Deanship of Graduate Studies

Al-Quds University

Risk Factors of Ulcerative Colitis in the Gaza Strip: A Case Control Study

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Dedication

I dedicate this work to ...

My parents for earning an honest living and for supporting and encouraging me to believe in myself.

To the loving memory of my brother Ibraheem, God bless his soul.

To my brother and sisters.

To all my relatives and friends who appreciate this work.

To everyone in my country could get benefit from this work.

To the soul of martyrs, who sacrificed their lives for us to reach some dreams and rights.

Ahmed Eleyan Abukhedeir

Declaration

I declare that this thesis submitted for the degree of Master is the result of my own research except as cited in the reference. The thesis has been not accepted for any degree and is not concurrently submitted in candidature of any other degree.

Signed:

Name: Ahmed Eleyan Abukhedeir

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First of all, all praise to ALLAH for giving me the blessing, the strength, the chance and endurance to complete this thesis.

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Ahmed Eleyan Abukhedeir

Abstract

Ulcerative colitis can be debilitating and can sometimes lead to life threatening complications. While it has no known cure, treatment can greatly reduce signs and symptoms of the disease and even bring about long-term remission. This study aimed to identify the main risk factors associated with ulcerative colitis among people in Gaza strip. A case-control study was undertaken to the patients attending to the main primary health care centres. The target population consisted of two groups, the first group were cases (all participants who diagnosed with ulcerative colitis and confirmed by colonoscopy during the study period), the second group were controls who include (all healthy participants without known diagnosis of ulcerative colitis and didn't have diarrhea at least for two months from data collection with a ratio of one case to two control. A convenience sample was consisted of 225 participants (75 cases and 150 controls) matched with age, gender and place of treatment. Face to face interview questionnaire was used and information on sociodemographic characteristics, life style, medical conditions and medication used were collected. Data was processed and analysed using statistical package for social sciences (SPSS) version 23. Binary logistic regression was used to control confounders. age, sex and place of treatment adjusted by selection before data analysis which showed that there was a significant risk factors between family history of ulcerative colitis and development of ulcerative colitis (OR= 4.57, 95%CI: 1.64 -12.72, P value= 0.001). While a significant protective factor showed between, eating daily wheat bread and ulcerative colitis development (OR= 0.05, 95%CI:0.01-0.37, P value=0.001). Furthermore, there was a significant risk factor between irregular use of antibiotic, acne medication (Isotretinoin) and development of ulcerative colitis (OR= 1.92, 95%CI: 1.09-3.36, P value =0.022), (OR= 2.64, 95%CI 1.23-5.64, P value = 0.010). Moreover, there was a significant risk factor between extremely sever stress and development of ulcerative colitis (OR= 2.6, 95% CI: 1.14-5.91, P value = 0.039). Finally, there was a significant risk factor between ex-smoking and development of ulcerative (OR= 3.8, 95%CI: 0.44-1.66, P value = 0.002). Therefore, special effort needs to focus on causes of ulcerative colitis as using irregular antibiotic, Isotretinoin drug, stress events, and family history of ulcerative colitis. Strategies about health education program at primary and secondary level should be started to reduce the incidence of ulcerative colitis. Also, the findings from our study suggest to pay attention for healthy diet such as wheat bread.

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List of Abbreviation

AAD	Antibiotic Associated Diarrhoea
AD	Atopic Dermatitis
BMI	Body Mass Index
C.I.	Confidence Interval
CD	Crohn's Disease
CDC	Centers for Disease Control and Prevention
CRC	Colorectal Cancer
DASS-21	Depression Anxiety Stress Scale 21
FOBT	Fecal Occult Blood Test
GG	Gaza Governorate
GI	Gastrointestinal
GS	Gaza Strip
IBD	Inflammatory Bowel Disease
MET	Metabolic Equivalent Task
MOH	Ministry of Health
NGO	Non-Governmental Organizations
NSAIDs	Nonsteroidal Anti-Inflammatory Drugs
OCP	Oral Contraceptive Pills
OR	Odds Ratio
PCBS	Palestinian Central Bureau of Statistics
PNIPH	Palestinian National Institute of Public Health
UC	Ulcerative Colitis
UNRWA	United Nations Relief and Works Agency for Palestine

Chapter One
Introduction

1.1 Background

Ulcerative colitis (UC) “is an inflammatory bowel disease (IBD) marked by gastrointestinal (GI) microbiota alteration lead to mucosal inflammation, intestinal permeability increased, and dysfunction of immune system occurred. UC is a chronic disease that causes inflammation and ulcerations in the lining of the large intestine, which includes the colon and rectum. UC is an inflammation leads to small ulcers on the lining of the large intestines, which can lead to bleeding, pus, diarrhea, abdominal pain, cramping, nausea, and extreme fatigue” (Davis et al., 2018).

Ulcerative colitis clinical course may continuance from a quiescent course with extended period of remission to fulminate disease requiring aggravate medical treatment or surgery at the end. In addition, disease outcome is often determined by relapse rates, the development of colorectal cancer (CRC) and fatality. Early diagnosis, identifying those with a high risk of developing complicated disease, is essential for choosing appropriate treatment (Monstad et al., 2014).

The main causes of ulcerative colitis which is a type of inflammatory bowel diseases (IBD) is unknown, but there are several theories. Ultimately, scientists believe that there is more than one cause and that the several different factors work together to cause the disease. Furthermore, the cause for one particular individual with the disease could be different from another’s. Also, factors may cause ulcerative colitis include a complex interaction of genetics, immune response, and environmental triggers (Tresca, 2018).

According to researcher knowledge there are no previous studies identify the prevalence and burden of ulcerative colitis among people live in Gaza Governorates. Therefore, the researcher conducted this study to identify different risk factors associated with ulcerative colitis among people live in Gaza Governorates that might be enable policy maker to make decision to decrease the burden and incidence of ulcerative colitis.

1.2 Research problem

Worldwide the uppermost incidence and prevalence of inflammatory bowel diseases are seen in Northern America and North Europe. Inflammatory bowel disease is closely linked to a westernized environment and lifestyle. The incidence of ulcerative colitis between 9 to 20 cases per 100,000 persons per year. In addition, the prevalence about 156 to 291 cases per 100,000 persons per year. Compared to Crohn disease, ulcerative colitis has a higher prevalence in adults. When considering the pediatric population; however, ulcerative colitis is less prevalent than Crohn disease (Lynch and Hsu, 2018).

Recently, the incidence in the Arab population was reported to be 22 case per 100,000. furthermore, a recent retrospective study in Saudi Arabia demonstrated that there is an increase in the number of UC patients who were referred to tertiary care centers. Another retrospective study on Libyan children reported that the incidence of inflammatory bowel disease was increasing and the clinical features were similar to those reported in other countries (Alharbi et al., 2014).

However, if we identify the main risk factors associated with ulcerative colitis we can help primary prevention and control of the UC by increase awareness, health education and promotional programs of risk factors for UC among the population to improve their health. Nevertheless, if factors still neglected the incidence and prevalence of UC will increase among population.

1.3 Justification of the study

Ulcerative colitis can be debilitating and can sometimes lead to life-threatening complications. On the other hand, ulcerative colitis considered incurable disease and treatment can greatly diminished the signs and symptoms of disease. For any patient with ulcerative colitis, the risk of colorectal cancer is known to be elevated, and was estimated to be 2% after ten years, 8% after twenty years and 18% after thirty years of disease (Lakatos, P. L., & Lakatos, L., 2008).

As there are no previous study, assess the risk factors of ulcerative colitis among people in Gaza Governorates according to the researcher knowledge, so the burden of ulcerative colitis and expenditure will increase dramatically.

Gaza Strip (GS) is consider one of these developing country and ulcerative colitis is a neglected health problem and do not has apriority by Ministry of health (MOH) or United Nations Relief and Work Agency for Palestine (UNRWA) the main health providers in GS unlike other non-communicable disease that affected high percentage of the population such as diabetes and hypertension. In this study, the researcher shedding light on the different risk factors associated with ulcerative colitis among people live in Gaza strip as people suffer from many crises results from siege and wars vexatious by the Israel military occupation.

1.4 Study objectives

1.4.1 General objective

The general objective of this study is to identify the main risk factors of UC among people in Gaza strip.

1.4.2 Specific objective

1. To identify the main risk factors of ulcerative colitis among the case and control groups.
2. To determine the association between life style and UC among case and control groups.
3. To assess the association between use of certain types of medication and occurrence of UC.
4. To examine the medical condition that contributes to occurrence of UC.
5. To investigate the association between socio-demographic factors and UC in Gaza strip.
6. To suggest recommendations to the policy and decision makers and professionals for the adoption of creative methods to reduce the incidence of disease among people in Gaza strip.

1.5 Research question

1. Are there a significant association between life style habits such as (body mass index (BMI), dietary pattern, smoking, physical inactivity, stress, sleeping pattern) and occurrence of UC?
2. What is the relationship between use of certain types of medication and occurrence of UC?
3. What is the main medical condition associated with developing of UC?
4. Is there a significant association between family history and developing of UC?
5. Are there a significant association between socio-demographic factors such as (occupation, education level, and family income) and occurrence of UC

1.6 Context of the study

1.6.1 Demographic characteristics

Palestine is part of the historic 'Fertile Crescent', which is considered the cradle of the human civilization and the origin of agriculture. where located at the crossroads between Asia, Europe, and Africa has made Palestine an environmental melting pot for the flora and fauna of the three continents. The total area of historical Palestine is estimated at 27,000 km2. However, today the State of Palestine consists of two physically separated land masses, namely the West Bank and Gaza Strip (Isaac et al., 2015).

Based on the Palestinian Central Bureau of Statistics (2017), the estimated population living in Palestine is 4,780,978; about 2,881,687 of them live in West Bank (5,655 sq. km) and 1,899,291 live in Gaza Strip (365 sq. km). The highest percentage of the population is younger than seventeen years old (43.9%), with a sex ratio of 103.3, which means that there are 103 males for every 100 females. In addition, the average of family size is 5.1 (4.8 in West Bank and 5.6 in Gaza). While, 78.3% of the population excluding East Jerusalem residents is health insured, 98.1% is educated, 27.2% is unemployed (13.2%in west bank and 48.2%in Gaza), and 5.8% is disabled.

The Gaza Strip is home to 1.4 million Palestine refugees which form 73 % of Gaza population. For the last decade, the socioeconomic situation in Gaza has been in steady decline. The blockade on land, air and sea forced by Israel following the Palestinian rift in 2007 which entered its 12th year in June 2018 and continues to have a destructing effect as access to markets and people's movement to and from the Gaza Strip remain severely restricted (UNRWA, 2018).

1.6.2 Health profile

Based on Palestinian Ministry of Health (2017), the Life expectancy in Palestine has upswing to 73.8; 74.1 in West Bank and 73.3 in Gaza; 75.4 for females and 72.3 for males. On the other hand, the burden of non-communicable diseases in Palestine is high. The leading causes of death are consecutively cardiovascular diseases (30.3%), cancer (14.7%), cerebrovascular diseases (11.7%), complication in perinatal period (9.3%), and diabetes mellitus (9.0%). related risk-factors such as sedentary lifestyle, smoking and unhealthy diet are widespread.

1.6.3 Health care services context

Access to health services in West Bank is restricted by the Israeli apartheid wall and checkpoints. Palestinian patients, health staff, and ambulances are refrained from accessing referral hospitals in East Jerusalem, as entrance to the city is possible for holders of Israeli issued permits only. Also, there is a pressing need for specialized health care for Gaza patients which their health care denied as a result of the closure of Rafah border crossing with Egypt and the complicated process of passing through the border (PNIPH, 2018).

According to the Palestinian Central Bureau of Statistics (2017), there are an increase in the total current expenditure on health to attain 1,321.3 millions $ in 2015 compared to 1,234.2 millions $ in 2014. In addition, the percentage of total health expenditure to Gross Domestic Product (GDP) at current prices for Palestine increased from 10.7% in 2015 to 9.8% in 2014.Also, total health expenditure per capita was 282.2 $ in 2015 compared to 271.2 $ in 2014. Finally, the contribution of hospitals to total expenditure on health was 41.6% in 2015. The general hospitals recorded the highest contribution with 73.8%, while 24.5% of specialized hospitals. Providers of primary health care (ambulatory health care) recorded 20.4% during 2015 compared to 20.8% during 2014.

1.6.4 Primary health care

The Palestinian Ministry of Health (MOH), UNRWA, Military Health Services, NGOs, and the private sector provide a primary, secondary, and tertiary health care services. The total number of primary health care centers in Palestine until 2017 as revealed by the Palestinian Ministry of Health, are 743 (583 in West Bank and 160 in Gaza), and hospitals are 81 (51 in West Bank including East Jerusalem and 30 in Gaza). The Palestinian Ministry of Health classifies primary health care centers into four level of which 69 clinics are level one, constituting 14.8% of total centers of MOH and 242 clinics are level two, accounting for 51.9%of total clinics,125clinics were classified as three level 26.8%of total centers and 26 clinics are level four;5.6%of total centers (MOH., 2017).

1.7 Theoretical & operational definition

Ulcerative Colitis: is a chronic and incurable disease the cause still unknown but there is an interaction between genetic and environmental factors. 90% of ulcerative colitis patients reported that the primary presenting symptom of UC is visible blood in the stools, Recently the fecal occult blood test (FOBT) and colonoscopy used for colorectal cancer screening as part of general health screening programs, a small number of ulcerative colitis patients that lack ulcerative colitis related symptoms are diagnosed during screening examinations (Park, S. K. et al., 2014).

Ulcerative Colitis case: The researcher will define cases group operationally as people whom diagnosed established by physician confirmed by doing colonoscopy. Cases were taken from the main five primary health care centers.

Ulcerative Colitis control: The researcher will define controls operationally as healthy people without known or diagnosed with ulcerative colitis reside in the same geographical area of the cases.

Risk factors: Define by the researcher operationally as those factors that may lead to ulcerative colitis include socio-demographic, life style, medical history and medication use factors.

Socio-demographic factors: The researcher will define socio-demographic factors operationally as family size, family types, marital and income status related condition that have an impact on increased risk of ulcerative colitis.

Life style factors: The researcher will define life style factors operationally as bad habits that increase risk of ulcerative colitis such as smoking, eating smoked, canned, spicy, processed and high fat low fiber diet and stress event.

Medical history factors: The researcher will define medical factors operationally as medical related conditions that have shown impact on increased risk of ulcerative colitis such as family history, appendectomy, tonsillectomy, psoriasis and hyperthyroidism.

Medication factors: the researcher will define medication factors operationally as medication used that related to increase risk of ulcerative colitis. Drugs as antibiotic, contraceptive, nonsteroidal anti-inflammatory drugs (NSAIDs).

Chapter Two

Conceptual Framework and the Literature Review

In this chapter, the researcher represents the conceptual framework and literature review of the study themes and variables. In depth information regarding the main concepts and variables, beside previous studies were mentioned.

2.1 Conceptual framework

In a 2009 article Georges Bordage defines conceptual frameworks as representing "The ways of representing how complex things work, the ways of thinking about a problem or a study or the method they do. Different frameworks will confirm different variables and outcomes, and their interrelatedness." (p. 313).

In this chapter, the researcher reviews the critical points of the study variables that are related to developing ulcerative colitis. As well as, the researcher reviews relevant previous studies and experience of another researcher in this field. After that, the researcher was able to sketch map-showing line of the interdependence of the factors, which contribute to ulcerative colitis development. There are several factors related and affecting the occurrence of UC. Time restriction and the nature of the study did not allow studying all the factors and therefore the researcher focused on part of these variables and developed new brief model (Figure 2.1).

The first domain consists of socio-demographic risk factors which may influence the occurrence of UC among people live in Gaza strip which include age, educational level, occupation, family income, governorate, living area, citizenship, gender, marital status family size, family types. While, the second domain consist of life style risk factors which were suggested to developed UC and these factors are smoking habits, dietary habits (smoked, canned food, red and processed meats, high fat with low fiber diet), stress level, sleep duration, physical activity and BMI.

The third domain consisted of medical condition risk factors which cause UC and it includes family history, appendectomy, tonsillectomy eczema, psoriasis, hyperthyroidism. The fourth and final domain consist of medication used that developed UC and it include of (NSAIDs), Aspirin, oral contraceptive pills, post menopause hormone antibiotic and acne medication.

The following conceptual framework consists of four domains as shown, each dimension represents multivariable to measure the associated factors.

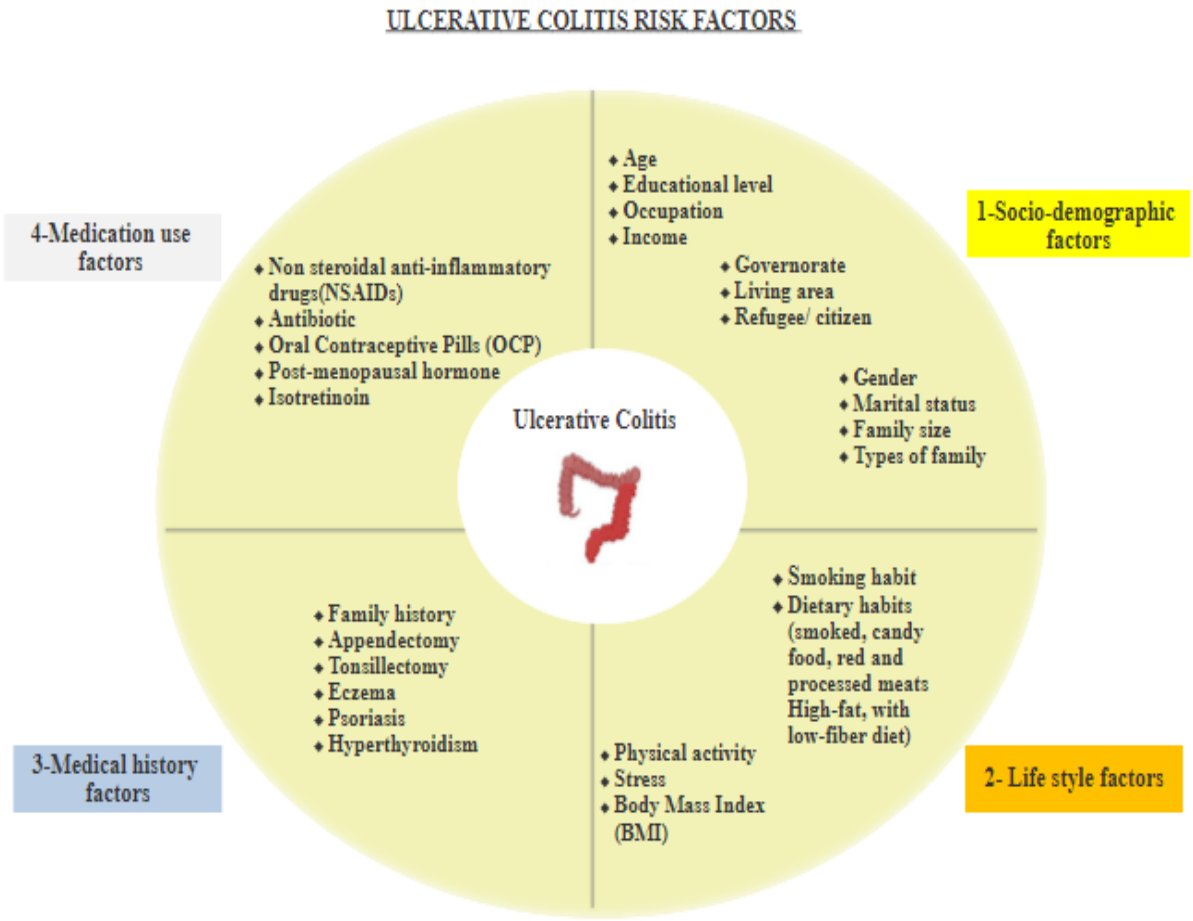

Figure (2.1): Ulcerative colitis risk factors conceptual framework (self-developed model)

This model consists of dependent variable (ulcerative colitis) and independent variables (risk factors)

2.2 Literature review

2.2.1 Ulcerative colitis definition

Ulcerative colitis (UC) is a chronic inflammatory bowel disease that can involve any aspect of the colon starting with mucosal inflammation in the rectum and extending proximally in a continuous fashion. Typical symptoms on presentation are bloody diarrhea, abdominal pain, fecal urgency, and tenesmus. In some patients, extraintestinal manifestations may predate the onset of gastrointestinal symptoms. A diagnosis of UC is made on the basis of presenting symptoms consistent with UC as well as endoscopic evidence showing continuous and diffuse colonic inflammation that starts in the rectum (Feuerstein, Moss and Farraye, 2019).

