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ORIGINAL ARTICLE

PATTERN OF GENERAL SURGICAL AND UROLOGIC ADMISSIONS AT ST. PAUL'S HOSPITAL MILLENNIUM MEDICAL COLLEGE

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ABSTRACT

Background*: There is scarcity of published data describing the burden of surgical disease in Africa. Such data can narrow the gap of health care information.*
Objective*: The purpose of the study was to determine the patterns of surgical admission at a teaching hospital.*
Methodology*: A three years retrospective study was conducted at St. Paul's Hospital Millennium Medical College (SPHMMC). Data was collected from electronically registered patient information and monthly mortality & morbidity reports.*
Result*: A total of 7117 patients were admitted to the General Surgery (GS) and Urology Units, out of which 6618 (93%) patients underwent surgical intervention. Acute appendicitis and its complications were the most common indication for admission 1429 (20.0%), followed by goiter 653 (9.1%), and cholelithias is 637(8.9%). The mean age of patients was 40.1 years. In the urology unit, benign prostatic hyperplasia (BPH) was the leading reason for admission for 455 (41.5%), followed by urethral stricture 192 (17.6) and nephrolithias is (11.6). The average hospital stay for elective patients was 9.4 days.*
Conclusion *: Acute appendicitis was the commonest indication for emergency admission, while goiter and cholelithias is were the most common elective admissions in general surgery. The prolonged hospital stays detected need due attention and solution.*
Key Words: *Burden of surgical disease, Admission pattern, Acute abdomen, Goiter, Cholelithiasis*

INTRODUCTION

Surgical conditions contribute a significant share of the global disease burden (1). Access to surgical care is essential for reduction of mortality and morbidity from surgical conditions (1, 2). Global data shows a big discrepancy between developed and developing nations in terms of availability and variety of surgical care. In low and middle-income countries where the majority of the world population lives, the unmet surgical need is reported to be very huge (1, 2, 3).

Reasons for this include inadequate trained man power and inadequate primary and secondary health care facilities which can provide emergency and lifesaving procedures (4). The inadequacy of the facilities is not only in numbers but also in capacity to work 24/7 throughout the year (5). This in turn leads to significant referrals to the few understaffed and poorly equipped hospitals (6).

The notion of access to care is multi-dimensional, encompassing geographic, temporal, structural, socio-cultural, financial, and political components. Unfortunately, 5 billion people lack access to safe, affordable surgical and anesthesia care when needed (7).

The unmet need obviously results in higher level of mortalities and morbidities especially in emergency conditions (1, 4, 5, 8). The Lancet Commission, in its key message, emphasized that investment in surgical and anesthesia services is affordable, saves lives, and promotes economic growth (2).

Ailments in the society definitely determine the trend in hospital admissions which in turn give an overview of the health status of the community (9, 10).

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Understanding and quantifying patterns of disease helps to improve policy-making and facilitate the prioritization of healthcare needs, as well as to effectively influence the appropriate allocation of resources (11). To the best of the authors' knowledge there is no similar study regarding patterns of surgical admission at SPHMMC and there are only few studies in the country (12,13).

The aim of the study was to describe the pattern of surgical admission in terms of diagnosis, mode of admission, and hospital stay at SPHMMC.

MATERIAL AND METHODS

This is a facility based retrospective study conducted at SPHMMC, which is one of the biggest comprehensive specialized referral and teaching hospitals located in Addis Ababa, Ethiopia. The Department of Surgery is among the oldest departments in the College, providing different subspecialty services. Before launching its own surgery residency program, SPHMMC was an affiliate of Addis Ababa University and was used as residents' teaching center. Data was collected from electronically documented patient information and monthly mortality and morbidity reports. The recording included patient address, age, sex, mode of admission, unit, admission diagnosis, date of admission, procedure, post-operative complication, date of discharege and status at discharge from September 1, 2013 – August 30, 2016. Because Orthopedics and Neurosurgical Units became independent departments, this study included patients admitted to urology and general surgery wards only.

