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A Descriptive Analysis of Patients with Stoma Attending a Tertiary Hospital on the East Coast of Peninsular Malaysia

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ABSTRACT

Background: Stoma surgery is common among patients diagnosed with gastrointestinal disorders as part of treatment to save their lives and minimise the impact of the disease. However, there is a paucity of knowledge of their data, particularly in our study setting. The aim of this study is to descriptively analyse the characteristics of ostomy patients receiving treatment at a tertiary hospital on the east coast of Peninsular Malaysia.
Methods: A retrospective observational study was conducted among ostomy patients attending a teaching hospital from 2016 to February 2021. Their electronic health records were reviewed and analysed. Data analysis was performed by using SPSS version 23.0. Descriptive statistical analysis was used to present the data.
Results: A total of 48 patients were included. Their median age was 62.5 (interquartile range [IQR] = 14) and the median duration of living with a stoma was 10.5 months (IQR = 10). Most of them were men (70.8%), Malays (91.7%), completed secondary school or above (73.3%), and married (84.8%). Patients with ileostomy were 60.4%, colostomy 37.5% and urostomy (2.1%). About 95.7% underwent elective stoma surgery. The primary indication for stoma formation was rectal and colon cancer (71.7%) followed by intestinal obstruction (19.6%).
Conclusion: In this study, stomas are predominantly observed among men, with ileostomy and colostomy being the most common types, primarily indicated for colorectal cancer. Further research is warranted to investigate the associated factors and impact of stoma formation on patients' daily life activities.

Keywords: Colorectal cancer; Ostomy; Stoma; Surgery; Gastrointestinal

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INTRODUCTION

An abdominal stoma is a surgically created opening on the abdominal surface that connects the intestines to the external environment. Globally, stoma formation is a common procedure in the management of gastrointestinal disorders. Colorectal cancer, inflammatory bowel disease, and acute diverticulitis are the most common indications for stoma formation (1,2). In the United Kingdom, approximately 21,000 stoma formation surgeries are performed annually, and 100,000 are performed in the United States, with a significant proportion involving colorectal cancer patients (3–5). In Malaysia, the incidence of colorectal cancer is consistently rising, reaching 14% in 2018, making it the second most common cancer after breast cancer (6). Additionally, the incidence of inflammatory bowel disease has been increasing since 1980 and has doubled from 2010 to 2018 (7).

The creation of a stoma can be both lifesaving and life changing, as it diverts the flow of urine or faeces out of the body through the stoma, improving the patient's quality of life (QoL). There are three main types of stomas: colostomy, ileostomy, and urostomy, with colostomy being the most common (3,8). These types vary depending on their formation site and the form of excretion. The duration of a stoma can be either temporary or permanent, based on the patient's condition. A temporary stoma requires a reversal surgery to restore normal function, typically performed after a minimum of 2 to 3 months following the initial stoma formation (9).

However, poor adaptation to living with a stoma and the occurrence of complications can lead to a reduced QoL and impaired well-being (10). A study examining the QoL among Malaysian colorectal cancer patients found that having a stoma was associated with poorer QoL (11). While previous research has explored the QoL among Malaysian colorectal cancer patients with stomas, there is limited data on the broader characteristics of Malaysian ostomy patients, particularly in our setting. This knowledge is important to help the healthcare providers tailoring interventions and care plans to meet the specific needs of individual patients as well as in planning allowing to anticipate and manage and allocating resources appropriately to improve overall outcomes and enhance QoL of the patients. This study aims to address this gap by providing a descriptive analysis of the demographic and clinical characteristics of ostomy patients receiving treatment at our hospital.

METHODS

This study is a retrospective observational study conducted at a single tertiary hospital on the coast of Peninsular Malaysia. Ostomy patients registered at a tertiary hospital from its establishment in 2016 until February 2021 were identified. The registry numbers of patients with stomas were primarily obtained from the list of patients referred to the enterostomal nurse and those admitted to surgical wards. Using these registry numbers, data were analysed through a retrospective review of electronic health records (EHR). Patients were included retrospectively if they had an abdominal ostomy and received treatment either as inpatients or outpatients.