Ulcerative colitis is a chronic inflammatory disease affecting the colon, and its incidence is rising worldwide. The pathogenesis is multifactorial, involving genetic predisposition, epithelial barrier defects, dysregulated immune responses, and environmental factors. Patients with ulcerative colitis have mucosal inflammation starting in the rectum that can extend continuously to proximal segments of the colon. Ulcerative colitis usually presents with bloody diarrhoea and is diagnosed by colonoscopy and histological findings (Ungaro et al., 2017).

Ulcerative colitis is an inflammatory disorder of the gastrointestinal tract that affects the colorectum. It often presents in young adulthood and is more common in developed nations. The diagnosis is reached after lower gastrointestinal investigation confirms diffuse, continuous, and superficial inflammation in the large bowel and biopsies show changes in keeping with the disorder. There is no single known unifying cause, and the pathogenesis probably relates to a change in colonic environment in a genetically susceptible person. It is a chronic lifelong condition that, untreated, has a relapsing and remitting course. Medical treatment aims to induce remission and prevent relapse of disease activity once this has been achieved, thereby minimizing the impact on quality of life and preventing long term sequelae (Ford et al., 2013).

2.2.2 Epidemiology of ulcerative colitis

The incidence and prevalence of ulcerative colitis and Crohn's disease are continuing to increase in low-incidence areas such as southern Europe, Asia, and much of the developing countries. However, they starting to stabilize in high-incidence areas such as Northern Europe and North America, (Loftus, 2004). In the United States, the incidence of ulcerative colitis estimated about 2.2 to 14.3 cases per 100,000 persons per years. As well as, the prevalence was 37 to 246 cases per 100,000 persons (CDC, 2016).

A national wide study published in Iran conducted by Malekzadeh et al., (2016) which aimed to estimate the incidence and prevalence of IBD and its trend in Iran at national and subnational level from 1990 to 2012. Estimated the incidence of ulcerative colitis in 2012 2.7 per 100,000 while the prevalence of UC in 2012 was 35.52 per 100,000 (Malekzadeh, et al., 2016). Also, in Riyadh Saudi Arabia study carried out by El Mouzan and Abdullah, Al Habbal (2006). which estimated the incidence and prevalence among children in Riyadh from 1993 to 2002 the incidence was 0.5 per 100,000 per year and the prevalence was 5 per 100,000 (El Mouzan, Abdullah and Al Habbal, 2006). Moreover, in Saudi Arabia reported an increase in the number of ulcerative colitis patients who were referred to tertiary care centers (Alharbi et al., 2014).

In addition, An Arab Israel study was done by Zvidi et al., (2013) which aimed to determine the prevalence of IBD among 1.5 million Arab residents in Israel who represent 20% of Israel total population the study estimated the prevalence rate about 22 per 100,000 (Zvidi et al., 2013).

Furthermore, an incidence and prevalence study conducted by Zvidi et al (2019) which amid to compare the annual incidence and prevalence rate of CD and UC in Arab and Jewish population in Israel from 2003 to 2008 the study estimated the incidence of ulcerative colitis among Arab population which increased slightly from 4.1 per 100,000 in 2003 to 5 per 100,000 per person per years in 2008, compared with Jewish population which are decreased from 16.4 per 100,000 to 9.5 per 100,000 person per years for the same time of period. The same study showed that the prevalence of UC and CD increased due to the accumulation of incident cases but remained much lower among Arab population (Zvidi et al., 2019). Finally, in Palestine there is no epidemiological study nor statistical evidence regarding incidence and prevalence of ulcerative colitis.

2.2.3 Risk factor of ulcerative colitis

2.2.3.1 Sociodemographic characteristics

Based on a multicenter case-control study published in China conducted by Wang et al, (2013) showed that there is no significant association between rural or urban residence, education, and ulcerative colitis development (Wang et al., 2013). On the other hand, A meta-analysis which reveal that there is a significant association between urban environment and ulcerative colitis (Soon et al., 2012). Furthermore, A study was done by Bernstein et al. (2001) reported inflammatory bowel disease patients are a lowest socioeconomic status according to employment, income and job classification. Also, the same study indicated that marital status among IBD patients are at least as likely as the general population (Bernstein et al., 2001). Additionally, A study in japan conclude that unemployment widespread among inflammatory bowel disease patients compared to the general population (Mahlich et al., 2017). Also, A Canadian study carried out by Blanchard et al. (2001) mentioned that there is an ecological association between higher average family income, small average of family and incidence of inflammatory bowel disease. However, a case control study published by Ekbom et al. (1990) showed that there was no significant association between socioeconomic status, marital status, number of children, and the number of persons per room and ulcerative colitis development.

Age & Gender

Ulcerative colitis primarily affects young adult while, 12% of ulcerative colitis patient are diagnosed at an advance age; which define as over 60 years (Quezada and Cross, 2012). Also, ulcerative colitis has a two pattern of incidence. The main onset peaks between the ages of 15 and 30 years. A second, and the lowest peak of incidence occurs between the ages of 50 and 70 years (Lynch and Hsu, 2018). About gender distribution in IBD is dependent on the disease subtype, Crohns disease or ulcerative colitis. In CD there is a greater prevalence of females, while in UC no significant differences were shown (Brant and Nguyen, 2008).

2.2.3.2 Life style

- **Smoking**

Nowadays, smoking considers a major cause of morbidity which may cause lung cancer, atherosclerotic vascular disease, other kinds of cancers and chronic obstructive pulmonary disease, While, smoking cession is the most important modifiable factor can protect us of premature mortality in developed and developing countries (Bastida and Beltrán, 2011).

Several studies consensus in the literature indicated that current smoking had a protective impact on both the occurrence and progression of ulcerative colitis otherwise, Ex-smokers have a significant association with ulcerative colitis development.

In the northwest of China, a study was done by Zhai et al. (2017) designed to illustrate the relationship between current smoking ulcerative colitis development, were a total of 421 patients diagnosed with UC, 341 (81%) patients were non-smokers, and 80 (19%) were a current smoker. The study concluded that a protective effect significantly associated with current smoking and ulcerative colitis (Zhai et al., 2017).

Also, a case control study published in Spain showed that current cigarette smoking considered as a protector factor for development of UC as evidence by (OR=0.55, IC 95% 0.33–0.92) and the fact of being ex-smoker considered as a risk factor as evidence by (OR = 1.94, IC 95% 1.14–3.34) with ($P > 0.05$) (Sicilia et al., 2008).

Moreover, the study was done by Beaugerie et al. (2001) amid to determine the impact of cessation of smoking on course of UC among the cohort of patient with UC. The study suggested that the severity of disease and need for hospital admission was increased among Smokers with UC who stop smoking with P value < 0.05 (Beaugerie et al., 2001). On the other hand, To, Ford and Gracie (2016) carried out a systematic review study which concluded that smoking may not improve the natural history of UC also, recommended that the smoking cession advice should be incorporated into guidance of ulcerative colitis management (To, Ford and Gracie, 2016).

Additionally, Meta-analyses have showed that former smoking associated with ulcerative colitis with an (OR= 1.79 95% CI, 1.37-2.34) and current smoking had a protective effect on the ulcerative colitis development when compared with controls with an (OR=0.58 95% CI, 0.45-0.75). As well as, a study conducted by Mahid et al. (2007) showed that passive

and active exposure to tobacco smoke in childhood were associated significantly with inflammatory bowel disease development (Mahid et al., 2007).

- **Sleeping**

Sleep deprivation and inadequate sleep may cause many neurobehavioral and physiological changes. Recently several studies have mention associations between disrupted sleep, or sleep deprivation and inflammatory responses (Simpson and Dinges, 2007). A study published by Tang et al. (2009) summarized that sleep deprivation considers an environmental factor that predisposes colonic inflammation which leads to inflammatory bowel disease with severe exacerbation and a more remission course (Tang et al.,2009). In a prospective study carried out by Ananthakrishnan et al. (2014) demonstrated that there were a significant association between less than six hours sleep per day, or higher than nine hours sleep per day and ulcerative colitis development (Ananthakrishnan et al., 2014). Moreover, Hood et al. (2018) concluded that poor sleep quality is a widespread in patients with ulcerative colitis and it was related to depression (Hood et al., 2018).

- **Obesity**

Obesity the chronic medical condition considered as an excessive body fat mass leading to debilitate health outcomes. also, emerged as one of global public health issues of the 21st century (Harper and Zisman, 2016).

BMI, formerly called the Quetelet index, is a measure for indicating nutritional status in adults. It is defined as a person's weight in kilograms divided by the square of the person's height in meters (kg/m2) (WHO, 2020).

Body mass index (BMI)	**Weight status**
Below 18.5	Under weight
18.5- 24.9	Normal
25-29.9	Over weight
30-39.9	Obese
Above 40	Extreme obesity

A study was done by Long et al. (2011) showed that approximately one in five children with CD and one in three with UC are overweight or obese. Obese IBD patients may have a more severe disease course, as indicated by increased need for surgery (Long et al.,2011). Also, a

study conducted by Khalili et al. (2016), which aimed to examine the association between measures of obesity assessed at multiple time points over adulthood and subsequent risk of ulcerative colitis and crohns disease. The study demonstrated that there was no significant association between any of anthropometric measures and risk of ulcerative colitis development (Khalili, 2016).

On the other hand, study by Chan et al. (2013), suggested that there was no association between obesity which measured by BMI and ulcerative colitis (Chan et al., 2013). Furthermore, a study was done by BACK et al. (2017) concluded that Patients with inflammatory bowel diseases have a high prevalence of overweight and obesity. Crohn's disease patients had more impaired anthropometric and body composition indicators when compared to patients with ulcerative colitis (BACK et al., 2017).

- **Physical activity**

Exercise is an activity improving mood, decreasing stress and increasing quality of life. There are many physiologic advantages of exercise such as improving bone density and decreasing risk of colon cancer. Exercise is important for prevention and treatment of obesity, and obesity was showed an increasing problem in patients with inflammatory bowel disease (Jones et al., 2015). In prospective cohorts carried by Khalili et al. (2013) showed that there was a negative association between physical activity and Crohn's disease but there was no association seen between physical activity and ulcerative colitis (Khalili et al., 2013). Also, a case-control study carried out by Ng et al. (2015) concluded that there was no association between physical activity and ulcerative colitis occurrence. On the other hand, the same study demonstrated that physical activity was a protective factor of CD. (Ng et al.,2015).

- **Stress**

Psychological stress is one environmental factor which has long been circumstantially reported as having a relationship with activity in inflammatory bowel disease. Recently there have been substantial advances in both proving this relationship and in elucidating the mechanisms by which it occurs (Mawdsley and Rampton, 2005). Also, a case control study done by Saed et al. (2002) concluded that there was association between the ulcerative colitis and life events stress is substantiated at all levels. (Saed et al., 2002). A cohort study published in Sweden by Melinder et al. (2017) suggested that Lower stress resilience may

increase the risk of diagnosis of IBD in adulthood, possibly through an influence on inflammation or barrier function. (Melinder et al., 2017).

In contrast a population base study carried out by Ng et al. (2015) showed that there was no association between stressful event and ulcerative colitis. (Ng et al., 2015). While, a study by Wahed et al. (2011) concluded that perceived stress levels are greater in patients with acute sever ulcerative colitis than in those in remission and anxiety scores are highest in patients newly presenting with UC, but neither stress nor anxiety influenced disease outcome. (Wahed et al., 2011).

Moreover, a prospective cohort study carried out by Levenstein et al. (2000) summarized that short-term stress does not trigger exacerbation in ulcerative colitis, but long-term perceived stress increases the risk of exacerbation over a period of months to years. (Levenstein et al., 2000). furthermore, a qualitative descriptive study by Larsson, Lööf and Nordin (2017) suggested that faecal urgency and the fear of losing bowel control are important stressors for patients with inflammatory bowel disease (Larsson, Lööf and Nordin, 2017).

- **Dietary**

Recently an evidence study indicates a role of dietary factors in the pathogenesis of ulcerative colitis. In a case–control study has been carried out by Rashvand et al. (2018) which aimed to investigate the relationship between dietary patterns and ulcerative colitis risk this study concluded that participant with a highest tertile of the healthy dietary pattern had a 79% lower risk of ulcerative colitis as evidence by (OR = 0.21, 95% CI = 0.07–0.59, P value = 0.003). Also, there was an association between the consumption of an unhealthy dietary pattern and ulcerative colitis development as evidence by (OR = 3.39, 95% CI = 1.16–9.90, P value = 0.027) (Rashvand et al., 2018).

A cohort study carried out by Ananthakrishnan et al. (2014), Among 170805 women the study identified 269 incident case of CD and 338 incident case of UC. The study demonstrated that the trans-unsaturated was associated with ulcerative colitis development (Hazard ratio (HR)1.34, 95% CI 0.94 – 1.92) (Ananthakrishnan et al., 2014).

In case-control study done by Rashvand et al. (2015) showed that there were a significant association between higher intake of processed, red, organ meat and ulcerative colitis

development, but total protein, bean, nut, fish, poultry, egg and dairy products were not associated with ulcerative colitis. Moreover, A meta-analysis by Ge et al. (2015) was designed to determine the association between meat consumption and inflammatory bowel disease were reviewed nine studies five of them examine the total meat consumption, only three studies examined red meat consumption, and two examined white meat consumption. This study showed there was no association between red meat consumption and inflammatory bowel disease as evidence by (RR: 2.37, 95% CI: 1.40–3.99). But No significant association between white meat and IBD was seen as evidence by (RR: 1.20, 95% CI: 0.73–1.97) (Ge et al., 2015).

As well as, a prospective study done by Racine et al. (2016) concluded that there were a significant association between diet imbalance with high intake of sugar, soft drink and low intake of vegetables and ulcerative colitis development (Racine et al., 2016). However, Processed, smoked, and canned meats may be contaminated with sugars and starch additives this thing can increase the risk of IBD among people who are consuming these types of food (Limdi, 2018). Another, meta-analysis reviewed 14 case-control studies was done by Li et al. (2015) revealed that consumption of vegetables and fruit might be associated as a protective factor of ulcerative colitis. As evidence by consumption of vegetables (OR=0.71, 95% CI 0.58-0.88, n=9 studies) and there was an inversely association between higher consumption of fruit and ulcerative colitis development with (OR=0.69, 95% CI 0.49-0.96, n=8 studies) (Li et al., 2015). In contrast, a prospective cohort study done by Andersen et al. (2018) demonstrated that there were no clear associations between the total fiber intake or specific sources of fiber such as fruit, vegetables or cereals, and the subsequent development of either Crohns disease or ulcerative colitis (Andersen et al., 2018).

Also, a case-control study published in China carried out by Wang et al. (2013) suggested that there were a risk association between spicy food, heavy sugar consumption and often feeling and ulcerative colitis in Chinese population (Wang et al., 2013). While, consumption of cereals, whole grain, or bran which considered insoluble fiber did not reduce the risk of Crohns disease or ulcerative colitis (Ananthakrishnan et al., 2013).

Furthermore, A case-control study done by Anonymous (1995) showed there were a significant association between high intake of western food such as bread for breakfast, butter, margarine, cheese, meats, and ham and sausage and increased ulcerative colitis (P value = 0.04). Margarine was positively associated with ulcerative colitis (P value= 0.005).

There was also a tendency towered positive association of bread for breakfast with ulcerative colitis (P value = 0.07) (Anonymous, 1995). Also, Nie and Zhao (2017) revealed that there were a negative association between Coffee consumption and UC development (RR= 0.58, 95% CI: 0.33–1.05), but it was not significant and may be confounded by smoking adjustment. In addition, there was a significant association between soft drinks consumption and ulcerative colitis occurrence (RR=1.69, 95% CI: 1.24–2.30). Whereas, tea consumption was inversely associated with ulcerative colitis occurrence (RR: 0.69, 95% CI: 0.58–0.83) (Nie and Zhao, 2017). Gautam (2015) study in India which concluded that Low intake of fruits and high intake of refined sugar were the only significant associated with ulcerative colitis. But higher rice, fish and lower wheat, meat and fried food intake were not associated with ulcerative colitis.

2.2.3.3 Medical history factors

- **Family history**

Several studies indicate that there was a significant association between ulcerative colitis and family history. A meta-analysis of Seventy-one studies reported over all, 12% of patients with ulcerative colitis had a family history of inflammatory bowel disease (Childers et al., 2014). Also, A case control study published in china conducted by Jiang et al. (2007) showed that there was an association between family history of IBD and increase risk of ulcerative colitis in a Chinese people evidence by (OR=4.35, 95%CI: 1.21-15.71, P=0.025) (Jiang et al., 2007). Furthermore, A case control study published by Sicilia et al. (2008) concluded that previous family history of inflammatory bowel disease was associated as a risk factors of ulcerative colitis development evidence by P value =0.002 (Sicilia et al., 2008). Another case control study by Bernstein et al. (2006) reinforced family history was associated with ulcerative colitis and have pointed out that being a Jewish also associated with ulcerative colitis (OR = 7.46, 95% CI, 2.33-23.89) (Bernstein et al., 2006).

- **Hyperthyroidism**

Thyroid disease involves “autoimmune thyroid diseases (ATDs), malignancy, amyloid goiter (AG), subacute thyroiditis (SAT), and congenital thyroid diseases. Thyroid dysfunctions are generally classified int hyperthyroidism or thyrotoxicosis and hypothyroidism. The main causes of hyperthyroidism are Graves' disease (GD) or Basedow disease, excessive supplementation of thyroid hormones, toxic adenoma, and toxic multinodular goiter; non-thyroid disease may also cause hyperthyroidism”. (Shizuma, 2016).

A population-based study of 2709 patients with ulcerative colitis as cases and 8127 sex- and age-matched patients without ulcerative colitis as a control in Taiwan showed that hyperthyroidism was associated with ulcerative colitis development (Tsai and Ze, 2017). Another study conducted by Casella et al. (2008) concluded that the prevalence of hyperthyroidism and hypothyroidism was relatively low in patients with ulcerative colitis (Casella et al., 2008).