Data was cleaned, coded and analyzed by SPSS version 20.1. Results were expressed in tables and graphs. Descriptive statistics is used for most variables. When applicable a p value of < 0.05 was used to test associations between variables.

RESULTS

In the study period, a total of 7117 patients were admitted to General Surgery and Urology Units, out of which 6618(93%) patients underwent surgical intervention. The remaining 499(7%) patients were discharged after conservative management, or died due to the disease course before intervention.

The number of admissions peaked in 2014/2015 accounting for 40.8% of the total admissions. The opening of a temporary campaign ward played a major role for the increased number of admissions.

Most of our patients came from Addis Ababa and Oromia accounting for 41% and 37% respectively. Males accounted for 4008 (56.3%) of the patients making the male to female ratio 1.3:1.

The GS Unit managed 84.7% of the admissions and emergency admissions accounted for 44.5% of total admissions (Table 1). Acute appendicitis, goiters, and cholelithiasis were the three most common diseases treated at the hospital (Table 2 and 3).

Emergency admissions of General Surgery

A total of 3061 emergency patients were admitted to the GS ward accounting for 50.8% of the general surgery admissions. Acute abdomen accounted for 76.1% of emergency admissions. Acute appendicitis and its complications was the leading reason for admissions, accounting for 46.7 % of the emergency admissions and 63.3% of the acute abdomen cases. Trauma and small bowel obstruction were the second and third reasons for emergency admission, accounting for 374 (15%) and 284 (11.8%) respectively. The mean age of admissions for emergency conditions was 31.8 years (Table 2).

Table 1. Admission pattern of surgical patients at St Paul's Hospital Millennium Medical College from September 1, 2013 to August 30, 2016.

	Variables	Number	Percentage
Year	2013/2014*	2100	29.5%
	2014/2015*	2905	40.8%
	2015/2016*	2112	29.7%
	Total	7117	100%
Residence	Addis Ababa	2918	41%
	Oromia	2633	37%
	Others	1566	22%
	Total	7117	100%
Sex	Male	4008	56.3%
	Female	3109	43.7%
	Total	7117	100%
Unit	General Surgery	6030	84.7%
	Urology	1087	15.3%
	Total	7117	100%
Mode of admission	Emergency	3142	44.1%
	Elective	3975	55.9%
	Total	7117	100%

- *September to August

Table 2. General Surgery unit patterns of emergency admissions at St. Paul's Hospital Millennium Medical College from September 1, 2013-August 30, 2016.

	Cause of emergency admission	No.	Percentage of total emergency admission	Mean Age	M:F
1	Appendicitis	1429	46.7%	25.8	1.9:1
2	Trauma	459	15%	30	4.4:1
3	Small bowel obstruction	362	11.8%	39	3.6:1
4	Large bowel obstruction	163	5.3%	49	2.9:1
5	Perforated PUD	119	4%	42	5:1
6	Cholecystitis	129	4.2%	40	1:1.6
7	Acute abdomen with unsettled diagnosis	100	3.3%	35	1:2
8	Perianal abscess	95	3.1%	33	2.8
9	Breast abscess	87	2.8%	37	-
10	Necrotizing fasciitis	33	1.1%	43	-
	Others	85	2.7%	33	1.1:1
	Total	3061	100%	31.8	2.0:1

PUD = peptic ulcer disease

Elective admission for general surgery

During the study period, 3044(49.2%) elective patients were admitted to the General Surgery Unit. The mean age at presentation was 40.1 years. Goiter, cholelithiasis, hernia, perianal conditions and breast cancer were the commonest indications for admission. There was significant female predominance among patients diagnosed with goiter, cholelithiasis, breast cancer and benign breast disease with p-value <0.000.

However, male predominance was observed in patients with hernia ($p<0.001$), perianal condition ($p=0.001$), and redundant sigmoid colon ($p<0.001$) (Table 3).

Table 3. Disease pattern of elective admissions to the General Surgery ward of St. Paul's Hospital Millennium Medical College from September 2013 to August 2016.

