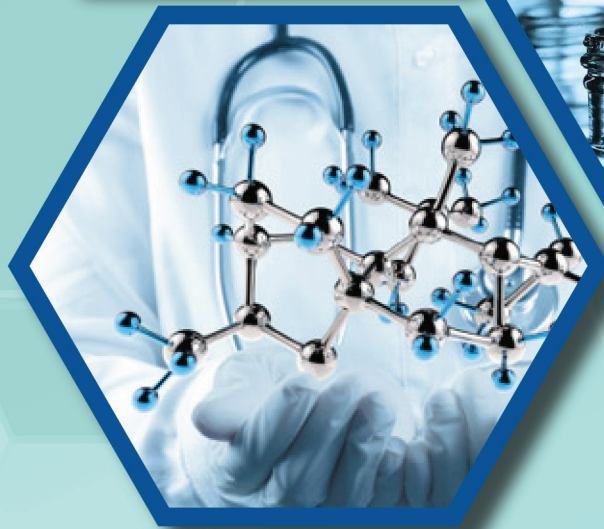


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Incidence of Acute Onset Endophthalmitis after Cataract Extraction Surgery at Tripoli Eye Hospital

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Abstract

The aim of this study was to observe the incidence of acute onset endophthalmitis after cataract surgery in Tripoli Eyes Hospital between January 2015 until December2017. A retrospective study was reviewed all cases during three years by reviewing electronic surgical records. The study recorded the clinical and the microbial reultes of the recorded cases within the 6 weeks after cataract surgery . The study found that the The median age of patients was 74 years. The mean duration from day of cataract surgery to the day of diagnosis with endophthalmitis was 10 days. 5 of the 8 vitreous isolates produced culture positive growth. The 3 culture negative cases presented on postoperative days 5, 10 and 14.,topical 2% lidocaine gel was used in two (67%) before povidone-iodine preparation. Of the patients with endophthalmitis after a temporal clear cornea approach to phacoemulsification, 2 achieved a final visual acuity of counting finger or better, and 2 had a final visual acuity of hand motions or worse. One patient had a poor visual outcome due to endophthalmitis- not responding to the treatment ended with evisceration, whereas the other had a poor outcome .The study concluded thatthe incidence of endophthalmitis after clear cornea phacoemulsification (0.10%) was lower than the incidence after other approaches to cataract surgery (0.02%) in the current study,

Keywords:Endophthalmitis,phacoemulsification,Cornea,Cataract

INTRODUCTION

In the past 4 decades, cataract surgery has undergone remarkable technical refinement, with simplified postoperative care and faster visual recovery as consequences.(1) With improved instrumentation, small-incision phacoemulsification became possible in the late 1980s, leading to the current

state of the art of sutureless phacoemulsification surgery with foldable intraocular lens implantation.(2)

Removal of the lens through a corneal incision was reported as early as 1668; however, the current self-sealing clear corneal incision was first introduced in 1992 by I. Howard Fine, MD. (3) Since then, increasing popularity of clear corneal incisions over limbal and scleral tunnel incisions among cataract surgeons across the United States and Europe has resulted in greater intraoperative control, decreased surgical time, simplified postoperative care, less induction of astigmatism, and faster visual recovery. In the most recent survey of American Society of Cataract and Refractive Surgery members (2003), Leaming reported that clear corneal incision was preferred by 72% of US surgeons and the no-suture closure was preferred by 92%. This acceptance is part of a gradual uptrend from 1.5%, 12.4%, 30%, 40%, and 47% in 1992, 1995, 1997, 1999, and 2000, respectively. (4) Among European surgeons, a similar 51.4% prefer clear corneal incisions, while a 1999 French survey reported a more than 86% preference for clear corneal incisions. (5) Furthermore, sutureless cataract incisions are reportedly preferred among 92%, 94%, and 58% of cataract surgeons in the United States, New Zealand, and Japan, respectively. (3)

Endophthalmitis is an uncommon but serious intraocular infection that occurs most commonly as a complication of intraocular surgery and often causes severe visual impairment or even the loss of an eye. (6) The reported incidence of postoperative endophthalmitis varies by the specific surgical procedure and across studies, but the overall incidence has been declining since the late 19th to late 20th century. The incidence of endophthalmitis after cataract surgery was approximately 5% to 10% in the late 1800s and early 1900s, 1.5% to 2% during the 1930s, 0.5% to 0.7% in the mid 1900s, and 0.06% to 0.09% according to nationwide patient registries in the early 1990s. (7) Improvements in microsurgical and aseptic techniques, advancements in surgical materials, and use of prophylactic broad-spectrum antibiotics, in combination with a better understanding of causes of the infection, may explain this favorable trend.

In a meta-analysis of studies published from 1979 to 1991, a period that predates the use of self-sealing clear corneal incisions, Powe et al reported a 0.13% incidence of acute postoperative endophthalmitis following cataract extraction.(8) However, recent reports suggest that the postcataract endophthalmitis rate may be substantially higher, suggesting a greater risk of endophthalmitis coincident with the increase in self-sealing clear corneal incisions. (8) Colleaux and Hamilton reported a 0.129% and 0.05% incidence of endophthalmitis following cataract extraction with sutureless clear corneal and scleral tunnel incisions, respectively. Similarly, 3 retrospective, comparative, case-controlled studies found a significantly higher

endophthalmitis rate associated with clear corneal incisions compared with scleral tunnel incisions. (9,10,11) In a study from the Massachusetts Eye and Ear Infirmary (Boston), the incidence of endophthalmitis was 0.68% for clear corneal incisions vs 0.18% for scleral tunnel incisions. (12) More recently, Nakagi et al reported a statistically increased risk with clear corneal incisions (0.29%) compared with sclerocorneal incisions (0.05%).(13)

Various other anecdotal reports by cataract surgeons and retinal specialists have also claimed a higher incidence of endophthalmitis with clear corneal incisions. (14) These studies indicate an apparently increased occurrence of endophthalmitis in the last decade and a several-fold increase in endophthalmitis risk associated with self-sealing clear corneal incisions compared with scleral tunnel and sclerocorneal wounds. However, the relative rarity of endophthalmitis following intraocular surgery poses significant difficulty in ascertaining accurate incidence rates or in analyzing effects of multiple risk factors.

Some studies found a three- to four-fold risk for endophthalmitis after clear cornea cataract surgery compared with scleral tunnel incisions.(14,15) In contrast, Lalwani et al reviewed 73 endophthalmitis cases after clear cornea cataract surgery and compared them with the data from the Endophthalmitis Vitrectomy Study (EVS), in which scleral tunnel and clear cornea incisions were used. They found that time to endophthalmitis diagnosis was longer in clear cornea cataract surgery cases but clinical features, causative organisms, and visual acuity outcomes were similar to those reported in the EVS.(17)

Most reports regarding the rates of endophthalmitis are based on the experience of individual institutions or groups of surgeons and are limited by the small sample sizes, thereby making comparisons and statistical validity of data difficult. Only more appropriate methods such as extensive reviews or multicenter, prospective studies can help reveal clinical and statistical trends for this adverse outcome.

Risk Factors for Acute Endophthalmitis following Cataract Surgery

The World Health Organization's Prevention of Blindness and Visual Impairment makes the global estimate that the number of people of all ages visually impaired is estimated to be 285 million, of whom 39 million are blind in 2010. The major causes of visual impairment are uncorrected refractive errors (43%) and cataract (33%) ; cataracts remain the leading cause of blindness (51%). (15) Cataract surgery is becoming more prevalent in the elderly as the life expectancy of the population increases. There has been a dramatic shift in surgical practice during the last 30 years with small-incision phacoemulsification being the predominant method of intervention used since

1990. Although cataract surgery is highly effective and relatively safe, owing to the enormous numbers, even uncommon surgical complications could potentially harm many patients. Endophthalmitis is one of the most serious complications of cataract surgery and often results in severe visual impairment. Nationwide surveys and large case series of postcataractendophthalmitis (POE) in different countries estimated that the incidence for endophthalmitis ranged from 0.012% to 1.3% since 2000, in part because of differences in study design, time, and region [3, 17 ~ 32]. Earlier literatures stratified the results over time and noted decreasing endophthalmitis rates, from 0.327% in the 1970s to 0.158% in the 1980s and 0.087% in the 1990s.(16,17)

The optimal means to prevent POE remains controversial because conducting the large studies required to investigate an uncommon problem is difficult. While preoperative preparation with 5% povidone-iodine solution dropped into the conjunctival sac is the best established method of chemoprophylaxis based on the current clinical evidence, the benefit of other forms of perioperative factors remains uncertain. (18) Several extensive reviews have been written regarding this topic despite the variable evidence and strength of association [6~11].

Postoperative endophthalmitis following cataract surgery could have potentially devastating consequences of severe vision loss or even blindness. the most common pathogen is *Staphylococcus epidermidis*. (19) The average time from surgery to presentation of endophthalmitis is usually 6-7 days (20). There were described a case of immediate postoperative endophthalmitis from *Staphylococcus haemolyticus*. (21) This is a rare cause of endophthalmitis in the postoperative setting following cataract surgery, with an incidence of 0.002% in the Endophthalmitis Vitrectomy Study . (22) Wound integrity also seems to be an important feature influencing the risk for developing endophthalmitis in pars plana vitrectomy. In general, the incidence of endophthalmitis after pars plana vitrectomy is low (0.03%–0.05%). Nevertheless, recent data indicate that the use of sutureless small incision techniques (eg, 23- or 25-gauge incision size) is significantly associated with a higher rate of postoperative endophthalmitis than the sutured 20-gauge technique.(23) However, endophthalmitis can also complicate other ocular surgeries and procedures such as intravitreal injections. Some data suggest that penetrating keratoplasty, trabeculectomy, and glaucoma drainage device implantation have a higher risk of being complicated by endophthalmitis than cataract surgery.(24) Regarding glaucoma filtering surgery, endophthalmitis is reported to occur after 0.2%–9.6% of trabeculectomies, and its incidence seems to increase with the rising use of antifibrotic agents, such as mitomycin-C or 5-fluorouracil. (25) Endophthalmitis rarely occurs after external ocular surgeries including scleral buckling, pterygium excision, removal of corneal sutures, and strabological interventions.

Incidence of Acute Onset Endophthalmitis after Cataract Extraction Surgery at Tripoli Eye Hospital

In general, secondary intraocular lens placement seems to be associated with the highest risk for developing endophthalmitis (0.2%–0.37%) and pars plana vitrectomy with the lowest (0.03%–0.05%).(25) Preoperative risk factors include eyelid abnormalities, blepharitis, conjunctivitis, canaliculitis, lacrimal duct obstructions, contact lens wear, and ocular prosthesis in the fellow orbit.(26) The ocular surface and the adnexa are considered the primary sources of infection in postoperative endophthalmitis. However, contaminated agents or surgical equipment used perioperatively may also be a source of infection. In addition, perioperative variations seem to have some impact on postoperative endophthalmitis rate; different intraocular lens (IOL) materials potentially act as vectors for bacterial spread into the eye and viscoelastic substances, such as sodium hyaluronate, or hydroxypropylmethylcellulose may facilitate transmission of bacteria to the eye.(27) Knowledge about the cause of endophthalmitis is essential because the spectrum of organisms may change, warranting different therapeutic approaches. Bacteria infections are the most common cause of postoperative endophthalmitis, and Gram-positive isolates account for most cases. Fungal infections may also occur, particularly in association with the use of contaminated ocular irrigation fluids.

Postoperative endophthalmitis can be either sterile or infectious. In the EVS, only 69.3% of cases met the criteria for laboratory-confirmed infection. The reasons that more than 30% of cases failed to obtain positive results from culture vary and include low microbial counts, spontaneously sterilizing during the ocular inflammatory response of certain strains (eg, *Staphylococcus epidermidis*), or even noninfectious inflammations.(28)

In addition, the etiology of endophthalmitis might differ depending on the location in the world where the disease occurs. Whereas the microbiologic spectrum in Europe or in the US seems to be generally comparable, it might be very different in other parts of the world. According to the EVS, 94.2% of culture-positive endophthalmitis cases involved Gram-positive bacteria; 70% of isolates were Gram-positive, coagulase-negative staphylococci, 9.9% were *Staphylococcus aureus*, 9.0% were *Streptococcus* species, 2.2% were *Enterococcus* species, and 3% were other Gram-positive species. Gram-negative species were involved in 5.9% of cases.(29) In contrast, a recent survey from India reported that Gram-positive bacteria accounted for only 53% of postoperative endophthalmitis cases, but 26% were Gram-negative isolates and 17% were of fungal origin.(30) Depending on the infecting organism, a correlation is thought to exist between clinical presentation and microbiologic spectrum. Gram-positive, coagulase-negative micrococci seem to cause less severe infections compared with more virulent Gram-negative and “other” Gram-positive organisms.⁷ Streptococcal endophthalmitis often results in earlier onset and notably worse outcomes than infections by staphylococcal

species. Endophthalmitis cases that failed to obtain positive results from culture tended to have a later onset and a better visual outcome.

Specific factors influencing bacterial adhesion, including IOL material and surface irregularities, might have a role in the development of certain forms of endophthalmitis. *S. epidermidis* carrying the intercellular adhesion locus might play a part in the pathogenesis of some forms of endophthalmitis.(31)

In most cases the diagnosis of endophthalmitis is made on clinical grounds. Any eye with inflammation that is out of proportion to the previous surgical trauma or greater than the predicted postoperative clinical course must be suspected as indicating postoperative endophthalmitis. If doubt cannot be erased, frequent observations should be conducted until the clinical course can be determined. Symptoms can be variable, from very little inflammation in the anterior chamber and the anterior portion of the vitreous to extremely painful panophthalmitis with no fundus view, corneal edema, or complete anterior chamber hypopyon.

According to the EVS, hypopyon can be seen in nearly 75% of patients, whereas ocular pain, often regarded as pathognomonic for endophthalmitis, was absent in 25% of patients.(32) In the European Society of Cataract and Refractive Surgeons Endophthalmitis Study (ESCRS) of prophylaxis for postoperative endophthalmitis after cataract surgery, hypopyon was present in 80% of culture-proven cases and 56% of unproven cases, resulting in an overall incidence of 72%.(33) Most common presentations include decreased vision, ocular pain and redness, corneal edema, and vitritis. In addition, retinal vasculitis, retinal hemorrhages, and posterior pole hypopyon may occur.

The current study investigates the incidence and clinical settings of acute-onset endophthalmitis after cataract surgery in the new millennium and assesses visual acuity outcomes after treatment among patients who developed endophthalmitis after cataract surgery at Tripoli eye hospital.

