Original Article

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Epidemiological Study of colorectal and anal cancer in Kirkuk City

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ABSTRACT

Background: Colorectal carcinoma is the most common gastrointestinal malignancy worldwide. It is the second cause of death in the western countries. Despite the clear relationship with age, colorectal carcinoma is not strictly a disease of elderly and 6-8% of the cases occur in patients below 40 years of age. Colorectal cancers are of favorable prognosis provided if diagnosed and treated in early stage.**Objective:**This study aims to assess the incidence of colon cancer in Kirkuk city, to highlight the recently noted increase in its occurrence among individuals younger than 50 years old and to evaluate the level of knowledge of Kirkuk population about colon cancer screening and their willingness for the screening.**Patients and Methods:**This cross-sectional retrospective study enrolled (172) patients with colorectal cancer. Patients included in this study had been selected from those who attended the endoscopic and oncology units in Kirkuk general hospitals during the period between the 1st of January 2008 to the 31stof December 2012 in addition to the cases provided by the specialists private clinic in Kirkuk. The demographic information, distribution, presentation, histopathological typing and staging have been described. **Results:**Of the (172) patients involved in this study, 94 patients (54.7%) were males and 78 (45.3%) were females with a male :female ratio of(1.2:1), mean age was (51.4) years and peak age of incidence was (60-69) years age group.The main presenting symptom was abdominal pain (42.4)%. The most common site of the tumor was the rectum (35)%. In the evaluation of population knowledge, (61%) weren't knowing about colon cancer screening and (68%) of those who knew about screening weren't willing to be screened in the future; absence of symptoms (64.8%) was the most common barrier to screening **Conclusion:** Colorectal carcinoma is a public health burden in most industrialized countries and is now the third most common cause of cancer related deaths in the world. This study showed an increase in number of cases of colon cancer in Kirkuk during the year 2012 compared with previous years, with a notable increase among young adults, most of them presented with advanced and aggressive disease.A considerable proportion of the population were unwilling to participate in the colon cancer screening program. Lack of health education is the preeminent explanation.
Key words: Colorectal carcinoma Screening - young adults

Introduction:

The colorectum is the portion of the gastrointestinal (GI) tract most commonly affected by tumors [1]. Colorectal cancer is the most frequent cause of death among visceral malignancies that affect both sexes. The incidence begins to rise at age 40 and peaks at age 60 to 75 yr [2]. Both men and women face a lifetime risk of almost 6% for the development of invasive colorectal cancer [1].It is estimated that approximately 149,000 new cases of colorectal cancer were diagnosed in 2008 and that 50,000 deaths from colon and rectum cancer occurred [1]. The incidences of colon cancer in the Arab world are relatively low, although in some of the affluent countries it ranks two after breast cancer [3]. Comparative studies in the Iraqi Cancer Registry during the 30 year period (1965-1994) showed an increased incidence of colorectal cancer in Iraq from 25% to 50%.

The incidence of colorectal cancer in Iraq is 2.6% compared to 6-13% in the developed countries and 17-51.1% in the industrialized nations [4]

.The aetiology for most cases of large-bowel cancer appears to be related to environmental factors [5]. Environmental factors probably account for 70% of all 'sporadic' colorectal cancers [6]. The disease occurs more often in upper socioeconomic populations who live in urban areas [5].

1-Diet; Animal fat:

The enhanced number of calories inherent in "western" diets coupled with physical inactivity has been associated with a higher prevalence of obesity. Persons with excess weight gain develop insulin resistance with increased levels of insulin,leading to higher circulating concentrations of insulin-like growth factor type I (IGF-I).

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This factor appears to stimulate proliferation of the intestinal mucosa.

One hypothesis is that the ingestion of animal fats found in red meats and processed meat leads to an increased proportion of anaerobes in the gut microflora, resulting in the conversion of normal bile acids into carcinogens [5]

.2-Inflammatory bowel disease:The chronic inflammatory colitis, ulcerative colitis and Crohn's disease, are associated with an increased risk of colorectal cancer [1]

3-Hereditary syndromes (autosomal dominant inheritance), Familial polyposis coli, Nonpolyposis syndrome (Lynch syndrome):Patients with the highest risk for colorectal cancer are those who have a hereditary colorectal cancer syndrome.The dominantly inherited syndromes include familial adenomatous polyposis(FAP)and Lynch syndrome [1]

.4-Ureterosigmoidostomy:

Colon cancer develops in 5 to 10% of people 15 to 30 years after ureterosigmoidostomy to correct congenital extrophy of the bladder.

5-Tobacco Use: Cigarette smoking is linked to the development of colorectal adenomas, particularly after 35 years of tobacco use. No biologic explanation for this association has yet been proposed[5]Adenocarcinoma of the colon and rectum grows slowly, and a long interval elapses before it is large enough to produce symptoms. Early diagnosis depends on routine examination [2].All patients with symptoms suggestive of colorectal neoplasia should undergo an evaluation of the colon by colonoscopy or by flexible sigmoidoscopy and barium enema study [7] .It has been known for the last two decades that adolescents and young adult patients with colorectal cancer have a poorer prognosis and more aggressive disease than older adults [8].

The overall survival rate in colon cancer is increased by screening procedures. Screening is most useful for cancers having a well known precancerous condition such as adenomas in case of colon cancer [9]. Colon cancer fulfils the criteria of screening, because it represents a major health problem, localized lesions are curable by surgical resection and the prolonged history of colon cancer affords time to detect and eliminate early neoplastic lesions before they reach an advanced, incurable stage. The willingness of patients and physicians to comply with recommendations for screening programs has a major impact on the effectiveness of colon cancer screening [10]. Effective screening tests include immunochemical methods for fecal occult blood (i-FOBT) using antibodies to human globin with potential increase in patients' compliance;because no dietary restrictions are needed. Colonoscopy is also recommended for screening by the American Cancer Society.

There are differences in practice between the US, Europe,and other countries in screening for colorectal neoplasia *1)* and investigation of other common lower gastrointestinal tract problems. Colonoscopy is often considered the gold standard for detection of colorectal neoplasia, and deaths from colorectal cancer can undoubtedly be reduced through removal of adenomatous polyps *(2, 3)*. Colonoscopy is a scarce resource in many countries, however, and it may be limited to those with comprehensive health insurance. Consequently, there is much interest in using fecal tests to decide who will truly benefit from colonoscopy, particularly because the symptoms reported for colorectal diseases overlap considerably, making clinicaldecision-making about whom to refer difficult. In this issue of the Journal, Kok and colleagues *(4)*report a study on the diagnostic accuracy of point-of care tests (POCTs)6 for fecal calprotectin and occult blood in primary care and assessing what they term "organic bowel disease." A qualitative immunochemical fecal occult blood test was used. We have recommended *(5)* that tests that use antibodies to detect fecal hemoglobin be termed "fecal immunochemical tests for hemoglobin" and that the abbreviation "FIT" be used, because guaiac-based fecal occult blood tests(gFOBTs) and FITs are very different tests. As the authors mention, FITs are rapidly superseding traditional gFOBTs because of their many advantages, including that only a single sample is generally collected, the available collection devices encourage adoption of the test, the test is more specific for lower gastrointestinal bleeding, and dietary restriction is definitely not required .Indeed, the many disadvantages of gFOBTs with respect to sample collection and handling, analysis,and interpretation of results *(6)* have led to the general consensus that their use is obsolete because of the much better performance characteristics of FITs.We strongly advocate that professionals in laboratory medicine (PLMs) encourage current users of gFOBTs in laboratories, clinics, wards, and primary care to replace these tests with the more effective FITs.Kok and colleagues *(4)* performed fecal tests on samples from patients with lower-abdominal symptoms.