	Disease	Total	Percentage	Mean age	F:M ratio
1	Goiter	653	22%	36.1	7.8:1
2	Cholelithiasis	637	21.40%	41.3	4:1
3	Hernia	318	10.70%	45.9	1:2.4
4	Perianal conditions	190	6.40%	49	1:3
5	Breast cancer	184	6.20%	41	35.8:1
6	Obstructive jaundice	156	5.20%	47.9	1:1
7	Colonic cancer	153	5.20%	46.5	1.2:1
8	Colostomy	123	4.10%	42.6	1:1.6
9	Redundant sigmoid	116	3.90%	51	1:7.9
10	Varicose	111	3.70%	32	1:1
	Others	328	11.04%		1:1
	Total	2969	100%	40.6	1.7:1

Urology Unit admission pattern

A total of 1087 patients were admitted and treated in the Urology Unit, accounting for 15.3 % of the study population. Of the 1087 cases, 1006 (92.4%) were elective admissions.

The leading cause of admission was benign prostatic hyperplasia (BPH) 455(41.8%) followed by urethral stricture and nephrolithiasis accounting for 192 (17.7%) and 127(11.68%) cases respectively. The mean age of the urology patients was 48.3 years, while the average age for BPH patients was 63.5 years (Table 4).

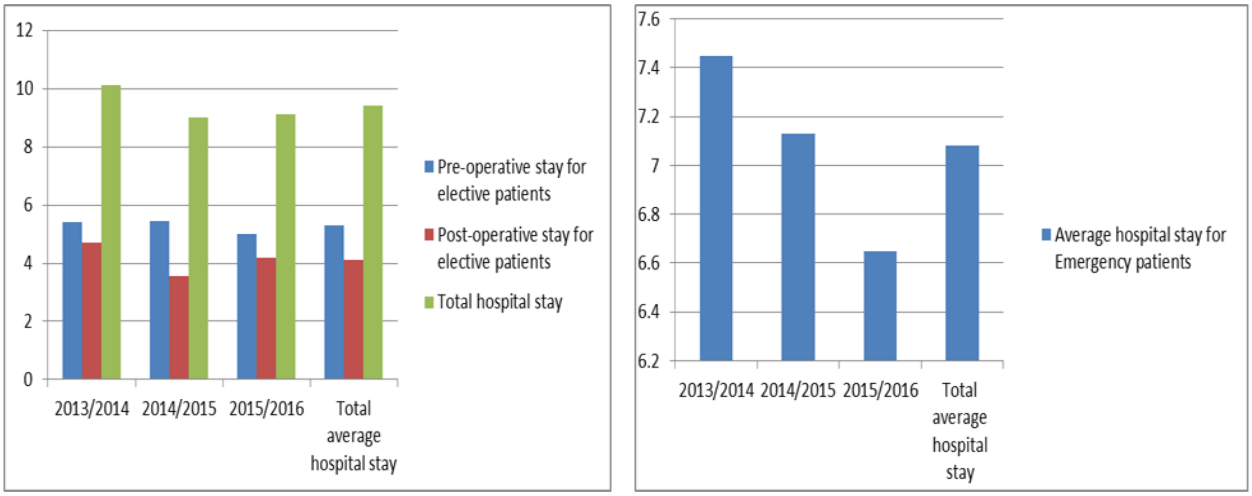

Figure 1. Hospital stay of elective and emergency patients admitted to St. Paul's Hospital Millennium Medical College, from September 1, 2013-August 30, 2016.

Table 4. Pattern of disease in patients admitted to Urology Unit of St. Paul's Hospital Millennium Medical College September 1, 2013-August 30, 2016.

	Disease	**Total**	**Percentage**	**Mean age years)**	**M:F**
1	BPH	455	41.8%	63.2	-
2	Urethral Stricture	192	17.6%	44.2	-
3	Nephrolithiasis	127	11.6%	35	1.5:1
4	Severe hydronephrosis (non excreting kidney)	86	7.9%	36.5	1:1
6	Undescended testis	43	3.9%	9.2	-
7	Hypospadias	38	3.5%	17.8	-
8	Renal cell carcinoma	32	2.94%	42.9	01:01.7
9	Hydrocele	30	2.76%	43.3	-
10	Testicular torsion	15	1.38%	22	
	Others	69	6.35%	41	4.6:1
	Total	1087	100%	48.3	7.6:1

The average total hospital stay for emergency patients was 7.08 days. The average total hospital stay for elective patients was 9.4 days with average pre-operative stay of 5.3 and post-operative stay of 4.1 days (figure 1).