Methods and Materials

The study was a retrospective, observational cross section. Annual cataract surgery statistics were determined by reviewed of Tripoli Eye center records (statistic of electronic surgical department), a copy of records was attached at appendix A. The data for this study come from the medical files of all patients that had cataract surgery in Tripoli Eye Hospital, Tripoli, Libya. Surgeries were categorized as either phacoemulsification or extra capsular cataract extraction (ECCE). Clinical records were reviewed of all cataract surgeries patients who developed acute-onset postoperative endophthalmitis, defined as clinically diagnosed endophthalmitis that occurred within 6 weeks of cataract surgery.

Incidence of Acute Onset Endophthalmitis after Cataract Extraction Surgery at Tripoli Eye Hospital

Preoperative precautions, such as skin scrapping by 10% povidine iodine , conjunctiva wash by 5% povidine Drapping of eyelids, Vancomycin in irrigation bottle, Intracameravigamox, Subconjunctival antibiotic, Time of presentation after operation Visual acuity at presentation, Management , Vitreous tap, Culture results Type of organism, Intravitreal antibiotic injection, Intravitreal Antibiotic used, Outcome either Improved on intravitreal injections, Referred for vitrectomy, Referred for evacuation, Patient discharged against medical advice. Both culture positive and culture negative cases were included.

As a part of operating room protocol during the time of the study (2015-2017), povidone-iodine solution was used to prepare the lids, lashes, and conjunctiva before cataract surgery. No antibiotics were placed in the surgical infusion fluid during the study period. The diagnosis of endophthalmitis was based on decreased visual acuity and typical clinical features, including marked intraocular inflammation. In all clinical diagnosed patients, anterior chamber and/or vitreous cultures were obtained, and intravitreal antibiotics were administered on the day of diagnosis. Stored bacterial isolates from culture-positive cases were tested in vitro for sensitivity to vancomycin, ceftazidime, gentamicin, ciprofloxacin, ofloxacin, levofloxacin, gatifloxacin, and moxifloxacin by disk diffusion method. Zones of inhibition were measured after 24, 48, and 72 hours of incubation at 35 C. Cataract surgeries that were combined with any other procedure, including penetrating keratoplasty, pars plana vitrectomy, or trabeculectomy, were excluded from the study. Patients with delayed-onset endophthalmitis (infection diagnosed later than 6 weeks aftersurgery) and endophthalmitis referred to the Tripoli Eye Hospital after cataract surgery performed elsewhere were excluded from the current study.

Results

Between January 2015 and December 2017, 4886 cataract surgeries were performed. eight cases about (0.16%) were diagnosed with presumed infectious postoperative endophthalmitis. **Table 1** shows that the distribution of types of procedures that have been done also the incidence of endophthalmitis. The highest incidence of endophthalmitis cases occurred in the ECCE. The incidence in the ECCE group was statistically significantly higher than the incidence in the phacoemulsification group ($P=0.016$).

The three years incidence rate of acute onset endophthalmitis after cataract surgery was 0.16% (8/4886) for cataract surgeries of all methods, 0.10% (2/1915) for cataract surgery by phacoemulsification, and 0.20% (6/2971) for cataract surgery through methods other than clear cornea phacoemulsification .

The incidence of endophthalmitis by year is displayed in **Table 1**. The median age was 74 years (range: 50-83 years). Clinical data are summarized in **Table 2**. The mean duration from day of cataract surgery to the day of diagnosis with

endophthalmitis was 10 days (range: 1-14 days). Five of the eight vitreous isolates produced culture positive growth: four coagulase-negative Staphylococcus and one Streptococcus pneumoniae. The S. pneumoniae case presented on the fifth postoperative day, whereas the coagulase- negative Staphylococcus cases presented at a median postoperative day 11 (range: 5-14 days). The three culture negative cases presented on postoperative days 5, 10 and 14.,topical 2% lidocaine gel was used in two (67%) before povidone-iodine preparation (Table 2, cases 2 and 3).

Perioperative antibiotics were selected at the discretion of each surgeon and are summarized in **Table 3**. Although all patients received a povidone-iodine preparation to the lids, lashes, and conjunctiva, no preoperative antibiotic was used in three patients. Of the four patients who received preoperative antibiotics, two received ofloxacin and two received gentamicin. In vitro testing demonstrated that two of the five (40%) bacterial isolates in this study were resistant to all tested fluoroquinolones, including commercially available fourth generation fluoroquinolones.

Two of five (40%) were resistant to gentamicin, and three of five (60%) were resistant to ceftazidime. None of the isolates was resistant to vancomycin. On the day of endophthalmitis diagnosis, each patient received intravitreal vancomycin 1 mg, ceftazidime 2.25 mg, and dexamethasone 0.4 mg. Of the six patients with endophthalmitis after a temporal clear cornea approach to phacoemulsification, two achieved a final visual acuity of counting finger or better, and two had a final visual acuity of hand motions or worse. One of these patients had a poor visual outcome due to endophthalmitis- not responding to the treatment ended with evisceration, whereas the other had a poor outcome

Table 1.EndophthalmitisAfter Cataract Surgery: Annual

Incidence

years	Number of Cases/Number Cataract Surgeries	Incidence (%) of Endophthalmitis
2015	3/1233	0.24
2016	2/1123	0.17
2017	3/2530	0.11
Total	8/4886	0.16

Incidence of Acute Onset Endophthalmitis after Cataract Extraction Surgery at Tripoli Eye Hospital

Table 2. Distribution of endophthalmitis according to type of surgery and patient

Surgery Type	Patients, n	Endophthalmitis Cases, n (%)
Phacoemulsification	2, 1915	0.10
ECCE	6, 2971	0.20
Total	8, 4886	0.16

Table 3. Clinical Settings, Treatment, and Visual Acuity Outcomes of Acute-onset Endophthalmitis After Cataract Surgery

Patient	Age	Day of diagnosis	Preoperative precautions	Cultured organism	Management	Final VA	Outcomes
1	83	13	Yes	Staphylococcus epidermidis	Tap & inject (V, C, Dexa)	No LP	Referred for evisceration
2	55	6	Unknown	None	Tap & inject (V, C, Dexa)	LP	Improved on intravitreal injections
3	74	10	Yes	None	Tap & inject (V, C, Dexa)	HM	
4	63	9	No	Staphylococcus auricularis	Tap & inject (V, C, Dexa)	CF	Improved on intravitreal injections
5	81	11	Unknown	Staphylococcus epidermidis	Tap & inject (V, C, Dexa)	No LP	Referred for vitrectomy

6	68	5	Yes	Streptococcus pneumoniae		HM	
7	57	14	Yes	None	Tap & inject (V, C, Dexa)	LP	Patient discharged against medical advice
8	78	7	No	Staphylococcus epidermidis	Tap & inject (V, C, Dexa)	CF	Improved on intravitreal injections

Discussion

Controversy exist regarding the possible Increased risk of postoperative endophthalmitis after cataract surgery through clear cornea incision. Anexperimental study of corneal wound dynamics in cadaver and rabbit corneas reported that even properly constructed corneal wounds may allow communication between the intraocular and extraocular environments.(3) Some studies reported an increased risk of endophthalmitis in clear cornea cases,(4,5) whereas another reportedno significant difference.6 The overall incidence of endophthalmitis in the current series (0.16%) is similar to incidence rates published in recent international studies (6).

In a retrospective case-control study including 38 endophthalmitis patients and 371 control patients, Cooper and associates reported a threefold higher risk of endophthalmitis after cataract surgery with a clear cornea incision compared with a superiorscleral tunnel incision (odds ratio, 3.36 with a 95% confidence interval).4 Among 12,317 cataract procedures, Nagaki and coworkers reported a 4.6-fold ($P _ .037$) higher relative risk of endophthalmitis with clear cornea incisions vs superior scleral tunnel incisions.(15)Colleaux and Hamilton retrospectively reviewed 13,886 cataract surgeries performed at a hospital-based surgical unit in Canada. Although the incidence of endophthalmitis was higher in clear cornea (0.129%) vs sclera tunnel (0.05%) incisions, the difference was not statistically significant.(26) In a recent endophthalmitis outbreak in an Australianmulti-surgeon center, 10 of 11 endophthalmitis cases followed clear cornea phacoemulsification occurring in the right eye.6

However, the surgeon's hand dominance was not described in this report. In the current series, 86% of endophthalmitis cases occurred in the right eye, where theright-handed surgeons placed the corneal incision inferotemporally.Inferiorly placed filtering blebs have been associated with an increased risk of both acute- and delayed-onset endophthalmitis, perhaps associated with the proximity of the bleb to the inferior tear lake and inferior lid margin.(17)The most commonly

used preoperative antibiotics in the current study were gentamicin and ciprofloxacin. At the present time, the fourth generation fluoroquinolones are commonly used for prophylaxis during cataract surgery and have a broad range of coverage for both gram-positive and gram-negative bacteria. However, resistant organisms may be encountered, including two of five (40%) isolates in the current study. None of the five gram-positive isolates was resistant to vancomycin, confirming its continued role as initial endophthalmitis treatment. A higher incidence of endophthalmitis has been associated with foldable (1.21%) vs injectable (0.028%) intraocular lenses.(8) Although the overall incidence of endophthalmitis among patients with foldable vs injectable lenses is not known (20), there were twice as many endophthalmitis cases after surgery with foldable lenses than with injectable lenses. Subconjunctival antibiotics at the conclusion of cataract surgery have been associated with a lower incidence of endophthalmitis when compared with the incidence after surgery with no injected antibiotics.(5,9 –11) Only two of the eight cases in the current study received subconjunctival antibiotics (Table 3, cases 1 and 6).

Conclusion and Recommendations

The incidence of endophthalmitis after clear cornea phacoemulsification (0.10%) was lower than the incidence after other approaches to cataract surgery (0.02%) in the current study, but the decreased incidence

is not statistically significant ($P = .681$, Fisher's exact test). Depending on the projected incidence, a study would need to include as many as 100 000 patients to have sufficient study power to detect even a 50% difference in the risk of endophthalmitis .

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Households' Dietary Habits and Food Consumption Patterns in Derna-Libya

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Abstract

Since the beginning of the crisis in 2011, over 3 million people have been affected across Libya. According to 2017 Humanitarian Needs Overview, an estimated 1.3 million people are in need to humanitarian assistance, including approximately 241,000 internally displaced persons (IDPs). A household (HHS) is a social unit consisting of a person living alone or a group of persons who sleep in the same housing unit and have a common arrangement in the preparation and consumption of food. This study was performed among only Libyan households in Derna city, consists of seven districts. Libyan HHS whose salary ranged from 400-600 Libyan dinars represented about 15%, while 23.33% from up to 1000 LYD. The previous study results among men and women suggested that high level of leisure time physical activity (PA) reduced the risk of CVD in a range of about 20 to 30 percent, compared to the risk of those with low level of PA at leisure time. The classic diet-heart hypothesis posits that diets high in saturated fatty acids (SFAs) and cholesterol and low in polyunsaturated fatty acids (PUFAs) raise serum total and LDL cholesterol, which in turn increase the risk of coronary heart disease (CHD). This study revealed that about 72% physical inactivates, which leads to increase of NCDs such as Coronary Heart Disease, high blood pressure, and DM. Our results showed that 87% consumed high fried foods may link to an increased risk for type-2 diabetes, and Hypercholesterolemia. Hypertension is the heights NCDs among Libyan households individual (42%).

Key Words: *Households, Composition of Food, Derna City, Physical Inactivates, Fried Foods.*

INTRODUCTION

A balanced healthy diet is essential for healthy growth and development ^(1, 4). A population group defined food consumption patterns as repeated arrangements

observed in food consumption. They are embedded in types and quantities of foods and their combinations into different dishes or meals. Food consumption patterns depend on several factors such as personal preference, habit, availability, economy, convenience, social relations, religion, tradition, culture and nutritional requirements. It decreases the risk of chronic diseases ^(2, 5) and is affected by basic factors such as socioeconomic status ^(3, 6). The food supply of Libya is very abundant. The supply of major food groups has increased markedly overtime.

Fruit, vegetables, pulses and vegetable oils have more than doubled between 1965/67 and 2000/02. Starchy roots increased six-fold during the same period ^(4,7,8). This study aimed to describe dietary habits among Libyan households, investigate the problems related to inadequate quantity and quality of habitual diet and supplements, and provide a basis for strategies to improve dietary consumption among Libyan households.

Literature Review

A household is a group of people who normally live and eat their meals together in the household, and acknowledge the authority of a man or woman who is the head of household ⁽¹⁾. The food supply of Libya is very abundant. The supply of major food groups has increased markedly overtime. Fruit, vegetables, pulses and vegetable oils have more than doubled between 1965/67 and 2000/02. Starchy roots increased six-fold during the same period. The increasing trend in food supply from 1965/67 can be explained by the prosperous economy due to oil production. During the 1980's, for several food groups such as cereals, meat, milk, eggs, fruit and vegetables, there was a decrease in supplies due to changes in national policies which aimed to reduce imports and rely more on local production to meet the country's food requirements ⁽³⁾. Usually, in Libya, there are three meals a day, lunch being the main meal ⁽⁴⁾, and milk is consumed mainly for breakfast, with increased consumption in the month of fasting Ramadan. Meat, principally poultry, lamb, mutton, beef or camel, is an important part of Libyan meals.

As income rises, people switch to more expensive foods such as meat, fruit, and luxury foods and at low income level, the cheap foods such as potatoes, bread, sugar and rice are the main source of energy ⁽⁶⁾.

Material and Methods

1) Study Design and Population

Derna is one of the municipalities of Libya. It is located in the northeast of the country. It is about 300 Km east of Benghazi, the second largest city in Libya. Derna has a shoreline on the Mediterranean Sea.

Stratified random Sample was collected in different districts in Derna city by used a questionnaire answer about all questions. Derna is divided into seven administrative areas including:(Alblad ,Sahashrgi , Bab tobriq , shyhaa , Almagar , Alftayah , and Hay alsalam). The study was performed among only Libyans households in Derna city, consists of seven districts. Participation in this survey is voluntary Information relating to the family demography (family size, family type, frequency of food intake was obtained using interview questionnaire. This survey was collect from June 2017 to October 2017.It included 60 households.The diet survey was conducted using a food frequency questionnaire in Arabic language, including two sets of sections, first section including socioeconomic characteristics of the households (age, income, and family members) and general questions.Second part consisted of food consumed during the previous 24 hours recall (24 hrs-recall) ,as well as food frequency questionnaire (FFQ) which consisted of listing all food and beverages consumed according to food groups.

2- Data Collection

The questionnaire was distributed randomly to staff members and students from College of Medical Technologyl, health institutions, and some family members of neighbors. Each participant recorded what they ate and drank during the previous 24 hours recall as well as food frequency questionnaire (FFQ). A total of 60 household were selected from seven different administrative areas for assessment of food consumption during 24 hrs- recall as shown in Table 1. Any answer by suspected questionnaire or incomplete answer was excluded from the study.

