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Unveiling the Volume and Outcomes of Upper Gastrointestinal Endoscopy at a Tertiary Care Center: A Descriptive Cross-Sectional Study

Suryaman Menyangbo[1], Janardan Panthi[1], Dinesh Shahi[1], Ananda Neupane[1], Ramesh Kandel[2]

[1] Department of General surgery, Rapti Academy of Health Sciences, Ghorahi, Dang, Nepal
[2] Department of Internal Medicine, Rapti Academy of Health Sciences, Ghorahi, Dang, Nepal

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Corresponding Author:

Suryaman Menyangbo
Department of General surgery,
Rapti Academy of Health Sciences,
Ghorahi, Dang, Nepal
Email: suryaman77@gmail.com

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Abstract

Introduction: Endoscopy is a vital procedure for diagnosing and managing digestive diseases. The volume of upper gastrointestinal endoscopies performed at healthcare centers in Nepal is poorly documented. There is a knowledge gap regarding the volume of endoscopies performed, including whether they are overutilized or follow proper guidelines. With rising digestive disease cases in Nepal and global increases in digestive malignancies, endoscopies are crucial for accurate diagnosis and cancer detection. The aim of the study was to assess the volume of endoscopies performed and identify the spectrum of pathologies associated with these procedures.

Methods: This descriptive, cross-sectional study was conducted at Rapti Academy of Health Sciences (RAHS) that utilized the hospital records of patients registered over a period of two years, from March 2, 2022, to April 1, 2024. After approval from the Institutional Review Committee of RAHS (IRC RAHS), data were collected using a structured proforma, which included variables such as age, gender, ethnicity, and visual endoscopic pathological findings. Patients under 14 years of age and those who were hospitalized were excluded from the study.

Results: A total of 2,305 patients underwent upper gastrointestinal endoscopic procedures, with females comprising 68% (n=1,567). The mean age of participants was 43 years, with the majority (n=537; 23.30%) in the 30-39 age group. Gastritis was the primary finding in 1,243 (53.9%) participants, while 38 (1.64%) had significant suspicious malignant lesions.

Conclusion: The volume of gastrointestinal endoscopies performed was higher compared to similar settings in other hospitals in Nepal. Gastritis was the most common finding, with a significant number of cases showing suspicious malignant lesions during endoscopy.

Keywords: endoscopy, gastritis, malignancy, prevalence

Introduction

Endoscopy has become a crucial procedure for diagnosing and managing digestive diseases, providing direct insight into the mucosal surface.[1]

As awareness of digestive diseases in Nepal grows, more people are seeking medical care. The latest report, "Nepal Burden of Disease 2019," highlighted the significance of digestive diseases, including gastritis, polyps, gastric and duodenal ulcers, and malignancies, ranking them as the fifth leading cause of mortality.[2] A Sudanese study reported a higher prevalence of upper GI disorders, with increasing esophageal varices and malignancies.[3] An Indian study found upper GI lesions more common in males, with benign lesions prevailing over malignant ones. Gastritis was the most frequent condition across various populations.[4]

Research has shown that endoscopic procedures are highly effective in diagnosing digestive pathologies.[5] Studies in Portugal, the US, and other European nations found an increase in the number of endoscopies performed, highlighting the importance of these

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procedures in diagnosing digestive diseases.[6-8] A study at Gandaki Medical College, Nepal, reviewed 889 upper gastrointestinal endoscopies, identifying gastritis as the most common diagnosis, particularly in patients aged 30-50 years. It emphasized the need for optimal case selection to prevent overuse in younger populations while ensuring proper utilization in older patients for accurate diagnoses.[9]

Despite numerous studies on endoscopic findings, there is a lack of sufficient research documenting the volume of endoscopies performed in Nepal.[10-14] This study aims to find out the numbers of endoscopic procedure undergoing in patients at tertiary center and associated pathological findings in them.

Methods

This was a descriptive, cross-sectional (retrospective) study conducted at the Endoscopic Unit of Rapti Academy of Health Sciences, Ghorahi, Dang, in December, 2024 that utilized the hospital records of patients who were registered over a period of two years, from March 2, 2022, to April 1, 2024. Ethical approval for this study was obtained from the Institutional Review Committee of RAHS (IRC No: 2024/30). A total population sampling method was used, and the final sample size reached 93,221 at the end of two years. All patients above 14 years presenting with abdominal pain, acid reflux, or bloating who requested an endoscopy from the surgical and medical OPDs were included. Patients who were admitted to the hospital, those in the pediatric age group, as well as individuals with incomplete information or deleted data, were excluded from the study. Endoscopic procedures performed over a 24-month period were recorded. Data, including diagnoses and socio-demographic information, were collected from the computer and entered into a structured proforma. The recorded variables for each patient included age, gender, ethnicity, and visual endoscopic pathological findings. Patient information was entered into Microsoft Excel (version 16). The total number of patients visiting the hospital's medical and surgical OPDs was obtained from the IT department, with permission granted by the hospital administration.

