

Incidence of Colorectal carcinoma in Young Population of Islamabad

Nasira Tajamal*, Rehan Tajamal and Salman Tajamal

MBBS, MPH (Pak), MPH in Medical Epidemiology, USA

*Corresponding author

Nasira Tajamal, MBBS, MPH (Pak), MPH in Medical Epidemiology, USA,
E-mail: drnasira7@gmail.com

Submitted: 16 Dec 2018; Accepted: 22 Dec 2018; Published: 05 Jan 2019

Abstract

The Purpose of this study is to promote awareness concerning increased incidence of colorectal carcinoma in younger population and its clinical as well as pathological features compared to older patients. This cross sectional study was conducted from January 2017 to October 2017 in patients with diagnosis of colorectal carcinoma admitted through emergency or outpatient department to surgical ward of PIMS hospital of Islamabad. Data concerning age, gender, presentation, site of tumor, surgery performed and Dukes staging was used for analysis.

Total numbers of patients screened were 250. Patients with colorectal carcinoma were 27. Male patients were 17(63%) and females were 10 (37%). Patients between the ages of 10-20 were 4(15%) out of these 2 were declared unfit for surgery because of widespread tumor within the abdomen as well as distant metastasis. There were 9 (33%) patients between the ages of 21 to 30 while among these 4 were inoperable because of widespread and undifferentiated carcinoma. Patients between the ages of 31 and 40 were 5 (19%), among these 2 were inoperable. The next category of patients was between the ages of 41 to 50, they were 4 (15%). There were 3 (11%) patients between the ages of 51 and 60, and 2 (7%) cases were between the ages of 61 to 70. Total 9 (33.3%) young patients were inoperable and they were of age 50 and below 50. Colorectal Carcinoma is more aggressive among young patients [1,2]. Total Stage D inoperable patients were 11(40.7%) and 18 (82%). Patients between the ages of 10 to 50 had left sided disease.

Introduction

Colorectal cancer is the third most commonly occurring cancer in men and the second most commonly occurring cancer in women. There were over 1.8 million new cases in 2018 [3].

The cancers responsible for the highest incidence in both the genders (total = 148,041) in Pakistani population includes breast (n = 34038, 23%), lip and oral cavity (n = 12761, 8.6%), lung (n = 6800, 4.6%), non-hodgkin lymphoma (n = 5964, 4%) and colorectum (n = 5335, 3.6%), respectively [4].

Another meta-analysis in 2018 in Pakistan showed, 99.7% for oral cancer, 98.6% for prostate cancer, 98.3% for gastric cancer, 99.8% for breast cancer, and 85.4% for colorectal cancer. p values for all cancers were highly statistically significant [5]. There is a need for declaration of alarming situation of increasing incidences of colorectal carcinoma in Pakistan, [6]. The incidence of CRC is increasing especially in younger age group [7]. In spite of drastic increase in the number of patients of colorectal carcinoma, there is no proper national cancer registry program in the country, the only notified cases are from the researches carried out in different hospitals of Pakistan [6]. Although Pakistan like other south Asian countries is considered as a low risk country for CRC, but in fact it is one of the high risk country for colorectal carcinoma as evident from recent studies [8]. The increasing risk of CRC could be due to change in life style including reduce physical activities, high

intake of food containing preservatives, animal food having high concentration of fat, smoking, consumption of sugary drinks with artificial colours and flavours. All these factors lead to obesity and thus development of cancers [8]. Cancer is considered as first cause of death in developed countries such as US, Australia, Canada, China, while in developing countries like Pakistan, India, Bangladesh and Nepal as the second cause of death.

Worldwide most commonly cancers are breast cancer in females, lung cancer, colorectal cancer, prostate cancer in males, stomach cancer, liver cancer, cervix uteri cancer, esophageal cancer, cancer of urinary bladder, Non Hodgkin Lymphoma and childhood cancer. Some recent studies has reported most frequently diagnosed cancers and cancer related deaths (Table 1). Worldwide, Approximately 1.2 and 1.7 million cases of colorectal cancer were reported in 2008 and 2012 respectively. According to data of Karachi cancer registry (KCR), age standardized incidence rate (ASR) for all types of cancers are 179.0/100,000 in males and 204.1/100,000 in females. In Pakistan, ASR particularly for colon cancer is 3.2/100,000 inmales and 2.8/ 100,000 in females.