DISCUSSION

Our study showed that the hospital handled a good number of emergency and elective cases in the study period, contributing to the reduction in morbidity and mortality from lack of surgical care (1,2).

Acute appendicitis, as the most common form of acute abdomen and seen in young adults, is in agreement with studies done in different setups (14-18). Small bowel and large bowel obstruction were also among the leading causes of acute abdomen, a finding similar to other studies in the country (14, 15, 16, 19). The overall number of emergency admissions to hospitals in Addis Ababa and elsewhere in the nation has increased over recent years, placing a considerable strain on the capacity of the hospitals to provide elective work (20).

This is witnessed in our case where the general surgery emergency admission made more than half of the admissions. This finding is higher than what has been reported in the country (12, 14).

Trauma is the leading cause of admission in most developing nations, for example in Nigeria Delta Hospital accounting for 31.7% of all admissions (21). The rate is low in our study as most orthopedic and neurosurgical traumas were not managed in our hospital and were hence excluded. This is supported by reports of emergency referrals from the same hospital (6).

Our study revealed cholelithiasis as the second leading cause of admission; this is in agreement with similar reports in our country (12, 22, 23, and 24). This is an evidence for the gradual increase in prevalence of cholelithiasis in Africa (25-27). It may be attributed to the advance in medical technology and increase in seeking medical evaluation by the population.

Thyroid pathologies are the leading cause of elective admission in our study, and it was the second leading cause of admission in a study done at Tikur Anbessa Hospital. Our study revealed a high percentage of toxic goiters (51.4%), which is very different from findings of a study in Gondar hospital (28).

This may be due to the difference in the community studied, increased detection of subclinical toxicity by routine availability of thyroid function test, increased patient awareness or may be due to increased availability of iodized salt in the country. This needs an additional large community based study.

The absolute number of urology admissions is comparable to a study done in Tikur Anbessa Hospital with BPH being the leading indication for admissions (12).

Length of stay in a hospital can be influenced by many factors; such as in the USA, length of stay, as well as appropriateness of hospital admission is influenced by medical insurance company policies, whereas in the UK length of stay is determined by how many people are waiting for a bed (29). There is paucity of such studies in Ethiopia. In our study, the average hospital stay for emergency patients was 7.01 days, which is comparable with the average hospital stay in a Saudi Arabia hospital with 6.6 days but higher than 5.3 days seen in a UK study (16, 30). This shows that there is still room to decrease the hospital stay for emergency admissions. The length of hospital stay for elective patients remains unacceptably high in our study in the current era where day care surgery has become the norm rather than the exception (31).

This is partly explained by repeated and numerous cancellations of procedures, the tendency to keep patients in hospitals for teaching and examination purposes, patients having long waiting time for admission being admitted with outdated investigation, uncoordinated admission and scheduling process in the hospital and the small number of operation theater tables shared among different departments.

Additionally, shortage of equipment and supplies might have contributed to the prolonged hospital stay. The increased number of emergency admissions also played a role in the cancelation of elective procedures because tables are occupied by emergency cases.

Conclusion and recommendations

Our study showed that acute abdomen and trauma are the most common reasons for emergency admission, while goiter and cholelithiasis are the commonest elective admissions in the General Surgery Unit. BPH and urethral stricture are the commonest admissions in the Urology Unit. There was unacceptable long hospital stay for elective cases.

We strongly recommend the College at large and the Department in particular to study the root cause of prolonged hospital stay and to devise a mechanism to reduce it. Some of it may be planning a day care surgery, pre-admission anesthesia clinic, coordinating the admission and scheduling process and dedicating a separate table for emergency procedures.

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