Table 1:Shown the Administrative Area and Number of Households in DernaCity.

Administrative Area	Household No.
Al-Belad	17
Bab-Tobrok	5
AL-sahel	11
Sheha	8
Al-Magar	9
Al-fataih	3
Hay-Alsalam	7
Total	60

3- Statistical Analysis

Only Libyan household were included in the survey. This study used 60 households (HHS), from 7 administrative area, HHS surveys used for this analysis are converted to the Excel 2013© for Windows Copyright 2007.

Results and Discussion

Food items of households survey (HHS) are categorized in 9 major food groups (Meat, chicken, fish, eggs, Milk, cheese, Fruits, vegetable, and beverage). 15% of the monthly income was from HHS whose salary ranged from 400-600 Libyan dinars, while 23.33% from up to 1000 LYD, as shown in Figure 1.

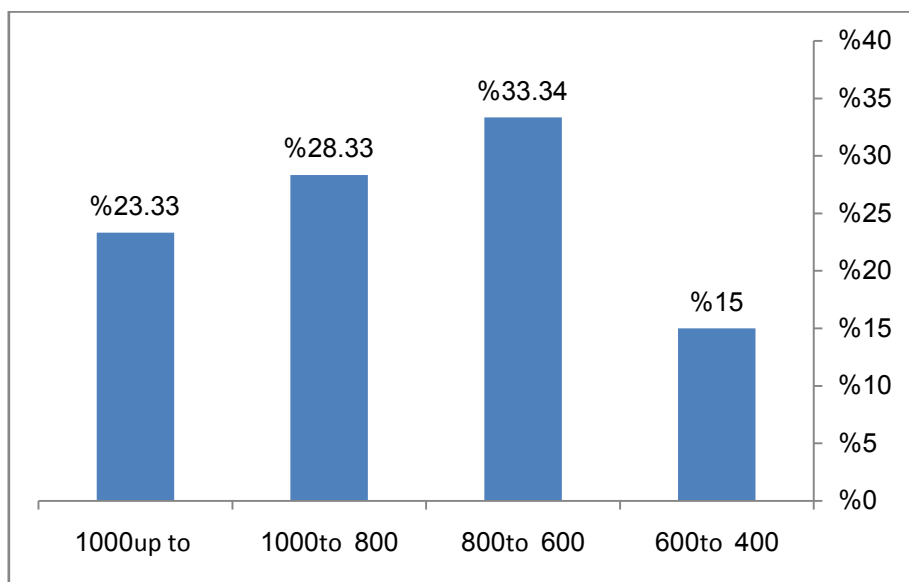


Figure 1: The Percentage of Monthly Income of Households.

This study revealed that 35% have up to 8 members living in households while 18% have from 2 to 4 members, as shown in Table 2.

Table 2: Numbers of Family Members of Households.

No. of family members	Percentage (%)
2 to 4	18%
4 to 6	13%
6 to 8	34%
up to 8	35%
Total	100

The results in this study revealed that about 72% physical inactives, which leads to increase of NCDs such as Coronary Heart Disease, high blood pressure, and DM, and may expect other diseases such as obesity, breathlessness, stroke, stiff joints, osteoporosis, the results need more further studies. 95%, of households, ate simple sugar and sweets, this results may explains the increased

incidence of diabetes and expect increase overweight and obesity among householdmembers in Derna, as shown in table 3.

Table 3:Percentage of Households Consumption from Sugar and Sweets.

Simple sugar and sweets	Household No.	Percentage (%)
yes	51	95%
No	9	5%
Total	60	100%

78%, and 73% of households consumed coffee, and tea in the morning and during day respectively, 85% of them, drank tea immediately after meals, may lead to anemia disease (iron deficiency).Our results showed that 87% consumed high fried foods may linked to an increased risk for type-2 diabetes, obesity, and Hypercholesterolemia.Hypertension is the heights NCDs among household individual, (42%), as shown in Figure 2.

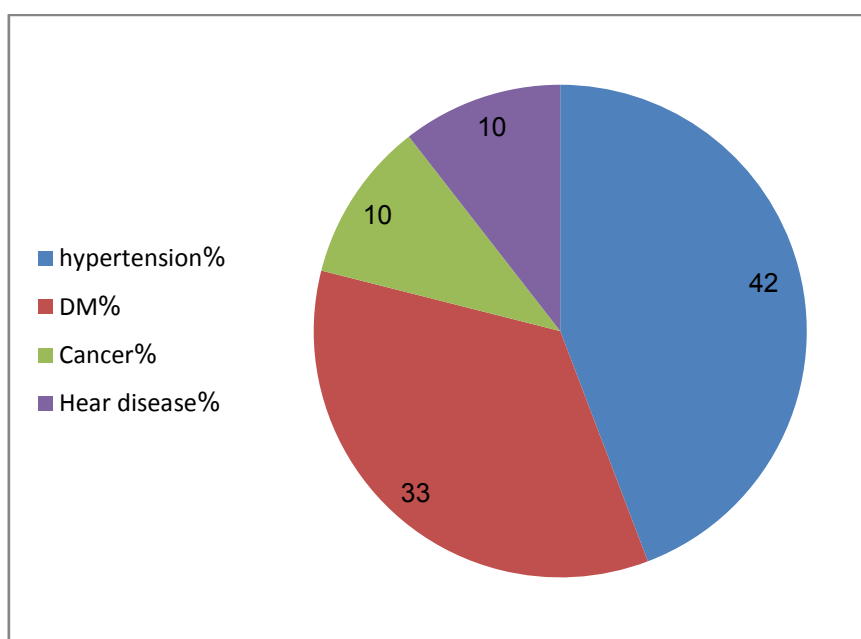


Figure 2:Different Diseases Risks from Consuming High Fried Foods.

Table 4 :Include Foods Eaten by any Member of the Household, and Exclude Foods Eaten Outside the Home.

No.		Dietary Components	No. of Household	
1	OILS	Corn oil	42	70
		Sunflower oil	13	22
		Olive oil	5	8
Total			51	100
2	MILK	Fat free	16	15
		Half creamy	13	31
		Full creamy	22	53
Total			60	100
3	Fish	Weekly	4	7%
		Daily	5	8%
		once a month	33	55%
		Not once	18	30%

Table 4: Continued

Total			60	100
4	meat	daily	7	12%
		1 to 3 times	11	18%
		from 3 to 5 times	15	25%
		Not once	13	22%
Total			60	100
5	carbohydrates	Once	22	37%
		2 TO 3	29	48%
		3 TO 5	8	13%
		More than five times	1	2%
Total			60	100
6	Chicken	daily	11	18%
		1 to 3 times	28	47%
		from 3 to 5 times	19	32%
		Not once	2	10%
Total			60	100

Highest proportion about 47%, and 32% of households consumed chicken and meat respectively from one to three times per week. 65% of households did not remove fat from meat that leads to increase incidence of coronary heart disease (CHD), hypertension, and DM. This study showed that 53% of households drank full creamy milk, and 15% fat free milk, which also explains in this study, increase of non-communicable diseases such as CHD, and hypertension. High diet consumed by Libyan households was not recommended in daily dietary pattern. It is probably that the high consumption of food rich fat, and sedentary life style played an important role in the increase of many chronic disease such as CHD, stroke, diabetes, and hypertension, as shown in Table 4. In comparison, a previous study implied that a large number of studies seem to be focusing on determinants of dietary energy consumption (or dietary quantity), at the expense of dietary quality and diversity⁽⁸⁾.

Conclusion

These results showed that 55% consumed a fish meal only one time per month. The results also implied that about 72% physical inactivates, 65% of households did not remove fat from meat, decrease of omega 3 consumption, decrease of physical activity, and an increase of fat consumption. These results expect to increase the incidence of cardiovascular disease. Our goal reach to recommendation in daily dietary pattern, the main recommendation are maintaining ideal body weight, consumption complex carbohydrate, reducing of fat intake, eating fish once per week, and increasing consumption food rich antioxidants such as fruits and vegetable. Lack of awareness, low purchasing power, poor food selection and food habits etc. are the causes associated with consumed inadequate food with low to poor diversified diet. This study recommended the importance of nutrition education to household's members on hygienic food preparation and nutrition. In this study, the dietary intake data are taken from just 24 hrs recall, interview that covered one day. Household's intake of specific nutrients may vary considerably from one day to the next being high one day and low another.

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Relationship between Obesity and Hypercholesterolemia

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Abstract

The aim of this study was to evaluate the association between serum cholesterol level and body Obesity in Derna City, and to investigate the trend of the prevalence of obesity in Derna and its relationship with hypercholesterolemia. The study was a cross-sectional study carried out on the 66 (40 males and 26 females) weight between 65 – 135 kg, which were selected using multistage cluster sampling method. Plasma cholesterol was measured in the morning after a 12-hour fasting and was determined by auto-analyzer. Hypercholesterolemia (HC) was defined by a total plasma cholesterol level over 200 mg/dl. That the percent of males was 40(60.6%), and the percent of female was 26(39.4%), Ranges weights of the people who took them samples were, from 55kg to 135 kg, the percent of less weight was (7.6%) . The weights that were above normal weight rate was from 86kg to 135kg by (28.79%), The percent of cholesterol levels ranged between 90mg\dl to 350mg\dl, The percentage of people who increased their cholesterol were 7(10.6%), the percent and the type of Nutrition, that was, fat, vegetable, fruits, and carbohydrate. The highest proportion of fat by 31(47.0 %), and less percentage of fruit by,8 (12.1%), The rate of Heart disease in the people and there percent were, 13 (19.7 %), the people did not have heart disease were 53(80.3%), and the proportion of smokers from non-smokers were, smokers 17(25.8 %), non smoking 49(74.2 %). I note that the Mean and Std. deviation of the weight was 3.0 (Std, 1.478), and the quality of nutrition was 2.11(Std .1.229), smoking was1.74, (Std. 0.441), and heart disease1.80 (Std.0, 401).

Keywords: Cholesterol, Obesity, Hypercholesterolemia, Nutrition, Carbohydrate.

INTRODUCTION

Hypercholesterolemia, or high cholesterol, occurs when there is too much cholesterol in the body. Cholesterol is a soft, waxy, fat-like substance that is a natural component of all the cells of the body. Your body makes all the cholesterol it needs. Any added cholesterol, which comes from the foods you

eat, can cause harm. High cholesterol raises your risk for heart disease, heart attack, and stroke. When there is too much cholesterol circulating in the blood, it can create sticky deposits (called plaque) along the artery walls.

Plaque can eventually narrow or block the flow of blood to the brain, heart, and other organs. Blood cells that get caught on the plaque form clots, which can break loose and completely block blood flow through an artery, causing heart attack or stroke.⁽³⁶⁾

The normal range for total blood cholesterol is between 140 and 200 mg per decilitre (mg/dL) of blood (usually just expressed as a number). However, the total number doesn't tell the whole story: There are two types of cholesterol -- HDL (high density lipoproteins, or "good" cholesterol) and LDL (low density lipoproteins, or "bad" cholesterol). The amount of HDL relative to LDL is considered a more important indicator of your heart disease risk. There is a third kind of fatty material called triglycerides found in the blood. They also play a role (generally as triglyceride levels rise, "good" HDL cholesterol falls). In fact, there is a subset of physicians who believe that triglycerides are the only fats in the body that increase heart disease risk. When you have high cholesterol, it usually means you have high levels of LDL cholesterol, normal or low levels of HDL cholesterol, and normal or high levels of triglycerides. While heredity may be a factor for some people, the main culprits are lack of exercise and diets high in saturated fat. High cholesterol can be prevented, sometimes with lifestyle changes (diet and exercise) alone. If these do not work, your doctor may recommend medications to lower your cholesterol levels.⁽³⁶⁾ There usually are not any symptoms of high cholesterol, especially in early stages. The only way to tell if your cholesterol is high is through a blood test.⁽³⁶⁾ In some cases, high cholesterol levels may be inherited -- your liver may make too much cholesterol, or your body may not remove LDL from your blood as efficiently as normal. High cholesterol and elevated triglycerides can also be associated with other diseases, such as diabetes. But most often high cholesterol is caused by eating foods high in saturated fat and not getting enough exercise. High cholesterol is more common in people who are overweight or obese, a condition that affects almost half of U.S. adults.⁽³⁶⁾

Obesity is described by the world health organization (WHO) as: disease in which excess body fat has accumulated to such an extent that health may be adversely affected.⁽²⁾ WHO also says: obesity is a complex condition, one- with serious social and psychological dimensions, that affects virtually all age and socioeconomic groups and threatens to overwhelm both developed and developed countries.^{(3) (17)} This study aimed to to evaluate the association between serum cholesterol level and body Obesity in Derna City, and to investigate the trend of the prevalence of obesity in Derna and its relationship with hypercholesterolemia.

Material and Methods

The research was a cross-sectional study carried out on the 66 (40 males and 26 females) weight between 65 – 135 kg, our study by our data which collected from different area in Derna City, the time of sample collection was in July 2012 to may 2013, that were selected using multistage cluster sampling method.

Plasma cholesterol was measured in the morning after a 12-hour fasting and was determined by auto-analyzer. Hypercholesterolemia (HC) was determined by a total plasma cholesterol level over 200 mg/dl. *In this study, we use the following diagnostic kits: LDL CHOLESTEROL Liquicolor, Human csellachaft fur Biochemica und Diagnostica mbH (Max-Planck-ring 21 . 65205 wiesbaden. Germany). The assay combines two steps :in the 1st step chylomicrons, VLDL and HDL cholesterol are specifically removed by enzymatic reactions.*

In the 2nd step remaining LDL- cholesterol is determined by well established enzymatic reactions , also employing specific surfactants for LDL.

HDL-CHOL

HDL-CHOLESTOL PRECIPITATION REAGENT

Analyticon Biotechnologies AG

Am Mnhlenberg 10,35104 Lichtenfels/ Germany.

Test principle

The chylomicrons ,VLDL(very low density lipoproteins) and LDL(low density lipoproteins)are precipitated by addition phosphotungstec acid and magnesium chloride.After centrifugation thhe supernatant fluid containsthe HDL(High density lipoproteins) –fraction, their cholesterol content is determined enzymatically.

Specimen:

Serum was collected using standard sampling tubes serum, heparin- or EDTA-plasma without use citrat-, oxalate-or fluid stability. The samples were kept for 7 days at +2 c- +8c 3 months at- 20c. Fasting and non fasting samples can be used. EDTAplasma causes decreases results. Samples containing precipitate were centrifuged before performing the assay

Preparation and stability:

- Precipitant for macro assays. Use contents undiluted.
- Precipitant for semi macro assays:
- Dilute 4 parts precipitating reagent with 1 parts of redistilled water(e.g. 80ml+20ml)

The HDL reagent is stable up to the expiry date when stored at +15 to +25°.