- **Tonsillectomy**

The appendix and the tonsils are important parts of the gut-associated lymphoid system, and it may be that their removal effect the balance between ileocolonic helper and suppressor functions that could be play important role in the pathogenesis of ulcerative colitis and Crohns disease. A Case Control Study published in Australia done by Ko et al. (2015) showed that there was an association between tonsillectomy and development of ulcerative colitis in middle eastern migrants as evidence by (OR, 2.22; 95% CI, 1.02–4.69). Also, in the Caucasian population, tonsillectomy was associated with UC (OR 2.48; 95% CI, 1.15–5.37) (Ko et al., 2015). In contrast a case_ control study published in Iran by Firouzi et al. (2006) showed that there was no association between tonsillectomy and either ulcerative colitis or Crohns disease (Firouzi et al., 2006).

- **Psoriasis**

Psoriasis is immune-mediated inflammatory skin disease and considered a chronic immune disease. It ranges in severity from a few scattered red, scaly plaques to involvement of almost the entire body surface (Parisi et al., 2013). A case control study included 12502 patients with psoriasis aged 20 years and above and 24287 were age and sex-matched with controls. concluded that there was an association between and both Crohn's disease and ulcerative colitis (Cohen, Dreiher and Birkenfeld, 2009). Also, a Danish cohort study done by Egeberg et al. (2016) showed that a psoriasis associated with increased risk of CD and UC (Egeberg et al., 2016). Furthermore, A Systematic review carried out by Fu et al. (2018) reported that psoriasis was associated significantly with UC development (OR=1.75; 95% CI, 1.49-2.05) (Fu et al., 2018).

- **Appendectomy**

A case control Study published in Australia by Ko et al. (2015) showed that in the middle eastern migrants' people with previous appendectomy was associated significantly with ulcerative colitis (OR, 5.00; 95% CI, 1.59–15.70) (Ko et al., 2015). Furthermore, a case-control study showed significantly lower incidence of ulcerative colitis than matched controls with who had a previous appendectomy. Moreover, a negative relationship was seen between appendectomy and risk of ulcerative colitis when the surgeries were done before the age of 20 years (Abegunde et al., 2016). Also, a case control study was done by De Saussure et al. (2007) showed that appendectomy had a strong negative correlation with tobacco smoking, and ulcerative colitis patients (De Saussure et al., 2007). Furthermore, A case control study published in Spain by Sicilia et al. (2008) showed that previous appendectomy was not seen statistically differences with ulcerative colitis (Sicilia et al., 2008).

- **Eczema**

Eczema, also known as Atopic Dermatitis (AD), is the most common form of dermatitis. Genetic as well as environmental factors are thought to play a part in the pathogenesis. Eczema is most commonly seen in children but can be seen in adults. People with the disease tend to have dry, itchy skin that is prone to infection (Nemeth and Evans, 2019). A cohort study conducted by Schmitt et al. (2016) showed that Atopic Dermatitis was associated with ulcerative colitis development as evidence by (RR, 1.25; 95% CI 1.03-1.53). Moreover, a meta-analysis by Fu et al (2018) reviewed of five case control and cross-sectional studies and four cohort studies. Suggested that psoriasis was associated significantly with both inflammatory bowel disease UC and CD. (Fu et al., 2018).

2.2.3.4 Medication use factors

- **Antibiotic**

Antibiotic therapy can affect commensal inhabitants of the human host and target pathogens. Antibiotic used had an extent of the impact on non-target microbial populations. Sometimes an imbalance in the commensal gut microbiota due to antibiotic administration can result in intestinal problems, such as antibiotic-associated diarrhoea (AAD) (Jernberg et al., 2010). Gut microbiota alterations specifically reduced intestinal microbial diversity and have been

found to be associated with chronic gut inflammation such as ulcerative colitis and Crohns disease (Nitzan et al., 2016).

A population-based in Manitoba conducted by Shaw, Blanchard and Bernstein (2011) which aimed to determine if antibiotics use 2-5 years before diagnosis of was associated with the inflammatory bowel disease development. This study reported that there were a strong association between antibiotic dispensations and ulcerative colitis development at ≥3 antibiotic dispensations. (Shaw, Blanchard and Bernstein, 2011) another cohort Study by Kronman et al. (2012) which concluded that Childhood antianaerobic antibiotic exposure is associated with IBD development (Kronman et al., 2012).

- **NSAIDs**

Non-steroidal anti-inflammatory drugs (NSAIDs) are a type of pain killer medication that was associated with inflammatory bowel disease development (Long et al., 2016) In a prospective study by Ananthakrishnan et al. (2012) were 76,795 U.S. women who are aspirin and NSAID use. Confirmed that recurrent use of NSAIDs was associated with increased absolute incidence of crohns disease and ulcerative colitis. But aspirin was not associated with both IBD ulcerative colitis and crohns disease. In addition, a case control study conducted by Gleeson and Davis (2003) showed that people with newly diagnosed with ulcerative colitis were associated significantly with high frequency of antecedent exposure to NSAIDs or salicylates at P value < 0.001 (Gleeson and Davis, 2003) In contrast, a study conducted by Wang and et al. (2013) showed that NSAID use was not associated with ulcerative colitis development (Wang et al., 2013). Another study showed a disease relapse among inflammatory bowel disease patients who are using Non-steroidal anti-inflammatory drugs (Forrest, Symmons and Foster, 2004). Moreover, a study was done by Felder et al. (2000) suggested that NSAIDs trigger the UC and CD disease activity and recommended that should be avoided in patients with a history of both diseases as much as possible (Felder et al., 2000).

- **Oral contraceptive & Post-menopausal hormone**

Oral contraception pills contain hormones that can be combined in four different ways, defined by the ratio of estrogen to progesterone. Current OCPs contain approximately one third to one-fifth of the estrogen and different progesterone preparations compared with older

OCPs (Cornish et al., 2008). In 1960 the approval of the first oral steroid contraceptive, oral contraceptive which are considered a popular method of family planning globally (Sech and Mishell, 2015).

Estrogen play a role as an enhancer of the immunity, mostly in regard to humoral immunity and the proliferation of macrophages, while progesterone plays a role as an immune suppressor (Cutolo et al., 2006). There is a debate in the literature about the effect of oral contraceptive pills on developing ulcerative colitis. A meta-analysis study conducted by Ortizo and et al (2017) demonstrated that using of oral contraceptive pills OCP was associated with developing CD and UC. Whereas a 30% higher risk for increasing UC development (OR: 1.30, 95% CI: 1.13-1.49, I=26%) in patients who are used oral contraceptive pills compared with those who didn't use OCP (Ortizo et al., 2017). Furthermore, A systematic review was done by Wang et al. (2019) reported that oral contraceptives was associated with ulcerative colitis development. the study also confirmed that the risk of being ulcerative colitis was decreased for people who stop using the oral contraceptives. Moreover, a study carried out by García et al. (2005) showed that long-term used of oral contraceptives were associated with increasing the risk of UC development (OR: 2.35; 95% CI: 0.89-6.22) (García et al., 2005). However, a large cohort study of women done by Khalili et al (2012) demonstrated that there was a significant association between postmenopausal hormone and ulcerative colitis development (Khalili et al., 2012).

In contrast a multicentral study carried out by Wang et al. (2013) which aimed to evaluate a potential risk factors in the development of ulcerative colitis in China. suggested that oral contraceptive was not associated with the ulcerative colitis development (Wang Y et al., 2013). Also, a nationwide study by Khalili et al. (2016) demonstrated that there was no association between oral contraceptive use and ulcerative colitis (Khalili et al. ,2016).

- **Acne medication "Isotretinoin" use**

Isotretinoin is a vitamin A medication type used mostly for severe cystic acne and acne that has not responded to other treatments (Papaconstantinou et al., 2014) An association between isotretinoin and IBD was first discussed in the mid-1980s several cases have since been described. Also, a case control study was done by Crockett et al. (2010) demonstrated that a previous isotretinoin exposure was associated with ulcerative colitis development (Crockett et al., 2010). Furthermore, a population-based cohort study by Alhusayen et al.

(2013) showed that there was a modest significan association between topical isotretinoin and ulcerative colitis as evidence by (RR 1.19; 95% CI 1.00-1.42) (Alhusayen et al., 2013).

In contrast a retrospective study done by Rashtak et al. (2014) indicated that isotretinoin had a negative association with inflammatory bowel disease development (Rashtak et al., 2014). Moreover, a French nationwide study was done by Racine et al. (2014) suggested that isotretinoin use was not associated with increased UC risk but was associated with a decreased CD risk (Racine et al., 2014).

Chapter Three
Methodology

3.1 Study design

The study designed to be a case - control study with matching of three characteristics, gender, age and place of treatment which very useful to investigate the risk factors of ulcerative colitis in Gaza strip. The case group is the patients they have the disease or outcome of interest and the control group included the people who have not experienced the disease or outcome.

3.2 Study population

It was a census study in which the entire patients of ulcerative colitis (cases) who had registered in the five main MOH primary health care centers (level four centers) from August 2019 till October 2019. The study included 225 participants, both cases and controls. Cases were (75) confirmed ulcerative colitis with colonoscopy from the five main primary health care "Jabalia martyrs' clinic, Al Remal martyrs Clinic, Deir El Balah martyr's clinic, Khan Yunis martyr's clinic, Rafah martyr's clinic". Controls (150) were healthy participant without known diagnosis of ulcerative colitis and didn't have diarrhea at least for two months from data collection with a ratio of one case to two control. Matching was done by age, gender and location of the treatment as the following: firstly, the researcher collected all case group from the five primary health care centers as a census study. Then, selected tow controls for each case after identifying controls age, gender, place of treatment and absences of diarrhea at least for two months. Finally, consent form was done before a structured face to face questionnaire filled.

3.3 The study setting

The study was conducted in MOH primary health care centers (Jabalia martyrs' clinic, Al Remal martyrs Clinic, Deir El Balah martyr's clinic, Khan Yunis martyr's clinic, Rafah martyr's clinic) where the patient diagnosed with ulcerative colitis, for each case and control had been taken from the same center.

3.4 Period of study

The study started in March 2019 and completed by November 2019. Annex (2) describes the activities of the research and the duration for each activity.

3.5 Eligibility criteria

3.5.1 Inclusion criteria:

3.5.1.1 Cases:

Cases were patients confirmed diagnosis by physician and colonoscopy with ulcerative colitis in Gaza Strip and regularly followed up in one of the five main primary health care centers.

3.5.1.2 Controls:

Controls were healthy people without known or diagnosed with ulcerative colitis reside in the same geographical area of the cases. Also, patient didn't have diarrhea at least for two months.

3.5.2 Exclusion criteria:

Any patient confirmed with ulcerative colitis who had not followed up in the one of five main primary health care centers in Gaza Strip during the study period. Also, cases were excluded from the study if they were with known diagnosis of other types inflammatory bowel disease (IBD) such as Crohn's disease.

3.6 Study instrument

The study utilized a structured face to face questionnaire. An Arabic version of the questionnaire annex (7) used during interviews with participants, the questionnaire reviewed by experts who are qualified in many fields related to the study. Generally, the questionnaire included many variables that are directly and indirectly reflects the outcomes needed for the study as follow:

1. Socio-demographic factors contains information about age, gender, education level, governorate, occupation, marital status, family types, family size, citizenship and income.
2. Life style factors contains dietary habits (smoked food, canned food, high fat, low protein diet, spicy food), physical activity, sleep duration, stress level, smoking and BMI.
3. Medical history factor which include family history, appendectomy, tonsillectomy, psoriasis, eczema and, hyperthyroidism.
4. Medication use factors contain drugs used as contraceptive, nonsteroidal anti-inflammatory (NSAAIDs) drug, antibiotic and acne medication.

3.7 Data collection

The researcher explained the purpose of the questionnaire to the patient before obtaining the consent. The researcher used a structured face to face questionnaire. Great care was taken to ensure the confidentiality; the researcher gave the participant enough time to answer the questions. the data collected by two expert and qualified assistants. The assistants trained well on how to interview the clients in the same way as the researcher.

3.8 Data entry and analysis

The researcher used Statistical Package of Social Science (SPSS) version 23 program for data entry and analysis.

Statistical methods carried out as follow:

- Reviewing and filling out the questionnaire.
- Developing an appropriate data entry model.
- Coding the participant data.
- Defining and recording the variables.
- Cleaning the data.
- Descriptive statistics frequencies and percentage were used in the study.
- Bivariate analysis was used via Odds Ratio to show if there are statistically significant association between factors and ulcerative colitis.
- Multivariate analysis was used by binary logistic regression to determine which pure independent variables affect the probability of an outcome of ulcerative colitis and results were presented with beta coefficient, OR with CI 95% and p value.

3.9 Scientific rigor

3.9.1 Validity of instrument

Validity of an instrument is a determination of the extent to which the instrument reflects the abstract being examined.

Face and content validity:

The researcher submitted the questionnaire to group of expert panel (Annex 5) in order to evaluate its quality and to make the needed suggestions. All suggestion from each expert are taken in concern by the researcher and added as extra question in the questionnaire.

3.9.2 Reliability of instrument

- **Pilot study**

Piloting performed on 30 clients, 10 cases and 20 controls, where obtained from the main five primary health care centers. which allow for further improvement of reliability and validity of the questionnaire. After that, the piloting cases and controls added to the sample.

- **Questionnaire**

Otherwise, socio-demographic, life style factors contains dietary habits, sleep duration smoking and BMI domain, Medical history factor domain and Medication use factors domain which are self-developed and arbitrated by panel of expert (Annex 5). The study questionnaire included of two international questionnaire each questionnaire suitable for adults between 15 and 69 years of age and culturally adapted. Also, available in English, Arabic and many languages.

- The first questionnaire international short physical activity questionnaire which categories physical activity at last 7 days into high, moderate, low physical activity. The questionnaire consisted of seven question about physical activity the first and second question for vigorous activities, the third and forth question for moderate activity, in addition fifth and sixth question for walking activity finally the seventh question for sitting. The reliability of short international physical activity questionnaire tested by Cronbach's alpha = 0.80.

According to questionnaire guideline (IPAQ, 2005) physical activity measure as the following:

- Expressed as MET-min per week (metabolic equivalent task per week) =MET level x minutes of activity/day x days per week

MET levels	**MET-minutes/week for 30 min/day, 5 days**
Walking = 3.3 METs	3.3*30*5 = 495 MET-minutes/week
Moderate Intensity = 4.0 METs	4.0*30*5 = 600 MET-minutes/week
Vigorous Intensity = 8.0 METs	8.0*30*5 = 1,200 MET-minutes/week
Total	**2,295 MET-minutes/week**

Categorical Score- three levels of physical activity are proposed

1. Low

- No activity is reported OR
- Some activity is reported but not enough to meet Categories 2 or 3.

2. Moderate

Either of the following 3 criteria

- or more days of vigorous activity of at least 20 minutes per day OR
- or more days of moderate-intensity activity and/or walking of at least 30 minutes per day OR
- or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 600 MET-minutes/week.

3. High

Any one of the following 2 criteria

- Vigorous-intensity activity on at least 3 days and accumulating at least 1500 MET-minutes/week OR
- 7 or more days of any combination of walking, moderate- or vigorous-intensity activities accumulating at least 3000 MET-minutes/week

- The second questionnaire was DASS-21 is a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress. Each of the three DASS-21 scales contains 7 items, divided into subscales with similar content. Also, the

reliability which are measured by Cronbach's alpha was 0.81, 0.89 and 0.78 for the subscales of depressive, anxiety and stress respectively.

Recommended cut-off scores for conventional severity labels (normal, moderate, severe) are as follows:

NB Scores on the DASS-21 will need to be multiplied by 2 to calculate the final score.

Categories	**Depression**	**Anxiety**	**Stress**
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28 or above	20 or above	34 or above

3.10 Ethical consideration

An official letter of approval to conduct the study obtained from the Helsinki committee (Annex 8) and school of public health at Al-Quds University (annex 9). Also, an informed consent attached to each questionnaire obtained from each participant in the study. The researcher explained the purpose and the objectives of the study to all the participants, and the inclusion in the study was optional and confidential. Neither name nor personal data had been published.

3.11 Limitation of the study

The main constraints faced the researcher:

- Selected the case group with ulcerative colitis and the diagnosis confirmed by colonoscopy took too much time.
- Few numbers of cases.
- References that didn't cover all dimensions of supposed risk factors and some assumed risk factors were not studied before.
- Matching more than two characteristics between case and control groups.
- Limited scientific resource like books and journal.
- Lack of local research about the study topics.

Chapter Four

Result and discussion

4.1 Introduction

Chapter four clarifies the results of statistical analysis of the data; firstly include descriptive analysis that presents the participant characteristics and demonstrates the variation between cases and controls including frequencies and percentage. In addition, it showed the different risk factors such as socio-demographics, life style, medical and medication factors that related to ulcerative colitis development in Gaza Strip. Chi-square was used to show the differences between categorical variables, in addition, multiple logistic regression model was presented to show most important risk factors of ulcerative colitis. Finally, these results were discussed in comparison with literature review and related previous studies.

4.2 Descriptive analysis

Table (4.1): Frequencies of study population according to gender, age and place of treatment.

Variables		Case		Control	
		N	**%**	**N**	**%**
Gender	Female	32	42.7	64	42.7
	Male	43	57.3	86	57.3
	Total	**75**	**100**	**150**	**100**
Age	< 40	27	36	54	36
	40-50	28	37.3	56	37.3
	>50	20	26.7	40	26.7
	Total	**75**	**100**	**150**	**100**
Place of treatment	North Gaza	18	24	36	24
	Gaza	15	20	30	20
	Middle zone	14	18.7	28	18.7
	Khan-Younis	13	17.3	26	17.3
	Rafah	15	20	30	20
	Total	**75**	**100**	**150**	**100**

Table (4.1) showed that the study population consisted of 32 (42.7%) females and 43 (57.3%) males had ulcerative colitis among the case group where 64 (42.7%) female and 86 (57.3%) males without ulcerative colitis among the control group.

Age was divided into three groups each group was matched between case and control groups, 27 (36%) cases and 54 (36%) controls their age under 40 years. In addition, 28 (37.3%) cases and 56 (37.3%) controls their age between 40-50 years. Finally, 20 (26.7%) cases and 40 (26.7%) controls were aged more than 50 years. The researcher observed that more than 2/3 of our sample were under age of 50 years.

Concerning place of treatment was divided into five places each place was matched between case and control groups, 18 (24%) cases and 36 (24%) controls were taken from north Gaza (Jabalia martyrs' clinic). While 15 (20%) cases and 30 (20 %) controls were taken from Gaza city (Al Remal martyrs Clinic). Also, 14(18.7%) cases and 28 (18.7%) controls were taken from middle zone (Deir El Balah martyr's clinic). In addition,13(17.3%) cases and 26 (17.3%) controls were taken from Khan-Younis. Finally, 15 (20%) cases and 30 (20%) controls were taken from Rafah.