Colorectal cancer has been proved as a significant problem for global health as it is the main reason of morbidity and mortality. Prevalence rate of colorectal cancer is more than 9% in contrast to other cancers. Its prevalence rate fluctuates up to 10 folds between countries with highest incidence risk and countries with low incidence risk. Countries like New Zealand, Canada, Australia, the United States,

and some parts of Europe are at highest risk to develop colorectal cancer [8]. Countries with low incidence rate for colorectal cancer are India, China, some parts of Africa and Southern America. It varies from more than 40 for every 100,000 people in the United States. Australia, New Zealand, and Western Europe having less than 5 for every 100,000 people in Africa and various parts of Asia. Colorectal cancer at an early phase is often having no symptom but as disease progresses it may frequently cause following symptoms for example; blood ooze out from rectum, stool with bleeding, and abdominal pain with muscle cramping [8].

Literature Review

Large number of studies was searched at PubMed, Google scholar and Scopus. Many studies concluded the increasing incidence of CRC especially at young age [1,2,7,9-12]. CRC incidence rate is increased to some extent among young adults as compared to a relatively decrease in rate of colorectal carcinoma in patient age 50 and above [1]. Three to four decades back CRC was considered as a disease of patient 60 and above 60, but recently the trend has changed and young cases are coming into picture even in teen age which is a much unexpected situation [2]. The change in trend during the last decades has aroused a suspicion of some unusual causative agents including the genetic predisposition, more so the disease in young population is quiet aggressive and undifferentiated are recorded frequently [2]. Colorectal cancer is the commonest cancer among all GI cancers yet the diagnosis in young patients is delayed which could be due to expectation other than this disease and the doctor remain unaware of the seriousness of the condition, do not advice for specific test like CT scan and colonoscopy until the patient's condition gets extremely worse [2]. Colorectal cancer (CRC) is the third most common cancer and the second leading cause of cancer-related mortality in North America [10]. In addition to this the prevalence of CRC is increasing in Asia while Pakistan is at the top of list [10] among the factors responsible for the increase number of patients of CRC is the change in life style and smoking in Asian countries is a prominent cause. High BMI at age 20 years is associated with a higher risk of CRC in later life for both carriers and non-carriers of pathogenic germ line mutations in MMR genes. For MMR mutation carriers, they found no statistically significant differences between the strengths of association for men and women, and for carriers of mutations in MutL α or MutS α heterodimer genes. These results suggest that BMI in early adulthood is a potential modifier of CRC risk in later life for MMR gene mutation carriers as a whole [11]. A study conducted in Komfo teaching hospital on colorectal carcinoma concluded that there is an increase in incidence of rectal carcinoma in young adults and the diagnosis is delayed because of unexpected presence of cancer at young age, thus the prognosis is poor [13]. Japanese concluded in their study on CRC that Alcohol consumption leads to early onset of CRC [14].

Mucinous histology is a prospective prognostic factor in colorectal cancer, but has not been evaluated specifically in young patients. The incidence of colorectal cancer in the young below the age of 40 is increasing, and this population has worse CRC outcomes [15]. Research in Korea done on CRC concluded that the overall incidence of CRC is increased in Korea promptly while age-standardized cancer mortality rates have declined since 2002 and survival has improved [16]. The risk of colorectal cancer is increased among patients with ulcerative colitis. The degree of this increase in risk and the effects of the length of follow-up, the extent of disease at diagnosis, and age at diagnosis vary significantly in different