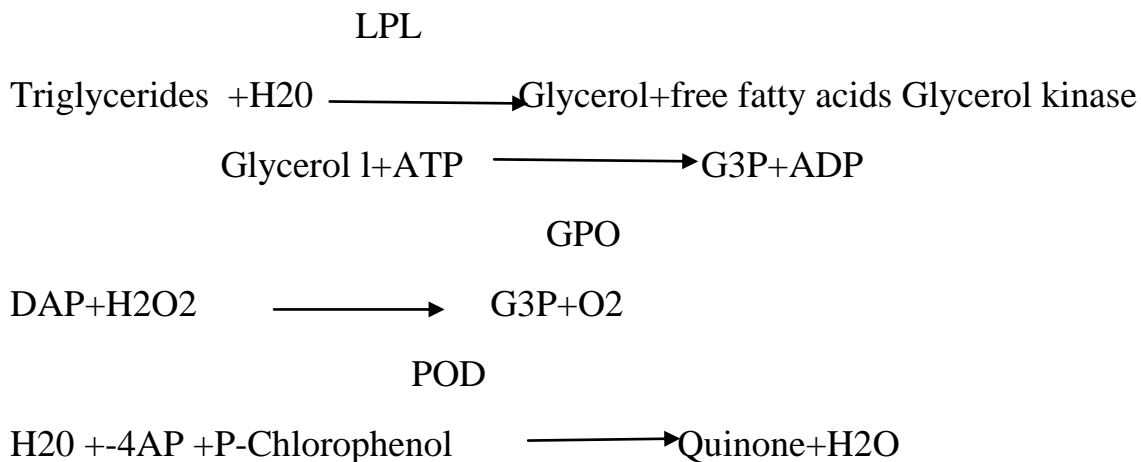
3.3 Triglycerides

GPO-POD. Enzymatic colorimetric

We use kit of SPINERACT, S.A.U. Ctra .Santa Coloma, 7E-17176 SANT ESTEVE DE BAS (GI) SPAIN.

Principle of the method

Sample triglycerides incubated with action -3-phosphate (G3P) is then converted by glycerol phosphate dehydrogenase (GPO) to dihydroxyacetone phosphate (DAP) and hydrogen peroxide (H₂O₂) in the last reaction, hydrogen peroxide (H₂O₂) react with 4-aminophenazone (4-AP) and P-chlorophenol in presence of peroxidase (POD) to give a red colored dye.



The intensity of the color formed is proportional to the triglycerides concentration in the sample.

Statistical analysis

A computer program was used for data analysis. SPSS version 18 was used and the descriptive data was given as a mean ± standard deviation (SD).

Results

Data were collected from different area in Derna City, the period of sample collection was in July 2012 to may 2013, and the total numbers of persons were 66 persons (40 males and 26 females). The percent of males was (60.6%), and the percent of female was (39.4%) as shown in table (1), graph (1).

Table: (1) percent male and female

	Frequency	Percent%
Valid male	40	60.6
female	26	39.4
Total	66	100.0

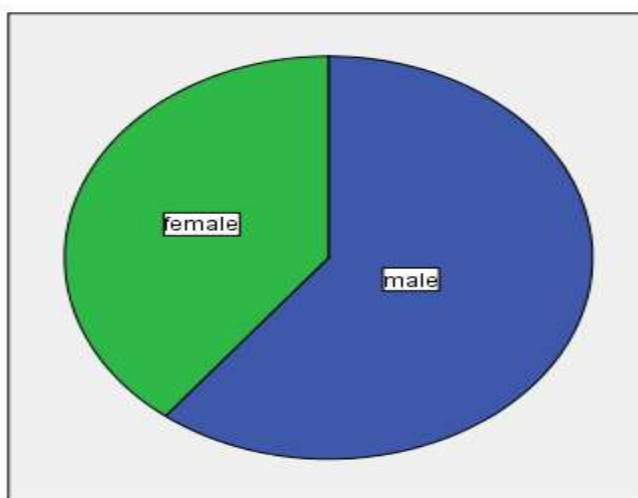


Figure: (1) percent males and females.

The weights of the cases used in this work arranged from 55kg to 135 k. The percent of less weight was (7.6%),as shown in Table (2). While, the weights that are above normal weight varied from 86 to 135 kg (28.79%), as shown in Table (3) and Graph (2).

Table (2) : Frequency and Percentage of Cases Weight

Weight	Frequency	Percent %
Valid 55-65	5	7.6
66-75	27	40.9
76-85	15	22.7
86-95	8	12.1
96-105	7	10.6
106-115	2	3.0
116-125	1	1.5
126-135	1	1.5
Total	66	100.0

Table (3) : the percent of over Wright

Weight	Frequency	Percent %
86-95	8	28.79
96-105	7	
106-115	2	
116-125	1	
126-135	1	
Total	19	

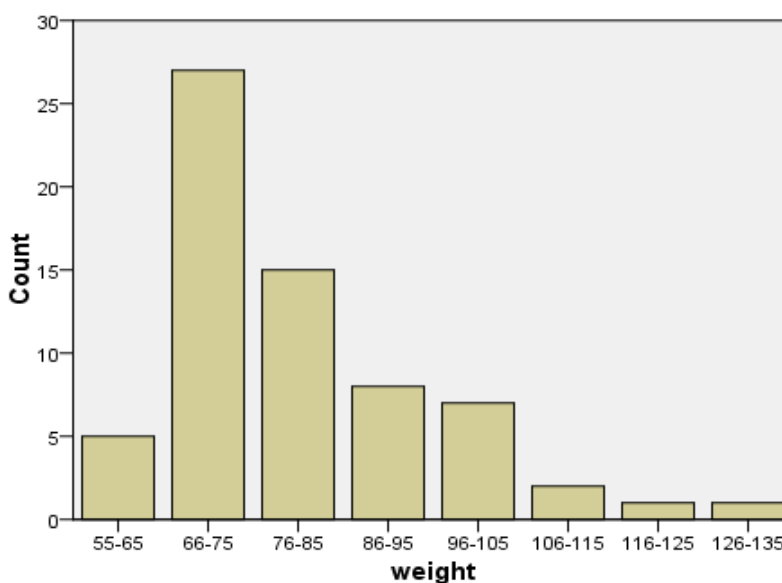


Figure (2) : Ranges Weights of the Cases and their Percentage.

The percent of cholesterol levels ranged between 90mg\dl to 350mg\dl, as shown in table (4), and graph (8).

Table (4) : The percent of cholesterol levels

Cholesterol mg\dl	Frequency	Percent %
Valid <100	21	31.8
100-150	30	45.5
156-200	8	12.1
206-250	3	4.5
256-300	4	6.1
Total	66	100.0

The percentage of people who increased their cholesterol were 7 (10.6%) as shown in Table (5).

Table (5) : The percentage of People with High Cholesterol

Cholesterol mg\dl	Count	Percent %
206-250	3	10 .6
256-300	4	
Total	7	
Total	66	100.0%

Table (6), showed the percent and the type of nutrition including, fat, vegetable, fruits, and carbohydrate. The highest proportion was fat 31(47.0 %) , and lowest percentage was fruit 8 (12.1%), as shown in figure (3).

Table (6): Percentage and Type of Nutrition

Type of Nutrition	Frequency	Percent %
Valid fat	31	47.0
vegetable	12	18.2
fruits	8	12.1
carbohydrates	15	22.7
Total	66	100.0

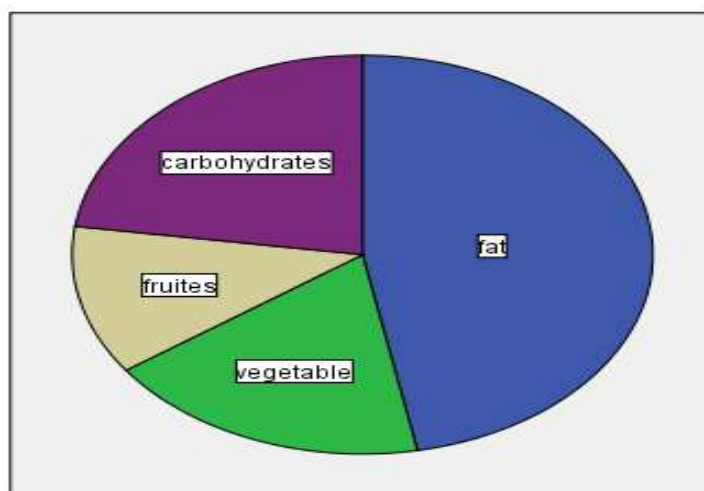


Figure (3): Percentage and Type of Nutrition.

The rate and percentage of heart disease were, 13 (19.7 %), while the rate and percentage of people who did not have heart disease were 53(80.3%) as shown in table (7) and graph (4).

Table (7): The rate of Heart disease.

	Frequency	Percent %
Valid yes heart disease	13	19.7
No heart disease	53	80.3
Total	66	100.0

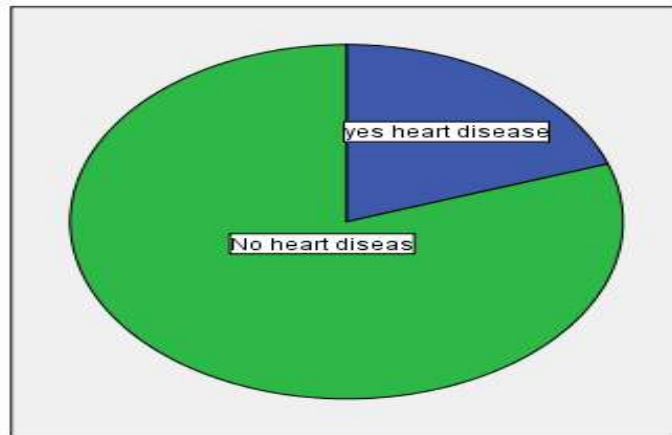


Figure (4) : The rate of Heart disease

And the proportion of smokers from non-smokers were, smokers 17(25.8 %), non smokers 49(74.2 %), as shown in table (8), and figure (5).

Table (8) : The proportion of smokers from non-smokers

	Frequency	Percent
Valid yes smoking	17	25.8
Not smoking	49	74.2
Total	66	100.0

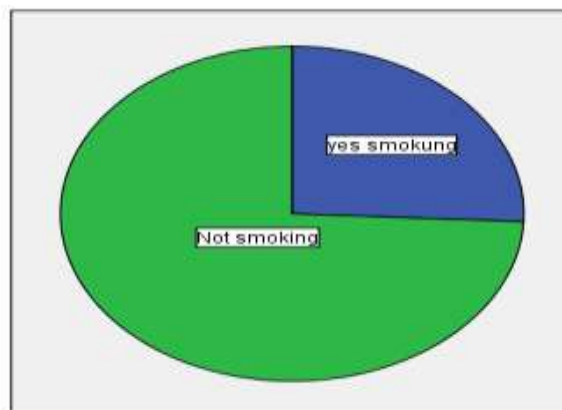


Figure (5) : The percentage of Smokers and Non-Smokers

Relationship between Obesity and Hypercholesterolemia

We note that the Mean and Std. deviation of the weight was 3.0 (Std, 1.478) , and the quality of nutrition was 2.11(Std .1.229), smoking was 1.74, (Std. 0.441), and heart disease 1.80(Std.0,401), as shown in table (9).

Table (9) : The Mean and Std. Deviation of the Weight, Quality of Nutrition, Smoking, and Heart Disease

	No	Mean	Std. Deviation
weight	66	3.00	1.478
Heart disease history	66	1.80	.401
Nutrition type	66	2.11	1.229
Smoking	66	1.74	.441

Discussion

This study finding indicates that samples collected from different areas in Derna City, the period of sample collection was in July 2012 to may 2013, and the total number of persons were 66 person. That the percent of males was 40(60.6%), and the percent of female was 26(39.4%), ranges weights of the people who took them samples were, from 55kg to 135 kg, the percent of less weight was (7.6%) . weights that are above normal weight rate were from 86kg to 135kg by (28.79%), The percent of cholesterol levels ranged between 90 mg\dl to 350mg\dl, The percentage of people who increased their cholesterol were 7(10.6%), the percent and the type of Nutrition, that was, fat, vegetable, fruits, and carbohydrate. The highest proportion of fat by 31(47.0 %) , and less percentage of fruit by,8 (12.1%).

The rate of heart disease in the people and there percent were, 13 (19.7 %),the people didn't have heart disease were 53(80.3%), and the proportion of smokers from non-smokers were, smokers 17(25.8 %), non smoking 49(74.2 %). We note that the Mean and Std. deviation of the weight was 3.0 (Std, 1.478), and the quality of nutrition was 2.11(Std .1.229), smoking was 1.74, (Std. 0.441), and heart disease 1.80 (Std.0, 401).

From all of this data shows that the type of nutrition is the most important factor in increasing the proportion of cholesterol, followed by smoking, family genetic history of the person.

According to the study of "Obesity and dyslipidemia" by Repas T, researchers wrote in abstract that Dyslipidemia is frequently found in association with obesity.⁽³⁷⁾ Obesity-related dyslipidemia is characterized by elevated triglycerides, elevated VLDL, increased apo-B, decreased HDL cholesterol and increased small dense LDL particles. This combination of lipid abnormalities is particularly atherogenic and, along with related comorbidities, explains the increased cardiovascular risk seen in obesity. Weight loss, through diet, medication and/or surgery all result in beneficial effects upon serum lipids.

Dietary modification and lifestyle change are essential components in the management of obesity-related dyslipidemia. Many patients, however, require pharmacotherapy to achieve lipid goals”⁽³⁷⁾ Another previous study “Prevalences of overweight, obesity, hyperglycemia, hypertension and dyslipidaemia in the Gulf: systematic review” by Alhyas L, McKay A, Balasanthiran A, Majeed A found that there are high prevalences of risk factors for diabetes and diabetic complications in the GCC region, indicative that their current management is suboptimal. Enhanced management will be critical if escalation of diabetes-related problems is to be averted as industrialization, urbanization and changing population demographics continue.⁽³⁷⁾

In the abstract of “The relative risks of hyperglycemia, obesity and dyslipidaemia in the relatives of patients with Type II diabetes mellitus” by Shaw JT, Purdie DM, Neil HA, Levy JC, Turner RC, researchers found that the relatives were significantly more obese, had higher fasting plasma insulin concentrations and had lower HDL-cholesterol concentrations.⁽³⁷⁾

In conclusion, there is a strong familial aggregation of hyperglycemia and obesity in the relatives of subjects with Type II diabetes and these subjects have higher fasting plasma insulin concentrations and lower HDL-cholesterol than the general population. These data indicate the particular relevance of screening the first degree relatives of subjects with Type II diabetes, as intervention strategies which aim to improve the metabolic profile are indicated for a large proportion of these subjects.⁽³⁷⁾ While, in the abstract of Obesity and risk of hypercholesterolemia in Iranian northern adults to Veghari *et al* , Vol 9, No 1 (2013) , Mean of age was 44.2 ± 11.5 years (44.3 ± 11.5 in men and 44.1 ± 11.2 in women) and plasma total cholesterol level was 203.1 ± 41.8 mg/dl.