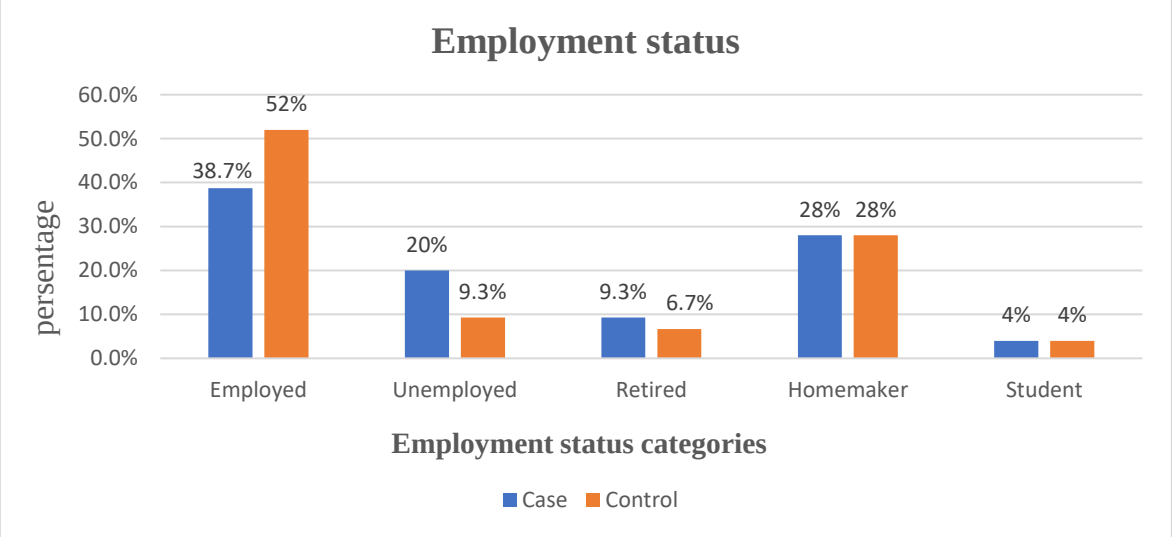

Figure (4.1): Percentage distribution of study population according to participant employment status.

Figure (4.1) showed that 29 (38.7%) cases and 78 (52%) controls were employed. While, 15 (20%) cases and 14 (9.3%) controls were unemployed. In addition, 7 (9.3%) cases and 10 (6.7%) controls were retired. Also, 21 (28%) cases and 42 (28%) controls were a homemaker. Finally, 3 (4%) cases and 6 (4%) controls were a student which have a lowest percentage.

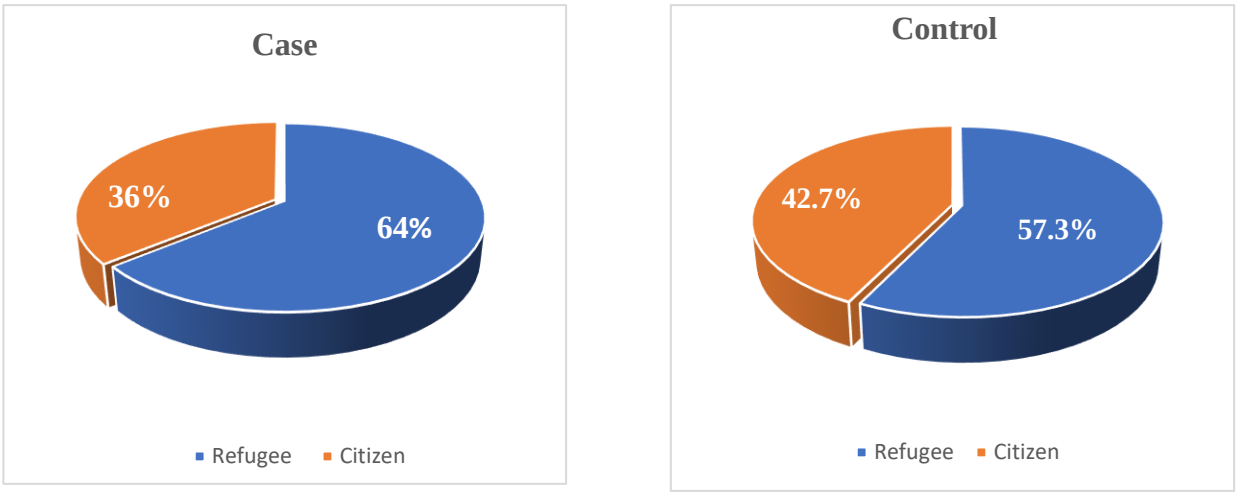

Figure (4.2): Percentage distribution of study population according to citizenship.

Figure (4.2) showed that 64% cases and 57.3% controls were a refugee. On the other hand, 36% cases and 42.7% controls were a citizen. The researcher noted that the percentage of refugee's people with ulcerative colitis more than two third of the study cases this result was expected because Gaza strip have a majority of refugee's people which are form approximately 73 % of Gaza population (UNRWA, 2018). Also, the researcher noted that ulcerative colitis can be affected refugee and citizen people as the same numbers when comparing Gaza refugee numbers with citizen numbers.

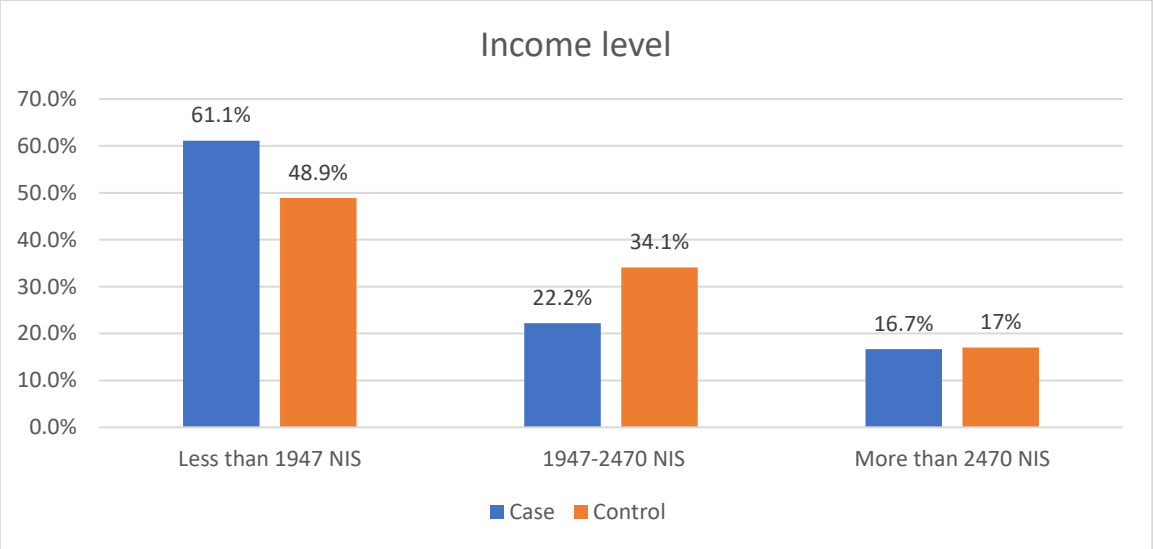

Figure (4.3): Percentage distribution of population study according to income level.

Figure (4.3) showed that (61.1%) of cases and (48.9%) of controls their income less than 1947 NIS while (22.2%) cases and (34.1%) of controls their income were between 1947-2470NIS. The lowest percentage of study population their income was more than 2470NIS (16.7%) cases and (17%) controls. Our result showed that about two third of our participants

less than 2470 NIS. This result consistent with (PCBS, 2017) report which showed that poverty rates in the Gaza Strip was increased significantly from 38.8 per cent in 2011 to 53 per cent by the end of 2017.

Table (4.2): Percentage distribution of study population according to education level

Variables		**Case**		**Control**	
		N	**%**	**N**	**%**
Educational level	Less than secondary school	15	20	31	20.7
	Secondary school and above	60	80	119	79.3
	Total	**75**	**100**	**150**	**100**

According to the table (4.2), 15 (20%) from cases and 31 (20.7%) from controls were education less than secondary school. While, 60 (80 %) cases and 119 (79.3%) controls were have a secondary school or above. Our result showed that more than two third (79.5%) of our participant (cases and controls) were educated and have at least secondary school certificate, this result consistent with the PCBS, (2017) report which mentioned that literacy rates were 96.8%in the Gaza strip, compared to 96% in the West Bank.

4.3 Bivariate analysis and logistic regression

4.3.1 Risk factors of ulcerative colitis

4.3.1.1 Socio-demographic variables

The researcher supposed that the socio-demographic variables of the participant might play a role as predisposing risk factors for ulcerative colitis. These variables include participant citizenship, residency area**,** family size, income and education level.

Table (4.3): Association between Socio-Demographic factors and ulcerative colitis

Variables	Cases (N= 75)	Controls (N = 150)	Statistical test		
			P-value (χ^2)	P-value OR	OR (95CI)
Refugee status					
Refugee	48 (64.0)	86 (57.3)	0.337(0.923)	0.337	1.32 (0.75-2.34)
Citizen®	27 (36.0)	64 (42.7)			
Types of residency area					
City	52 (69.3)	112(74.7)	0.396(1.852)	0.733	1.21 (0.41-3.56)
Camp	18 (24.0)	25 (16.6)		0.304	1.87 (0.57-6.19)
Village®	5 (6.7)	13 (8.7)			
Family size					
< 5	25 (33.3)	40 (26.7)	0.124(4.183)	0.048	3.28 (1.01-10.68)
5 - 10	46 (61.3)	89 (59.3)		0.083	2.71 (0.88-8.37)
> 10®	4 (5.3)	21 (14.0)			
Income					
Less than 1947	22 (61.1)	43 (48.9)	0.385(1.908)	0.654	1.28 (0.44-3.76)
1947-2470	8 (22.2)	30 (34.1)		0.517	0.67 (0.2-2.27)
More than 2470®	6 (16.7)	15 (17.0)			
Education level					
Less than secondary school	15 (20.0)	31(20.7)	0.90(0.014)	0.90	0.96 (0.48-1.91)
Secondary school or above®	60 (80.0)	119(79.3)			

Table (4.3) represent the socio-demographic risk factor. The table showed there is no statistical significant association between refugee status and having ulcerative colitis as evidence by P value more than 0.05. Also, there is no statistical association was seen between types of residency area and UC as evidence by P value more than 0.05. Our result consistent with Wang et al. (2013) study which concluded that rural or urban residence was not associated with ulcerative colitis. While inconsistent with Soon et al. (2012) mention that there is a positive relationship between urban environment and ulcerative colitis. The

differences with our study results might be due to Gaza strip city, camp, village have the same circumstances such as siege, occupation, stress, Israel escalation and unemployment.

In addition, the result showed that there is no statistical significant association between family size and ulcerative colitis evidence by P value more than 0.05. This finding inconsistent with Blanchard et al. (2001) which mention A higher incidence of IBD was ecologically associated a smaller average family size. However, consistent with Ekbom et al. (1990) who indicate that the number of children, and degree of crowding within their homes (the number of persons per room) was not significantly associated with the occurrence of ulcerative colitis.

Moreover, the result showed that there is no statistical significant association between income and UC at P value > 0.05 this result inconsistent with Blanchard et al. (2001) mention that there is an ecological association between higher average family income, small average of family and incidence of inflammatory bowel disease.

Furthermore, the result showed there is no statistical significant association between education level and UC at P value > 0.05. Our finding consistent with Wang et al. (2013) study which concluded that level of education not associated with UC, as well as consistent with Bernstein et al. (2001) study which showed reported that inflammatory bowel disease patients are a lowest socioeconomic status according to employment, income and job classification

4.3.1.2 Medical history Variables

The researcher supposed that the socio- demographic variables of the participant might play a role as predisposing risk factors for ulcerative colitis. These variables include family history, relationship with the family history, psoriasis, eczema, hyperthyroidism, appendectomy and tonsillectomy.

Table (4.4): Association between medical history and ulcerative colitis

Variables	Cases (N = 75)	Controls (N = 150)	Statistical test		
			P-value (χ^2)	P-value OR	OR (95CI)
Family history					
Yes	12 (16.0)	5 (3.3)	0.001 (11.4) *	0.004	4.57 (1.64-12.72)
No®	63 (84.0)	145(96.7)			
Relationship					
First relative	2 (16.7)	2 (40.0)	0.301 (1.06)	0.315	0.3 (0.03-3.13)
Second relative®	10 (83.3)	3 (60.0)			
Psoriasis					
Yes	3 (4.0)	2 (1.3)	0.201 (1.63)	0.223	3.08 (0.5-18.86)
No®	72 (96.0)	148(98.7)			
Eczema					
Yes	2 (2.7)	7 (4.7)	0.47 (0.521)	0.711	2.00 (0.05-78.25)
No®	73 (97.3)	143(95.3)			
Hyperthyroidism					
Yes	1 (1.3)	1 (0.7)	0.616 (0.252)	0.622	2.01 (0.12-32.64)
No®	74 (98.7)	149(99.3)			
Appendectomy					
Yes	4 (5.3)	9 (6.0)	0.840 (0.041)	0.840	0.88 (0.26-2.97)
No®	71 (94.7)	141(94.0)			
Tonsillectomy					
Yes	3 (4.0)	6 (4.0)	1 (0.000)	1.000	1 (0.24-4.11)
No®	72 (96.0)	144(96.0)			

As shown in table (4.4), that there is statistical significant association between family history and development of ulcerative colitis (OR= 4.57, 95%CI: 1.64 -12.72, p value= 0.001). which means that a previous family history of ulcerative colitis increase the risk of ulcerative colitis development 4.57 times in comparison with people who are didn't have a family history of ulcerative colitis. This finding is consistent with Jiang et al. (2007) that there was an association between family history of inflammatory bowel disease and increase risk of ulcerative colitis in a Chinese people evidence by (OR=4.35, 95%CI: 1.21-15.71, P=0.025). Also, consistent with Sicilia et al. (2008) study which concluded that a previous family

history of inflammatory bowel disease appeared as a risk factors for developing ulcerative colitis evidence by P value =0.002.

Concerning family relative first degree the table showed there is no statistical significant association between first degree relationship and ulcerative colitis development evidence by P >0.05. In addition, the table showed there is no statistical significant association between psoriasis and development of ulcerative colitis evidence by P value > 0.05. Our result is inconsistent with Cohen, Dreiher and Birkenfeld (2009) study which reported that there was significant association between psoriasis and both Crohn's disease and ulcerative colitis (OR, 1.64; 95% CI, 1.15-2.33). Inconsistent to this finding, a systematic review carried out by Fu et al. (2018) showed psoriasis was associated significantly with ulcerative colitis (OR= 1.75; 95% CI, 1.49-2.05). The differences with our study results might be due to a meta-analysis review more than one study subsequently it had a large number of populations compared with our study.

Furthermore, the table showed that there is no statistical significant association between eczema and ulcerative colitis occurrence as evidence by P value more than 0.05. Our study finding inconsistent with Schmitt et al. (2016) study which showed that atopic dermatitis was is a risk factor for ulcerative colitis development. Also, inconsistent with Fu et al. (2018) study which suggested there were a significant association with psoriasis and both IBD ulcerative colitis and Crohn disease.

Moreover, the table shows there is no statistical significant association between hyperthyroidism and ulcerative colitis development. Inconsistent with these finding A population-based study of 2709 patients with ulcerative colitis as cases and 8127 sex and age-matched patients without ulcerative colitis as a control in Taiwan showed that hyperthyroidism was associated with ulcerative colitis development (Tsai and Ze Lee, 2017). In contrast, a study conducted by Casella et al. (2008) concluded that the prevalence of hyperthyroidism and hypothyroidism was relatively low in patients with ulcerative colitis. This study may explain the differences between our study result and Taiwan study. however, the researcher estimates result due to low percentage of hyperthyroidism among our study participant which was 1 (1.3%) from cases and 1(0.7%) from controls.

Also, the table shows there is no statistical significant association between appendectomy and ulcerative colitis development as evidence by P value >0.05. Our study result is

congruent with a study in Spain by Sicilia et al. (2008) which showed there is no statistical differences in the analysis of previous appendectomy and ulcerative colitis. In contrast our study result is inconsistent with De Saussure et al. (2007) study which showed that there is a strong negative correlation between both appendectomy and tobacco smoking, and ulcerative colitis in patients followed-up by gastroenterological practitioners.

Finally, the same table showed that there is no statistical significant association between tonsillectomy and ulcerative colitis as evidence by P value > 0.05. Consistent with these finding a case control study published in Iran by Firouzi et al. (2006) which showed that tonsillectomy was not associated with either UC or CD disease. In contrast our study result is inconsistent with Ko et al. (2015) which demonstrated that tonsillectomy was associated with the development of UC in middle eastern migrants as evidence by (OR, 2.22; 95% CI, 1.02–4.69). Also, in the Caucasian population, tonsillectomy was associated with UC (OR 2.48; 95% CI, 1.15–5.37).

4.3.1.3 Medication variables

The researcher supposed that the medication variables of the participant might play a role as predisposing risk factors for ulcerative colitis. These variables include medication such as Aspirin, NSAIDs, antibiotic, acne medication "Isotretinoin", oral contraceptive pills and Post-menopausal hormones.

Table (4.5): Association between medication used and ulcerative colitis

Variables	Cases (N = 75)	Controls (N= 150)	Statistical test		
			P-value (χ^2)	P-value OR	OR (95CI)
Aspirin					
Yes	12 (16.0)	33 (22.0)	0.289 (1.12)	0.291	0.68 (0.33-1.4)
No®	63 (84.0)	117 (78.0)			
NSAIDs					
Yes	50 (66.7)	118 (78.7)	0.051 (3.80)	0.051	1.84 (0.99-3.42)
No®	25 (33.3)	32 (21.3)			
Antibiotic					
Yes	74 (98.7)	149 (99.3)	1.000 (0.252)	0.622	0.5 (0.03-8.05)
No®	1 (1.3)	1 (0.7)			
Antibiotic as prescribed					
Irregular	40 (53.3)	56 (37.3)	0.022 (5.23) *	0.023	1.92 (1.09-3.36)
Regular®	35 (46.7)	94 (62.7)			
Isotretinoin					
Yes	17 (22.7)	15 (10.0)	0.010 (6.57) *	0.012	2.64 (1.23-5.64)
No®	58 (77.3)	135 (90.0)			
Oral contraceptive					
Yes	6 (22.2)	19 (31.1)	0.392 (0.733)	0.394	0.63 (0.22-1.82)
No®	21 (77.8)	42 (68.9)			
Post-menopausal hormones					
Yes	1 (3.7)	7 (11.5)	0.242 (1.36)	0.267	0.3 (0.03-2.54)
No®	26 (96.3)	54 (88.5)			

As shown in table (4.5) there is no statistical significant associations between previous use of Aspirin and ulcerative colitis as evidence by P value >0.05. Consistent with these finding Ananthakrishnan et al. (2012) study which Confirmed that Frequent use of NSAIDs but not aspirin seemed to be associated with increased absolute incidence of CD and UC.

Furthermore, the table shows there is no statistical significant association between NSAIDs and developing of ulcerative colitis. Our study inconsistent with Ananthakrishnan et al.

(2012) study which Confirmed that recurrent use of NSAIDs was associated with ulcerative colitis but aspirin was not associated with increased absolute incidence of ulcerative colitis and Crohns disease.