The authors performed diagnostic endoscopic and histologic examinations and reported comprehensiveestimates of clinical characteristics. STARD (Standards for Reporting of Diagnostic Accuracy) guidelines*(7)* were followed. We advocate that, whenever possible

Studies in general population samples have found certain demographic variables, such as higher education, higher income, having health insurance, and being married, to be positively associated with colorectal cancer.

Factors such as lack of symptoms, lack of time, inconvenience, lack of interest, cost, discomfort associated with the procedure, and embarrassment have been found to be common barriers to colorectal cancer screening[18].

The aims of this study are to:

1-Assess the incidence of colon cancer in Kirkuk city and to highlight the recently noted increase in its occurrence among individuals younger than 50 years old

.2-Evaluate the level of knowledge of the population about colon cancer screening program and the applicability of this program by finding the most common barriers to screening to surmount them.

Patients And Methods:

This cross-sectional retrospective study enrolled analysis (172) patients diagnosed to have colorectal carcinoma who attended the endoscopic and oncology units in Azadi teaching hospital and Kirkuk general hospital during the period between the 1st of January 2008 to the 31st of December 2012 in addition to extra cases provided by the specialists in the major private histopathology laboratories in Kirkuk.The data were collected by a special form over 5 months from 15th July 2012 till 31st December 2012. The staging system used in this study was the modified Dukes' staging system [6].

Errors were unavoidable during data collection; those errors were due to deficient data recording mainly in 2008-2009 when the oncology centre in Azadi Teaching Hospital was not established. Errors were also encountered in data collection from patients with colon cancer who were not treated in Kirkuk hospitals. In such patients, the only data source was the histopathology report been provided by the histopathologists and hence their presentation and often the exact site of the tumor could not be determined.

Results: There were 92 (54.7%) male patients and 76 (45.3%) female patients, figure (1). The mean age was (48.5) years for males and (54.5) years for females, Male to Female ratio was (1.2:1).The peak age group was (60-69) years, figure (2). (62.3%) of the patients lived in urban areas; while (37.7%) lived in rural areas of Kirkuk. (37.4%) were employed while (62.6%) were unemployed. There were (9) patients with colon cancer in 2008, (6) patients in 2009, (25) patients in 2010, (57) patients in 2011 and (75) patients in 2012, figure (3).

Distribution of these patients in each year by sex is shown in figure (4). There were (54) patients below the age of 50 years (31.4%), with mean age of (30) years and a male to female ratio of (1:1), figure (5).

Figure (6) demonstrates an increase in occurrence of colon cancer among young adults between (2008 - 2012).

Family history of gastrointestinal malignancy was found in (1.8%) of cases and no relation could be demonstrated with inflammatory bowel disease or familial adenomatous polyposis.

The presenting symptom was known in (97) patients and unknown in the remainder because of the deficiency in their records. Abdominal pain was the main presenting symptom in 41 cases (42.4)%, followed by bleeding per rectum in 21 cases (21.6)%, constipation 15 cases (16)%, abdominal distension in 10 cases (10.3)%, pallor and fatigue in 6 cases (6.2)%, weight loss in (1.0)%, diarrhoea in (1.0)%, vomiting in (1.0)%, while in (1.0)% of patients colorectal cancer was detected incidentally, figure (7) .The mean period between onset of presenting symptoms and the final diagnosis was (7) months.Among (103) patients with registered site of the tumor in the records, the commonest site of the tumour was the rectum in 36 (35 %) of the patients followed by sigmoid colon in 16 patients (15.5 %) then the rectosigmoid in 15 patients (14.5%), caecum in 8 patients (7.7%), ascending colon in 7 patients (7%), descending colon in 7 patients (7%), hepatic flexure in 4 patients (4%), splenic flexure in 4 patients (4%)and anus in 4 patients (4%). Transverse colon tumors were the least (2)%, figure (8) .

Histopathological reports revealed that adenocarcinomas represent the commonest pathological type (97.8%). Other types include squamous cell carcinoma (1.15)% and small cell carcinoma (1.15)%, figure (9).

According to the degree of differentiation of adenocarcinomas, (66.7)% were moderately differentiated, (20.8)% well differentiated and (12.5)% poorly differentiated adenocarcinomas, figure (10).

The most common pathological stage according to modified Dukes staging system was Dukes B in (37.9%) of patients followed by stage C (24.2%), stage A (21.2)% while stage D was (16.7)%, figure (11).Young adults presented with more advanced stages having a higher percentage of stage C and D as shown in figure (12).

(6)% of patients with bleeding per rectum were misdiagnosed as having haemorrhoids and were operated for haemorrhoidectomy.

(56)% had surgery for removal of the tumor, of which hemicolectomy was the most common procedure. No complications were reported. (60)% had received chemotherapy, none received radiotherapy.

Case fatality rate of colorectal carcinoma was 9.88% being higher (13.7%) in the young adults (>50 y) compared to the older patients (8.2%).

Incidence of colorectal cancer in Kirkuk was 12 in 100,000 individuals.

As a supplement to this study about colon cancer, a cross-sectional study about colon cancer screening was done on 100 healthy individuals being randomly selected from general Kirkuk population. The data were collected by a special form over 2 months from 1st January 2013 till 20th February 2013.There were (50) males and (50) females. (83)% were from urban areas, (17)% from rural areas. (22)% were illiterates, (28)% had primary school degree, (34)% had high school degree and (16)% had college certificate.

Of the study sample (39)% were knowing about colon cancer screening programme while (61)% weren't. Figure (13).

Among those who knew about screening, (32)% had intention to participate in the colon cancer screening programme while (68)% of them weren't intending to be screened in the future. Figure (14).

Among educated persons, (41)% accepted to be screened in the future while (59)% refused to participate in any screening programme. In those persons unwilling to collaborate in the screening the barriers were as follows: (64.8)% because of being asymptomatic, (20.6)% afraid and/or embarrassed,(5.8)% because they've never been told by doctors about screening, (4.4)% because of lack of interest about screening and (4.4)% because of the cost of the screening tests. Figure (15).A test of significance (Chi square) was done and revealed a significant relation between knowledge about colon cancer screening and the level of education.(P value=6.98, d.f.=1), but there was not significant relation between the intention to participate in the screening and the level of education(P value =2.64, d.f.=1) as many educated persons refused screening.