studies [17]. Other studies also reveals the importance of early diagnosis at young age since the late diagnosis in younger age group is responsible of worse prognosis and early onset of disease is also associated with genetic predisposition as well as undifferentiated form of cancer further leads to worse outcomes [12]. This article concluded that the most prevalent cancers in Pakistan include breast, lip and oral cavity, cervix uteri, colorectal and bladder, respectively [5]. Study conducted in Karachi emphasis upon the importance of screening [5]. There is an impression that the prevalence of CRC is low in Karachi but after this research which concluded that basically the cases remain undiagnosed and the actual figure remain hidden which is responsible for the wrong interpretation of the authentic number of cases. Colorectal cancer (CRC) is one of the leading causes of mortality and morbidity in the world Favoriti et al., 2016. It is the third most common malignancy and the fourth leading cause of cancer-related deaths worldwide, accounting for approximately 1,400,000 new cases and about 700,000 deaths worldwide [18]. In a review article consideration is given to the incidence, mortality, and survival rates for colorectal carcinoma [19,20]. Attention is also given to regional variations and changes over time. A summarizing overview of known risk factors associated with colorectal cancer is provided, including familial and hereditary factors, as well as environmental lifestyle-related risk factors such as physical inactivity, obesity, smoking, and alcohol consumption.

There are chances that the global burden of CRC may increase by 60% and there may be 2, 2 million new cases while 1.1 million deaths by 2030 [21]. In this study they have put their efforts to describe the latest CRC incidence and mortality patterns and trends linking the to the prospects of reducing the burden through prevention and care of cancer.

Methods

Studies were identified by searching PubMed, Google Scholar, and Scopus, keeping colon cancer, rectal cancer, anal cancer, rectal bleeding and young patients suffering from abdominal pain, blood in stools and change in bowel habits as the main searching words. In this research paper we wanted to include all published studies that provide results of colorectal carcinoma among young patients in the general population. For inclusion into the research paper, the following criteria had to be met: study subjects had to be recruited at hospital based to make them representative of the underlying disease and less susceptible to move away from the search subject. Different designs were included to look at different aspects of colorectal carcinoma: All patients coming to PIMS which is a federal government hospital examine carefully having been diagnosed as colorectal carcinoma. Since the treatment in this hospital is with minimum charges that include a small amount of registration fee and low rate medicines, the patients usually belong to lower and lower middle class. Data was collected from ward where the diagnosed cases of CRC were asked open ended questions. From the detailed questionnaire only related question were documented and entered in table 1. Cross sectional studies were included to determine the immediate results. To explore the biological plausibility of dietary issues as a risk factor for cancer experimental studies on animals and histopathological studies on young children and young adults were included to determine possible life style changes and the presence of disease in young age group not expected to have cancer in colon and rectum. Studies having searching words as "young patients, genetic factors, smoking, environmental factors, and lifestyle were included, as were studies of the prevalence of colorectal cancer in patients with

established disease. The titles and abstracts of all articles identified by the search were screened and potentially relevant articles were retrieved and assessed according to the criteria mentioned above. Meticulous search for articles on the topic of carcinoma of colon and rectum 2017 was carried out.

Findings

In this cross sectional study total 250 patients were interviewed, out of these 250 patients 27 patients who were admitted in surgical ward of PIMS during the period of 10 months i.e from January 2017 to October 2017 were included in the study. They were diagnosed as cases of colorectal carcinoma. These patients were followed throughout the study period and their course of disease and prognosis was recorded. Patients were between the ages of 10 to 70 years. Dukes staging system was used There were 10 females and 17 males. Patients between the ages of 10 to 20 years were 4. One female was 17 years of age while males were of ages 15, 18 and 20. Only 2 patients were operable, rest of the two patients 15 and 18 years boys were inoperable because of stage D and they had family history of colon cancer. Their disease was very aggressive, wide spread and undifferentiated adenocarcinoma confirmed on biopsy. There were nine patients between the ages of 21 and 30 years. This age group was the highest in number and among these four was diagnosed in

advance stage D; they were of ages 22, 27, 28, and 30 years. Two of them had family history of CRC. Five patients were between the ages of 31 and 40, in these age group two patients were inoperable due to wide spread distant metastasis at the time of diagnosis. Both of these patients had cancer in Transverse Colon. One of the patient age 32 die during the study. The group between the ages of 41-50 was better than the previous groups, there were three patients in this group and all were operated followed by chemotherapy and radiation. There were three patients between the ages of 51 and 60. One patient who was 58 years was inoperable and died during the study period. The last group was 61-70 years of age having 2 patients, one male and one female. Male patient had advanced disease he was 70 years. He was kept on chemo/radiation.