Moreover, the table shows there is no statistical significant association between antibiotic use and development of ulcerative colitis as evidence by P value more than 0.05. Our study inconsistent with Shaw, Blanchard and Bernstein (2011) which concluded that there were a strong association between antibiotic dispensations and ulcerative colitis development at ≥3 antibiotic dispensation. Another inconsistent with or study result Kronman et al. (2012) study which concluded that Childhood ant anaerobic antibiotic exposure is associated with IBD development. On the other hand, the same table shows that there is a significant risk factor between irregular use of antibiotic and developing of ulcerative colitis as evidence by (OR 1.92,95% CI 1.09-3.36, P value =0.022).

In addition, the table shows there is a statistical significant association between Isotretinoin use and developing of ulcerative colitis as evidence by (OR =2.64,95% CI: 1.23-5.64, P value = 0.010) which means that the previous use of Isotretinoin increase the risk of ulcerative colitis development 2.64 times in comparison with people who didn't use of Isotretinoin. Our result congruent with Crockett et al. (2010) demonstrated that there is an association between ulcerative colitis and a previous isotretinoin exposure. Another study inconsistent with our study a retrospective study done by Rashtak et al. (2014) indicated that isotretinoin associated with a decreased risk of IBD development.

As well as, the table shows there is no statistical significant associations between oral contraceptive use and ulcerative colitis as evidence by P value >0.05. Our result consistent with a multicentral study carried out by Wang et al. (2013) which suggested that there is no significant association between oral contraceptives and development of UC. In contrast inconsistent with Wang et al. (2019) study which provided the evidence of an association between the use of oral contraceptives and the onset risk of UC.

Finally, the table shows that there is no statistical significant associations between post-menopausal hormone use and development ulcerative colitis as evidence by P value >0.05. Our result inconsistent with Khalili et al. (2012) which demonstrated that there was a significant association between postmenopausal hormone and ulcerative colitis

development. The differences with our study results might be due to Khalili et al. (2012) study used a larger number of women with ulcerative colitis observed for longer periods of time.

4.3.1.4 Life style variables

The researcher supposed that the life style variables of the participant might play a role as predisposing risk factors for ulcerative colitis. These variables include smoking, physical activity; sleep duration, weight status, stress, and dietary.

Table (4.6): Association between smoking and ulcerative colitis

Variables	Cases (n = 75)	Controls (n = 150)	Statistical test		
			P-value (χ^2)	P-value OR	OR (95CI)
Current smoking					
Yes	17 (22.7)	38 (25.3)	0.66 (0.19)	0.661	0.86 (0.44-1.66)
No®	58 (77.3)	112(74.7)			
Ex-smoker					
Yes	16 (27.6)	10 (8.9)	0.001 (10.3)*	0.002	3.8 (1.63-9.3)
No®	42 (72.4)	102(91.1)			
Tobacco types					
Cigarettes	29 (87.9)	43 (91.5)	0.596 (0.281)	0.556	0.64 (0.15-2.78)
Hubble-bubble®	4 (12.1)	4 (8.5)			
Cigarettes per day					
≤ 20	23 (79.3)	39 (86.7)	0.402 (0.702)	0.405	0.59 (0.17-2.04)
> 20®	6 (20.7)	6 (13.3)			
Passive smoking					
Yes	33 (44.6)	80 (53.7)	0.201 (1.63)	0.202	0.69 (0.4-1.22)
No®	41 (55.4)	69 (46.3)			

As shown in table (4.6) there is no statistical significant risk association between current smoking and development of ulcerative colitis as evidence as evidence by P value > 0.05. Our study results inconsistent with Zhai et al. (2017) which showed the current smoking is closely associated with a protective factor for UC. Also, inconsistent with Sicilia et al., 2008 study which summarized that current cigarette smoking was associated as a protective factor for ulcerative colitis development with an OR = 0.55 (IC 95% 0.33–0.92).

Moreover, the table shows that there is a statistical significant association between ex-smoking "former smoker" and development of ulcerative colitis as evidence by (OR 3.8,95% CI: 1.63-9.3, P value = 0.001) which means ex- smoking increase the risk of ulcerative colitis 3.8 time in comparison with people didn't have a history of ex- smoking. Our study

consistent with Mahid et al. (2006) study which reported that former smoking was associated ulcerative colitis (OR=1.79;95% CI, 1.37-2.34). Also, consistent Sicilia et al. (2008) which revealed that the current cigarette smoking considered as a protector factor for development of UC as evidence by (OR=0.55, IC 95% 0.33–0.92) and the fact of being ex-smoker considered as a risk factor as evidence by (OR = 1.94, IC 95% 1.14–3.34) with (P > 0.05) (Sicilia et al., 2008).

As well as, the table shows there is no statistical significant association between types of smoking use and ulcerative colitis as evidence by p value more than 0.05. Also, table shows that there is no statistically significant between number cigarlike per day and development of ulcerative colitis.

Finally, the table shows there is no statistical significant associations between passive smoking and development of ulcerative colitis as evidence by P value >0.05. Our study results inconsistent with Mahid et al. (2007) study which showed that here was a significant association between passive and active exposure to tobacco smoke in childhood and development of inflammatory bowel disease.

Table (4.7): Association between physical activity, sleeping duration, BMI and ulcerative colitis

Variables	Cases (n = 75)	Controls (n = 150)	Statistical test		
			P-value (χ^2)	P-value OR	OR (95CI)
Physical activity					
Low	15 (20.0)	19 (12.7)	0.351 (2.096)	0.170	1.72 (0.79-3.76)
Moderate	22 (29.3)	48 (32.0)		0.997	1.00 (0.53-1.89)
High®	38 (50.7)	83 (55.3)			
Duration of sleep at night?					
≤ 7	27 (36.0)	70 (46.7)	0.128 (2.32)	0.129	0.64 (0.36-1.14)
> 7®	48 (64.0)	80 (53.3)			
Weight status					
Obese	16 (21.3)	57 (38.0)	0.020 (7.84) *	0.236	0.67 (0.35-1.3)
Over weight	24 (32.0)	47 (31.3)		0.006	0.37 (0.18-0.75)
Normal®	35 46.7)	46(30.7)			

The table (4.7) showed there is no statistical significant association between physical activity and ulcerative colitis as evidence by P value >0.05. Our result consistent with Khalili et al. (2013) study which showed that physical activity was not associated with ulcerative colitis development. Also, consistent with Ng et al. (2015) study which concluded that there is no association between physical activity and ulcerative colitis. The same study demonstrated that physical activity was a protective factor of CD.

In addition, the result shows there is no statistical significant association between sleep duration at night and UC at P value >0.05. This result is inconsistent Ananthakrishnan et al. (2014) which demonstrated that less than 6 hrs sleep/day and more than 9 hrs sleep/day were associated with ulcerative colitis development.

Also, the result showed there is statistically significant difference between BMI and UC at P value = 0.02. but there is no association between obesity and ulcerative colitis evidence by (OR, 0.67 CI,0.35-1.3). This result consistent Khalili et al. (2016) study which suggested that there is no a significant association between any of these anthropometric measures and risk of UC. As well as. Our study results consistent with Chan et al. (2013), which suggested that obesity was not associated with the incident of both ulcerative colitis or Crohns disease development (Chan et al., 2013).

Table (4.8): Association between stress, anxiety, depression and ulcerative colitis

Variables	**Cases (n = 75)**	**Controls (n = 150)**	**Statistical test**		
			P-value (χ^2)	**P-value OR**	**OR (95CI)**
Stress level					
Extremely severe	16(21.3)	15 (10.0)	0.039 (10.1) *	0.023	2.6 (1.14-5.91)
Severe	16(21.3)	21 (14.0)		0.119	1.85 (0.85-4.03)
Moderate	10(13.4)	25 (16.7)		0.950	0.97 (0.42-2.27)
Mild	3 (4.0)	16 (10.7)		0.238	0.46 (0.12-1.68)
Normal®	30(40.0)	73 (48.7)			
Anxiety level					
Extremely severe	6 (8.0)	15 (10.0)	0.977 (0.459)	0.666	0.8 (0.29-2.2)
Severe	7 (9.3)	12 (8.0)		0.762	1.17 (0.43-3.17)
Moderate	11(14.7)	23 (15.3)		0.914	0.96 (0.43-2.13)
Mild	6 (8.0)	10 (6.7)		0.739	1.2 (0.41-3.51)
Normal®	45(60.0)	90 (60.0)			
Depression level					
Extremely severe	7 (9.3)	15 (10.0)	0.236 (5.54)	0.899	1.06 (0.4-2.82)
Severe	8 (10.7)	13 (8.7)		0.487	1.4 (0.54-3.66)
Moderate	14(18.7)	13 (8.7)		0.037	2.46 (1.06-5.71)
Mild	7 (9.3)	20 (13.3)		0.639	0.8 (0.31-2.04)
Normal®	39(52.0)	89 (59.3)			

As shown in table (4.8) that there is a statistical significant association between extremely sever stress and development of ulcerative colitis as evidence by (OR 2.6,95% CI 1.14-5.91, P value = 0.039). which means that people who are expose to extremely sever stress the risk of ulcerative colitis development will increase 2.6 times in comparison with people who are didn't expose. Our study results consistent with Mawdsley and Rampton (2005) which concluded that the association between the ulcerative colitis and life events

stress is substantiated at all levels. However, this result inconsistent with Ng et al. (2015) which demonstrated that there is no association between major stressful event before diagnosis and the risk of CD or UC. In addition, the same table shows there is no statistical significant difference between anxiety level, or depression level and development of UC at P value >0.05.

Table (4.9.1): Association between dietary factor (beef meat, lamb meat, chicken, or fish) and ulcerative colitis

Variables	Cases (n = 75)	Controls (n = 150)	Statistical test		
			P-value (χ^2)	P-value OR	OR (95CI)
Beef meat					
Daily	2 (2.7)	3 (2.0)	0.2 (8.554)	1.000	1.0 (0.13-7.89)
2-3 times/week	30 (40)	45 (30)		1.000	1.0 (0.32-3.1)
Weekly	16 (21.3)	27 (18)		0.848	0.89 (0.27-2.96)
Once/2week	7 (9.3)	13 (8.7)		0.762	0.81 (0.2-3.22)
Monthly	3 (4)	23 (15.3)		0.044	0.2 (0.04-0.96)
Rare	11 (14.7)	30 (20)		0.346	0.55 (0.16-1.91)
Never®	6 (8)	9 (6)			
Lamb meat					
2-3 times/week	4 (5.3)	1 (0.7)	0.044 (11.42) *	0.070	8 (0.85-75.56)
Weekly	4 (5.3)	2 (1.3)		0.124	4 (0.68-23.41)
Once/2week	2 (2.7)	1 (0.7)		0.267	4 (0.35-46.35)
Monthly	1 (1.3)	7 (4.7)		0.254	0.29 (0.03-2.46)
Rare	40 (53.3)	91 (60.6)		0.681	0.88 (0.48-1.63)
Never®	24 (32.1)	48 (32)			
Chicken					
2-3 times/week	33 (44)	45 (30)	0.441 (4.800)	0.759	1.47 (0.13-16.86)
Weekly	37 (49.3)	94 (62.7)		0.847	0.79 (0.07-8.95)
Once/2week	2 (2.7)	5 (3.3)		0.880	0.8 (0.04-14.64)
Monthly	1 (1.3)	3 (2)		0.810	0.67 (0.02-18.06)
Rare	1 (1.3)	1 (0.7)		0.711	2 (0.05-78.25)
Never®	1 (1.3)	2 (1.3)			
Fish					
Daily	2 (2.7)	1 (0.7)	0.632 (4.331)	0.423	4 (0.13-119.23)
2-3 times/week	9 (12)	19 (12.6)		0.967	0.95 (0.08-11.87)
Weekly	31 (41.3)	64 (42.7)		0.980	0.97 (0.08-11.1)
Once/2week	17 (22.7)	28 (18.7)		0.878	1.21 (0.1-14.43)
Monthly	10 (13.3)	29 (19.3)		0.771	0.69 (0.06-8.45)
Rare	5 (6.7)	7 (4.7)		0.793	1.43 (0.1-20.44)
Never®	1 (1.3)	2 (1.3)			

The table (4.9.1) shows that there is no statistical significant association between beef meat and ulcerative colitis as evidence by P value >0.05. Our result inconsistent with Rashvand et al. (2015) study which showed that high intake of processed, red, organ meat were significantly associated with ulcerative colitis development. Moreover, the table showed that

there is a statistically significant association between eating lamb meat 2-3 times weekly with compared with group of never eating lamb meat and development of ulcerative colitis evidence by (OR=8, 95%CI:0.85-75.56, P value=0.044). This result consistent with Ge et al. 2015 which reported that red meat intake was associated with IBD risk (RR= 2.37, 95%CI: 1.40–3.99). Furthermore, the table showed that there is no statistical significant association between the frequency of eating fish, or chicken and the occurrence of ulcerative colitis (p value > 0.05). These results consistent with Rashvand et al. (2015) which demonstrated that there was no association with total protein, bean, nut, fish, poultry, egg and dairy products and development of ulcerative colitis.

Table (4.9.2): Association between dietary factor (fruit & vegetables) and ulcerative colitis

Variables	Cases (n = 75)	Controls (n = 150)	Statistical test		
			P-value (χ^2)	P-value OR	OR (95CI)
Fruit					
Daily	28 (37.3)	49 (32.7)	0.803 (2.322)	0.388	1.71 (0.5-5.82)
2-3 times/week	23 (30.7)	44 (29.3)		0.477	1.57 (0.45-5.41)
Weekly	14 (18.7)	32 (21.3)		0.680	1.31 (0.36-4.79)
Once/2week	4 (5.3)	5 (3.4)		0.323	2.4 (0.42-13.6)
Monthly	2 (2.7)	8 (5.3)		0.769	0.75 (0.11-5.11)
Rare®	4 (5.3)	12 (8)			
Vegetables					
Daily	60 (80)	123 (82)	0.873 (1.825)	0.984	0.98 (0.09-10.97)
2-3 times/week	10 (13.3)	15 (10)		0.824	1.33 (0.11-16.74)
Weekly	2 (2.7)	8 (5.3)		0.634	0.5 (0.03-8.71)
Once/2week	1 (1.3)	1 (0.7)		0.711	2 (0.05-78.25)
Monthly	1 (1.3)	1 (0.7)		0.711	2 (0.05-78.25)
Rare®	1 (1.3)	2 (1.3)			

The table (4.9.2) shows that there is no significant association between the frequency of eating fruit and vegetables and the occurrence of ulcerative colitis as evidence by (p > 0.05). this finding consistent with an European prospective multi-centre cohort study done by Andersen, V. et al (2018) which demonstrated that there is no clear associations with the intakes of total fiber, or that from specific sources such fruit, vegetables or cereals, and the subsequent development of either CD or UC. In contrast our result inconsistent with Li et al. (2015) which, reported that consumption of vegetables and fruit might be associated as a protective factor of UC. Also, a prospective study done by Racine et al. (2016) concluded that there were an association between high intake of sugar, soft drinks and low intake of vegetables and a risk of ulcerative colitis.

Table (4.9.3): Association between dietary factors (cereals, beans and homos, falafel, fried potato) and ulcerative colitis

Variables	Cases (n = 75)	Controls (n = 150)	Statistical test		
			P-value (χ^2)	P-value OR	OR (95CI)
Cereals such as wheat, oats, groat					
Daily	6 (8)	27 (18)	0.295(7.291)	0.034	0.27 (0.08-0.9)
2-3 times/week	5 (6.7)	11 (7.3)		0.379	0.55 (0.14-2.1)
Weekly	9 (12)	22 (14.7)		0.222	0.49 (0.16-1.54)
Once/2week	4 (5.3)	4 (2.7)		0.825	1.2 (0.24-6.06)
Monthly	6 (8)	16 (10.8)		0.214	0.45 (0.13-1.58)
Rare	35 (46.7)	58 (38.7)		0.500	0.72 (0.28-1.85)
Never®	10 (13.3)	12 (8)			
Beans& homos					
Daily	22 (29.3)	44 (29.3)	0.918(2.015)	0.502	0.5 (0.07-3.79)
2-3 times/week	25 (33.3)	54 (36)		0.454	0.46 (0.06-3.48)
Weekly	18 (24)	29 (19.3)		0.648	0.62 (0.08-4.8)
Once/2week	3 (4)	6 (4)		0.571	0.5 (0.05-5.51)
Monthly	2 (2.7)	4 (2.7)		0.600	0.5 (0.04-6.68)
Rare	3 (4)	11 (7.4)		0.276	0.27 (0.03-2.83)
Never®	2 (2.7)	2 (1.3)			
Falafel					
Daily	19 (25.3)	41 (27.3)	0.391(6.295)	0.502	0.5 (0.07-3.79)
2-3 times/week	21 (28)	48 (32)		0.454	0.46 (0.06-3.48)
Weekly	22 (29.4)	33 (22)		0.648	0.62 (0.08-4.8)
Once/2week	4 (5.3)	9 (6)		0.571	0.5 (0.05-5.51)
Monthly	5 (6.7)	3 (2)		0.600	0.5 (0.04-6.68)
Rare	3 (4)	10 (6.7)		0.276	0.27 (0.03-2.83)
Never®	1 (1.3)	6 (4)			
Fried potato					
Daily	20 (26.7)	28 (18.7)	0.304(7.191)	0.113	5.71 (0.66-49.38)
2-3 times/week	26 (34.7)	39 (26)		0.125	5.33 (0.63-45.21)
Weekly	12 (16)	33 (22)		0.337	2.91 (0.33-25.77)
Once/2week	6 (8)	14 (9.3)		0.291	3.43 (0.35-33.8)
Monthly	5 (6.7)	10 (6.7)		0.246	4 (0.39-41.51)
Rare	5 (6.7)	18 (12)		0.497	2.22 (0.22-22.23)
Never®	1 (1.3)	8 (5.3)			

The table (4.9.3) shows that there is no statistically significant association between the frequency of eating cereals and the occurrence of ulcerative colitis as evidence by ($p > 0.05$). Our result inconsistent with Ananthakrishnan et al. (2013) study which showed that the cereals, whole grain and bran increase the risk of ulcerative colitis and Crohns disease.

In addition, the table shows that there is no statistical significant association between the frequency of eating Beans& homos, or Falafel and the occurrence of ulcerative colitis as

evidence by (p value > 0.05). Our result consistent with Rashvand et al. (2015) which demonstrated that there was no association with total protein, bean, nut, fish, poultry, egg and dairy products. Furthermore, the table shows there is no statistically significant association between the frequency of eating fried potato and the occurrence of ulcerative colitis as evidence by (p > 0.05).

Table (4.9.4): Association between dietary factors (white bread & wheat bread) and ulcerative colitis

Variables	Cases (n = 75)	Controls (n = 150)	Statistical test		
			P-value (χ^2)	P-value OR	OR (95CI)
White bread					
Daily	68 (90.8)	116 (77.4)	0.119 (7.33)	0.118	5.28 (0.65-42.55)
2-3 times/week	4 (5.3)	11 (7.3)		0.325	3.27 (0.31-34.72)
Weekly	1 (1.3)	3 (2.0)		0.482	3 (0.14-64.26)
Rare	1 (1.3)	11 (7.3)		0.892	0.82 (0.04-15)
Never®	1 (1.3)	9 (6.0)			
Wheat bread					
Daily	1 (1.4)	26 (17.3)	0.001 (22.50)*	0.004	0.05 (0.01-0.37)
2-3 times/week	6 (8)	16 (10.7)		0.147	0.46 (0.16-1.32)
Weekly	2 (2.7)	13 (8.7)		0.036	0.19 (0.04-0.9)
Once/2week	1 (1.3)	4 (2.7)		0.301	0.31 (0.03-2.88)
Monthly	4 (5.3)	14 (9.3)		0.089	0.35 (0.1-1.17)
Rare	30 (40)	39 (26)		0.864	0.94 (0.48-1.85)
Never®	31 (41.3)	38 (25.3)			

The table (4.9.4) shows that there is no statistical significant association between the frequency of eating white bread and the occurrence of ulcerative colitis as evidence by (p> 0.05). Furthermore, the table shows that there is a statistical significant of eating daily wheat bread as a protective factor of UC in comparison with the person who never eating wheat bread as evidence by (OR, 0.05,95%CI 0.01-0.37, P value 0.001).