Discussion:

Colorectal neoplasm is an important health problem associated with high morbidity and mortality in Western countries. The incidence and prevalence of colorectal neoplasm in several Eastern countries, however, have been increasing in recent decades and are now comparable to the rates seen in Western countries [19]

.Although the reasons for these increases are unclear, the increased westernization of lifestyles, including increased caloric intake and reduced physical activity leading to obesity and metabolic syndrome, may be responsible [19]

.According to Iraq cancer registry, the incidence of colorectal carcinoma was 4.55% of whole body malignancy in 2002 [20]. The incidence rate of colorectal carcinoma was 2.6% in a study published in the world journal of colorectal surgery [4] while the incidence rates in Kurdistan were 3.93% for males and 3.12% for females in 2009 [21]This study is comparable to the previous studies regarding the male: female ratio and peak age group affected by the disease [22] and shows an increase in colon cancer among young adults (below 50 y) which is compatible with the study done in United States [23]

.In this study 31.4% of the cases were below 50y while it was only 17.5% and 20% in two previous studies done in Baghdad [22,24] . Young adults presented with more advanced stages than the older adults mostly because of lack of clinical awareness and aggressive pursuit of symptoms [23]

.Adenocarcinomas constituted (97.8%) of the colon cancer in this study, most was of moderate differentiation which's comparable to the study done in India [25] and another done in Finland([26]. The rectum was the most common site for the tumour (35%) which is comparable to most of the studies [24,27]

The case fatality rate of colorectal cancer is low (9.8%) in comparison with breast cancer which has fatality rate of 48% in low-income, 40% in low-middle-income, and 38% in high-middle-income countries and 24% in high-income countries according to the most recent WHO data [28]

and this might reflect the better prognosis of colon cancer especially if diagnosed at early stage and treated properly by surgery and adjuvant therapy.Although screening reduces colon cancer mortality and incidence, and is recommended in national guidelines for adults over the age of 50, only about 45% of those aged 65 or older were compliant with screening recommendations in 2005([29,30,31])

. A study done in Kingdom of Saudi Arabia stated that lack of screening and consequent advanced stage at diagnosis might relate to the increase in colorectal cancer mortality in Saudis [32]

.Our study regarding screening agrees with the study published by Journal of Preventive Medicine in that lack of awareness about CRC and CRC screening and belief that "CRC screening is not necessary" were frequently and consistently reported as barriers to CRC screening in older persons([29]

.In the study issued by American Society for Gastrointestinal Endoscopy most respondents (70.5%) responded positively to undergo future CRC tests[33]while in our study most persons(68)% responded negatively.

Conclusion:

1-There is an increased incidence of colorectal carcinoma in all age groups, with a notable increase among young adults, most of them presented with advanced and aggressive disease.

2 -There was a delay for more than (7) months from the onset of presenting symptoms to the time of definitive diagnosis.

3- A considerable proportion of the population were

unwilling to participate in the colon cancer screening program. Lack of health education is the preeminent explanation.

Recommendations:

1-Clinicians should be aware of the possibility of colorectal cancer especially in those patients with bleeding per rectum, changes in bowel habit (especially of recent onset) with or without abdominal pain regardless the age for early detection of the disease and fecal occult blood test remain important measures for detecting tumors.

2-Developping programs and interventions to increase colorectal cancer screening and modification of the screening tests such as immune human fecal occult blood tests (i-FOBT) and colonoscopy in regard of the instruments used and the cost of the tests to encourage a higher proportion of the population to participate in the screening.

3- A need exists for continued efforts to educate the public about colon cancer and the important role of screening in preventing this disease. Programs to increase health education include :

- reminder letters,
- educational videos or
- small-group educational sessions.
- Other programs to increase screening are targeting physicians to increase recommending screening to patients .

Results:

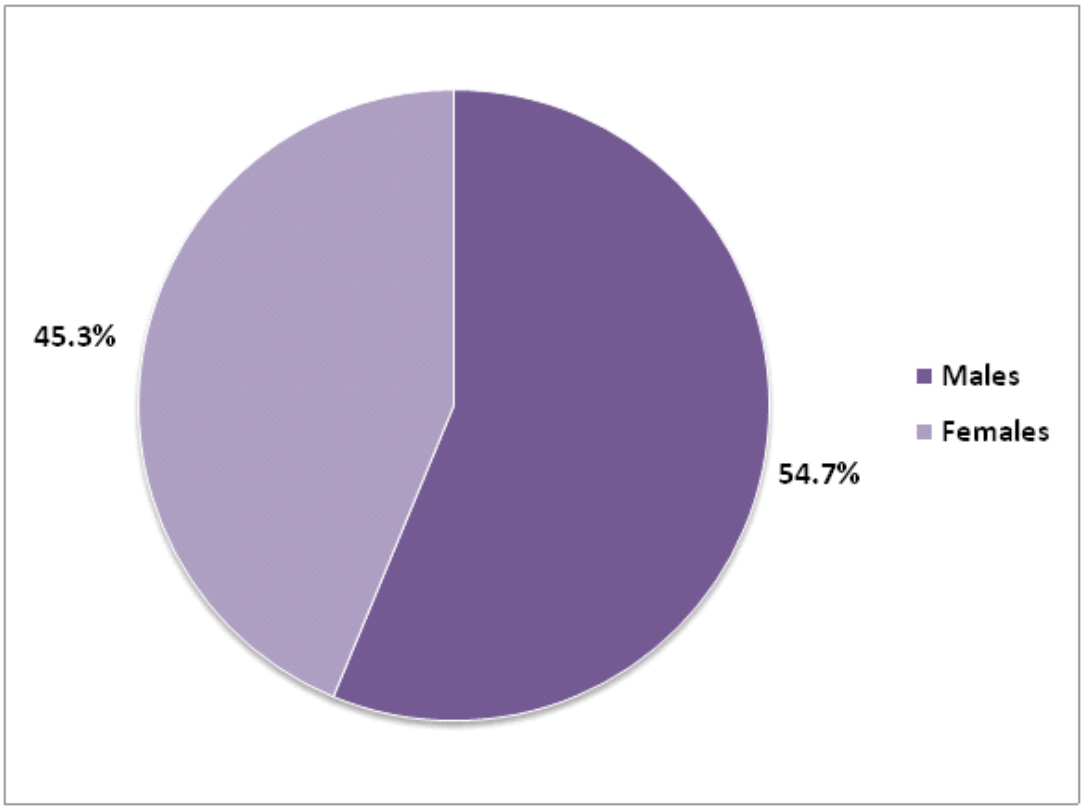


Figure (1): percentage distribution of patients with colon cancer according to sex.