During the study period of 10 months 2 patients died. Among these two patients one was 32 years and other was 58 years. It was noticed that the cancer was more aggressive in young as revealed through histopathology report of biopsy showed (stage D) undifferentiated adenocarcinoma. These young patients had family history of CRC, but unfortunately they were diagnosed late because of unawareness of the problem both from patient and doctors side. Total stage D patients were 11(40.7%). The young patients age 40 and below 40 were 8 (73%) of stage D and were inoperable.

S.No	No. of Cases	Age	Gender	Site	Surgery	Chemo and Radiations	Dukes Stage
1.	Total 27 patients.	10-70 years.	10Females. 17 Males	Colon and Rectum.	19 patients.	25 patients.	
2.	4	10-20	1Female 3 Males.	3Descending Colon. 1 Rectum	2 patient	4patients	2 stage D 2 stage C
3.	9	21-30	3 Females 6 Males.	2 Descending Colon 4 Rectum. 3 Ascending Colon.	5 Patients	9 Patients	4 stage D. 3 stage C 2stage B
4.	5	31-40	2 Females 3Males'	2Sigmoid Colon. 1 Ascending Colon. 2 Transverse Colon.	3 patients.	5 Patients	2 stage D 3 stage C
5.	4	41-50	1Female 3 Males.	2 Rectum 1 Sigmoid Colon. 1 Transverse Colon.	3 Patients	4 Patients	1 stage D 3stage C
6.	3	51-60	2 Females 1 Male	1 Ascending Colon 2 Rectum.	2 Patients	3 Patients	1 stage D 1 stage C 1stage B
7.	2	61-70	1Female 1 Male	1 Ascending Colon. 1 rectum	1 Patient	2 patients	1 stage D 1stage C

Discussion

Colorectal carcinoma used be consider as a disease of elderly population, since the last 2 decades cases in young patients are reported in many countries [1,2,9,10]. It was also assumed that the cause of CRC is the consumption of non-vegetarian diet since fewer number of CRC cases were reported in the past from Asia and Africa the places where vegetarian diet is the basic food of choice, but this assumption became less important when higher cases in young adults started emerging from Asia and Africa particularly in young adults where vegetarian diet is preferred mostly [4,5,7,8,22,23]. However the incidence of CRC is gradually decreasing in USA and it has been reported that they have reduced to about 2.8% per year in men and 2.2% in women [24,25]. This remarkable decrease in the incidence rate of CRC is mainly due to efforts and measures taken to reduce the occurrence of CRC by screening particularly colonoscopy is done, especially in patients with family history of CRC and aged

50 and above. Colonoscopy is the best investigation to detect the early neoplastic changes and even if a polyp is seen on colonoscopy it is removed at the same time [26,27]. Unfortunately in Pakistan screening is not done as a routine investigation, particularly in rural areas because of illiteracy and lack of access to health care centre and even in urban areas due to lack of awareness patients reach the health care centres in late stages [28-39]. Even when patient go to a hospital with symptoms of bowel disease colonoscopy is not done as a screening test. It is obvious from our study that most of the cases were diagnosed in later stages of the disease. The young patients with family history of CRC are not tested in the early stages and the outcome for these patients is even worse because in young patients the neoplasm is more aggressive and undifferentiated [4,7].

In our study Dukes staging was used and surprisingly 44.7% patients fall in stage D. Young patients who were 40 and below 40 years of

age were 73% [40-42]. Mortality rate during the study period was 7.4%. Our sample was small but still this study gives an idea about how many cases were diagnosed at stage D which means patients with distant metastasis. Another alarming situation is the presence of CRC in young patients. Since PIMS is a federal government hospital and the treatment charges are not high, therefore low socioeconomic class people come to this health care center and these people are mostly vegetarian but on the other hand they are very much found of eating hydrogenated vegetable oil and tobacco in the form of cigarettes and pan. Some lower middle class people from northern areas also get the treatment from this hospital and those people eat meat especially beef [43-51]. Since many studies documented about the dietary habits and physical activities that are responsible for the causation of CRC therefore it is important to note that these people are mostly physically active [1,2,4,7,9]. We need to continue our research on CRC to find out further evidences about the increasing incidence of CRC in young population.