All patients referred for endoscopic procedures from the surgery and medical outpatient departments were first assessed by the staff in the endoscopic unit to ensure that their lab test results for serology were available. An oral checkup was also mandatory for each patient. The patient was sprayed with 15% lignocaine and allowed to sit for 5 minutes for it to take effect. Positioned laterally on the left, the endoscope was first washed with tap water and then cleaned with Cidex solution for microbial decontamination. This procedure was repeated for each case. Endoscopic findings in the stomach were recorded in the computer. The endoscope used was the PENTAX VERSA EPKV1500c model.

Data were entered and analyzed using Microsoft Excel 2016. Statistical analysis for mean, percentage, and standard deviation was performed. The study results were presented in tables for better clarity.

Results

A total of 2,305 patients out of 93,221 who visited the outpatient departments of surgery and medicine underwent upper gastrointestinal endoscopic procedures. Of these, 1,567 (68%) were females and 738 (32%) were males. The mean age of participants was 43±16.15 years, with the highest number of endoscopies performed in the 30-39 age group (n=537; 23.30%). Gastritis was the most common finding, observed in 1,243 (53.3%) patients, followed by duodenitis in 282 (12.23%), polyps in 43 (1.86%), ulcers in 149 (6.46%), and significant suspicious malignant lesions in 27 (1.7%). Chhetri caste predominated with 753 (33.97%) patients, followed by Janajatis at 26%, and Brahmins at 25%.

Table 1: Sociodemographic features of endoscopies performed patients

S.N.	Sociodemographic Features	Frequency (N)	Percentage (%)
1	**Gender**		
	Male	738	32.01
	Female	1567	67.98
	Mean age ± SD: 43.0±16.1 years		
2	**Ethnicity**		
	Brahmin	585	25.38%
	Chetri	783	33.97%
	Dalit	274	11.89%
	Janajati	600	26.03%
	Magar	291	12.62%
	Tharu	247	10.72%
	Janajati (others)	62	2.69%
	Madhesi	22	0.95%
	Muslim	6	0.26%
	Thakuri	35	1.52%
	Total	2305	100%

Table 2: Pattern of age distribution among patients who underwent endoscopies

S.N.	Age-Group	Frequency (N)	Percentage (%)
1	<20 years	98	4.25%
2	20 – 29 years	435	18.87%
3	30 – 39 years	537	23.30%
4	40 – 49 years	431	18.70%
5	50 – 59 years	385	16.70%
6	60–69 years	239	10.37%
7	70–79 years	151	6.55%
8	>= 80 years	29	1.26%
	Total	2305	100%

Table 3: Features of endoscopic findings in patients

S.N.	Endoscopic finding	Frequency (N)	Percentage (%)
1	Esophagitis	223	9.67%
2	Esophageal candidiasis	18	0.78%
3	Esophageal Varices	45	1.95%
4	Hiatal Hernia	31	1.34%
5	Mallory Weiss tear	17	0.74%
6	Gastritis	1243	53.93%
7	Gastric ulcer	106	4.60%
8	Suspicious Malignant lesion/mass	38	1.64%
9	Gastric polyp	43	1.87%
10	Duodenitits	282	12.23%
11	Duodenal ulcer	43	1.87%
12	Foreign body	10	0.43%
13	Normal study	206	8.94%
	Total	2305	100.00%

Discussion

Upper gastrointestinal endoscopies are crucial tools for diagnosing and managing gastrointestinal disorders. Globally, the number of these minimally invasive procedures is increasing, which can incur significant costs for both patients and physicians if performed unnecessarily. However, when performed for indicated cases, endoscopies are valuable for diagnosing gastrointestinal disorders and malignancies. This study aims to assess the volume of endoscopies performed at our hospital, highlighting the burden they represent in our setup.