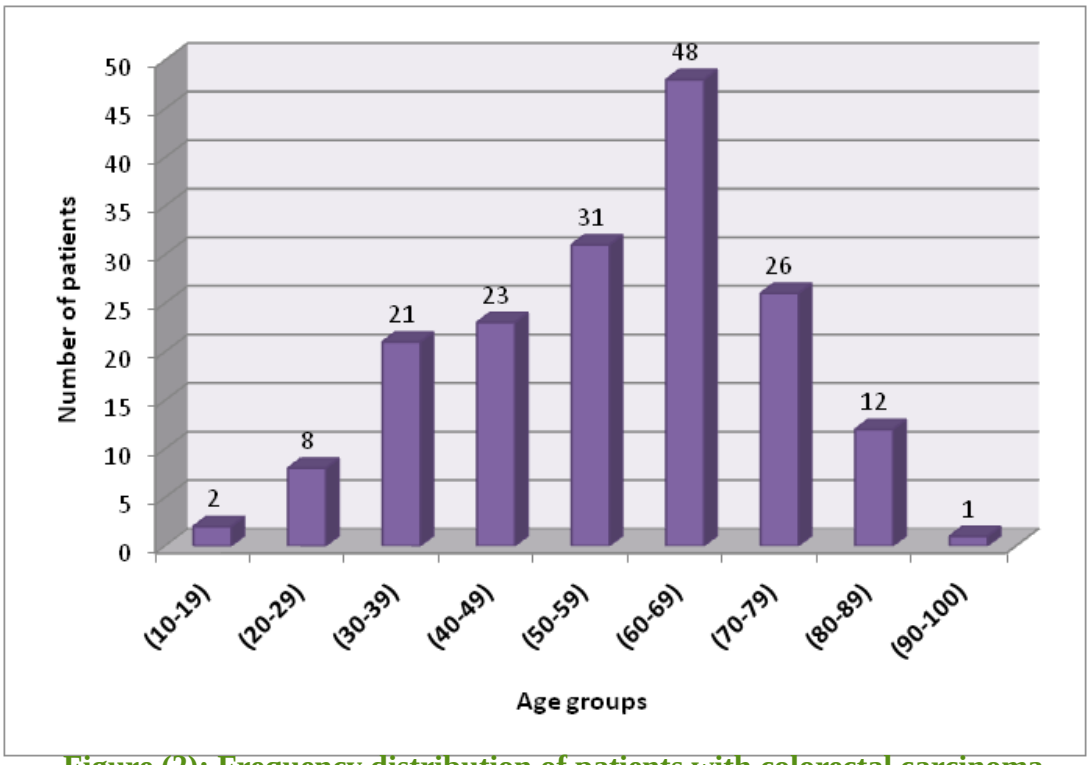


Figure (2): Frequency distribution of patients with colorectal carcinoma according to age groups.

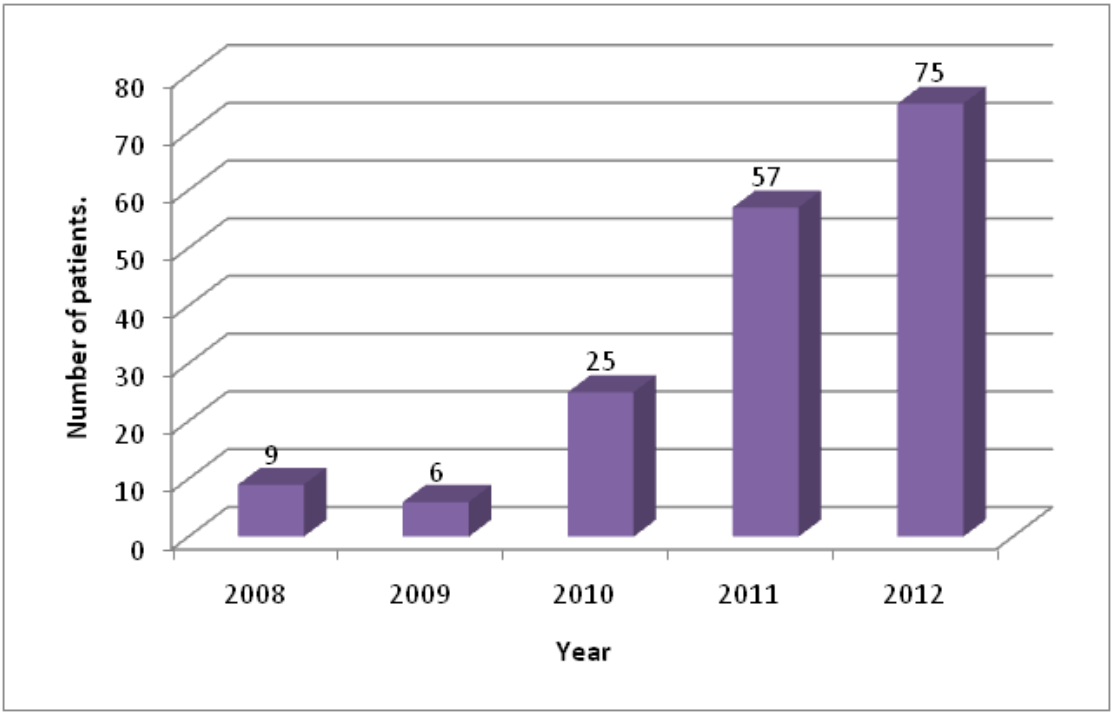


Figure (3): Frequency distribution of patients with colorectal carcinoma according To date of presentation (years).

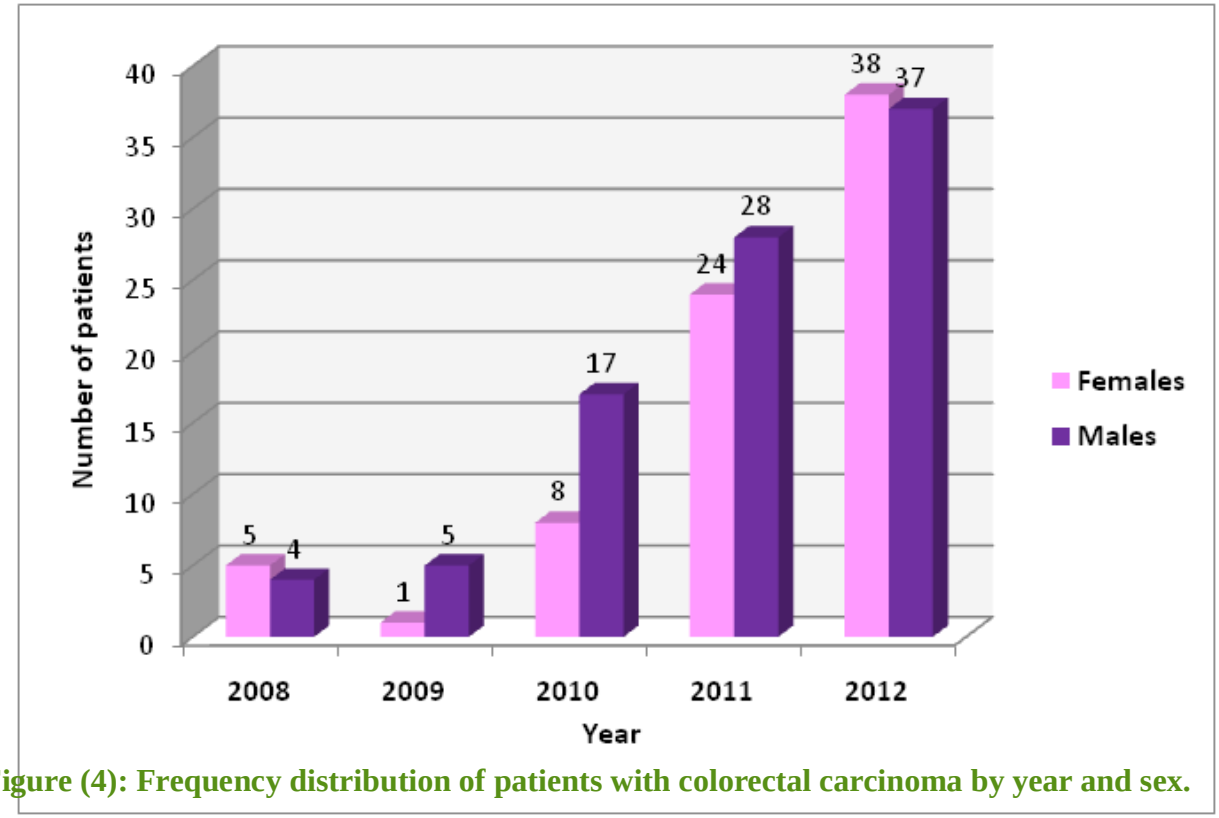


Figure (4): Frequency distribution of patients with colorectal carcinoma by year and sex.