Conclusion

The incidence of colorectal carcinoma appears to be increasing in patients aged less than 50. Data confirms that in culturally diverse young population, CRC tends to be in advance stage, aggressive and frequently non-operable at the time of diagnosis [7,12]. It is important for doctors to recognize the poor outcome of CRC in young population and follow an aggressive approach to early diagnosis and treatment. Young patients with rectal bleeding or other alarming signs should be evaluated with early colonoscopy instead of attributing these symptoms to haemorrhoids and dysentery, which is unfortunately the current practice here due to lack of awareness. Practice of doing colonoscopy by doctors may reduce the number of cases in advance stage [52-58]. There is a need of awareness programs on TV, seminars and presentations in school and colleges by the teachers and doctors to spread the message about the early approach in case of any suspicious symptoms. Adopting healthy life style and propaganda against smoking and use of tobacco is any form is mandatory in order to spread the message and safe the life of many patients.

Implication

Consequently, concluding the picture of this serious medical issue it is pertinent to address this lethal disease seriously and with diligent efforts so that it is diagnose in early stages:

1. Awareness about the disease among patients, through social media, community based seminars, presentations in school and colleges.
2. Addressing the doctors about the early investigations especially colonoscopy.
3. Use of tobacco and smoking should be discouraged.
4. Doctors should counsel their patients to follow the healthy life style such as eating healthy diet containing fiber and antioxidants and remaining physically active.
5. Young patients and patients with family history of CRC coming with bleeding PR should not be ignored but rather colonoscopy should be perform to confirm the diagnosis at the spot.
6. Use of hydrogenated vegetable oil, animal fat and sugary drinks with artificial colors and flavours, can food and stored food with preservatives should be avoided.