Table (4.9.5): Association between dietary factors (canned, spicy and smoked food), and ulcerative colitis

Variables	Cases (n = 75)	Controls (n = 150)	Statistical test		
			P-value (χ^2)	P-value OR	OR (95CI)
Canned food					
Daily	3 (4)	5 (3.3)	0.129(9.907)	0.447	1.86 (0.38-9.2)
2-3 times/week	9 (12)	15 (10)		0.265	1.86 (0.62-5.54)
Weekly	5 (6.7)	17 (11.3)		0.883	0.91 (0.27-3.11)
Once/2week	2 (2.7)	7 (4.7)		0.890	0.89 (0.16-4.97)
Monthly	13 (17.3)	9 (6)		0.008	4.48 (1.48-13.58)
Rare	33 (44)	66 (44)		0.299	1.55 (0.68-3.54)
Never®	10 (13.3)	31 (20.7)			
Spicy food					
Daily	39 (52)	61 (40.7)	0.675(3.161)	0.964	0.96 (0.15-6)
2-3 times/week	11 (14.7)	30 (20)		0.541	0.55 (0.08-3.74)
Weekly	16 (21.3)	41 (27.3)		0.577	0.59 (0.09-3.84)
Monthly	1 (1.3)	3 (2)		0.638	0.5 (0.03-8.95)
Rare	6 (8)	12 (8)		0.782	0.75 (0.1-5.77)
Never®	2 (2.7)	3 (2)			
Smoked food					
Daily	1 (1.3)	1 (0.7)	0.195(8.642)	0.442	4 (0.12-136.96)
2-3 times/week	2 (2.7)	1 (0.7)		0.210	8 (0.31-206.37)
Weekly	12 (16)	14 (9.3)		0.299	3.43 (0.34-34.99)
Once/2week	11(14.7)	20 (13.3)		0.504	2.2 (0.22-22.2)
Monthly	14(18.7)	51 (34)		0.936	1.1 (0.11-10.63)
Rare	34(45.3)	59 (39.3)		0.463	2.31 (0.25-21.47)
Never®	1 (1.3)	4 (2.7)			

The table (4.9.5) shows that there is no statistical significant association between the frequency of eating canned food, spicy food or smoked food and the occurrence of ulcerative colitis as evidence by ($p > 0.05$). Our result inconsistent with Wang et al. (2013) which suggested that spicy food, heavy sugar consumption and often feeling stress were associated with ulcerative colitis. The differences with our study results might be due to Chinese culture may be encourage spicy food more than Gaza culture.

Table (4.9.6): Association between dietary factor such as (milk, yogurt and Dairy products) and ulcerative colitis

Variables	Cases (n = 75)	Controls (n = 150)	Statistical test		
			P-value (χ^2)	P-value OR	OR (95CI)
Milk					
Daily	19 (25.3)	21 (14)	0.277 (7.50)	0.046	2.34 (1.02-5.4)
2-3 times/week	7 (9.3)	14 (9.3)		0.635	1.29 (0.45-3.76)
Weekly	4 (5.4)	19 (12.7)		0.327	0.54 (0.16-1.84)
Once/2week	3 (4)	8 (5.3)		0.968	0.97 (0.23-4.1)
Monthly	4 (5.3)	7 (4.7)		0.570	1.48 (0.38-5.7)
Rare	21 (28)	37 (24.7)		0.331	1.47 (0.68-3.19)
Never®	17 (22.7)	44 (29.3)			
Yogurt					
Daily	13 (17.3)	30 (20)	0.200 (8.56)	0.300	2.38 (0.46-12.3)
2-3 times/week	16 (21.3)	40 (26.7)		0.338	2.2 (0.44-11.05)
Weekly	15 (20)	30 (20)		0.224	2.75 (0.54-14.02)
Once/2week	3 (4)	10 (6.7)		0.621	1.65 (0.23-11.99)
Monthly	6 (8)	9 (6)		0.163	3.67 (0.59-22.78)
Rare	20 (26.7)	20 (13.3)		0.040	5.5 (1.08-28.05)
Never®	2 (2.7)	11 (7.3)			
Dairy products					
Daily	23 (30.6)	60 (40)	0.283 (7.43)	0.303	3.07 (0.36-25.9)
2-3 times/week	27 (36)	36 (24)		0.100	6 (0.71-50.89)
Weekly	9 (12)	24 (16)		0.331	3 (0.33-27.5)
Once/2week	2 (2.7)	3 (2)		0.232	5.33 (0.34-82.83)
Monthly	5 (6.7)	9 (6)		0.213	4.44 (0.42-46.55)
Rare	8 (10.7)	10 (6.7)		0.303	3.07 (0.36-25.9)
Never®	1 (1.3)	8 (5.3)			

The table **(4.9.6)** shows that there is no statistical significant association between the frequency of consumption of milk, or yogurt, or diary products and the occurrence of ulcerative colitis as evidence by ($p>0.05$). Our result consistent with Rashvand et al. (2015) which Showed that there was no association with total protein, bean, nut, fish, poultry, egg and dairy products.

Table (4.9.7): Association between beverage consumption such as (coffee, tea and soda) factor and ulcerative colitis

Variables	Cases (n = 75)	Controls (n = 150)	Statistical test		
			P-value (χ^2)	P-value OR	OR (95CI)
Coffee					
Daily	38 (50.7)	95 (63.3)	0.099 (10.66)	0.326	0.67 (0.29-1.46)
2-3 times/week	5 (6.7)	8 (5.4)		0.952	1.04 (0.28-3.93)
Weekly	4 (5.3)	14 (9.3)		0.271	0.48 (0.13-1.79)
Once/2week	1 (1.3)	1 (0.7)		0.727	1.67 (0.1-29.18)
Monthly	4 (5.3)	1 (0.7)		0.107	6.67 (0.66-66.84)
Rare	11 (14.7)	11 (7.3)		0.363	1.67 (0.55-5.01)
Never®	12 (16)	20 (13.3)			
Tea					
Daily	60 (80)	118(78.7)	0.736 (2.767)	0.759	0.85 (0.29-2.44)
2-3 times/week	4 (5.4)	5 (3.2)		0.734	1.33 (0.25-7.01)
Weekly	3 (4)	13 (8.7)		0.245	0.38 (0.08-1.93)
Once/2week	1 (1.3)	1 (0.7)		0.734	1.67 (0.09-31.87)
Rare	1 (1.3)	3 (2)		0.642	0.56 (0.05-6.63)
Never®	6 (8)	10 (6.7)			
Soft drink & Soda					
Daily	21 (28)	31 (20.7)	0.273 (7.549)	0.073	3.05 (0.9-10.29)
2-3 times/week	15 (20)	31 (20.7)		0.221	2.18 (0.63-7.57)
Weekly	23 (30.7)	44 (29.3)		0.161	2.35 (0.71-7.77)
Once/2week	1 (1.3)	9 (6)		0.560	0.5 (0.05-5.15)
Monthly	3 (4)	2 (1.3)		0.074	6.75 (0.83-54.66)
Rare	8 (10.7)	15 (10)		0.214	2.4 (0.6-9.56)
Never®	4 (5.3)	18 (12)			

The table (4.9.7) shows that there are no statistically significant association between the frequency consumption of coffee, tea, soft drink & Soda and the occurrence of ulcerative colitis as evidence by (p> 0.05). Our result inconsistent with Nie and Zhao (2017) study which revealed that Coffee drink tend to be negatively associated with ulcerative colitis development (RR=0.58, 95% CI: 0.33–1.05), whereas. soft drinks consumption was associated with ulcerative colitis risk as evidence by (RR= 1.69, 95% CI: 1.24–2.30), and tea consumption was negatively associated with ulcerative colitis risk as evidence by (RR= 0.69, 95% CI: 0.58–0.83).

Table (4.9.8): Association between fat intake factor such as (butter, vegetable oil, olive oil and margarine) and ulcerative colitis

Variables	Cases (n = 75)	Controls (n = 150)	Statistical test		
			P-value (χ^2)	P-value OR	OR (95CI)
Butter					
Daily	6 (8)	6 (4)	0.366 (6.535)	0.146	2.5 (0.73-8.59)
2-3 times/week	5 (6.7)	12 (8)		0.945	1.04 (0.33-3.3)
Weekly	11 (14.7)	23 (15.3)		0.688	1.2 (0.5-2.86)
Once/2week	1 (1.3)	6 (4)		0.430	0.42 (0.05-3.66)
Monthly	9 (12)	8 (5.3)		0.059	2.81 (0.96-8.22)
Rare	21 (28)	40 (26.7)		0.461	1.31 (0.64-2.71)
Never®	22 (29.3)	55 (36.7)			
Vegetable oil					
Daily	58 (77.3)	119 (79.2)	0.94 (1.251)	0.614	0.49 (0.03-7.93)
2-3 times/week	11 (14.8)	18 (12)		0.737	0.61 (0.03-10.79)
Weekly	3 (4)	7 (4.7)		0.590	0.43 (0.02-9.36)
Monthly	1 (1.3)	1 (0.7)		1.000	1 (0.02-50.4)
Rare	1 (1.3)	4 (2.7)		0.442	0.25 (0.01-8.56)
Never®	1 (1.3)	1 (0.7)			
Olive oil					
Daily	42 (56)	82 (54.7)	0.518 (5.200)	0.773	1.28 (0.24-6.88)
2-3 times/week	21 (28)	32 (21.3)		0.575	1.64 (0.29-9.25)
Weekly	4 (5.3)	17 (11.3)		0.597	0.59 (0.08-4.21)
Once/2week	2 (2.7)	1 (0.7)		0.278	5 (0.27-91.52)
Monthly	1 (1.3)	3 (2)		0.898	0.83 (0.05-13.63)
Rare	3 (4)	10 (6.7)		0.787	0.75 (0.09-6.04)
Never®	2 (2.7)	5 (3.3)			
Margarine					
Daily	1 (1.3)	1 (0.7)	0.427 (5.965)	0.722	1.67 (0.1-27.75)
2-3 times/week	5 (6.7)	7 (4.7)		0.783	1.19 (0.34-4.13)
Weekly	12 (16)	16 (10.6)		0.622	1.25 (0.51-3.04)
Once/2week	3 (4)	7 (4.7)		0.646	0.71 (0.17-3)
Monthly	7 (9.3)	30 (20)		0.052	0.39 (0.15-1.01)
Rare	20 (26.7)	44 (29.3)		0.445	0.76 (0.37-1.54)
Never®	27 (36)	45 (30)			

The table (4.9.8) shows that there is no statistically significant association between the consumption of Butter, or Vegetable oil, olives oil, margarine, and the occurrence of ulcerative colitis as evidence by ($p > 0.05$). Our result inconsistent with Anonymous (1995) study which showed that there were a significant association between high intake of western food such as bread for breakfast, butter, margarine, cheese, meats, and ham and sausage and increased ulcerative colitis (P value = 0.04). Margarine was positively associated with ulcerative colitis (P value= 0.005). There was also a tendency towered positive association of bread for breakfast with ulcerative colitis (P value = 0.07)

Table (4.10): The final model of logistic regression for all variables

Variables		B	S.E.	Wald	Sig.	OR (95% CI)
Family history	Yes	1.540	.661	5.432	0.020*	4.67 (1.28-17.04)
	No®					
BMI	Over weight	-0.414	.404	1.055	0.304	0.66 (0.3-1.46)
	Obese	-0.958	.461	4.313	0.038*	0.38 (0.16-0.95)
	Normal ®					
Lamb meat	2-3 times/week	2.511	1.452	2.992	0.084	12.32 (0.72-211.96)
	Weekly	1.070	1.039	1.062	0.303	2.92 (0.38-22.33)
	Once/2week	1.995	1.384	2.078	0.149	7.35 (0.49-110.86)
	Monthly	-.920	1.239	.552	0.458	0.4 (0.04-4.52)
	Rare	.233	.387	.361	0.548	1.26 (0.59-2.7)
	Never ®					
Wheat bread	Daily	-2.374	1.079	4.839	0.028*	0.09 (0.01-0.77)
	2-3 times/week	-.399	0.664	0.362	0.547	0.67 (0.18-2.46)
	Weekly	-1.166	0.946	1.518	0.218	0.31 (0.05-1.99)
	Once/2week	-0.920	1.338	0.474	0.491	0.4 (0.03-5.48)
	Monthly	-0.456	0.702	0.422	0.516	0.63 (0.16-2.51)
	Rare	.0374	0.405	0.851	0.356	1.45 (0.66-3.22)
	Never ®					
Stress level	Mild	-0.416	0.744	0.313	0.576	0.66 (0.15-2.83)
	Moderate	0.059	0.518	0.013	0.910	1.06 (0.38-2.93)
	Severe	0.730	0.508	2.061	0.151	2.07 (0.77-5.62)
	Extremally severe	1.099	0.525	4.386	0.036*	3.0 (1.07-8.39)
	Normal ®	-0.323	0.569	0.323	0.570	

Table (4.10) showed the logistic regression for all risk factors in our study it represents that there is a significant risk factors between family history of ulcerative colitis and developing of ulcerative colitis (OR4.67, 95%CI1.28-17.04, P value = 0.020). This result is consistent with Jiang et al. (2007) which showed family history of IBD was associated with an increase of ulcerative colitis among Chinese people as evidence by (OR=4.35, 95%CI: 1.21-15.71, P=0.025).

Concerning Body Mass Index (BMI) represent significant protective factor with ulcerative colitis (OR 0.38, 95% CI 0.16-0.95, P value =0.038) while odds ratio less than one means participant with high BMI (obese) protected from developing ulcerative colitis in comparison to participant with low BMI<29.9. Our study result is in

consistent Chan et al. (2013) which suggested that there were no association between obesity and ulcerative colitis.

Moreover, there is a significant protective factor between daily eating wheat bread and developing of ulcerative colitis (OR 0.09, 95%CI 0.01-0.77, P value = 0.046). Our result inconsistent with Gautam (2015) study in India which concluded that Low intake of fruits and high intake of refined sugar were the only significant associated with ulcerative colitis but there is no significant difference association between higher rice, fish and lower wheat, meat and fried food intake.

Finally, the same table showed that there is a significant risk factor between extremely sever stress and developing of ulcerative colitis (OR 3.0, 95% CI 1.07-8.39, P value = 0.036). This result is consistent with Mawdsley and Rampton (2005) which concluded that the association between the ulcerative colitis and life events stress is substantiated at all levels. However, this result inconsistent with Ng et al. (2015) which demonstrated that there is no association between major stressful event before diagnosis and the risk of CD or UC.

Chapter Five

Conclusion and recommendation

5.1 Conclusion

This study aimed to identify the main risk factors, which are associated with ulcerative colitis among male and female in Gaza strip. A case-control study was undertaken to patient attending to main primary health care centers. The target population consisted of two groups, the first group were cases (all participants whom diagnosed confirmed by colonoscopy during the study period and having ulcerative colitis confirmed by doctor), the second group were controls who include (all healthy participant without known diagnosis of ulcerative colitis and didn't have diarrhea at least for two months from data collection with a ratio of one case to two controls. A convenience sample was consisted of 160 participants (75 cases and 150 controls) matched with gender, age and place of treatment.

Validated questionnaire was distributed to all 225 participants during collected data time with different statistical tests were used as bivariate and multivariate analysis. The study population consisted of 225 participants, 75(33.33%) were cases and 150(66.66%) were controls. For female group, 32(42.7%) cases and 64(42.7%) controls. While male grope 43 (57.3%) cases and 86(57.3%) controls. Also, Age was divided into three groups each group was matched between case and control group, 27 (36%) cases and 54 (36%) controls their age under 40 years. In addition, 28 (37.3%) cases and 56 (37.3%) controls their age between 40-50 years. Finally, 20 (26.7%) cases and 40 (26.7%) controls were aged more than 50 years.

For medical history risk factors the results of bivariate test represent that there were significant association with family history of ulcerative colitis as evidence by p-value < 0.05 and development of ulcerative colitis. Other factors were statistically not significant risk factors with ulcerative colitis including, psoriasis, eczema, hyperthyroidism, appendectomy and tonsillectomy.

Regarding medication (drugs) used, bivariate test revealed that there were statistically significant association between irregular antibiotic used, Isotretinoin acne medication and development of ulcerative colitis as evidence by p-value < 0.05. Other factors were statistically not significant including Aspirin, NSAIDs, Antibiotic, Oral contraceptive pills and Post-menopausal hormones.

Concerning life style risk factors, the results of bivariate test represented that there is significant association as a protective factor with daily eating wheat bread and development of ulcerative colitis as evidence by< 0.05. In contrast there were significant association as a risk factor with ex-smoking “former smoker”, extremely sever stress, and development of ulcerative colitis as evidence by P value <0.05. Other factors were statistically not significant risk factors with ulcerative colitis including passive smoking, BMI, sleeping duration, beef meat, chicken, fish, fruit, vegetables, cereals, beans & homos, falafel, fried potato, white bread, canned food, spicy food, smoked food, milk, yogurt, diary products, coffee, tea, soft drink & Soda, butter, vegetable oil, olives oil and margarine.

Multivariate analysis of risk factors for ulcerative colitis among adults was done using multiple regression to show the important and independent risk factors. Our finding shows that significant risk factors between family history of ulcerative colitis and development of ulcerative colitis [(OR: 4.67, 95% C.I.: 1.28-17.04), P value= 0.020]. Furthermore, significant risk factor showed with extremely sever stress [(OR: 3.0, 95% C.I:1.07-8.39), P value= 0.036] and development of ulcerative colitis. In contrast, a significant protective factor between daily eating wheat bread and development of ulcerative colitis was found [(OR: 0.09, 95%C.I.: 0.01-0.77), P value= 0.028]. Finally, significant protective factor between Obesity and development of ulcerative colitis [(OR: 0.038, 95%C.I.: 0.16-0.95), P value= 0.038].

5.2 Recommendation

1. Health education program at primary and secondary level should be started to reduce the incidence of ulcerative colitis.
2. Improve awareness for different risk factors of ulcerative colitis among people live in Gaza Strip and how they can overcome these risks.
3. Encourage people to eat healthy diet such as wheat bread.
4. Encourage people to avoid acne medication especially which contain Isotretinoin, and avoid misuse of antibiotic
5. Continue screening test to identify people at risk in order to offer treatment and prevent complications of ulcerative colitis disease.
6. Supporting epidemiological study in area of gastrointestinal health and encouraging further studies to prove new emerged risk factors for ulcerative colitis occurrence.