Data on gender, age, educational level, marital status and employment status, type of stoma, character of stoma, causes of stoma formation, duration of stoma and presence of complication were extracted from the EHR and analysed. The author (NM) manually extracted the data from the EHR, and another author iteratively reviewed a subset of data for quality assurance and accuracy verification. Periodic consensus meetings were held to discuss findings and resolve any discrepancies. The primary outcomes of interest were the patients' demographic characteristics, types of stomas, admission types (emergency vs alternative), and the indications for stoma formation. This study is conducted and reported in alignment with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement (12). This study was approved by three ethical committees: Kulliyyah of Nursing Postgraduates Research Committee (KNPGRC) (ref: IIUM/313/G/14/3/1), IIUM Research Committee (IREC) (IIUM/504/14/11/2/IREC 2020-KON2), and SASMEC Clinical Research Committee (IIUM/413/DEaR/14/3/4).

Data Analysis

We conducted data analysis using Statistical Package for Social Science (SPSS) version 23.0. Descriptive statistical tests were used for data analysis. Categorical data, such as gender and employment status, were presented as frequencies and percentages. Numerical data, such as age and duration of living with stoma were presented as median and interquartile range (IQR).

RESULTS

Background of the Participants

We managed to include 48 patients in this study. Their median age was 62.5 (IQR = 14). About 58.3% were older people. In total, 70.8% were men (*n*=34) and 29.2% were women (*n*=14). Most of them were Malay (91.7%), Chinese (6.3%), and Indian (2.1%). About 50% of patients had completed secondary education, and 84.8% were married. Employment status was equally distributed among unemployed, employed, and retired patients, ranging from 26.7% to 37.8%. All participants were from the East Coast and Southern of Peninsular Malaysia, with most of them from the state of Pahang (75.0%). The rest were from Terengganu (22.9%) and Johor (2.1%). **Table 1** shows the background of patients included in the study.

Table 1: Background of patients with stoma (N=48)

Variables	*n* (%)	Colostomy (N=18) *n* (%)	Ileostomy (N=28) *n* (%)	Urostomy (N=1) *n* (%)
Age				
< 60 years old	20 (41.7)	8 (44.4)	12 (41.4)	0 (0.0)
≥ 60 years old	28 (58.3)	10 (55.6)	17 (58.6)	1 (100.0)
Gender				
Men	34 (70.8)	15 (83.3)	19 (65.5)	0 (0.0)
Women	14 (29.2)	3 (16.7)	10 (34.5)	1 (100.0)
Ethnicity				
Malay	44 (91.7)	17 (94.4)	26 (89.7)	1 (100.0)
Non-Malay	4 (8.3)	1 (5.6)	3 (10.3)	0 (0.0)
State				
Pahang	36 (75.0)	16 (88.9)	20 (69.0)	0 (0.0)
Others	12 (25.0)	2 (11.1)	9 (31.0)	1 (100.0)
Educational level (n = 30)				
Primary	8 (26.7)	4 (33.3)	4 (23.5)	0 (0.0)
Secondary and above	22 (73.3)	8 (66.7)	13 (76.5)	1 (100.0)
Marital status (n = 46)				
Married	39 (84.8)	15 (83.3)	23 (85.2)	1 (100.0)
Single/widowed	7 (15.2)	3 (16.7)	4 (14.8)	0 (0.0)
Employment status (n = 46)				
Employed	16 (34.8)	7 (38.9)	8 (29.6)	1 (100.0)
Unemployed/retired	30 (65.2)	11 (61.1)	19 (70.4)	0 (0.0)

Stoma Characteristic

The median duration of patients living with a stoma up to the time of data collection was approximately 10.5 months (IQR = 10). Ileostomy was the most common type of stoma (60.4%), followed by colostomy (37.5%). Only one patient (2.1%) had a urostomy. Among the 47 patients with documented stoma formation surgery, 4.3% underwent emergency stoma formation, while 95.7% had elective procedures. Of these patients, 46 (95.8%) had specified indications for stoma creation. The primary indications were rectal and colon cancer, which accounted for 71.7% of cases, followed by intestinal obstruction at 19.6%. Other indications, each accounting for 4.3%, included inflammatory bowel disease, mesenteric ischemia, abdominal sepsis, and hollow viscus perforation. However, 6.5% of patients had multiple indications for stoma formation, including intestinal obstruction, perforation, sepsis, and cancer. Nearly all cases of intestinal obstruction were due to tumours and cancer (88.9%), with the exception of one case caused by an inguinal hernia (11.1%). **Table 2** presents the indications for stoma formation among the patients in this study.