References

1. Singh KE, Taylor TH, Pan CG, Stamos MJ, Zell JA (2014) Colorectal Cancer Incidence among Young Adults in California.

- J Adolesc Young Adult Oncol 3: 176-184.
2. Campos FCGM, Figueiredo MN, Monteiro M, Nahas SC, Ceconello I (2017) Incidence of colorectal cancer in young patients. *Rev Col Bras Cir* 44: 208-215.
3. Arnold M, Sierra MS, Laversanne M, Soerjomataram I, Jemal A, et al. (2017) Global patterns and trends in colorectal cancer incidence and mortality. *Gut* 66: 683-691.
4. Muhammad Rehan Sarwar, Anum Saqib, Udo Schumacher (2017) Cancer prevalence, incidence and mortality rates in Pakistan in 2012.
5. Romana Idrees, Saira Fatima, Jamshid Abdul-Ghafar, Ahmad Raheem, Zubair Ahmad (2018) Cancer prevalence in Pakistan: meta-analysis of various published studies to determine variation in cancer figures resulting from marked population heterogeneity in different parts of the country. *World J Surg Oncol* 16: 129.
6. Bhurgri Y, Khan T, Kayani N, Ahmad R, Usman A, et al. (2011) Incidence and current trends of colorectal malignancies in an unscreened, low risk Pakistan population. *Asian Pac J Cancer Prev* 12: 703-708.
7. Farhana Badar, Shahid Mahmood (2012) Epidemiology of cancers in Lahore, Pakistan, among children adolescents and adults, 2010-2012: a cross-sectional study part 2.
8. Hasan F, Mahmood Shah SM, Munaf M, Khan MR, Marsia S, et al. (2017) Barriers to Colorectal Cancer Screening in Pakistan. *Cureus* 9: e1477.
9. David W Sheneman, Jack L Finch, Wells A Messersmith, Stephen Leong, Karyn A Goodman (2017) The impact of young adult colorectal cancer: incidence and trends in Colorado. *Future Medicine* 6.
10. Seung Eun Lee, Hee Bum Jo, Won Gun Kwack, Yun Jin Jeong, Yeo-Jin Yoon, et al. (2016) Characteristics of and risk factors for colorectal neoplasms in young adults in a screening population. *World J Gastroenterol* 22: 2981-2992.
11. Win AK, Dowty JG, English DR, Campbell PT, Young JP, et al. (2011) Body mass index in early adulthood and colorectal cancer risk for carriers and non-carriers of germline mutations in DNA mismatch repair genes. *Br J Cancer* 105: 162-169.
12. Amini AQ, Samo KA, Memon AS (2013) Colorectal cancer in younger population: our experience. *J Pak Med Assoc* 63: 1275-1277.
13. Francis Agyemang-Yeboah, Joseph Yorke, Christian Obirikorang, Emmanuella Nsenbah Batu, Emmanuel Acheampong, et al. (2017) Patterns and presentations of colorectal cancer at Komfo-Anokye teaching hospital Kumasi, Ghana. *Pan Afr Med J* 28: 121.
14. Miguchi M, Hinoi T, Tanakaya K, Yamaguchi T, Furukawa Y, et al. (2018) Alcohol consumption and early-onset risk of colorectal cancer in Japanese patients with Lynch syndrome: a cross-sectional study conducted by the Japanese Society for Cancer of the Colon and Rectum. *Surg Today* 48: 810-814.
15. Soliman BG, Karagkounis G, Church JM, Plesec T, KaladyMF (2018) Mucinous Histology Signifies Poor Oncologic Outcome in Young Patients with Colorectal Cancer. *Diseases of the Colon & Rectum* 61: 547-553.
16. Kyu-Won Jung, Young-Joo Won, Hyun-Joo Kong, Eun Sook Lee (2018) Cancer statistics in Korea: incidence, mortality, survival and prevalence in 2010. *Cancer Research and Treatment* 45: 1-14.
17. Ekblom A, Helmick C, Zack M, Adami HO (1990) Ulcerative colitis and colorectal cancer: a population-based study. *N Engl*