The HC was detected in 49.1% with higher rate in women (57.0%) than men (44.7%). In men at age 25-35 years, the odds ratio was 3.42 (1.60-7.29) in obese group and 1.90 (1.03-3.50) in overweight group compared to normal weight. In women, at age 35-45 years, the risk of HC in obese group was 3.01 (1.58-5.73) and in overweight group it was 2.06 (1.58-5.73), while in men aged 35-45 years the relative risk was 4.03 (2.22-7.34) in overweight and 3.58 (1.77-7.25) in obese group. In women after age 45 years, higher BMI was not a risk factor for HC. There was a positive association between BMI and serum cholesterol level. In early middle age, obese individuals were at risk of HC more than overweight subjects. In men, after age 35 years, the risk of HC increased in overweight group while in women there was no statistically significant association between BMI and HC⁽³⁸⁾.

Recommendations

Treatment of high cholesterol is important and there are two ways to reduce it. The first is with lifestyle changes, which include changing diet, managing your

weight and exercising. The second is to combine lifestyle changes with cholesterol-lowering medicines.

Also self-help is recommended by eating healthy foods to reduce high cholesterol levels. The diet should be low in saturated fats in particular, and low in fat overall. Biscuits, cakes, pastries, red meat, hard cheese and butter all tend to be high in saturated fats, so it's good to cut down on these foods. Some foods such as eggs, prawns and offal (for example, liver and kidneys) contain cholesterol. This type of cholesterol is known as dietary cholesterol and it has a much lower effect on blood cholesterol than saturated fat in your diet.

It's also important to eat plenty of fiber, especially soluble fiber, which helps to lower cholesterol. There is soluble fiber in fruits and vegetables, beans and oats. Aim to eat at least five portions of fruit and vegetables each day. Eating foods containing substances called plant sterols, contained in some yoghurt or spreads, may help to lower high cholesterol, but they are not a substitute for a healthy diet.

People who overweight should lose excess weight and stop smoking to reduce your LDL levels and increase HDL levels. Also, obese people should increasing their physical activity to enhance healthy body and decrease LDL.

Conclusion

Hypercholesterolemia (HC) was described by a total plasma cholesterol level over 200 mg/dl. The percent of males was 40(60.6%), and the percent of female was 26(39.4%). Ranges weights of the people who took them samples were, from 55kg to 135 kg, the percent of less weight was (7.6%) . The weights that were above normal weight rate was from 86kg to 135kg by (28.79%), The percent of cholesterol levels ranged between 90mg\dl to 350mg\dl, The percentage of people who increased their cholesterol were 7(10.6%), the percent and the type of Nutrition, that was, fat, vegetable, fruits, and carbohydrate. The highest proportion of fat by 31(47.0 %) , and less percentage of fruit by, 8 (12.1%). People can prevent high cholesterol by keeping to a healthy weight and eating a diet that is low in saturated fat including at least two portions of fish per week in diet, of which at least one should be an oily fish such as mackerel or salmon. Also regular exercise, avoid smoking and limits of alcohol are essential for healthy body.

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Multidrug Resistant Gram Negative Bacteria Isolated from housefly (*Musca Domestica*) in Al-Jallaa Hospital, Benghazi

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Abstract

*Recently a number of insect vectors have been identified as potential carriers of antibiotic resistant bacteria, these vectors include house flies which are considered to be the insects with the most in close contact with human beings; where they carry human pathogenic bacteria on the external areas of their bodies or in their digestive tracts. An analytical, descriptive cross-sectional study was conducted to examine bacterial contaminants of house flies *Musca domestica* and determined the resistance of these bacteria against antibiotics that are most commonly used. The study was performed from 20th of December 2016 to 22nd of March in 2017 in Al-jalla hospital in the city of Benghazi. A total number of 100 house flies were collected from four places, 25 flies from each one. The body surface of house flies was washed using the sterile normal saline and cultured on MacConkey and blood agar. Antibiotic sensitivity testing was performed by Kirby-Bauer disc diffusion methods on Mueller Hinton agar. The most prevalent types of bacteria was *Klebsiella Pneumonia* and *Escherichia Coli*, in addition to *Pseudomonas aeruginosa*, *Acinetobacter SPP*, *Proteus mirabilis* and *Enterobacterspp*. And a high level of multi-drug resistance pattern of the isolated pathogens was demonstrated. We concluded that the house fly could play a vector role for infections in the hospitals. Environmental control measures of these vectors are required to reduce the risk of infection*

Key words: *House fly, Multi drug resistance, Hospitals, Benghazi.*

INTRODUCTION

House flies are involved in mechanical transmission various pathogens from one place to another, exposing humans to the risk of various diseases (1,2). They are able to transport pathogens by binding them in the mouth, body surface, foot, wings, etc. (3). Moreover, they are always in direct contact with sewage and garbage, where the transfer of these disease-causing by flies home from contaminated areas to the place where human beings live (4). House flies have been identified by the US Food and Drug Administration (FDA) as a major agent in the spread of diseases such as cholera, shigellosis (5). Besides, it has recently been recognized that house flies can act as potential carriers of the bird flu virus, a serious threat to human health, livestock and livestock worldwide (6).

Antibiotic resistance occurs when bacteria change in response to the use of the medications, leading to higher medical costs, prolonged hospital stays, more intensive care required and increase mortality (3). Bacteria resistant in modern medicine, only a few insect species have been screened for them, i. e. antibiotic – resistant human pathogens were found to be carried by flies and cockroaches in hospitals and other urban settings. (7-8-9-10). A study, suggesting that the insect gut may also serve as a mixing ground for bacterial genes (11). Control of the housefly allows reduction of the transmission of these pathogenic bacteria in a hospital and in housing in general. However, the susceptibility or resistance of the bacteria found on these insects in the geographical area would be relevant to a patient who presents an infection.

However, till now, there are no data available on the drug resistance pattern of the fly associated microorganisms in Benghazi. Therefore, the aim of our study was to investigate the types and prevalence of bacteria living on the body surface of house flies from Al Jallaa, Benghazi. Another aim was to investigate if these isolated bacteria are antibiotic resistant.

1. MATERIALS AND METHODS

1.1. House fly collection

Our study was an analytical descriptive cross-sectional study, and was performed from 20 December to 22 March in 2017 in Al-Jallaa hospital. A total number of 100 house flies were collected from four selected sites.

The adult house flies were captured by a sterile nylon net and immediately shipped to the microbiology laboratory. Each one of the collected flies was transferred in sterile tubes with 1ml of dextrose. And shaken with a vortex

machine for two minutes to wash off any bacteria that is on the external body of insects. Then centrifuged at 2000 rpm for five minutes.

The files were morphologically identified in insect laboratory at public health faculty, university of Benghazi. **Bacteriological analysis**

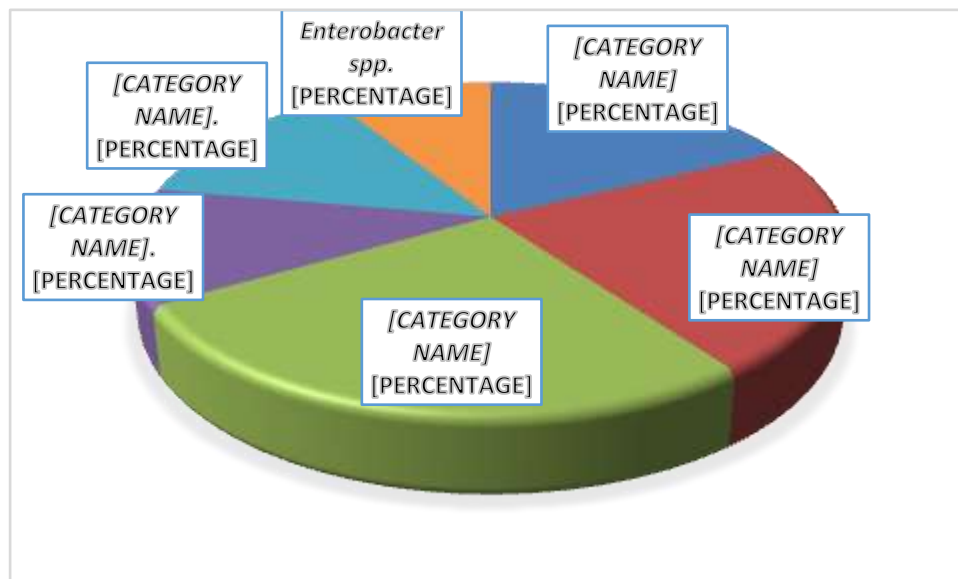
After centrifugation, the deposited part was then cultured in MacConkey agar and blood agar (Merck, Germany) and incubated in 37°C for 24 hours (12). All biochemical tests were used to identify each bacteria, such as Triple Sugar Iron (TSI), urea media and citrate media. The resistance of the isolated bacteria was determined using the disk diffusion method (13).

2. RESULTS

The Percentage of bacteria isolated from 100 house flies is shown in figure 1. All of the bacteria isolated (69.22 %) were Gram-negative bacilli. The most frequent bacteria isolated from houseflies and coming from the four districts of the hospital were *E. coli* and *Klebsiella spp.* Types of bacteria isolated from the flies found in four places in the hospital are shown in the table 1. As shown, most types of bacteria were isolated from the garage and kitchen, while only two types of bacteria isolated from the department of neurosurgery.

Antibiotic resistance was done for all the isolates against 10 disk antibiotics and multidrug resistant pattern was in nearly all isolates as presented in table 2.

Overall, most of the isolated bacteria were resistant to Augmentin, Azithromycin, Tetracycline and Gentamycin. On the other hand, all the isolates were sensitive to the Imipenem and Amikacin



Multidrug Resistant Gram Negative Bacteria Isolated from housefly (*Musca Domestica*) in Al-Jallaa Hospital, Benghazi

Figure 1:Percentage of bacteria isolated from the external body surface of *Musca domestica* collected from the hospital

Table 1: Distribution of bacteria isolated from house flies in four places, in the Al-Jallaa hospital

Collection Sites	Isolated bacteria	Percentage of growth
Kitchen (n= 25)	<i>E.coli</i> , <i>Enterobacter Spp</i> , <i>Proteus mirabilis</i> , <i>k. pneumonia</i> and <i>P. aerogenosa</i>	20 %
Garbage (n= 25)	<i>E.coli</i> , <i>Enterobacter Spp</i> . <i>Proteus mirabilis spp</i> , <i>k. pneumonia</i> , <i>P. aerogenosa</i> and <i>Acinetobacter spp</i> .	33.84 %
Burn and plastic surgery (n= 25)	<i>E.coli</i> , <i>k. pneumonia</i> , <i>P. aerogenosa</i> and <i>Acinetobacter spp</i> .	9.23 %
Neurosurgery (n= 25)	<i>E. coli</i> and <i>k. pneumonia</i>	6.15 %
Total percentage of growth		69.22 %

Table 2: Percentage of resistance of each pathogen to various antibiotics

Isolated bacteria	Ak	IPM	SXT	AMC	CTX	CAZ	AZM	TE	CIP	CN
<i>P.aerogenosa</i>	0%	0%	38%	88%	25%	0%	38%	50%	38%	25%
<i>E. coli</i>	0%	0%	50%	70%	0%	0%	60%	10%	0%	0%
<i>K. pneumonia</i>	8%	0%	25%	83%	17%	25%	50%	33%	0%	8%
<i>Proteus mirabilis</i>	0%	0%	60%	0%	0%	0%	80%	40%	0%	20%
<i>Acinetobacter Spp.</i>	0%	0%	67%	0%	33%	17%	50%	50%	50%	50%
<i>Enterobacter Spp.</i>	0%	0%	50%	0%	0%	0%	25%	75%	0%	75%

AK = Amikacin, IPM=Imipenem , SXT = Trimethoprim, AMC = Amoxicillin-ClavulanteAcide –Sulfamethoxazol, CTX =Cotrimoxazole, , CAZ= Ceftazidime, AZM=Azithromycin , TE= Tetracycline, CIP = Ciprofloxacin and CN=Gentamycin.

SPP. = Species

3. DISCUSSION

Due to eating habits of flies, especially house flies which feed on animal products, all kinds of food, particularly sweet things and unprotected materials. Therefore, they are responsible for the transferring of pathogens from contaminated places. Thus, in the last decade, attention has been paid to the house flies as a potential mechanical vector of disease transfer (14). Levine et.al demonstrated that the types of bacteria that may be transported by house flies have varied from country to country (15).

Our results are in accordance with the reports of Graczyk et al. Which highlights the importance of house flies in carrying various pathogenic bacteria particularly *K. Pneumoniae* the most important at USA (16). Furthermore, another study indicated that the bacteria type most transmitted by house flies collected from various food products was *E. coli*(14).

This finding confirms what we observed in the present study. Moreover, another study in Iran reported nearly all the types of bacteria in our study (17). Anyway the most important point is that all these studies have put emphasis on the fact that house flies are an important carrier of pathogenic bacteria.

The other objective of the current study was to measure the resistance of isolated bacteria to the commonly used antibiotics. The results of our study showed that the resistance of isolated bacteria from house flies in the Aljalah hospital was high. The Gram-negative bacteria that were isolated were multiple resistant to most of the antibiotics used in the hospital.

All Gram negative bacilli isolated in this study were susceptible to Imipenem and Amikacin. Carbapenems which were exclusively used in hospitals, while the aminoglycoside antibiotics are only preferably used there.

These results confirm the study of Liu Y, et al., who reported that all bacteria were resistant to such antibiotics as amoxicillin, tetracycline, Cephalothin, and Cefuroxime, while sensitive to Meropenem and Imipenem (18). Recent studies reported that the horizontal transport of resistance genes and virulence can occur in the gastrointestinal tracts of the house fly (19). Furthermore, another study shows that plasmids can mediate the horizontal transfer of resistant genes in the gastrointestinal tracts from domestic flies (20).

4. CONCLUSION

Our study found that flies collected from hospital environments carried multi-drug resistant pathogens, which are opportunistic to humans. The most prevalent types of bacteria were *Klebsiella Pneumonia* and *Escherichia Coli*, in addition to *Pseudomonas aeruginosa*, *Acinetobacter SPP*, *Proteus mirabilis* and *Enterobacterspp*. Accordingly, it is necessary to control such flies successfully.

Most importantly, hospital environments must be controlled using effective procedures.