Table 2: Indications for performing stoma (N=46)

Indications	*n*	%
Rectal or colon cancer	33	71.7
Intestinal obstruction	9	19.6
Inflammatory bowel disease	2	4.3
Mesenteric ischemia	2	4.3
Abdominal sepsis	2	4.3
Hollow viscus perforation	2	4.3

DISCUSSION

Our study found that stomas are more prevalent among men and individuals aged 60 and above compared to women and younger adults, primarily due to colorectal cancer. The majority of patients in our study had colorectal cancer, consistent with findings from studies worldwide (2,13,14). Regular colorectal cancer screening is essential for early detection, prevention, and reducing the disease's overall impact. However, delayed healthcare-seeking behaviour among men is often linked to beliefs related to masculinity that discourage participation in screening (15). A quasi-experimental study evaluating the effectiveness of CRC campaign in Malaysia found that the campaign improved CRC symptoms awareness (16). Additionally, the study revealed that individuals aged 50 and older had the highest completion rates of the immunochemical Faecal Occult Blood Test, likely due to screening recommendations from the Malaysian Ministry of Health, which facilitated the detection of a higher incidence of colorectal cancer (16).

Similar findings regarding age and sex were reported in the Malaysian National Cancer Registry Report 2012–2016, which documented trends in colorectal cancer in Malaysia (17). However, it is unlikely that this trend will remain. A study evaluating age- and sex-specific trends in colorectal cancer incidence rates from 1935 to 2017 using the cancer registry in the United States found that incidence rates decreased among people aged 50 and above across most time points from 1985 to 2017 (18). Conversely, after 1985, there was an increasing trend of colorectal cancer incidence among young adults, primarily attributed to rising obesity rates (18).

If this trend holds true for Malaysia, it is anticipated that there will be an increase in stoma formations due to colorectal cancer in the coming years. The correlation between obesity and colorectal cancer suggests a potential rise in stoma formations as obesity rates in Malaysia continue to rise. This is particularly concerning given the increasing trend in overweight and obesity among adults in Malaysia, which has grown from 2011 to 2023, with 54.4% of adults being overweight and obese (19). This national screening finding is based on adults having a BMI of 25 kg/m^2 and above (19).

The treatment of colorectal cancer is multifaceted, with stoma formation being a common surgical intervention among patients requiring bowel diversion. Additionally, treatment modalities may include chemotherapy, radiotherapy, palliative care, and rehabilitation (20). An analytical study assessing the evolving burden of colorectal cancer in Malaysia revealed that colorectal cancer ranks as the second most common cancer in men and the third most common cancer in women, often diagnosed at advanced stages with lower 5-year relative survival rates compared to developed Asian countries (21). The economic burden of colorectal cancer in Malaysia is substantial encompassing direct medical expenses, non-medical costs, and productivity losses and projected to rise due to the current upward trend in colorectal cancer incidence (21).

A retrospective multicentric population-based study investigated the survival rates and prevalence of ostomy in 151 elderly patients operated on for stage III and IV rectal cancers (22). The result showed that 76.1% of the patients with stage III cancer undergone stoma formation surgery. Of these, 29.5% had a stoma reversal. Meanwhile, for patients with stage IV cancer, half of them had a palliative derivative stoma (22). Based on our study findings, it is postulated that older adults had a substantial impact on having a stoma compared to other aged groups of patients, as the ageing process contributes to physiological changes and greater dependency on other people.

According to the Malaysian National Cancer Registry Report 2012–2016, the highest incidence of colorectal cancer was recorded among the

Chinese ethnicity, followed by Malay and Indian (17). A cross-sectional study investigating the pattern of health-related QoL (HRQoL) and its associations among 324 patients with colorectal cancer in the western region of Peninsular Malaysia found that poorer HRQoL was associated with having a stoma and being of Chinese ethnicity (11). However, in our study, most patients were of Malays ethnicity, reflecting the high population of Malays residing in the east coast region of Peninsular Malaysia. Future research directions should assess the impact of ethnicity on stoma management and its influence on patient well-being.