In our study, a total of 2,305 diagnostic endoscopies were performed on patients who attended the surgical and medical OPDs over a period of two years. A nationwide study in the USA, analyzing data from multiple survey centers and emergency departments, reported an annual endoscopic procedures performed to be approximately 22.2 million.[8] However, it is noteworthy that the volume of endoscopic procedures performed at our hospital was relatively high. In contrast to findings from other studies conducted in similar settings in Nepal, our results were notably higher.[10,11] The likely cause of this may be the overuse of endoscopies or improper adherence to established guidelines. In a related study at Gandaki Medical College, Nepal, 889 upper gastrointestinal endoscopies were reviewed, revealing gastritis as the most common diagnosis, especially in patients aged 30-50 years. The study stressed the importance of optimal case selection to prevent overuse in younger patients while ensuring appropriate utilization in older populations for accurate diagnosis.[9] At times, patients treated locally with proton pump inhibitors (PPIs) for abdominal discomfort may still seek endoscopy, which could occasionally lead to an increase in the number of procedures. However, this assumption requires prospective investigation with a proper study design to validate.

Gastritis was the most common gastrointestinal finding in our study, observed in 1,243 (53.43%) patients. This finding is consistent with studies conducted in other regions of Nepal.[9-11] A similar prevalence of gastritis was observed in a study conducted in India.[13] In contrast, a four-year retrospective study conducted in Nigeria found fewer cases of gastritis during endoscopic procedures.[14] Similar findings were prevalent in countries with likely comparable socioeconomic statuses, suggesting that socioeconomic conditions may have contributed to the development of gastritis.

In the spectrum of endoscopic findings, other pathological findings were similar to those in previous studies, except for gastritis. However, our study revealed that 206 (8.5%) participants had normal findings. A study conducted at different tertiary care centers in Nepal showed higher numbers of normal endoscopies,[9-11] which was consistent with findings from a study conducted in Nigeria.[14] On the other hand, a study conducted in India reported a lower number of normal findings.[13] Numerous factors, including physicians, knowledge and perception of diagnoses, medication history (such as PPI use), and adherence to proper endoscopy guidelines, may contribute to the variation in normal findings across different settings worldwide.

The most significant endoscopic finding in our study was the presence of suspicious malignant ulcer-type lesions in 38 (1.64%) patients. This finding was consistent with studies conducted at other medical institutions in Nepal.[15,16] A study involving 2198 patients in India found 3.1% of malignant lesions, which is higher than in our study.[4] While the number of suspicious malignant lesions was lower in our study, it remains significant considering these cases were identified in a single institution. Additionally, a recent study conducted at a hospital in Nepal on the spectrum of histopathology of biopsies from suspected neoplastic lesions revealed 20% of definite neoplastic pathologies.[17] Emphasizing that endoscopies allow direct visualization of mucosal architecture and gross morphology, biopsy results can help confirm the diagnosis of stomach pathologies. Our study supports the notion that endoscopy is a valuable diagnostic tool. The lack of biopsy in our study represents a limitation. This was likely due to the unavailability of oncology services at the institute, which led to referrals for further evaluation.

The age group with the highest number of procedures was 30-39 years, accounting for 537 (23.3%) cases, followed by younger age groups. The mean age of patients was 43.0±16.1 years. Our study also found that 1,567 (68%) of the patients who visited the endoscopic unit were females, which aligns with research conducted in other regions of Nepal.[9,11] However, a study by Chetri et al. at Lumbini Medical College[10] found a higher prevalence of males, which is consistent with findings from a hospital-based study in Nigeria.[14] The observed similarities and

differences are likely due to variations in health-seeking behaviors among populations in different countries, as well as differences in the design of the studies.

In our study, Chhetri was the dominant caste among those who underwent the procedure, with 783 (33%) patients, followed by Janajati with 600 (23%). The specific reason for this distribution was not clearly identified; however, a study conducted in eastern Nepal found that the Janajati ethnic group had a higher number of endoscopies performed.[18] Socioeconomic status, culture, behavioral patterns, and societal structure may influence digestive pathologies, which could explain why the Janajati ethnic group undergoes a higher number of endoscopies in eastern Nepal.

This study had certain limitations, including its retrospective design and being conducted at a single center, which limits its generalizability. However, the study's strength lies in the high volume of endoscopies performed at a single center and the identification of suspected malignant lesions during endoscopy. This highlights the importance of endoscopies in diagnosing gastrointestinal diseases. Nevertheless, the high number of endoscopies at a single tertiary center suggests the potential over-utilization of the procedure, which warrants further investigation.

Conclusion

The study showed that the volume of endoscopic procedures performed in our setting was higher compared to other studies in similar settings in Nepal. Gastritis was the predominant finding, while suspicious malignant lesions indicated an increasing trend of malignancy among digestive disorders in the Nepalese population. Although the volume of endoscopies was higher in our study, it suggests that emphasizing upper gastrointestinal endoscopy could aid in screening for malignant lesions in digestive diseases. Proper utilization of endoscopy, following established guidelines, can help reduce over-utilization rates.

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