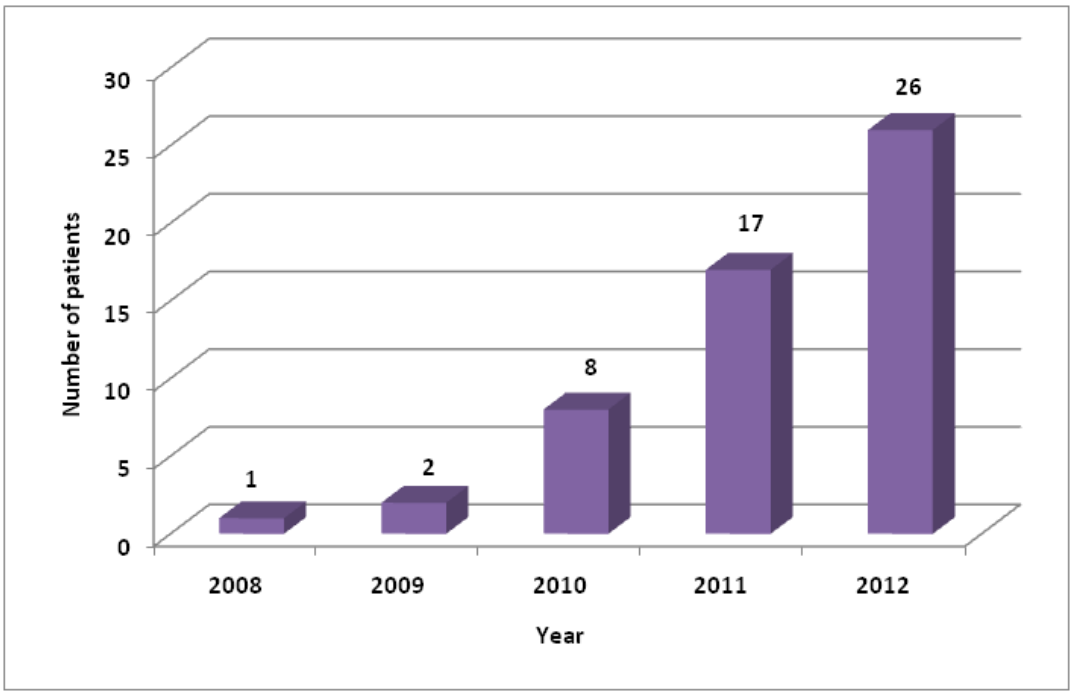


Figure (5):Frequency distribution of colorectal cancer patients aged <50 years.

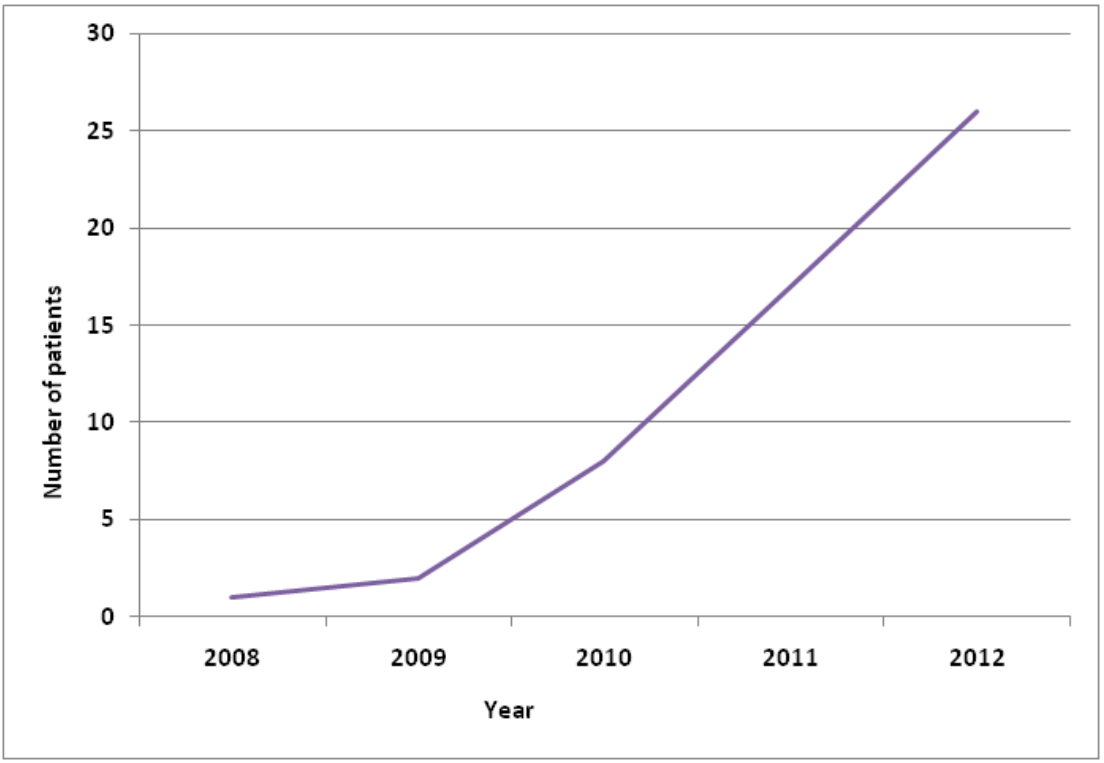
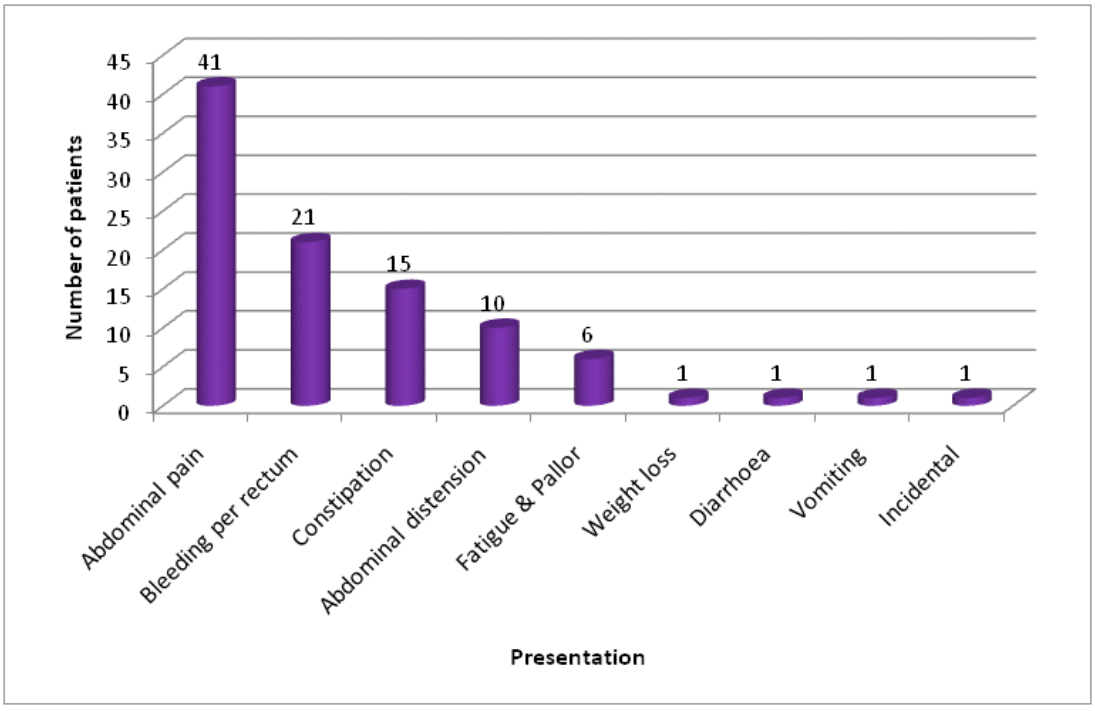