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Isolation And Identification Of The Fungi Found In Children Hair In Benghazi City

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Abstract

*TC is a dermatophytosis of the scalp hair follicles and the skin. It is a contagious disease and predominantly affects preadolescent children. The study was done to evaluate the prevalent pattern clinical of and to find epidemiological factors influencing their occurrence. The study was carried out from October to November 2011 in Benghazi and considered the age, sex and contact history factors. A total of 101 children, in age group of 2-12 years were included in this study, and all the children were from Benghazi area. Direct microscopic examination and mycological culture were done for all cases. Majority of patients were two males in 11 and 12 years age group. They gave history of family member with no tinea capitis. Direct microscopy with KOH and lactophenol cotton blue was found to be help in the diagnosis. Positivity of culture was observed in 2 cases (2.0%) of males and *Micosporum canis* the species was isolated, followed by *Candida spp* 24 (23.8%) and *Candida albicans* 21 (20.8%). It is beneficial to do both direct microscopy with KOH, Lactophenol cotton blue and culture in all cases of tinea capitis.*

Key words: *Tinea capitis; dermatophytosis; mycological.*

INTRODUCTION

(TC) is fungal infection of the scalp, hair follicles and hair shafts, especially common in pediatric population and under tropical conditions.^{47,48} The dermatophyte colonize the hair and outer layer of epidermis and grow on keratin. These fungi have the capability to produce keratinase, which allows them to metabolize and live on human keratin like skin, nails and hairs.¹ The infection caused by dermatophyte (species of fungi belonging to genera *Trichophyton*, *Microsporum* or *Epidermatophyton*) are referred to as *Tinea*.¹¹ Adults are only rarely affected. This age difference has been attributed to the higher content of fungi static fatty acids in the sebum after puberty.⁸⁴ The

higher incidence in boys may be due to the fact that male children had shorter hair and spores reached the scalp easily. The most common factors affecting the distribution and transmission of dermatophyte infections are climatic condition, general hygiene and animal contact.^{8, 9} Depending on their habitat, they can be categorized as geophilic, zoophilic and anthropophilic, and all three species can infect human scalp.^{4, 19} The source of infection by close contact with fomites.

Dogs and cats are also frequently infected with fungi that cause ringworm in children.¹ The organisms responsible for TC can be cultured from hair brushes, combs, caps, pillow covers, theatre seats and other fomites.¹¹ The disease can also be transmitted from an infected child to other children through close contact at schools.⁸⁵

An early diagnosis is important to prevent transmission between children, especially siblings, and also to avoid possible scarring and permanent hair loss. Aims of study are to survey the dominant dermatophyte fungi which grow on hair children, identification and classification of the dermatophytes that infected hair children in Benghazi city.

2. MATERIALS AND METHOD

A total number of one hundred and one (101) children their aged were between comprising 2-12 years, this study over period from October 2011 until November 2011.

2.1 Method of data collection: Relative history was taken.

2.2 Method of collection of specimen: The scalp was cleaned with cotton swabs soaked in methylated spirit and scrapings were obtained using a clean sterile scalpel. Each sample of hairs was epilated with the help of forceps in petri dish- box.

2.3 Methods: One hundred and one (101) children from Benghazi Hair stumps and scales were exposed to direct microscopic examination using 10% potassium hydroxide solution and the slide is kept for 10-15 Minutes. Detection type of hair infection (endothrix-ectothrix), septate hyphae and spores of dermatophytes, Lactophenol cotton blue stain used also for detection of species were identified by noting their characteristic features such as the conidia and hyphae. Cultivation on Sabouraud's Dextrose Agar (with cyclohexamide and chloramphenicol. Chloramphenicol is used for its antibacterial action and cycloheximide selectively suppresses saprophytic fungi, An optimum temperature of 26 C° is maintained. The period required for growth is up to 3-4 weeks.

3. RESULTS AND DISCUSSION

3.1 Distribution of children according to the ages:The highest frequency of children was 3 years old (19.8%), followed by 2 years (16.8%) and the lowest age was 11 (3.0%).

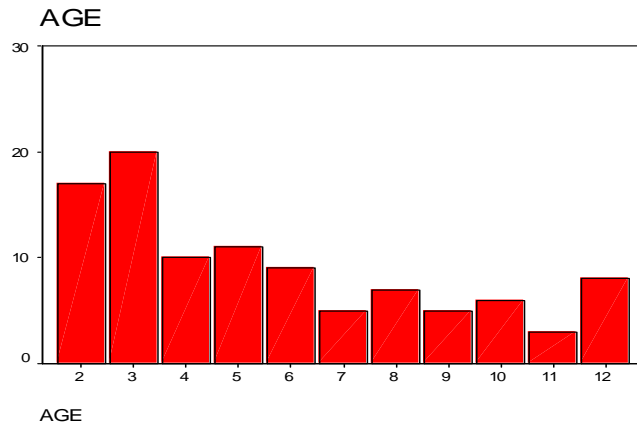


Figure1: Distribution of children according to the age group

3.2 Distribution of fungal growth according to the ages.

According to the age, the highest frequency was 3 (11%) with no growth and the lowest was 7 and 11 (1.0%) respectively, *Candida* spp, the highest frequency age was 6 (5.9%) and the lowest age was 8, 8, 11 and 12 (23.8%) respectively, the highest age growth with *Candida albicans* was 10 (4.0%) and the lowest was 12 (1.0%) , 11 and 12 years 1 (2%) respectively with *Microsporium canis*.

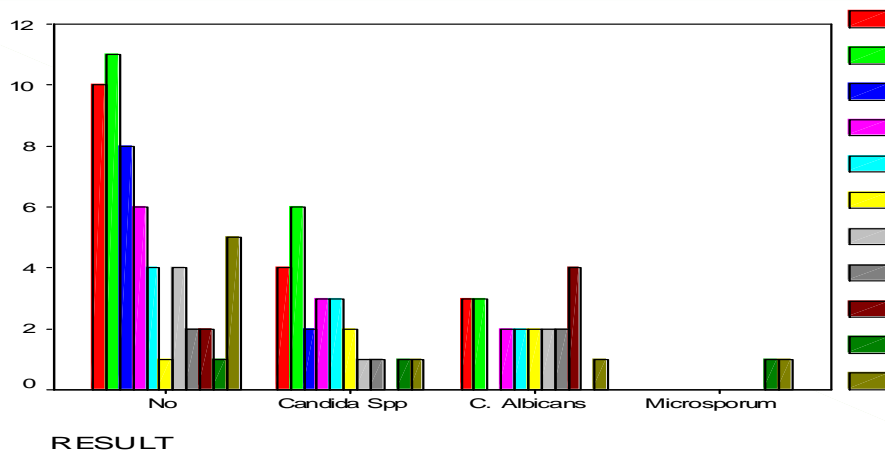


Figure 2: Distribution of fungal growth according to the age group

3.3 Distribution of fungal growth according to position contact with source of infection: According to contact with animals, children with no fungal growth result was 9 child (8.9%) while *candidaspp* 6 (5.9%), *candida albicans* 8 (7.9%) and *Microsporiumcanis* 2 (2.0%).

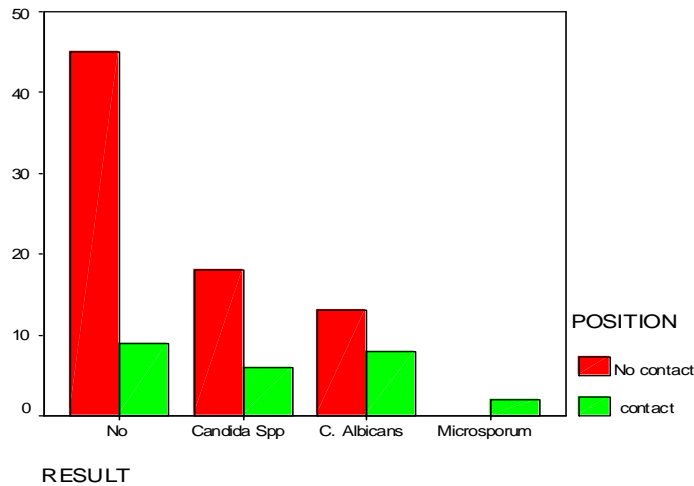


Figure 3: Distribution of fungal growth according to position contact with source of infection

3.4 Comparison between the ages based on the contact with the source of infection:

The highest age contact with source of infection was 12 (5.0%) while the lowest was 6, 9 and 11 years(1.0%) respectively

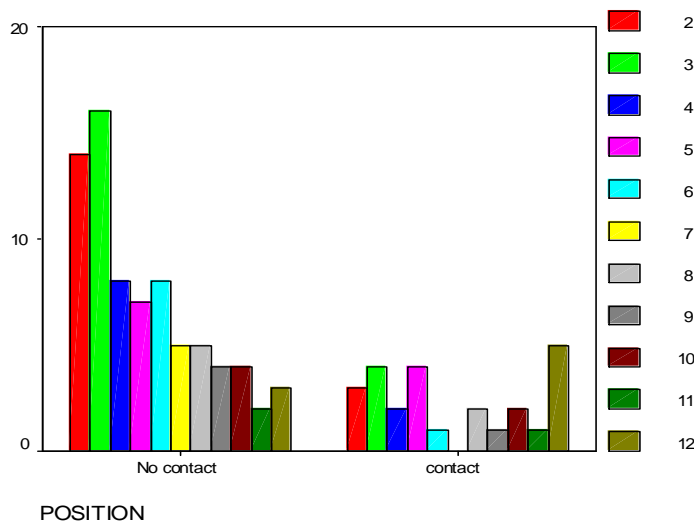


Figure 4: Comparison between the ages based on the contact with the source of infection

3.5 Comparison between fungal growth and position the contact with source of infection:

Culture with no Fungal growth was high 44 (43.6%) in children with no animal contact and 9 (8.9%) with contact, while fungal growth was 32 (31.7%) with no contact, and 16 (15.8%) with contact.

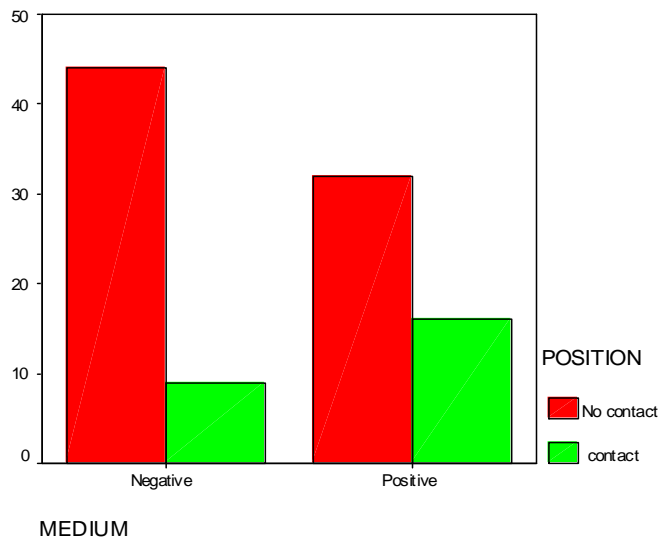


Figure 4: Comparison between fungal growth and position the contact with source of infection.

CONCLUSION

Tinea capitis is a disease of pre pubertal children. The prevalence rates vary widely with place and time; various factors such as socioeconomic status, literacy, overcrowding, personal hygiene, etc play a role in acquiring the infection. Direct microscopic examination is simple, and has easy procedure to perform, and has positive rates. The culture, *M. canis* was a causative agent isolated. TC infects mainly children and rarely adults, and it is difficult to determine the geographic distribution of dermatophytes. Social behaviors, migration, and quick travelling are factors to geographic distributions of dermatophytosis worldwide. *Candida* spp and *Candida albicans* were also isolated; these two types don't cause TC. This study shows incidence of TC in children between ages 11-12 and the incidence was in males and not in females. *M. canis* is an important etiologic agent; these findings are in agreement with other studies

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Prevalence of Hydatid Cysts in Herbivorous Animals and their Relationship to Humans in Misurata City

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Abstract

The total number of slaughterers was estimated to be 8462, of which 6420 were camels, 497 were cows and 1545 were sheep in Misurata abattoir. The slaughters were examined for hydatid cysts of Echinococcus granulosus. The results showed that the number of infected animals was 920 animals, 10.9% of the total number of herbivores slaughtered in Misurata 8462, with the highest infection rate of 672, 73.04% (672/920) in camels, followed by 222 sheep, With a percentage of 14.36% (222/1545), followed by cows with 26, 5.23% (26/497). The results indicated that the highest incidence of hydatid cysts of Echinococcus granulosus in the liver was sheep (46.7%), followed by camels (45.6%) and cows (7.7%). The results indicated that the highest incidence of Echinococcus granulosus in the lung was in the camels (84.1%), followed by sheep (14.1%) and cows (1.7%). The Data revealed that the highest incidence of water sacs in the intestines was in sheep by 80%, followed by camel by 20%, while cows had no intestinal infection. The study indicates that the liver is more affected and the vitality of the cysts in the liver were more than those in the lungs, so the liver is an important organ in the continuation of the life cycle of the worm, The liver is considered to be the preferred organ of the Libyan consumer. The infidels tend not to sacrifice the entire infected liver and only the injured part, which is disposed of in an improper manner and often eaten by dogs, is separated, leading to the spread of infection.

Keywords: *Echinococcus granulosus, Hydatidosis, Herbivorous Animals, Infection, Prevalence.*

INTRODUCTION

Hydatidosis is a widespread zoonotic disease infecting large number of animals and humans (Bouree, 2001). It is caused by the larval stage for dogs and by eggs for humans and animals of any one of the four species of genus *Echinococcus* Rudolphi, 1801. Those four species are *Echinococcus granulosus* (Batsch, 1786), *Echinococcus multilocularis* (Leuckart, 1863),

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Echinococcus vogeli (Rausch and Bernstein, 1972) and *Echinococcus oligarthrus* (Diesing, 1963) (Thompson and Lymbery, 1988).

Adult *Echinococcus* spp. are small, true tapeworms belonging to the class Cestoda within the phylum platyhelminths. Subfamily Echinococcinae (Thompson, 1995; Rausch, 1997). Hydatidosis has been reported in both urban and rural communities where dog, the main definitive host, have been access to raw offal through home-slaughter from poorly regulated abattoirs or from scavenging carcasses or discarded offal (Watson-Jones *et al.*, 1997). Man can be infected by ingesting eggs from canine faeces on vegetables or fruits or from handling dogs (Onahet *et al.*, 1989). In addition to economic importance, hydatidosis is a great threat to public health and many human cases require surgical interference (Haridy *et al.*, 2000).