- J Med 323: 1228-1233.
18. Arnold M, Sierra MS, Laversanne M, Soerjomataram I, Jemal A, et al. (2016) Global patterns and trends in colorectal cancer incidence and mortality. *Gut* 1-9.
 19. Fatima A Hagggar, Robin P Boushey (2009) Colorectal Cancer: Colorectal Cancer Epidemiology: Incidence, Mortality, Survival, and Risk Factors. *Clin Colon Rectal Surg* 22: 191-197.
 20. Hamidreza Sadeghi Gandomani, Seyed Majid yousefi, Mohammad Aghajani, Abdollah Mohammadian-Hafshejani, Abed Asgari Tarazoj, et al. (2017) Colorectal cancer in the world: incidence, mortality and risk factors. *Biomedical Research and Therapy* 4: 1656-1675.
 21. Arnold M, Sierra MS, Laversanne M, Soerjomataram I, Jemal A, et al. (2017) Global patterns and trends in colorectal cancer incidence and mortality. *Gut* 66: 683-691.
 22. Khalid Ahsan Malik (2007) Colorectal carcinoma LUMHS.
 23. Ayesha Tariq, Imtiaz Majeed, Azhar Khurshid (2015) Types of Cancers Prevailing in Pakistan and their Management Evaluation 16.
 24. Siegel RL, Jemal A, Ward EM (2009) Increase in incidence of colorectal cancer among young men and women in the United States. *Cancer Epidemiol Biomarkers Prev* 18: 1695-1698.
 25. Cress RD, Morris C, Ellison GL, Goodman MT (2006) Secular changes in colorectal cancer incidence by subsite, stage at diagnosis, and race/ethnicity, 1992-2001. *Cancer* 107: 1142-1152.
 26. Philips KA, Liang SY, Ladabaum U, Haas J, Kerlikowske K, et al. (2007) Trends for colonoscopy for colorectal cancer screening. *Med Care* 45: 160-167.
 27. Alici S, Aykan NF, Sakar B, Bulutlar G, Kaytan E, et al. (2009) Colorectal cancer in young patients: characteristics and outcome. *Tohoku J Exp Med* 199: 85-93.
 28. Vale Rodrigues R, Claro I, Lage P, Rosa I, Ferreira S et al., (2018) Colorectal cancer surveillance in Portuguese families with lynch syndrome: a cohort study. *Int J Colorectal Dis* 33: 695-702.
 29. Shamsdin SA, Karimi MH, Hosseini SV, Geramizadeh B, Fattahi MR, et al. (2018) Associations of ICOS and PD.1 Gene Variants with Colon Cancer Risk in The Iranian Population. *Asian Pac J Cancer Prev* 19: 693-698.
 30. Pulte D, Jansen L, Brenner H (2018) Disparities in Colon Cancer Survival by Insurance Type: A Population-Based Analysis. *Dis Colon Rectum*. 61: 538-546.
 31. Chouhan V, Mansoor E, Parasa S, Cooper GS (2018) Rates of Prevalent Colorectal Cancer Occurrence in Persons 75 Years of Age and Older: A Population-Based National Study. *Dig Dis Sci, Epub* 63: 1929-1936.
 32. Degiuli M, Arolfo S, Evangelista A, Lorenzon L, Reddavid R, et al. (2018) Number of lymph nodes assessed has no prognostic impact in node-negative rectal cancers after neo adjuvant therapy. Results of the "Italian Society of Surgical Oncology (S.I.C.O.) Colorectal Cancer Network" (SICO-CCN) multicentre collaborative study. *Eur J Surg Oncol* 44:1233-1240.
 33. Cao B, Min L, Zhu S, Shi H, Zhang S (2018) Long-term oncological outcomes of local excision versus radical resection for early colorectal cancer in young patients without preoperative chemo radiotherapy: a population-based propensity matching study. *Cancer Med* 7: 2415-2422.
 34. Brouwer NPM, Stijns RCH, Lemmens VEPP, Nagtegaal ID, Beets-Tan RGH, et al. (2018) Clinical lymph node staging in colorectal cancer; a flip of the coin? *Eur J Surg Oncol* 44: 1241-1246.
 35. Snyder RA, Hu CY, Cuddy A, Francescatti AB, Schumacher JR, et al. (2018) Alliance for Clinical Trials in Oncology Network Cancer Surveillance Optimization Working Group. *JAMA* 319: 2104-2115.
 36. Trautmann F, Reißfelder C, Pecqueux M, Weitz J, Schmitt J (2018) Evidence-based quality standards improve prognosis in colon cancer care. *Eur J Surg Oncol* 44: 1324-1330.
 37. Ma Y, Luo Y, Lin N, Lv Y, Zhou Y, et al. (2018) Prognostic impact of the number of lymph nodes examined in different stages of colorectalmucinous adenocarcinoma. *Onco Targets There Collection* 11: 3659-3670.
 38. Wolbert T, Leigh EC, Barry R, Thompson EC, Gress T, et al. (2018) Later Stage Disease and Earlier Onset of Rectal Cancer: Epidemiology and Outcomes Comparison of Rectal Cancer in a Rural Appalachian Area to State and National Rates. *Am Surg* 84: 1229-1235.
 39. Bojko MM, Kucejko RJ, Poggio JL (2018) Racial Disparities and the Effect of County Level Income on the Incidence and Survival of Young Men with Anal Cancer. *Health Equity* 2: 193-198.
 40. Khatatbeh MM, Jadallah KA, Bashtawy ALM, Hamaydeh SA, Gharaibeh MA (2018) Factors Associated with Colorectal Cancer Among Jordanians: a Case- Control Study. *Asian Pac J Cancer Prev* 19: 577-581.
 41. Lim MC, Won YJ, Lim J, Seo SS, Kang S, et al. (2018) Second primary colorectal cancer among endometrial cancer survivor: shared etiology and treatment sequelae. *J Cancer Res Clin Oncol* 144: 845-854.
 42. Rigter LS, Snaebjornsson P, Rosenberg EH, Atmodimedjo PN, Aleman BM, et al. (2018) Double somatic mutations in mismatch repair genes are frequent in colorectal cancer after Hodgkin's lymphoma treatment. *Gut* 67: 447-455.
 43. Silva DAS, Tremblay MS, Souza MFM, Mooney M, Naghavi M, et al. (2018) Mortality and years of life lost by colorectal cancer attributable to physical inactivity in Brazil (1990-2015): Findings from the Global Burden of Disease Study. *Malta DC PLoS One* 13: e0190943.
 44. Mughini-Gras L, Schaapveld M, Kramers J, Mooij S, Neeffjes-Borst EA, et al. (2018) Increased colon cancer risk after severe Salmonella infection. *PLoS One. eCollection* 13: e0189721.
 45. Park DI, Ryu S, Kim YH, Lee SH, Lee CK (2010) Comparison of guaiac-based and quantitative immunochemical fecal occult blood testing in a population at average risk undergoing colorectal cancer screening. *Am J Gastroenterol* 105: 2017-2025.
 46. Guraya SY, Eltinay OE (2006) Higher prevalence in young population and rightward shift of colorectal carcinoma. *Saudi medical journal, research gate* 27: 1391-1393.
 47. Guraya SY, Eltinay OE (2006) Higher prevalence in young population and rightward shift of colorectal carcinoma. *Saudi medical journal, research gate* 27: 1391-1393.
 48. Hagggar FA, Boushey RP (2009) Colorectal cancer epidemiology: incidence, mortality, survival, and risk factors- Clinics in colon and rectal surgery. *Clin Colon Rectal Surg* 22: 191-197.
 49. Ansari R, Mahdavinia M, Sadjadi A, Nouraie M, Kamangar F, et al. (2006) Incidence and age distribution of colorectal cancer in Iran: results of a population-based cancer registry. *Cancer letters* 240: 143-147.
 50. O'Connell JB, Maggard MA, Liu JH, Etzioni DA, Livingston