Figure (6): Frequency distribution of colorectal cancer patients aged >50 years between 2010 -2012.



Figure(7):Frequency distribution of colorectal cancer patients by presentation.

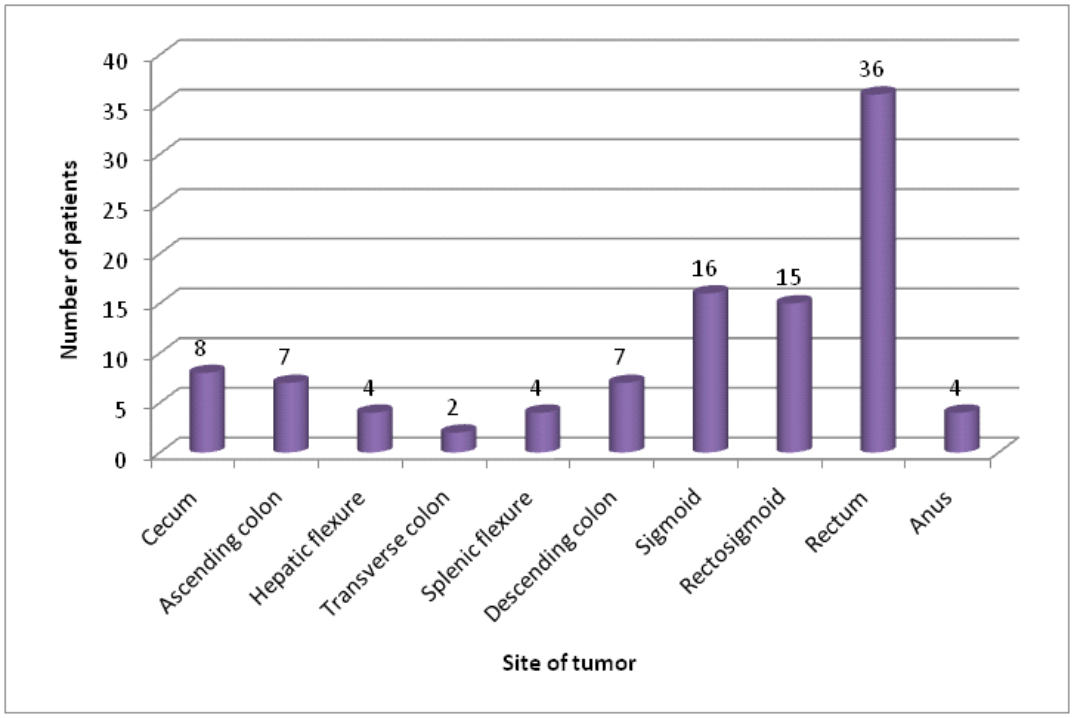


Figure (8):Frequency distribution of patients with colorectal carcinoma By site of Tumor.

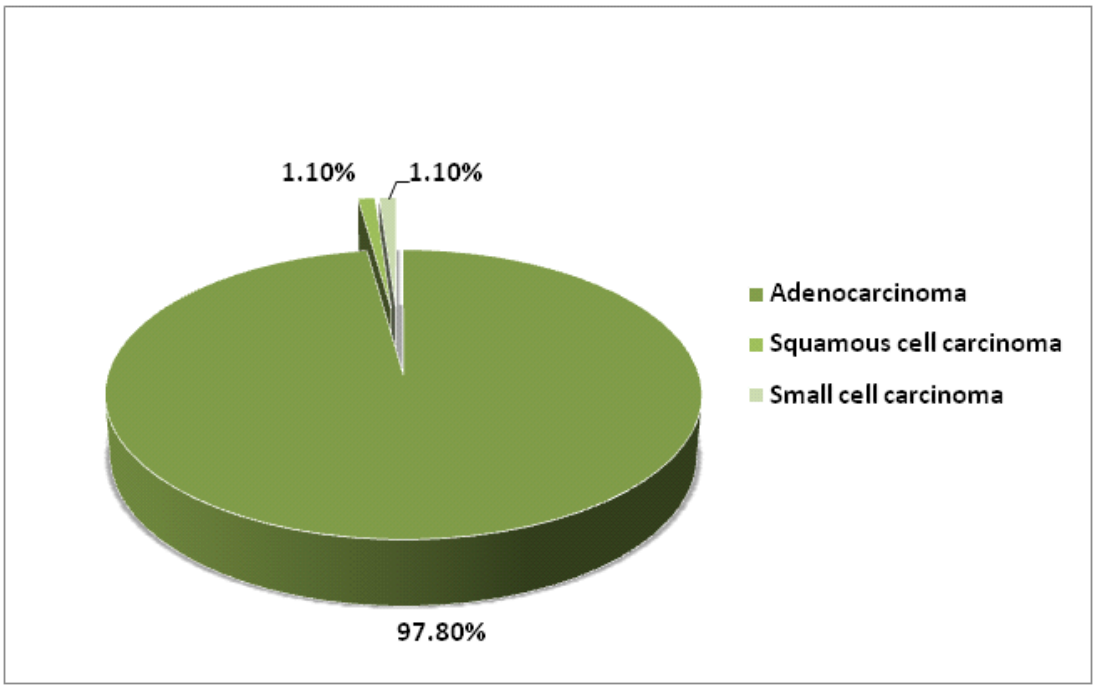


Figure (9): Percentage distribution of patients with colorectal carcinoma According to type of malignancy.

