute pancreatitis and elevated liver enzymes (26.9%), nephrological problems like elevated blood urea nitrogen and electrolyte imbalances (21.7%), endocrinological problems including hyperglycemia, diabetic emergencies and hormone replacement (9.6%) and hematological problems like anemia and thrombocytopenia (9.0%). The least frequent reasons were toxicological problems such as intoxication and altered consciousness.

**Table 3. Characteristic Features of Patients Categorized by Age**

	Age Group(Years)				All
	<50	50-64	65-75	>75	
Gender					
Female (n,%)	349 (53.6%)	238 (42.3%)	290 (46.0%)	375 (52.5%)	1252
Male (n,%)	302 (46.4%)	325 (57.7%)	341 (54.0%)	339 (47.5%)	1307
Policlinics/Clinics					
Policlinics (outpatient) (n,%)	148 (22.7%)	81 (14.3%)	40 (6.3%)	26 (3.6%)	295
Clinics (inpatient) (n,%)	503 (77.3%)	482 (85.7%)	591 (93.7%)	688 (96.4%)	2264
Emergency Departments					
Yes (n,%)	374 (57.5%)	302 (53.7%)	278 (44.1%)	277 (39.8%)	1231
No (n,%)	277 (42.5%)	261 (46.3%)	353 (55.9%)	437 (61.2%)	1328
Diabetes Status					
Yes (n,%)	82 (12.5%)	137 (24.3%)	116 (18.3%)	87 (12.1%)	422
No (n,%)	569 (87.5%)	426 (75.7%)	515 (81.7%)	627 (87.9%)	2137
Malignancy					
Yes (n,%)	38 (5.8%)	80 (14.2%)	60 (9.5%)	37 (5.2%)	210
No (n,%)	613 (94.2%)	483 (85.8%)	571 (90.5%)	677 (94.8%)	2349
Hypertension					
Yes (n,%)	80 (12.2%)	137 (24.3%)	116 (18.3%)	87 (12.1%)	422
No (n,%)	571 (87.8%)	426 (75.7%)	515 (81.7%)	627 (87.9%)	2137
Coronary Arter Disease					
Yes (n,%)	38 (5.8%)	108 (19.1%)	96 (15.2%)	39 (5.4%)	281
No (n,%)	613 (94.2%)	455 (81.9%)	535 (84.8%)	675 (94.6%)	2278

Table 4. Consultation Status According to Internal Medicine Subspecialties

	Age Group(Years)				All
	<50	50-64	65-75	>75	
Department of Subspecialties					
General Internal Medicine Causes (n,%)	248 (38.1%)	182 (32.0%)	149 (23.3%)	120 (16.4%)	699 (27.0%)
Gastroenterological causes (n,%)	170 (26.0%)	139 (24.5%)	172 (27.1%)	212 (29.6%)	693 (26.9%)
Nephrological causes (n,%)	41 (6.1%)	96 (16.9%)	181 (28.4%)	241 (33.8%)	559 (21.7%)
Endocrinological causes (n,%)	63 (9.5%)	68 (11.9%)	57 (9.0%)	61 (8.4%)	249 (9.6%)
Hematological Causes (n,%)	79 (12.1%)	43 (7.6%)	48 (7.6%)	60 (8.4%)	230 (9.0%)
Infectious causes (n,%)	25 (3.7%)	16 (2.7%)	20 (3.0%)	16 (2.1%)	77 (2.9%)
Oncological causes (n,%)	23 (3.4%)	20 (3.4%)	5 (0.7%)	7 (0.8%)	55 (2.0%)
Rheumatologic Causes (n,%)	4 (0.5%)	5 (0.7%)	1 (0.2%)	3 (0.4%)	13 (0.5%)
Toxicological causes (n,%)	3 (0.5%)	1 (0.2%)	3 (0.5%)	0	7 (0.3%)
Total (n,%)	651	563	631	714	2559

Table 5. Status Of Reasons for Consultation According to Clinical Presentations

Reasons for Consultation	n/%
General condition disorder, electrolyte problems, Heart Failure, Chronic Lung Diseases (General Internal Medicine Causes)(n,%)	699 (27.0%)
GI bleeding, acute pancreatitis, liver dysfunction, acute cholecystitis, cholangitis (Gastroenterological causes)(n,%)	693 (26.9%)
BUN creatinine elevation, electrolyte imbalance, acute hemodialysis and other (Nephrological causes) (n,%)	559 (21.7%)
Hyperglycemia, diabetic ketosis, hormone replacement and other (Endocrinologic causes) (n,%)	249 (9.6%)
Anemia, thrombocytopenia, leukopenia (Hematological Causes) (n,%)	230 (9.0%)
Pneumonia, urinary tract infections, neutropenia fever (Infectious causes) (n,%)	77 (2.9%)
Oncologic emergencies such as brain metastasis, spinal cord compression, VCSS (n,%)	55 (2.0%)
Arthritis, rash, rheumatologic symptoms Rheumatologic Causes(n,%)	13 (0.5%)
Intoxication, confusion, altered cognitive state (Toxicological causes) (n, %)	7 (0.3%)

GI:Gastrointestinal BUN: Blood Urea Nitrogen VCSS: Vena Cava Superior Syndrome

DISCUSSION

The word "consultation" is derived from the Latin word "consultati". It is the exchange of ideas among two physicians and presenting recommendations regarding the patient (4). Consultation is a must patient management requirement in patient follow-up. The increasing number of patients receiving treatment in hospitals, wide variety of invasive interventions being performed and increasing comorbidities necessitates interdisciplinary interactions in patient management. As a result of the primary responsible physician consulting with and receiving recommendations from other departments, consultations can be of vital importance in the stages of patients' diagnosis, treatment and the correct management of treatment-related side effects. In a study conducted at Uludağ University Faculty of Medicine, it was detected in the one-year data of the emergency internal medicine unit that most consultations were requested from the internal medicine department (5). Another study by Karakaya (2009) also reported that internal medicine was the department that the emergency department requested consultation most (6). As seen in various studies conducted, internal medicine is one of the departments where consultations are frequently requested (6, 7).