- EH, et al. (2003) Rates of colon and rectal cancers are increasing in young adults. *Am Surg* 69: 866-872.
51. O'Connell JB, Maggard MA, Edward H Livingston, Cifford K Yo (2001) Colorectal cancer in the young adults. *The American journal of Surg* 187: 343-348.
52. Fuchs CS, Giovannucci EL, Colditz GA, Hunter DJ, Speizer FE, et al. (1994) A prospective study of family history and the risk of colorectal cancer. *N Engl J Med* 331: 1669-1674.
53. Walsh MD, Leggett BA, Young JP, Goldberg RM, Cunningham JM (1994) Immunohistochemistry versus microsatellite instability testing in phenol typing colorectal tumors. *J Clin Oncol* 20: 1043-1048.
54. Umar A, Boland CR, Terdiman JP, Syngal S, De la Chapelle A, et al. (2004) Revised Bethesda Guidelines for hereditary nonpolyposis colorectal cancer (Lynch syndrome) and microsatellite instability. *J Natl Cancer Inst* 96: 261-268.
55. O'Connell JB, Maggard MA, Liu JH, Etzioni DA, Ko CY (2004) Are survival rates different for young and older patients with rectal cancer. *Dis Colon Rectum, Springer* 47: 2064-2069.
56. Thiis-Evensen E, Hoff GS, Sauar J, Langmark F, Majak BM (1999) Population-based surveillance by colonoscopy: effect on the incidence of colorectal cancer: Telemark Polyp Study I. *Scand J Gastroenterol* 34: 414-420.
57. Finlay A Macrae, Richard M Goldberg, David Seres, Diane MF Savarese (2018) Colorectal cancer: Epidemiology, risk factors, and protective factors.
58. Johnson Olabisi, Narendra Parihar, Alison Isherwood, Mike Hughes. *Worldwide Incidence of Colorectal Cancer: a 10-year Forecast.*

Copyright: ©2019 Nasira Tajamal, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.