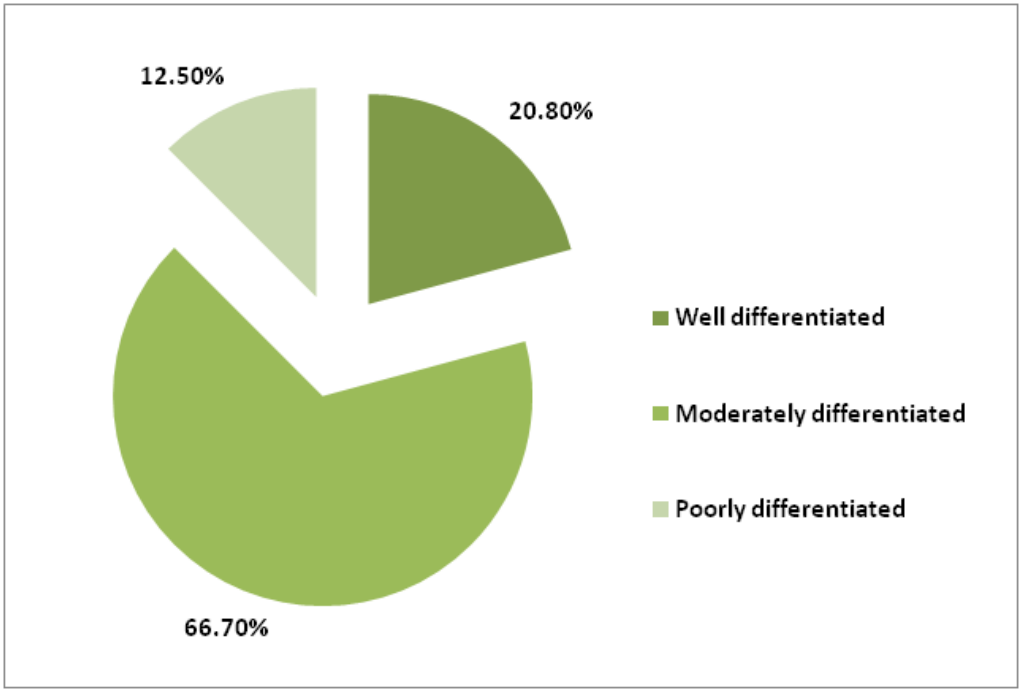


Figure (10): Percentage distribution of patients with colorectal adenocarcinoma according to differentiation.

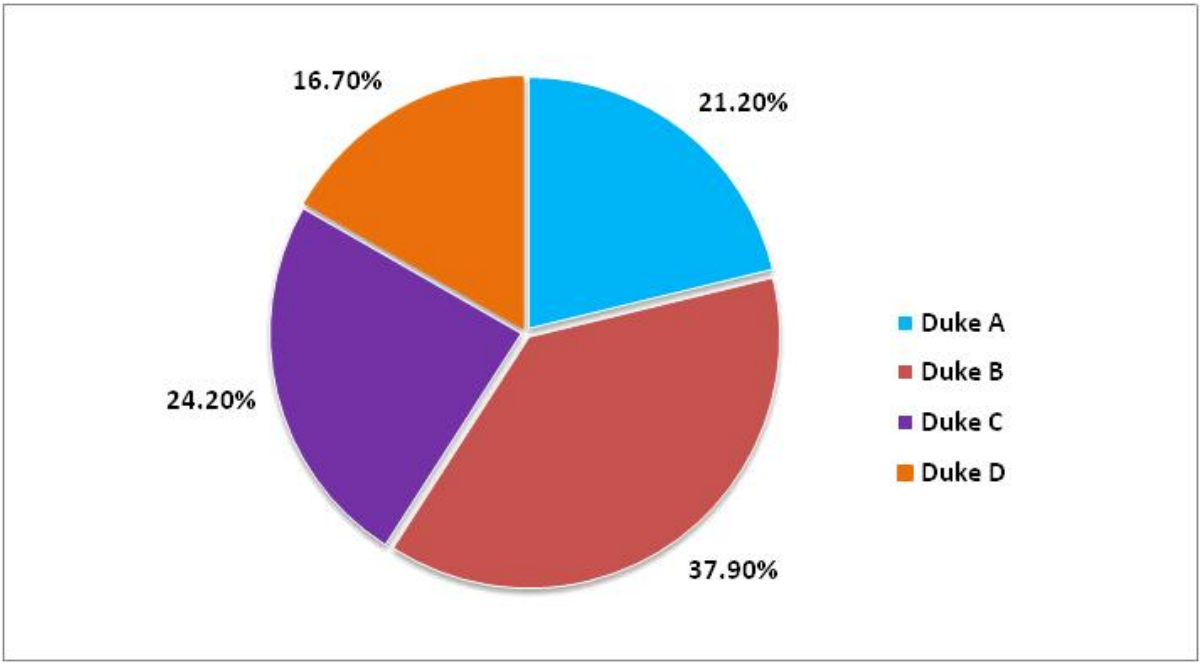


Figure (11): Percentage distribution of patients with colorectal carcinoma by Dukes Stage.

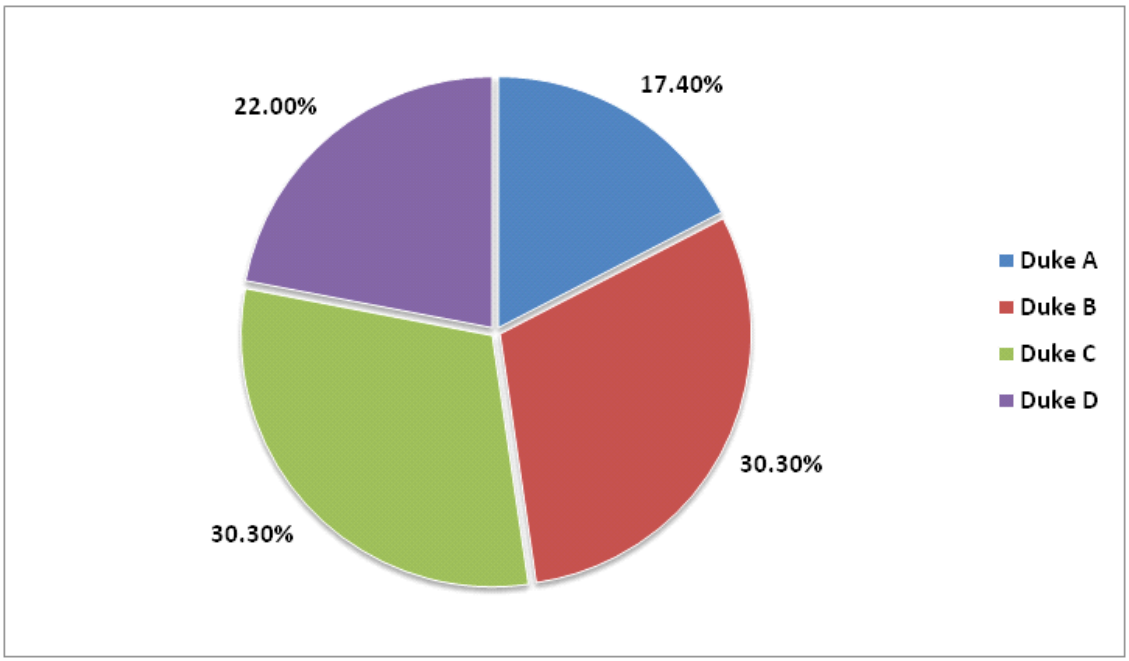


Figure (12):
Percentage distribution of young adults with colon cancer by Dukes staging.