Our study indicates that more than half of our patients had ileostomies, which contradicts most of the previous studies (10,13). This discrepancy can be attributed to the unique circumstances of each case. The decision to create a specific type of stoma is based on factors such as the location and stage of the cancer, the patient's overall health, and the treatment goals, whether curative or palliative (23). In cases of acute complications from colorectal cancer, such as bowel obstruction or perforation, emergency surgery may be required. Ileostomy can provide a rapid and effective means to manage these complications and protect the patient's health. This was evidenced by a study examining patient records from hospitals across the United States, which found that the most frequent underlying diagnoses resulting in ostomy surgery were diverticulitis of the large bowel managed by colostomy (19.6%), colorectal cancer managed by ileostomy (22.5%), or urothelial cancer managed by urostomy (78.1%) (23).

It was observed that 4.2% of our patients underwent emergency stoma surgery. Stoma formation is a lifesaving procedure to protect the anastomosis (24). Patients undergoing emergency surgery are at higher risk for complications. Despite the proven benefits of preoperative stoma site planning, the urgency and condition of the patient often necessitate proceeding without it. Unfortunately, a poorly sited stoma can result in ongoing complications, leading to a lifetime of misery (24,25). A study investigating the impact of elective versus emergency colorectal surgery on early ostomy complications found that early complications were more likely to occur following emergency surgery compared to elective procedures (26). Additionally, ostomy complications accounted for 62.4% readmissions (23).

In our study, majority of the patients were married and unemployed or retired. With regard to this finding, we anticipate the possible financial and social consequences of patients with stoma is the role and social status changes in face of their family and society (27). A study exploring the self-care challenges among the long term rectal cancer survivor with stoma found that majority of the survivors reported ostomy-related self-care challenges and 31% experienced problems across multiple domains of ostomy self-care, becoming a burden to the family and attempts to live as before (28). A study evaluating QoL in Ethiopia also found that 71% of the patients worried that they were a burden to the people close to them (29).

It is noteworthy that some patients had multiple indications for stoma formation, reflecting the complexity of medical conditions necessitating surgical intervention. Despite this complexity, our data analysis methodically considered each patient's primary stoma indication as a distinct factor, ensuring clarity in our findings. The study's limitation lies in its descriptive analysis, single-center design, and small sample size, which restricted the generalisability of our findings beyond the specific hospital setting and patient population. Additionally, the relatively recent establishment of the research setting meant that most patients were recruited from recent years, potentially limiting the sample size and the longitudinal insights into stoma data. Nevertheless, this study represents a pioneering effort as the first descriptive analysis of stoma surgery patients in a Malaysian hospital, providing foundational data on patient demographics and needs. These insights are crucial for healthcare providers to tailor interventions effectively, thereby enhancing stoma care practices and ultimately improving the quality of life for individuals living with stomas.

CONCLUSION

Our study identified key demographic characteristics associated with stoma prevalence, revealing a predominance among men, Malay ethnicity, married individuals, and those who are unemployed or retired. The most prevalent types of stomas observed were ileostomy and colostomy, primarily indicated for conditions such as rectal and colon cancer, as well as intestinal obstruction. These findings underscore the need for tailored healthcare strategies that address the specific needs of these demographic groups. Moving forward, future research efforts should prioritise larger, multicenter studies to enhance the generalisability of our findings

across diverse populations. Such studies would provide a more comprehensive understanding of stoma and management practices on a broader scale. Additionally, assessing the efficacy of current stoma management practices is crucial to optimise patient care outcomes and enhance QoL.

CONFLICT OF INTEREST

The author(s) has no conflict of interest to declare with regard to this work.

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AUTHOR CONTRIBUTIONS

NM, PAW, NI: drafted the manuscript and contributed to the concept development and design of the article through data collection, analysis and data interpretation for the article.
PAW, IIH, HH: revised the manuscript critically with intellectual contents and approved the final version of the manuscript.
PAW: revised the manuscript critically for important intellectual content.

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