5.3 Recommendation for further research

1. Conducting study to explore the prevalence of ulcerative colitis among people in Palestine.
2. Conducting more studies to identify the possible complications of ulcerative colitis and disease exacerbation risk by using a qualitative and quantitative research.
3. Conducting research study about risk factor of ulcerative colitis with increasing of sample size, one case to three controls.
4. Conducting research study to recognize medication & nutrition compliance among ulcerative colitis patient.

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Annexes

Annex (1): Palestine map

Annex (2): Time table1

The research time table as it illustrates in table:

Item	Jan	Feb	March	April	May	June	July	Aug	Sep.	Oct.	Nov.	Dec.
Thesis (1) Registration	**4-19**											
Topic choosing		**1-30**										
Proposal writing			**15th March -30 April**									
Defense session					**7th-21**							
Pilot study						**1-15th**						
Data collection						**15th June -31 August**						
Thesis (2) registration									**1-10**			
Data analysis										**10-30**		
Write down thesis											**10-25**	
Thesis discussion												**10-20**

Annex (3): Case distribution in primary health care

A census of case that already registered at the main health care center are about:

Center name	**Case number**
Jabalia martyr's clinic	**18**
Al Remal martyrs Clinic	**15**
Deir El Balah martyr's clinic	**14**
Khan Yunis martyr's clinic	**13**
Rafah martyr's clinic	**15**
Total	**75**

Annex (4): Study budget

The researcher expects the study budget will be as illustrate in the table.

Activity	**Money (NIS)**
Thesis registration	7500 NIS
Transportation	1000 NIS
Communication	500 NIS
Print paper	300 NIS
Data collection	600 NIS
Statistical cost	500 NIS
Print the thesis	600NIS
Total	**11,000 NIS**

Annex (5): Experts panel

1. Dr. Bassam Abu Hamad	Al-Quds University
2. Dr. Yehia Abed	Al-Quds University
3. Dr. Khitam Abu Hamad	Al-Quds University
4. Dr. Ahmed El-shair	Islamic University
5. Dr. Ashraf El-Jedi	Islamic University
6. Dr. Areefa Al-Bahri	Islamic University
7. Dr. Ahmed Kandil	Ahli Arab Hospital
8. Dr. Iyad Zeedan	Ahli Arab Hospital
9. Dr. Halit Mater	European Gaza Hospital
10. Dr. Eyad Gabri	Al-Aqsa Martyrs Hospital

Annex (6): Interviews Questionnaire (English copy)

Risk Factors of Ulcerative Colitis in the Gaza Strip: A case control Study

Dear participant:

The researcher carries out this study as a part of the requirements for master degree of public health at Al-Quds University, School of public health –Palestine. The study is self-funded. Kindly, I would like to inform you that you have been selected to be part of my research study" **Risk Factors of Ulcerative Colitis in the Gaza Strip: A case control Study**". You are selected because you have met the selection criteria for participation and your facility has been thoroughly selected as a source of data by filling a well and comprehensive questionnaire.

The purpose of this study is to identify the main risk factors of ulcerative colitis among people in Gaza strip.

The researcher thankfully appreciates your effective participation in this study through answering the interviewer's questions that do not take more than 15 minutes. The researcher would like to emphasize that all data given from your side is top confidential and only for the purpose of scientific research. Accordingly, we will not need to mention names. Although welcomes your participation, participation is optional and no information given would be used against you whatever.

Thank you for your participation

Researcher,
Ahmed Eleyan Abukhedeir
0592104761

Part 1 demographic variables	
1.1Name:	Serial number:
1.2Status	1.□ Case 2. □Control
1.3Age	Years
1.4Gender	1.□ Male 2. □ Female
1.5Marital status	1.□ Single 2. □ Married 3. □ Divorced 4. □ Widow
1.6Refugee status	1.□ Refugee 2. □ Citizen
1.7Health facilities	
1.8Living area	1.□City 2. □Camp 3. □Village
1.9Family type	1.□ Nuclear 2. □ Extended
1.10Family member	
1.11Educational level	1.□ Illiterate 2. □ Primary 3. □ Prep school 4.□Secondary 5.□ Diploma 6.□ Bachelor 7.□ Master or above
1.12Occupation: 1. □ Employed 2. □ Unemployed 3. □ Retired 4. □Homemaker 5. □Student 1.13If employed, what type of work?..... 1.14For How long you been working in this occupation?..... years 1.15Did you have previous occupation? 1.□Yes 2. □No 1.16If yes, what was the previous work?..... 1.17What is your income in NIS؟.....NIS	
Part 2 Medical history	
2.1Dose any of your family members suffer or have suffered from ulcerative colitis? 1.□Yes 2. □No 3. □Ddon't know 2.2If yes, What's your relation? 1.□Father 2. □Mother 3. □Brother 4. □Sister 5. □Second relative	
2.3Do you suffer from chronic bowel disturbance (constipation, diarrhoea)؟ 1.□Yes 2. □No 2.4If yes, for How long?..... 2.5please mention the disturbance?.....	
2.6The last two month did you have diarrhoea؟ 1.□Yes 2. □No	
2.7Have the doctor ever told you that you suffer from psoriasis? 1.□Yes 2. □No 2.8If yes, for How long?..... years.	

2.9Have the doctor told you that you suffer from eczema؟ 1.□Yes 2. □No 2.10If yes, for How long?..... years.
2.11Have the doctor told you that you suffer from hyperthyroidism? 1.□Yes 2. □No 2.12If yes, for How long?..... years.
2.13Did you have appendectomy surgery؟ 1.□Yes 2. □No 2.14If yes, for How long?..... years.
2.15Did you have colon surgery? 1.□Yes 2. □No 2.16If yes, for how long?..... years.
2.17Did you have tonsillectomy surgery؟ 1.□Yes 2. □No 2.18If yes, for How long?..... years.
Part 3 Medication use
3.1Have you ever taken aspirin medication regularly؟ 1.□Yes 2. □No 3.2If yes, for How long?..... years.
3.3Have you ever taken (NSAIDs) medication such as Ibuprofen, Diclofen sodium/potassium؟ 1.□Yes 2. □No 3.4How many times have you taken NSIDs during the past 12 months? 1.□ Never 2. □ Once 3. □ 2-5 times 4. □ More than 5 times 3.5If yes, for How long?..... years.
3.6Have you ever taken any type of antibiotic medication? 1.□Yes 2. □No 3.7If yes, are you take it as prescribe regularly? 1.□Yes 2. □No 3.8How many times have you consumed antibiotics during the past 12 months? 1.□ Never 2. □ Once 3. □ 2-5 times 4. □ More than 5 times 3.9Please mention the name of antibiotic?.....
3.10Have you ever been taken acne medication? 1.□Yes 2. □No 3.11If yes, mention the name ……. (Just for female) 3.12 Have you ever used any contraceptive medication? 1.□Yes 2. □No 3.13 If yes, for How long?..... years. 3.14 Have you ever received any post-menopausal hormones? 1.□Yes 2. □No 3.15 If yes, for How long?..... years

Part 4 Life style

(Smoking)

4.1 Do you smoke any type of the tobacco products? 1.□Yes 2. □No 3.□ Ex-smoker

4.2 If yes or ex-smoker, for How long?..... years

4.3 What type of tobacco do you smoke?

1.□ cigarettes 2. □ hubble-bubble 3. □ Electronic Cigarettes 4. □ others

4.4 If cigarettes, how many cigarettes do you smoke a day?.....

4.5 Is any smoking person living or working with you? 1.□Yes 2. □No

(Physical activity)

Think about all the vigorous activities that you did in the last 7 days. Vigorous physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

4.6 During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling?

1.□ …….. Day per week 2. □ No vigorous physical activities (skip to Q4.8)

4.7 How much time did you usually spend doing vigorous physical activities on one of those days?

1.□ ……Hours per day 2. □ ……Minutes per day 3. □ Don't know/Not sure

Think about all the moderate activities that you did in the last 7 days. Moderate activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

4.8 During the last 7 days, on how many days did you do moderate physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.

1.□ …….. Day per week 2. □ No moderate physical activities (skip to Q 4.10)

4.9 How much time did you usually spend doing moderate physical activities on one of those days?

1.□ ……Hours per day 2. □ ……Minutes per day 3. □ Don't know/Not sure

Think about the time you spent walking in the last 7 days. This includes at work and at home, walking to travel from place to place, and any other walking that you have done solely for recreation, sport, exercise, or leisure.

4.10 During the last 7 days, on how many days did you walk for at least 10 minutes at a time?

1.□ …….. Day per week 2. □ No walking physical activities (skip to Q 4.12)

4.11How much time did you usually spend walking on one of those days?

1.□ ……Hours per day 2. □ ……Minutes per day 3. □ Don't know/Not sure

The last question is about the time you spent sitting on weekdays during the last 7 days. Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.

4.12 During the last 7 days, how much time did you spend sitting on a week day?

1.□ ……hours per day 2. □ ……minutes per day 3. □ Don't know/Not sure

(Sleeping pattern)

4.13 How many hours you do regularly sleep at night?..... hours

4.14 Is this enough? 1.□Yes 2. □No

4.15 Is it disturbed? 1.□Yes 2. □No

4.16 Does your work affect your sleep pattern? 1.□Yes 2. □No

(Body Mass Index)

4.17 Wight……. kg

4.18 Hight……cm

4.19 BMI……kg/m2

Number	Type of food	Daily	2-3 times/week	weekly	Once/2weeks	Monthly	Rare	Never
4.20.1	Beef meat							
4.20.2	Lamb meat							
4.20.3	Chicken							
4.20.4	Fish							
4.20.5	Canned food							
4.20.6	Vegetables							
4.20.7	Fruits							

Number	Type of food	Daily	2-3times/week	weekly	Once/2weeks	Monthly	Rare	Never
4.20.8	Cereals (white, oats, groats)							
4.20.9	Beans &Homos							
4.20.10	Falafel							
4.20.11	Fried potato							
4.20.12	White bread							
4.20.13	Wheat bread							
4.20.14	Spicy food							
4.20.15	Dairy products (cheese)							
4.20.16	Milk							
4.20.17	Yogurt							
4.20.18	Coffee							
4.20.19	Tea							
4.20.20	Soft drinks or soda							
4.20.21	Butter							
4.20.22	Vegetable oil							
4.20.23	Olive oil							
4.20.24	mangrin							
4.20.25	Smoked food							

(DASS 21 scale)

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement

The rating scale is as follows:

0 = Did not apply to me at all.

1 = Applied to me to some degree, or some of the time.

2 = Applied to me to a considerable degree, or a good part of time.

3 = Applied to me very much, or most of the time.

NO.	Item	0	1	2	3
4.21.1	I found it hard to wind down	**0**	**1**	**2**	**3**
4.21.2	I found it difficult to work up the initiative to do things	**0**	**1**	**2**	**3**
4.21.3	I felt that I was using a lot of nervous energy	**0**	**1**	**2**	**3**
4.21.4	I found myself getting agitated	**0**	**1**	**2**	**3**
4.21.5	I found it difficult to relax	**0**	**1**	**2**	**3**
4.21.6	I was intolerant of anything that kept me from getting on with what I was doing	**0**	**1**	**2**	**3**
4.21.7	I felt that I was rather touchy	**0**	**1**	**2**	**3**
4.21.8	I was aware of dryness of my mouth	**0**	**1**	**2**	**3**
4.21.9	I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	**0**	**1**	**2**	**3**
4.21.10	I experienced trembling (e.g. in the hands)	**0**	**1**	**2**	**3**
4.21.11	I was worried about situations in which I might panic and make a fool of myself	**0**	**1**	**2**	**3**
4.21.12	I felt I was close to panic	**0**	**1**	**2**	**3**
4.21.13	I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	**0**	**1**	**2**	**3**
4.21.14	I felt scared without any good reason	**0**	**1**	**2**	**3**
4.21.15	I couldn’t seem to experience any positive feeling at all	**0**	**1**	**2**	**3**
4.21.16	I found it difficult to work up the initiative to do things	**0**	**1**	**2**	**3**
4.21.17	I felt that I had nothing to look forward to	**0**	**1**	**2**	**3**
4.21.18	I felt down-hearted and blue	**0**	**1**	**2**	**3**
4.21.19	I was unable to become enthusiastic about anything	**0**	**1**	**2**	**3**
4.21.20	I felt I wasn’t worth much as a person	**0**	**1**	**2**	**3**
4.21.21	I felt that life was meaningless	**0**	**1**	**2**	**3**

Annex (7): Interviews Questionnaire (Arabic copy)

الأخ الفاضل / الأخت الفاضلة

تحية طيبة وبعد

أنا الباحث /أحمد عليان أبو خضير الطالب في جامعة القدس ماجستير الصحة العامة تخصص علم الأوبئة – أقوم بإجراء دراسة عن: **العوامل التي قد تؤدي لمرض القولون التقرحي المزمن في قطاع غزة** علماً أن هذه الدراسة ليست ممولة من أي جهة ولا تهدف لتحقيق أي مكاسب مادية.

مشاركتك في هذه الدراسة سوف تساعد الباحث على معرفة العوامل التي قد تؤدي إلى مرض القولون التقرحي المزمن وبالتالي المساعدة في السيطرة على هذا المرض.

مشاركتك في هذه الدراسة لا تشكل أي خطر أو تكلفة عليك والمعلومات المستمدة من هذه الدراسة سوف تستخدم فقط لغرض البحث ولن تستخدم لأي أغراض أخرى وسوف تعامل بطريقة سرية، لك حرية الاختيار في المشاركة أو الرفض.

في حال الموافقة. نثمن هذا الاختيار، سوف نقوم بمقابلة تستغرق 15 دقيقة من وقتك إذا كان لديك أي استفسار يمكنك ان تستوقفني وتطلب الشرح اللازم.

مع جزيل الشكر والتقدير

الباحث: أحمد عليان محمد أبو خضير

0592104761

الاستبيان

1. أولاً/ المعلومات الاجتماعية والديموغرافية	
1.1. الاسم:	**الرقم المتسلسل:**
1.2. الحالة	case □.1 control □.2
1.3. العمر	سنة
1.4. الجنس	1.□ ذكر 2.□ أنثى
1.5. الحالة الاجتماعية	1.□ أعزب 2.□ متزوج 3.□ مطلق 4.□ أرمل /ة
1.6. حالة اللجوء	1.□ لاجئ 2.□ مواطن
1.7. مكان تلقى العلاج	
1.8. موقع السكن	1.□مدينة 2.□ مخيم 3.□ قرية
1.9. نوع العائلة	1.□نووية 2.□ ممتدة
1.10. عدد افراد الأسرة	
1.11.المستوى التعليمي	1.□ أمي 2.□ابتدائي 3.□ اعدادي 4.□ثانوي 5.□ دبلوم متوسط 6.□ بكالوريوس 7.□ دراسات عليا
1.12. العمل:	1. □ أعمل 2. □ لا أعمل 3. □متقاعد 4.□ ربة منزل 5.□ طالب
1.13.لو كانت الإجابة أعمل، ماهي طبيعة العمل؟	
1.14.منذ متى وانت تعمل بهذا المجال؟ .....سنة	
1.15. هل كان لديك عمل سابق؟ 1.□ نعم 2.□ لا	
1.16.لو كانت الإجابة بنعم، فماهي طبيعة العمل؟	
1.17. الدخل بالشيقل:	
2. ثانياً/عوامل الخطر الطبية	
2.1. هل يوجد أي شخص في العائلة عانى او يعاني من مرض القولون التقرحي المزمن؟ 1.□ نعم 2.□ لا 3. □لا أعرف	
2.2. لو كانت الإجابة، نعم ماهي صلة القرابة؟ 1. □ الأب 2. □ الأم 3. □الاخ 4.□ الأخت 5.□من الدرجة الثانية	
2.3. هل تعاني من اضطرابات الأمعاء المزمنة ك (الإمساك والإسهال)؟ 1.□ نعم 2.□ لا	
2.4. لو كانت الإجابة نعم كم المدة؟	
2.5. الرجاء تعين نوع الاضطراب؟	

2.6. خلال الشهرين الماضيين هل أصبت بالإسهال؟ 1.□ نعم 2.□ لا
2.7. هل سبق وأخبرك الطبيب أنك تعاني من الصدفية؟ 1.□ نعم 2.□ لا **2.8. لو كانت الإجابة نعم، منذ متى؟ ..... سنوات**
2.9. هل سبق وأن اخبرك الطبيب أنك تعاني من الأكزيما؟ 1.□ نعم 2.□ لا **2.10.لو كانت الإجابة نعم، منذ متى؟ ..... سنوات**
2.11. هل سبق واخبرك الطبيب أنك تعاني من ارتفاع هرمونات الغدة الدرقية؟ 1.□ نعم 2.□ لا **2.12.لو كانت الإجابة نعم، منذ متى؟ ..... سنوات**
2.13.هل سبق وأجريت لك عملية استئصال الزائدة الدودية؟ 1.□ نعم 2.□ لا **2.14.لو كانت الإجابة نعم، منذ متى؟ ..... سنوات**
2.15. هل سبق وأجريت عمليات متعلقة بالقولون؟ 1.□ نعم 2.□ لا **2.16.لو كانت الإجابة نعم، منذ متى؟ ..... سنوات**
2.17.هل سبق وأجريت لك عملية استئصال اللوزتين؟ 1.□ نعم 2.□ لا **2.18.لو كانت الإجابة نعم، منذ متى؟ ..... سنوات**
3. ثالثا/ عوامل الخطر المتعلقة باستخدام الأدوية
3.1. هل سبق لك تناول دواء الأسبرين بانتظام؟ 1.□ نعم 2.□ لا **3.2. لو كانت الإجابة نعم، منذ متى؟** ..... سنوات
3.3. هل سبق لك تناول ادوية مضادات الالتهاب غير الستيروئيدية كالديقلوفين والايبروفين؟ 1.□ نعم 2.□ لا **3.4. لو كانت الإجابة نعم، منذ متى؟ ..... سنوات** **3.5. كم مرة تناولت مضادات الالتهاب غير الستيروئيدية خلال ال 12 شهرا الماضية؟** **1.□ اطلاقاً 2.□ مرة 3.□من2 -5مرات 4.□أكثر من5 مرات**
3.6. هل سبق لك تناول المضادات الحيوية؟ 1.□ نعم 2.□ لا **3.7. لو كانت الإجابة نعم، هل قمت بتناولها بانتظام كما وصفها الطبيب؟** 1.□ نعم 2.□ لا **3.8. كم مرة تناولت المضادات الحيوية خلال ال 12 شهرا الماضية؟** **1.□ اطلاقاً 2.□ مرة 3.□من2 -5مرات 4.□أكثر من5 مرات** **3.9. اسم الدواء ان أمكن؟** .....
3.10.هل سبق وتناولت علاج لحب الشباب؟ 1.□ نعم 2.□ لا **3.11.اسم الدواء ان أمكن؟** .....
(للنساء فقط) **3.12.هل سبق وتناولت أدوية موانع الحمل؟** 1.□ نعم 2.□ لا **3.13.لو كانت الإجابة نعم، كم المدة المستخدمة؟ .....** **3.14.هل سبق وتلقيت أي علاج هرموني لتفادي سن اليأس؟** 1.□ نعم 2.□ لا **3.15.لو كانت الإجابة نعم، كم المدة المستخدمة؟ .....**

4. رابعا / نمط المعيشة

(التدخين)

4.1. هل انت مدخن؟ 1.□ نعم 2. □ لا 3. □سابقاً

4.2. لو كانت الإجابة بنعم أو سابقا كم المدة؟ .....