The prevalence rates of cystic hydatidosis in livestock are indicators of environmental transmission and potential risk for human (Ibrahim and Craig, 1998). Hydatid disease is endemic in many animal raising countries particularly in Middle East, Mediterranean (FAO, 1993; Clavelet *et al.*, 1999 and Ermanet *et al.*, 2001), North Africa (Matossian *et al.*, 1977 and Gebreelet *et al.*, 1983). Hydatid disease appears to be endemic in Libya (Gebreelet *et al.*, 1983). However little work has been published in Libya (Dar and Taguri, 1978; Gebreelet *et al.*, 1983; Kalaniet *et al.*, 1984; Gusbi, 1987; Gusbiet *et al.*, 1987; Awan *et al.*, 1990; Shambeshet *et al.*, 1992, 1999; Khan and Kidwai, 1996; Khan and El-Buni, 1999; Tashaniet *et al.*, 2002 and Mohamed *et al.*, 2004). This study is aimed to determine the current prevalence of cystic echinococcosis in various domestic herbivorous animals slaughtered for human consumption in Misurata, and to study the morphological characters of larval stage of *Echinococcus granulosus* in these animals. It is also to analyse the different factors which may be responsible for transmission and spread of the disease in Misurata.

Materials and Methods

Data were obtained from the Registry Office at the Main Slaughter Center in Misurata. 8462 slaughters were collected during one year from January to December 2016. Approximately, 6420 slaughters were camels, 497 were cows, and 1545 were sheep in Misurata abattoir. All the slaughters were examined for hydatid cysts of *Echinococcus granulosus*. Graphs and percentage formulas of slaughters were calculated using Microsoft office excel 2016 program.

The materials and methods suitable for this study are chosen according to the following:

1. Compiling statistics on the prevalence of hydatid cysts in pet herbivores and their relation to humans in Misurata (2016)

- The study is based on the descriptive approach on the spread of hydatid cysts in pet herbivores and their relation to humans.
- Discuss the results in detail in light of available data and make appropriate recommendations according to the results of the study.

Results

1 - Overall Incidence of *Echinococcus Granulosus* Infection

The results obtained in this study showed that the number of infected animals was 920 animals, 10.9% of the total number of herbivores slaughtered in Misrata 8462, with the highest infection rate of 672, 73.04% (672/920) in camels, followed by 222 sheep, With a percentage of 14.36% (222/1545), followed by cows with 26, 5.23% (26/497). (Figure 1).

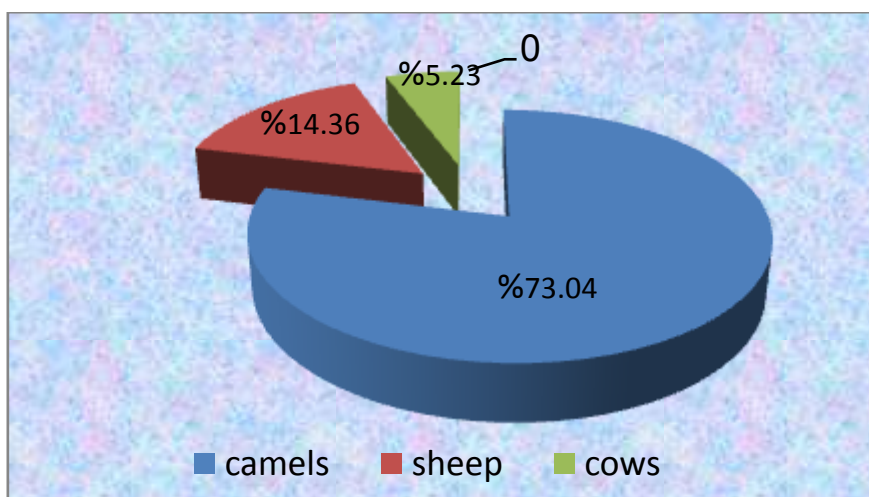


Figure (1) : General Average of *Echinococcus granulosus* Infection.

2 - Relationship between the Overall Rate of Infection with *Echinococcus granulosus* and Liver Disease

The results showed that the highest incidence of hydatid cysts of *Echinococcus granulosus* in the liver was in sheep 84, 46.7% (84/180), followed by camels 82, 45.6% (82/180), cows 14, 7.7% (14/180). (Figure 2, 3).



Figure (2): Liver Disease in Sheep.

Prevalence of HydatidCysts in Herbivorous Animalsand their Relationshipto Humans in Misurata City

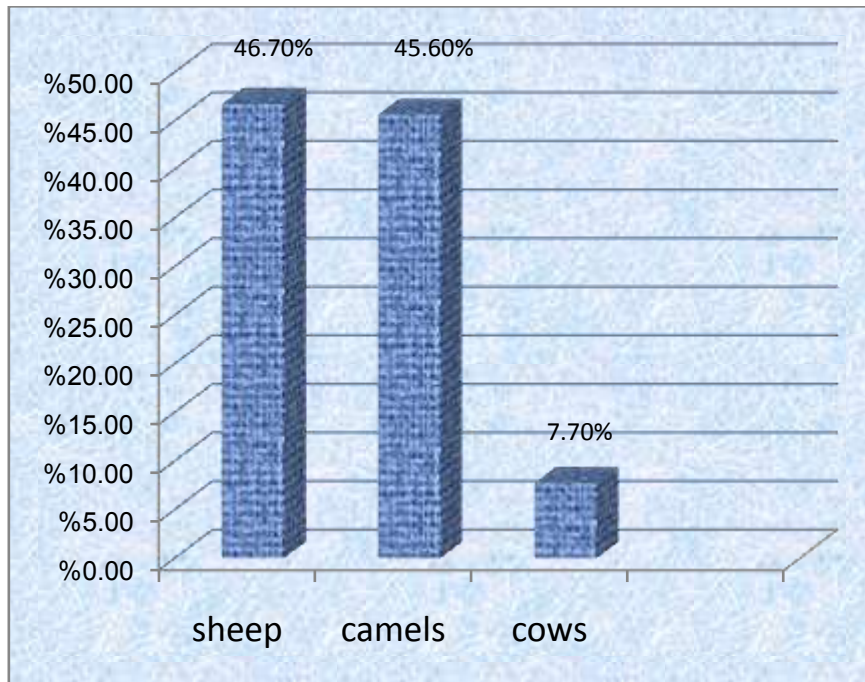


Figure 3: Relationship between the Overall Rate of Infection with *Echinococcusgranulosus* and Liver Disease.

3 - The relationship between the Overall Rate of Infection with *Echinococcusgranulosus* and Lung Disease.

The results showed that the highest incidence of *Echinococcusgranulosus* in the lung was in the camels 585 , 84.1% (585/695), followed by 98 sheep, 14.1% (98/695), and 1.7% (12/695) in cows . (Table 1, Figure 4).



Figure (4): Lung Disease in Sheep.

Table (1): The Relationship between the General Rate of Infection of *Echinococcusgranulosus* and Lung Disease.

The herbivores	Number	(%)
Camels	585	84.1
Sheep	98	%14.1
Cows	12	%1.7
Total	695	%100

4 - Relationship between the Overall Rate of Infection with *Echinococcusgranulosus* and Intestinal Infection.

The results demonstrated that the highest incidence of *Echinococcusgranulosus* in the intestine was in sheep at 8, 80% (8/10), followed by camels with 2, 20% (2/10), whereas cows did not exist .(Figure 5).

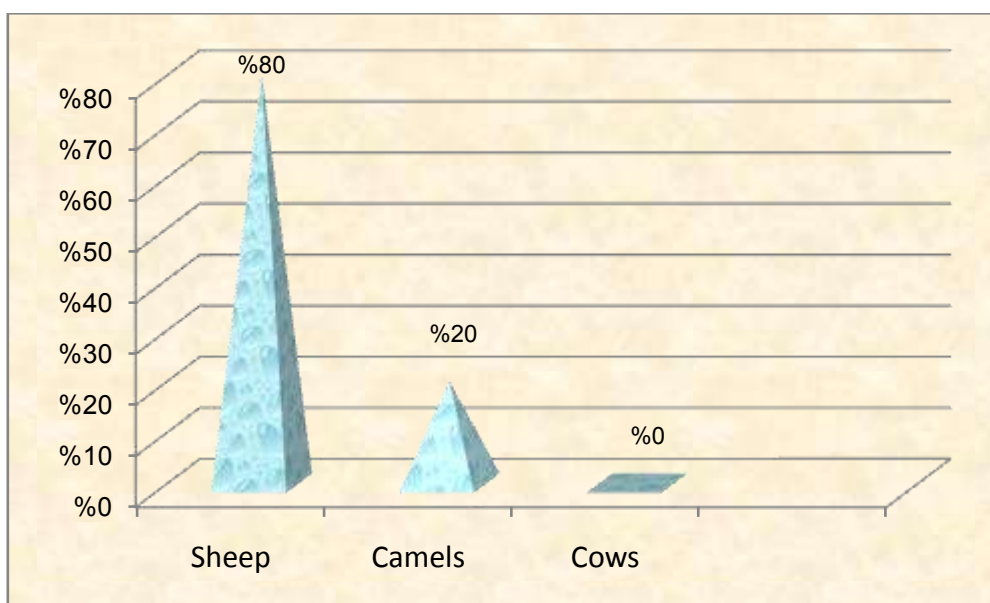


Figure 5: The Relationship between the Overall Rate of Infection with *Echinococcusgranulosus* and Intestinal Disease.

Discussion

The results illustrated that the number of infected animals was 920 animals(10.9%) of the total number of herbivores slaughtered in Misurata 8462. Whereas, the data implied that the highest percentage of infection was found in camels (73.04%) and in sheep 14.36% which is similar to a previous study by Tashaniet *al.*, 2002, also, in cows (5.23%) which is comparable to a prior study documented by Shambesh, 1997.

Additionally, the results indicated that the highest incidence of hydatid cysts of *Echinococcus granulosus* in the liver was sheep (46.7%) , which is parallel to an earlier study by Tashani *et al.*, 2002), followed by camels (45.6%) and cows (7.7%). This is also related to a previous study reported by Abd-Elgader, 2006. The data indicated that the highest incidence of *Echinococcus granulosus* in the lung was in the camels (84.1%) which are similar to a previous study by Shambesh, 1997, followed by

sheep (14.1%) and cows (1.7%). The results showed that the highest incidence of water sacs in the intestines was in sheep (80%) which is comparable to a previous study detailed by Tashani *et al.*, 2002, followed by camel by (20%), while cows had no intestinal infection.

The finding in this study explains the significance of elemental study of hydatid cysts in terms of harshness of infection and fertility. The study reveals that the liver is extra influenced by the lungs and the vitality of the cysts in the liver than those in the lungs, as a result the liver is a vital organ in the persistence of the life cycle of the worm, particularly liver is considered to be the preferred organ of the Libyan consumer.

Conclusion

The results of this study indicate the importance of detailed studies of hydatid cysts in terms of severity of infection and fertility. The study points out that the liver is more affected by the lungs and the vitality of the cysts in the liver than those in the lungs. The liver is an important organ in the continuation of the life cycle of the worm, and is considered to be the preferred organ of the Libyan consumer. The infidels tend not to sacrifice the entire infected liver and only the injured part, which is disposed of in an improper manner and often eaten by dogs, is separated, leading to the spread of infection.

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Prevalence of Vitamin D Deficiency among Hypothyroid Patients in Benghazi Medical Center

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Abstract

Vitamin D is a steroid hormone introduced into the body through food, but major synthesis occurs through exposure of the skin to solar ultraviolet light. Vitamin D obtained from the skin or the diet is converted by the liver to 25(OH) vitamin D and is metabolized in the kidney to (1,25) dihydroxyvitaminD. The consequences of low vitamin D level is not only causing osteomalacia, but also found to increase risk of autoimmune thyroid disease. A different gene in the Vitamin D receptor was shown to predispose people to autoimmune thyroid disease including Graves' disease and Hashimoto's thyroiditis. Since hypothyroidism is a common endocrine problem in Benghazi, data on the effects of vitamin D supplementation on thyroid function in hypothyroid patients needs to be investigated.

Keywords: Hypothyroidism, Thyroid Stimulating Hormone (TSH), vitamin D

INTRODUCTION

Hypothyroidism, also called underactive thyroid or low thyroid, is a disorder of the endocrine system, in which the thyroid gland does not produce enough thyroid hormone [1]. Hypothyroidism can cause a number of symptoms, such as poor ability to tolerate cold, a feeling of tiredness, constipation, depression, and weight gain. Sometimes, there may be swelling of the front part of the neck due to goiter [1].

The National Health and Nutrition Examination Survey (NHANES) found the prevalence of hypothyroidism in the general population to be about 3.7%, with higher prevalence of hypothyroidism in women than men [2].

Hypothyroidism is classified to (1) Primary hypothyroidism, which is the most common cause and mostly caused by the autoimmune destruction (Hashimoto thyroiditis), followed by radioiodine or surgical ablation for hyperthyroidism. Congenital hypothyroidism accounts for about 1 in 4500 live births [3]. (2) Secondary hypothyroidism, which is due to pituitary TSH deficiency, (3) tertiary hypothyroidism, which is due to hypothalamic TRH deficiency and (4) peripheral thyroid hormone resistance.

Vitamin D is a fat-soluble vitamin. In nature, it is present in very few foods such as vegetables like mushrooms; vitamin D₂ (ergocalciferols) and animals as fish, cod liver oil, fortified food, dairy products and egg yolk; vitamin D₃ (cholecalciferol) [4], or available as dietary supplements. Additionally, the body itself has the ability to produce vitamin D₃ when exposed to the UVB radiation from the sunlight. Vitamin D gotten from sun exposure, food, and supplements is biologically inert and must undergo hydroxylations in the body for activation. The first hydroxylation converts vitamin D to calcidiol (25-hydroxyvitamin D [25(OH) D]) in the liver, while the second forms the physiologically active calcitriol (1,25-dihydroxyvitamin D, 25(OH)₂ D) in the kidney [5]. Serum 25-hydroxyvitamin D (25(OH) D) is the commonly used biomarker of an individual's vitamin D status.

Recently, Vitamin D, which is required for normal development and mineralization of bone, as well as bone remodeling, has been recognized to be involved in various immune functions [6], and its deficiency has been shown to be associated with autoimmune diseases such as rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), inflammatory bowel disease (IBD), multiple sclerosis (MS) and type 1 diabetes. Furthermore, vitamin D supplementation was found to prevent the onset and/or development of these autoimmune diseases [7,8]. Additionally, it was reported that patients with Hashimoto's thyroiditis had lower vitamin D levels [9,10]. The present study was aimed to investigate the relation between serum 25(OH) D and hypothyroidism in order to elucidate whether supplementation with vitamin D in the insufficient group affects these measures.

Methodology:

Study design: Cross sectional study was used to collect the data after Ethics Committee approval. One hundred patients of both sex and age range (20-65 years) were taken from the endocrine unit at the Benghazi Medical Center between July and October 2018.

Complete history of any medical or surgical problems from the patients was taken, in addition to the history of drug taken especially for (Corticosteroids, Anti-tuberculous, Anti-epileptic, and Lipid lowering drugs).