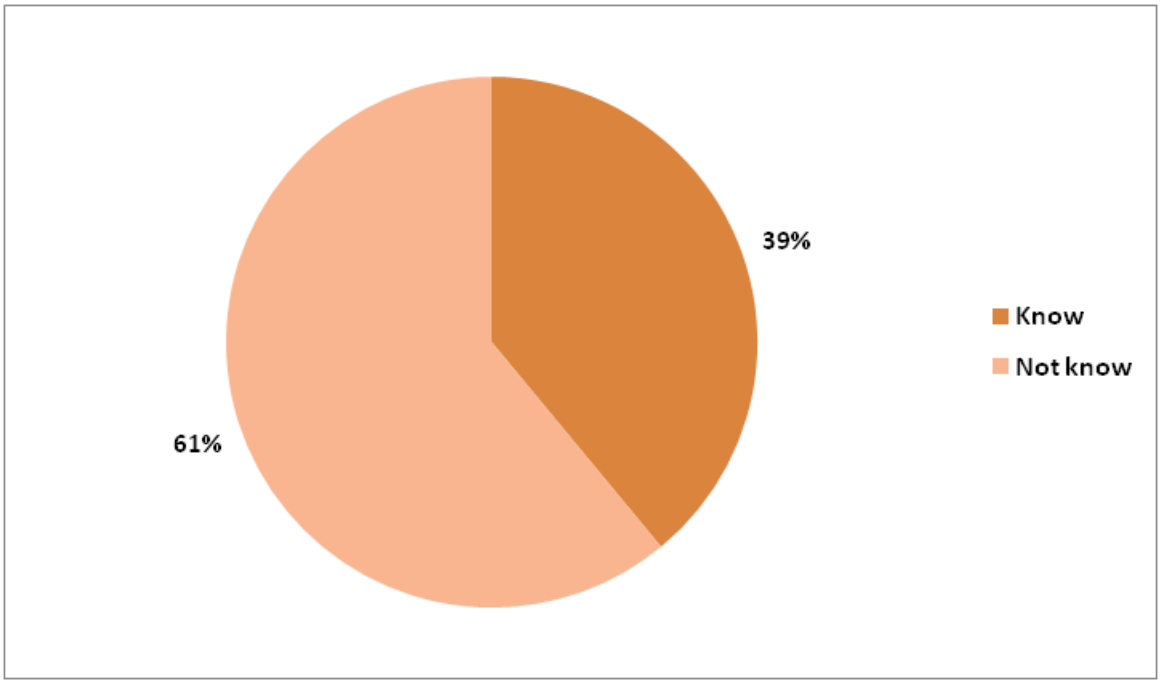


Figure (13):
Frequency distribution of study sample according to their knowledge about colon cancer screening programme.

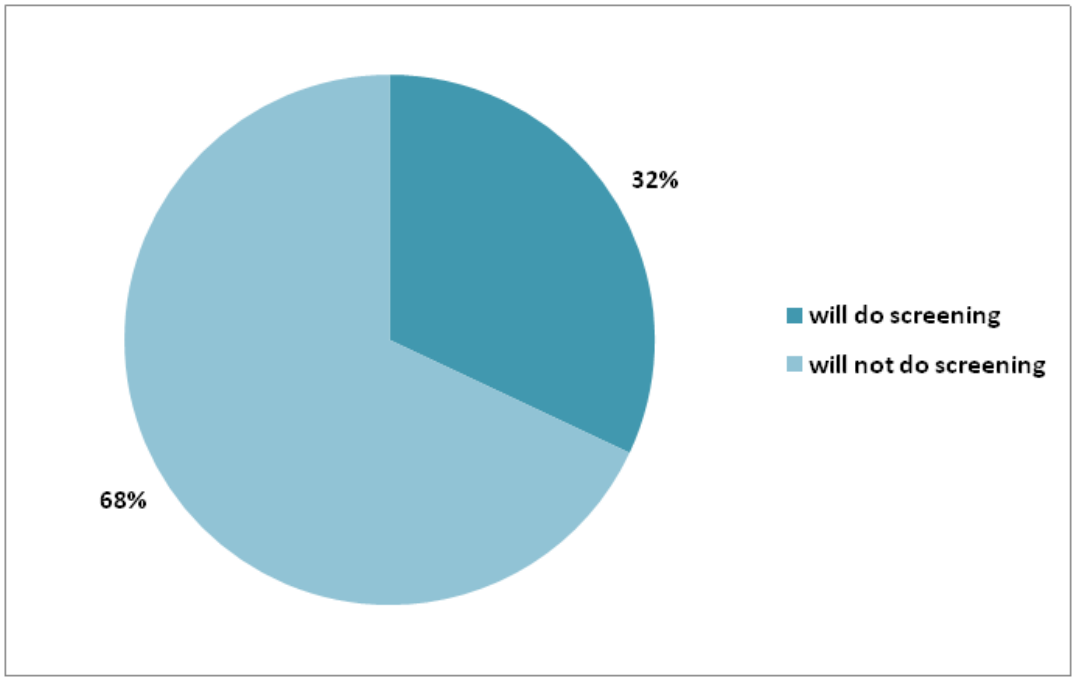


Figure (14): Frequency distribution of study sample according to their Intention to screening

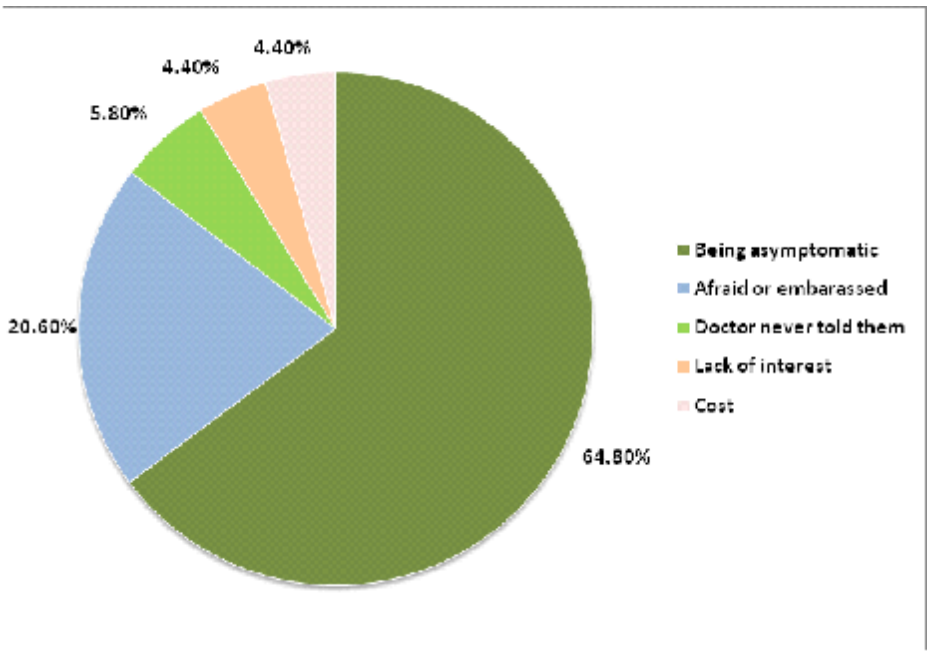


Figure (15):
Frequency distribution of study sample according to the barrier to screening.

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