When the relevant literature is reviewed, it is observed that studies on consultations in Turkey have generally been conducted by emergency department physicians, evaluating only emergency consultations. Our study, on the other hand, differs as it includes both inpatients and outpatients along with emergency department cases, focusing specifically on internal medicine consultations. In a study conducted in Edmonton, Canada, by Brick et al. (2010), where they examined the data of 841 patients who presented to a tertiary care emergency department and received consultations, it was reported that the departments where the most consultation requests are made were general internal medicine (n:107, 12.7%) and cardiology (n:98, 11.6%), and in 92 patients for whom more than one consultation was requested, the most frequently requested second consultations were in the General Internal Medicine department (n: 16, 12.7%), Orthopedics and General Surgery departments (n: 10, 10.9%) (8). In our study, it was observed that the department requesting the internal medicine consultation most was the emergency department with 51.8%. The frequent admission of elderly patients with chronic, severe and multiple internal problems to the emergency department, and the fact that they cannot be directly discharged from the emergency department due their comorbid diseases can explain this rate. Marto et al. (2004) investigated internal medicine consultations requested by non-emergency departments, and indicated that the departments requesting internal medicine consultations were highly surgical branches,

and orthopedics and general surgery were at the forefront (9). In a study conducted in Spain, Ruiz et al. (2014) examined internal medicine consultations requested from inpatients and found that 30.7% of these consultations were from internal medicine departments, while 69.3% came from surgical departments (10). Indeed, we also observed that after the emergency department, the surgical clinics are those most frequently requesting internal medicine consultation, with orthopedics and general surgery being the most common specialties. The studies conducted by Kellett et al. (2007) in Ireland and by Duckitt et al. (2009) across Europe revealed that the mean age of patients presenting to internal medicine emergency departments were 68 and 67 years, respectively (11, 12). With increasing life expectancy, both in Turkey and worldwide, internal medicine specialists are now encountering elderly patients more often. In our study, the main reason why we categorized the patients according to age is the increase in geriatric population. In complying with the literature, the mean age of the patients undergoing consultation was 61 years and of whom 74.6% were over the age of 65 years. In the age categorization, the patients over 75 years constituted the highest rate, accounting for 27.9%.

It was shown in a study by Duckitt et al. (2009) that patients admitted to internal medicine emergency departments had at least three comorbid diseases (12). In our study, of the patients consulted to internal medicine department, 87.4% suffered from at least one comorbid disease. Regarding comorbid diseases, 20.9% had hypertension, 16.5% had diabetes, 11.1% coronary artery disease and 8.2% had malignancy. Marto et al. (2004) reported that among the conditions that caused consultation to be requested, cardiovascular problems and general malaise ranked first with 194 patients (35%), followed by infectious, gastrointestinal and endocrinological causes, respectively. They also noted that in regard to symptoms and findings, 7.6% of cases were consulted for conditions consistent with heart failure, hypervolemia and edema table; 7.4% for those consistent with respiratory failure and shortness of breath and 6.4% for those consistent with renal failure. In the study conducted by Aygencel et al. (2012), among patients who receive internal medicine consultation, the most common complaints presenting to the emergency department were symptoms belonging to the gastrointestinal system (31.3%) such as nausea, vomiting, abdominal pain, diarrhea, bloody diarrhea and bloody vomiting and general symptoms (29.7%) such as fever, fatigue, widespread body pain and general malaise (1). The same study also indicated that the most common group of diseases for which internal medicine consultation is requested is nephrological conditions such as elevated BUN and creatinine levels and electrolyte imbalances. In our study, it was observed that

the most frequently consulted internal medicine subspecialty was general internal medicine, accounting for 27%. The reasons for consultation requests for general internal medicine were found to be general malaise, edema, heart and respiratory failures. The departments where consultation was most frequently requested after general internal medicine were gastroenterology, nephrology and endocrinology. In terms of consultation reasons, it was observed that gastrointestinal causes (26.9%), including gastrointestinal bleeding, liver diseases and complications, acute pancreatitis, cholecystitis and cholangitis, were the most common. This was followed by nephrological reasons (21.7%), such as high urea-creatinine levels, electrolyte imbalances, hypertensive emergencies and endocrinological reasons (9.6%), like hyperglycemia, diabetic emergencies and hormone replacement. In the study by Duckitt et al. (2009), it was stated that patients most frequently presented to the internal medicine emergency department due to complaints of shortness of breath, chest pain, abdominal pain, general malaise, and fever (12). In our study, on the other hand, in the patients for whom internal medicine consultation was requested, the most frequent emergency department admission complaints were related to gastrointestinal and general symptoms. This difference may be attributed to the fact that in Turkey, pulmonary diseases, cardiology and infectious diseases are separate departments independent of internal medicine.

CONCLUSION

The internal medicine department is a very important unit in terms of patient diversity and approach to complex cases and internal emergencies. Identifying profiles of patients for whom internal medicine consultation is requested and evaluating consultation process and issues associated with consultation will be useful in shaping training programs at institutions that educate physicians in this field of residency and improving the quality of health services.

ETHICAL DECLARATIONS

Ethics Committee Approval: Our study was approved by the Non-interventional Clinical Researchs Ethics Committee of Faculty of Medicine, University of Gaziosmanpasa (approval decision number: 2023-KAEK-154, Date: 22.06.2023)

Informed Consent: An informed consent form was obtained from the participants before participating in the study.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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