4.3. أي نوع من التبغ تستخدم؟ 1.□ السجائر 2. □ الشيشة 3. □ السجائر الالكترونية

4.□غير ذلك أذكرها.....

4.4. لو كانت الإجابة سجائر، كم عدد السجائر في اليوم؟ .....

4.5. هل يوجد شخص مدخن يعيش أو يعمل معك؟ 1.□ نعم 2.□ لا

(ممارسة النشاط البدني)

الآن فكر في الأنشطة البدنية مرتفعة الشدة هي تلك الأنشطة التي تجعل تنفسك أعلى بكثير من المعتاد، مثل رفع أشياء ثقيلة، أو حرث الأرض، أو ركوب الدراجة بسرعة عالية، أو الجري، أو ممارسة كرة القدم، أو كرة السلة، أو السباحة، أو نط الحبل. فكر فقط في الأنشطة البدنية مرتفعة الشدة التي قمت بممارستها لمدة 10 دقائق على الأقل في كل مرة.

4.6. خلال الأيام السبعة الماضية، كم يوماً مارست فيه نشاطاً بدنياً مرتفع الشدة؟

1□ ..... يوم في الأسبوع 2□ لا أقوم بأي نشاط بدني مرتفع الشدة (انتقل للسؤال 4.8)

4.7. في المعتاد، كم من الوقت قضيته في ممارسة نشاط بدني مرتفع الشدة في أحد تلك الأيام؟

1.□ .....ساعة في اليوم 2. □ .....دقيقة في اليوم 3.□ لا أدري / أو غير متأكد

الآن فكر في جميع الأنشطة البدنية التي تتطلب جهداً بدنياً معتدل الشدة والتي قمت بممارستها خلال الأيام السبعة الماضية. الأنشطة البدنية معتدلة الشدة هي تلك الأنشطة التي تجعل تنفسك أعلى من المعتاد إلى حداً ما، ويمكن أن تتضمن رفع أشياء خفيفة، أو ركوب الدراجة بسرعة عادية، أو ممارسة كرة الطائرة، أو ممارسة تنس الطاولة، أو كنس المنزل، أو غسل الملابس يدوياً، أو غسل السيارة. لا تحسب المشي ضمن هذه الأنشطة. مرة أخرى، فكر فقط في الأنشطة البدنية معتدلة الشدة التي قمت بممارستها لمدة 10 دقائق على الأقل في كل مرة.

4.8. خلال الأيام السبعة الماضية، كم يوماً مارست فيه نشاطاً بدنياً معتدل الشدة؟

1□ ..... يوم في الأسبوع 2□ لا أقوم بأي نشاط بدني معتدل الشدة (انتقل للسؤال 4.10)

4.9. في المعتاد، كم من الوقت قضيته في ممارسة نشاط بدني معتدل الشدة في أحد تلك الأيام؟

1.□ .....ساعة في اليوم 2. □ .....دقيقة في اليوم 3.□ لا أدري / أو غير متأكد

الآن فكر في الوقت الذي قضيته في المشي خلال الأيام السبع الماضية، ويتضمن ذلك المشي إلى العمل، والمشي أثناء العمل، وفي البيت، وخلال انتقالك من مكان لآخر، أو أي نوع من أنواع المشي بغرض الترويح أو الرياضة.

4.10.خلال الأيام السبعة الماضية، كم يوماً مارست فيه المشي لمدة 10 دقائق على الأقل في كل مرة؟

1.□ ..... يوم في الأسبوع 2.□ لا أقوم بممارسة المشي اطلاقاً (انتقل للسؤال 4.12)

4.11.في المعتاد، كم من الوقت قضيته في ممارسة المشي في أحد تلك الأيام؟

1.□ .....ساعة في اليوم 2. □ .....دقيقة في اليوم 3.□ لا أدري / أو غير متأكد

الآن فكر في الوقت الذي قضيته جالساً خلال الأيام السبعة الماضية. أحسب وقت الجلوس في العمل، وفي المنزل، وفي الدراسة، وفي الترفيه. من الممكن أن يتضمن ذلك وقت الجلوس على المكتب، وأثناء العمل على الكمبيوتر، وأثناء زيارتك لصديق، وأثناء القراءة، والجلوس أو الاستلقاء لمشاهدة التلفزيون.

4.12. خلال الأيام السبعة الماضية، كم من الوقت قضيته جالساً في أحد هذه الأيام من غير أيام الإجازة الأسبوعية؟

1.□ .....ساعة في اليوم 2. □ .....دقيقة في اليوم 3.□ لا أدري / أو غير متأكد

(نمط النوم)

4.13.كم ساعة تنام بشكل منتظم خلال الليل؟ .....

4.14.هل تعتبر ساعات نومك كافية؟ 1.□ نعم 2.□ لا

4.15.هل تعتبر ساعات نومك مضطربة؟ 1.□ نعم 2.□ لا

4.16.هل عملك يؤثر على نومك؟ 1.□ نعم 2.□ لا

(مؤشر كتلة الجسم)

4.17.الوزن.....كجم

4.18.الطول ..... سم

4.19.مؤشر كتلة الجسم .....كجم/م^2

(نمط الغذاء)

4.20.الى أي مدى تتناول/ين الطعام الآتي؟

<u>ملاحظة لمرضى القولون التقرحي المزمن الى أي مدى كنت تتناول/ين الطعام الآتي قبل الإصابة بالمرض؟</u>

الرقم	نوع الطعام	يومياً	2-3 مرات أسبوعيا	مرة في الأسبوع	مرة كل أسبوعين	مرة كل شهر	نادراً	اطلاقاً
4.20.1.	اللحم البقري							
4.20.2.	لحم الماعز							
4.20.3.	الدجاج							
4.20.4.	السمك							
4.20.5.	المعلبات							
4.20.6.	الفواكه							
4.20.7.	الخضروات							
4.20.8.	الحبوب كالقمح والشعير والشوفان							
4.20.9.	الفول والحمص							
4.20.10.	الفلافل							

4.20.11.	البطاطس المقلية							
4.20.12.	الخبز الأبيض							
4.20.13.	الخبز الأسود(القمح)							
4.20.14.	الأكل المبهر							
4.20.15.	الحليب							
4.20.16.	لبن الزبادي							
4.20.17.	مشتقات الحليب كالأجبان							
4.20.18.	الشاي							
4.20.19.	القهوة							
4.20.20.	المشروبات الغازية							
4.20.21.	السمن							
4.20.22.	الزيت النباتي (السيرج)							
4.20.23.	زيت الزيتون							
4.20.24.	زبدة المنجرين							
4.20.25.	الأكل المدخن							

(مقياس DASS 21)

4.21.اقرأ كل من النصوص التالية ثم ضع دائرة حول الرقم ٠،١،٢أو ٣الذي يبين درجة انطباق هذا الشعور عليك في الأسبوع الماضي. لا يوجد إجابات صحيحة أو خاطئة. لا تقضي وقتاً طويلاً في أي منها

0 = لا ينطبق على بتاتاً (اطلاقاً).
1 = ينطبق على بعض الشيء أو قليلاً من الأوقات (أحياناً).
2 = ينطبق على بدرجة ملحوظة أو بعض الأوقات (غالباً).
3 = ينطبق على كثيراً جداً، أو معظم الأوقات (دائماً).

		إطلاقاً	أحياناً	غالباً	دائماً
4.21.1.	وجدت إنني مضطرب ومنزعج بسبب أمور تافهة جدا	0	1	2	3
4.21.2.	كنت أميل إلى ردة فعل مفرطة للظروف والأحداث	0	1	2	3
4.21.3.	أجد صعوبة في الاسترخاء	0	1	2	3
4.21.4.	وجدت نفسي أميل إلى الاضطراب والانزعاج بسهولة	0	1	2	3
4.21.5.	شعرت بأنني أستهلك الكثير في الطاقة العصبية (شعرت بأنني أستهلك الكثير من قدرتي على تحمل التوتر العصبي)	0	1	2	3
4.21.6.	وجدت أنني قليل الصبر كلما أخرني شيء (عند انتظار المصعد، إشارات المرور، أو كلما طلب مني الانتظار، مثلاً)	0	1	2	3

.4.21.7	شعرت بأنني أميل إلى الغيظ بسرعة	0	1	2	3
.4.21.8	شعرت بجفاف في حلقي	0	1	2	3
.4.21.9	شعرت بصعوبة في التنفس (شدة التنفس السريع، اللهثان بدون القيام بمجهود جسدي مثلاً)	0	1	2	3
.4.21.10	شعرت بالرجفة (إن رجلي لا تقوى على حملي مثلاً)	0	1	2	3
.4.21.11	وجدت نفسي في مواقف جعلتني قلقاً جداً، وكنت مرتاحاً للغاية بزوالها	0	1	2	3
.4.21.12	انتابني شعور بالإغماء	0	1	2	3
.4.21.13	عرقت بشكل ملحوظ (عرق غزير من اليدين مثلاً) بدون أن يكون الطقس حاراً وبدون بذل مجهود جسدي	0	1	2	3
.4.21.14	شعرت بالخوف بدون أي سبب وجيه	0	1	2	3
.4.21.15	لم يبدو لي أن بإمكاني الإحساس بمشاعر إيجابية على الإطلاق	0	1	2	3
.4.21.16	لم يبدو لي أن بإمكاني أن أبدأ في القيام بأعمالي	0	1	2	3
.4.21.17	شعرت بأن ليس لدي أي شيء أتطلع إليه	0	1	2	3
.4.21.18	شعرت بالحزن والإكتآب	0	1	2	3
.4.21.19	شعرت بأنني فقدت الاهتمام بكل شيء تقريبا	0	1	2	3
.4.21.20	شعرت بأن قيمتي قليلة كشخص	0	1	2	3
.4.21.21	شعرت بأن الحياة لا قيمة لها	0	1	2	3

Annex (8): Approval from Helsinki committee- Gaza governorate

المجلس الفلسطيني للبحث الصحي

Palestinian Health Research Council

تعزيز النظام الصحي الفلسطيني من خلال مأسسة استخدام المعلومات البحثية في صنع القرار

Developing the Palestinian health system through institutionalizing the use of information in decision making

Helsinki Committee

For Ethical Approval

Date: 2019/06/17 **Number:** PHRC/HC/582/19

Name: Ahmed E. M. AbuKhedeir الاسم:

We would like to inform you that the committee had discussed the proposal of your study about:

نفيدكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:

Risk Factors of Ulcerative Colitis in the Gaza Strip: A case control Study

The committee has decided to approve the above mentioned research. Approval number PHRC/HC/582/19 in its meeting on 2019/06/17

و قد قررت الموافقة على البحث المذكور عاليه بالرقم والتاريخ المذكوران عاليه

Dr. Yehia Abed

Signature

Member **Chairman** **Member**

Dr. Asaad 6 2019

Genral Conditions:-

1. Valid for 2 years from the date of approval.
2. It is necessary to notify the committee of any change in the approved study protocol.
3. The committee appreciates receiving a copy of your final research when completed.

Specific Conditions:-

E-Mail:pal.phrc@gmail.com

Gaza - Palestine غزة - فلسطين

شارع النصر - مفترق العيون

Annex (9): An official letter of request

Al-Quds University
Jerusalem
School of Public Health

جامعة القدس
القدس
كلية الصحة العامة

التاريخ:2019/8/5

حضرة الدكتور/ رامي العبادلة المحترم
مدير عام تنمية القوى البشرية–وزارة الصحة

تحية طيبة وبعد،،،

الموضوع: مساعدة الطالب أحمد أبو خضير

نشكر لكم دعمكم الدائم لمسيرة العلم والتعليم وخصوصاً دعم كلية الصحة العامة وطلابها، ونود أعلامكم بأن الطالب المذكور أعلاه قوم بعمل بحث كمتطلب للحصول على درجة الماجستير في الصحة العامة–مسار علم الأوبئة بعنوان:

"Risk Factors of Ulcerative Colitis in the Gaza Strip : A case control study"

وعليه نرجو من سيادتكم التكرم بالموافقة على تسهيل مهمة الطالب في إنجاز هذا البحث حيث أن الفئه المستهدفة مرضى القولون التقرحي المزمن المسجلين والمراجعين في مراكز الرعاية الاولية التابعة لإدارتكم.

و اقبلوا فائق التحية و الاحترام،،،

د. بسام أبو حمد
منسق عام برامج الصحة العامة
فرع غزة

نسخة:
- الملف

Jerusalem Branch/Telefax 02-2799234
Gaza Branch/Telefax 08-2644220 -2644210
P.O. box 51000 Jerusalem

فرع القدس / تلفاكس 02-2799234
فرع غزة / تلفاكس 08-264420-2644210
ص.ب. 51000 القدس

Annex (10): MOH task facilitation form

State of Palestine
Ministry of health

دولة فلسطين
وزارة الصحة

السيد : رامي عيد سليمان العبادله المحترم

التاريخ:18/08/2019

رقم المراسلة 352964

مدير عام بالوزارة /الإدارة العامة لتنمية القوى البشرية – /وزارة الصحة

السلام عليكم ,,,

الموضوع/ تسهيل مهمة الباحث/أحمد أبوخضير

التفاصيل //
بخصوص الموضوع أعلاه، يرجي تسهيل مهمة الباحث/أحمد عليان أبو خضير
الملتحق ببرنامج ماجستير الصحة العامة – تخصص علم الأوبئة – كلية الصحة العامة – جامعة القدس أبوديس بغزة في إجراء بحث بعنوان :-
"Risk Factors of Ulcerative Colitis in the Gaza Strip: A case control Study"
حيث الباحث بحاجة لتعبئة استبانة وعمل مقابلة مع عدد من مرضى القولون التقرحي المزمن المسجلين والمراجعين في مراكز الرعاية الصحية الأولية (مركز صحي شهداء جباليا –مركز صحي شهداء الرمال – مركز صحي شهداء دير البلح – مركز صحي شهداء خانيونس – مركز صحي شهداء رفح) وكذلك عينه ضابطه ممن لا يعانون من مشاكل القلون التقرحي من المراجعين لذات المراكز.
نأمل توجيهاتكم لذوي الاختصاص بضرورة الحصول على الموافقة المستنيرة من المرضى الذين هم على استعداد للمشاركة في الدراسة ومن ثم تمكين الباحث من التواصل معهم، بما لا يتعارض مع مصلحة العمل وضمن أخلاقيات البحث العلمي، ودون تحمل الوزارة أي أعباء أو مسئولية.
وتفضلوا بقبول التحية والتقدير،،،
ملاحظة/ *البحث حصل على موافقة لجنة اخلاقيات البحث الصحي*
ملاحظة / تسهيل المهمة الخاص بالدراسة أعلاه صالح لمدة 6 شهر من تاريخه.

محمد ابراهيم محمد السرساوي
مدير دائرة/الإدارة العامة لتنمية القوى البشرية –

التحويلات

محمد ابراهيم محمد السرساوي(مدير دائرة)	رامي عيد سليمان العبادله(مدير عام بالوزارة)	إجراءاتكم بالخصوص(18/08/2019)
رامي عيد سليمان العبادله(مدير عام بالوزارة)	مدحت عباس خضر حسن(مدير عام بالوزارة)	للإطلاع و توجيهاتكم بالخصوص(18/08/2019)
مدحت عباس خضر حسن(مدير عام بالوزارة)	صلاح الدين علي عبد الحفيظ الرنتيسي(مدير دائرة)	لعمل اللازم(18/08/2019)
مدحت عباس خضر حسن(مدير عام بالوزارة)	عبد الكريم سعيد العبد النبار(مدير دائرة)	لعمل اللازم(18/08/2019)
مدحت عباس خضر حسن(مدير عام بالوزارة)	فواز ادريس محمد ابو زياده(طبيب مدير)	لعمل اللازم(18/08/2019)
مدحت عباس خضر حسن(مدير عام بالوزارة)	ناهض عيد حسن جودة(مدير دائرة)	لعمل اللازم(18/08/2019)

Gaza Tel. (+970) 8-2846949 Fax. (+970) 8-2826295

غزة تلفون. (+970) 8-2846949 فاكس. (+970) 8-2826295

عنوان الرســـالة: العوامل التي قد تؤدي إلى خطر الإصـــابة بمرض القولون التقرحي المزمن في قطاع غزة "دراســـة الحالات والشواهد "

إعداد: أحمد عليان أبو خضير

إشراف: د. يوسف إبراهيم الجيش.

ملخص الدراسة:

يعتبر القولون التقرحي المزمن مرض مهدد للحياة حيث انه لا يمكن علاج هذا المرض ولكن يمكن الســـيطرة على علامته وأعراضه كالأمراض المزمنة.

تكونت عينة الدراسة من 255 حالة (75حالة مصابة بمرض القولون التقرحي المزمن و150 حالة سليمة)، حيث استخدم الباحث دراسة مقارنة بين الحالات المرضية والحالات السليمة، وقد أُخذت جميع الحالات من مراكز الرعاية الأولية الخمسة الرئيسية خلال فترة جمع العينة. تكونت أداة الدراسة من استبانة تم إعدادها لقياس متغيرات الدراسة (العوامل الاجتماعية الديموغرافية، نمط العيش، الوضع الصحي الطبي، الأدوية المستخدمة)، وقد قام الباحث بإجراء اختبارات الصدق والثبات للاستبانة من خلال عينة استطلاعية تكونت من 30حالة (10حالات و20شواهد)، وقد تم تضمينهم في عينة الدراسة، وقد استخدم الباحث الحزمة الإحصائية SPSS، وقد أظهر تحليل ثنائي المتغيرات لإيجاد عوامل الخطر لمرض القولون التقرحي المزمن أن هناك علاقة ذات دلالة إحصائية بين الإصابة بمرض القولون التقرحي المزمن والتاريخ العائلي. وأن الحالات التي لديها تاريخ عائلي للإصابة بمرض القولون التقرحي المزمن تزداد معدل إصابتهم بالمرض أكثر من الذين ليس لديهم تاريخ عائلي للإصابة بمرض القولون التقرحي المزمن بمعدل (OR 4.57, 95%CI 1.6 -12.72, p value 0.001)، في حين تناول خبز القمح بشكل يومي يعتبر عامل حماية من الإصابة بالمرض كما وأظهرت النتائج أن الحالات التي كانت تستعمل المضادات الحيوية بشكل غير منتظم وعلاجات حب الشباب المحتوية مادة Isotretinoin تزيد من معدلات الإصابة بمعدل (OR 2.64 OR 1.92) على التوالي أيضا وجدت الدراسة أن هناك علاقة بين القولون التقرحي المزمن والتعرض للتوتر بمعدل (OR 2.6,95% CI 1.14-5.91, P value = 0.039) كذلك وأظهرت ارتباط ما بين التدخين سابقا ومرض القولون التقرحي المزمن بمعدل *(OR 3.8,95% CI 0.44-1.66, P value = 0.002)*.

وتوصـي الدراسـة بالابتعاد عن أدوية حب الشـباب المحتوية لمادة Isotretinoin، والالتزام بالوصـفات الطبية الخاصـة بالمضـادات الحيوية بشـكل منتظم أيضـا تناول المأكولات الصـحية والتشـجيع على تناول خبز القمح بدلا من الخبز الأبيض.