Quantitative determination of serum FT₄, TSH, and 25-OHD was performed using an enzyme linked immunosorbent assay (ELISA). Hypothyroidism was defined as a TSH level > 5 MIU/l and FT₄< 50 nmol/l. While vitamin D deficiency was defined as a level of vitamin 25-OHD of <30 ng/ml and the level below 12ng/ml is considered as very severe deficiency for both men and women.

The study of sample size of 83 patients was calculated with an alpha error of <0.05.

Analysis of variance F test (ANOVA) was used to compare the results of all studied groups. The mean and the standard deviation (SD) and the range were calculated for all continuous variables. Student's *t*-test was used to compare the means of TSH and Vitamin D levels. Chi-square test was used to compare the prevalence of vitamin D deficiency among the hypothyroid patients. Statistical analysis was performed using the software SPSS for Windows.

Results:

Out of (100) patients, 83 returned the filled questionnaire with a response rate of 83%. Regarding the age, it ranged between 20 and 65 years. The mean age among all participants was 48 years. The highest percentage (43.4%) of the study subjects was between 35-49 years old, while the lowest percentage (10.8 %) of the study subjects was 65+ years old (Figure 1)

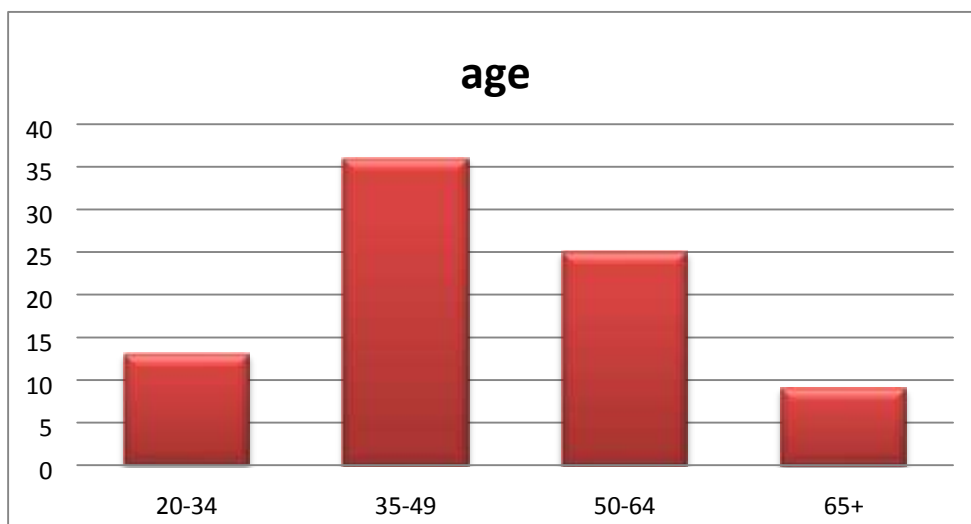


Figure 1: Age distribution of hypothyroid patients (years).

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In terms of gender, most of the samples (approximately 98%) of participants were females, whereas 2.02% of hypothyroid participant were males (Figure 2).

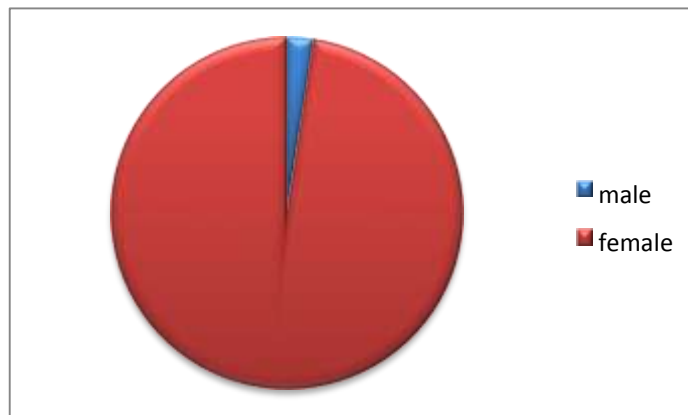


Figure 2: Sex distribution of hypothyroid patients.

It was found that the majority of hypothyroid patient had vitamin D deficiency (94%), whereas only (6%) had sufficient amount of vitamin D level. The Level of Vitamin D among hypothyroid patients was divided into deficient, insufficient and sufficient measured by percentage. The insufficient had the vast majority (48.2%), followed by deficient (45.8%). (Figure 3)

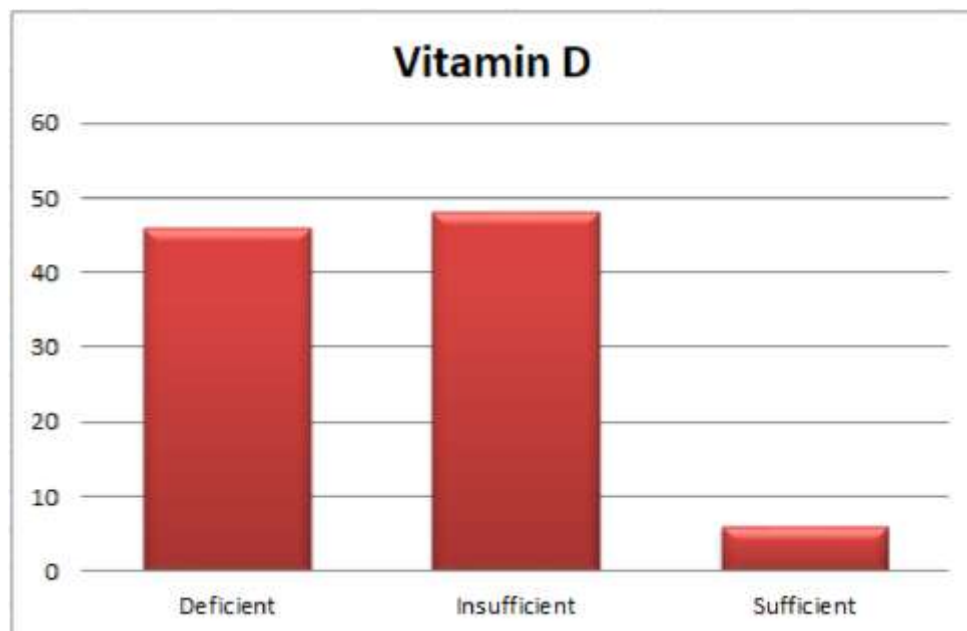


Figure 3: Vitamin D level among hypothyroid patents

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The study compared the level of vitamin D among controlled and uncontrolled hypothyroid patients. The uncontrolled participants are those patients who had hypothyroidism as a TSH level > 5 mU /l and FT4 < 50 nmol/l. the uncontrolled group had the highest percentage (74.7%) of low vitamin D level (< 30 ng/ml), whereas the controlled patients had a lower percentage (25.3%) of low vitamin D level (Figure 4).

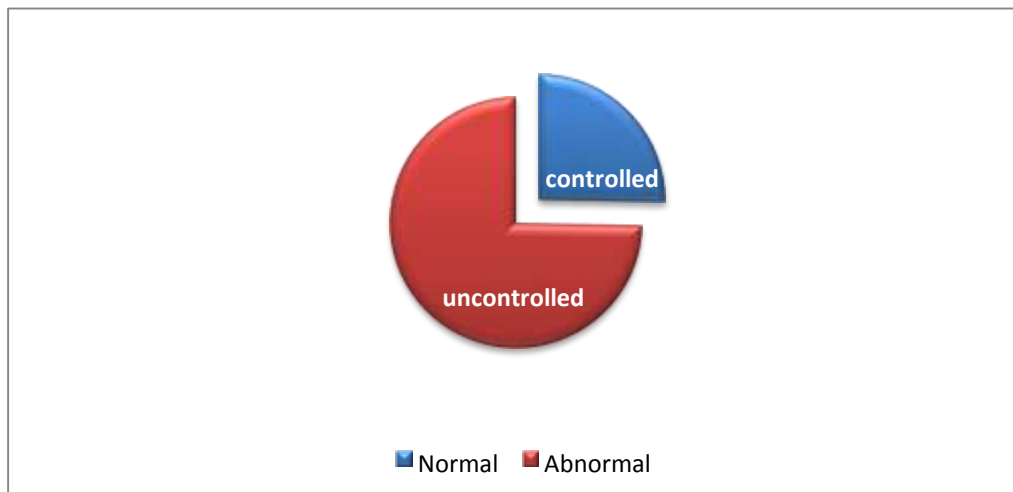


Figure 4: The percentage of vitamin D deficiency among hypothyroid patients

Treated=controlled Untreated=uncontrolled

The risk factors for vitamin D deficiency in our study were as follows; antiepileptic drugs (Carbamazepine and Phenytoin) (two patients) and Rifampin for treatment of tuberculosis (one patient).

Discussion:

This study was conducted in Benghazi city and included Libyan subjects who visited endocrine clinics at the Benghazi Medical Center, which considered as one of the largest referring hospitals for the eastern part of the country. All the participant in the study had primary hypothyroidism, which is the most common cause of hypothyroidism and mostly caused by the autoimmune destruction (Hashimoto thyroiditis) [11.12].

Vitamin D deficiency is a global problem throughout the world. It has been estimated that more than one billion people in the world have vitamin D deficiency or insufficiency [13]. In Libya, studies on vitamin D status in 2017 identified Vitamin D deficiency is common, especially in women of childbearing age and older age [14].

It has been recognized that vitamin D involved in various immune functions besides to its role in bone and muscle development Moreover, vitamin D deficiency has been shown to be associated with autoimmune diseases, including rheumatoid arthritis (RA), inflammatory bowel disease (IBD),

multiple sclerosis (MS) and type 1 diabetes (T1DM), and that vitamin D supplementation prevents the onset and/or development of these autoimmune [15].

Importantly, both vitamin D and thyroid hormone bind to similar receptors called steroid hormone receptors. Vitamin D mediates its effect through binding to vitamin D receptor (VDR), and activation of the VDR-responsive genes. While VDR gene polymorphism was found to associate with autoimmune thyroid diseases (AITDs) [16], a different gene in the vitamin D receptor was shown to predispose people to autoimmune thyroid disease including Graves' disease and Hashimoto's thyroiditis. Few studies have been conducted in order to find any significant association between the levels of vitamin D and hypothyroidism and to determine whether vitamin D deficiency involves in the pathogenesis of hypothyroidism or rather a consequence of the disease, however the results were conflicting.

Our results revealed that most of the hypothyroid patients (about 94%) had low vitamin D level. this was in accordance with a study performed in India by [Idiculla](#) et al in 2018 who demonstrated that there was a significantly higher proportion of severe vitamin D deficiency (<4.2 ng/dl) in hypothyroid group patients. This points to higher possibility of hypothyroidism in individuals deficient in vitamin D [17].

Furthermore, the Mackawy et al study concluded that the patients with hypothyroidism suffered from hypovitaminosis D and there was a significant positive correlation between serum level of vitamin D with thyroid hormones and a significant negative correlation with TSH levels and suggested that the deficiency of serum levels of vitamin D was significantly associated with the degree and severity of hypothyroidism [18]. They explained the association by the following factors. First, the lower levels of vitamin D may be due to the poor absorption of vitamin D from the intestine. Second, the body may not activate vitamin D properly [18].

Also, our result was in accordance with another study done by Byron Richards (2008) which, studied the effect of vitamin D deficiency on thyroid gland. The investigator reported that a lack of vitamin D contributed to the possibility of low thyroid hormones [19].

Besides, our result discovered that one of the hypothyroid patients had a history of tuberculosis which was treated by rifampicin. Tuberculosis (TB) remains a major worldwide health issue as the second most frequent cause of infection-related mortality [20,21]. Rifampin and isoniazid are used in treating tuberculosis (TB). The complex relationship between vitamin D and TB has long been recognized. Prior to the advent of antibiotics, sun exposure and

vitamin D supplements formed the primary treatment for the disease [22]. Vitamin D is a modulator of macrophage activity and enhances the production of the antimicrobial protein cathelicidin [23]. Vitamin D deficiency has been associated with increased susceptibility to TB infection or reactivation of latent TB infections [24]. Treatment with rifampin and isoniazid may also alter vitamin D status, as CYP3A4 is induced by rifampin and inhibited by isoniazid [25]. CYP3A4, a hepatic cytochrome P450 enzyme is involved in drug metabolism, and catabolism of Vit D via a similar pathway as CYP24A1 (an enzyme catalysing the hydroxylation steps of Vit D₂ and Vit D₃) [26]. Rifampicin causes an accelerated loss of Vitamin D due to increased clearance as it acts as an agonist to pregnane X receptor and inducing the activity of CYP3A4 and limiting the formation of active one alpha 25(OH)₂D₃. Isoniazid causes impairment of 25hydroxylation leading to impaired Vit D action [27, 28].

On the other hand our study also revealed that two of the hypothyroid patients who had vitamin D deficiency had a history of epilepsy and were treated by anti-epileptic drugs. Antiepileptics do affect the bone mineral metabolism adversely, as manifested by decreased vitamin D levels in serum of patients taking antiepileptic drugs [29]. Vitamin D and calcium supplementation have to be started with antiepileptic drugs therapy [30]. Phenytoin, phenobarbital and carbamazepine have been investigated for their influence on vitamin D metabolism [31]. The commonest theory is that antiepileptic drugs induce the cytochrome P450 enzymes in the liver and cause increased conversion of vitamin D to inactive metabolites. The inactive vitamin D results in decreased absorption of calcium in the intestines, leading to hypocalcaemia and increase in parathyroid hormone in circulation. The susceptibility of individuals to the effect of AED on vitamin D and bone metabolism may be influenced by some genetic factors [32].

Conclusion:

Vitamin D deficiency is common among hypothyroid Libyan patients living in Benghazi. This study regarding the prevalence of vitamin D deficiency among hypothyroid Libyan patients should be extended to measure vitamin D level among different ages and sexes and in all main cities within the country.

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The Role of the Physiotherapy in Treatment and Prevention of Sacroiliac Joint Dysfunction

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Abstract

This study is aimed to investigate sacroiliac joint (SIJ) dysfunction to understand the treatment and the prevention as it is said (prevention is better than cure). Also, it is to recognize causes that increase SIJ pain, to protect and to educate people against SIJ. In addition, it is to study symptoms and treatment of SIJ dysfunction, especially treatment by physiotherapy that involve electrotherapy, exercise therapy, heat therapy, cold therapy and etc, to reduce pain, improve circulation, improve muscles power, increase range of motion, strengthen muscles and ligaments around the SIJ and advise patient or normal person to improve lifestyle activity where lifestyle activity or daily routine consider main cause that lead to SIJ dysfunction. For this reason, we can use the physiotherapy to the prevention against sacroiliac joint (SIJ) dysfunction. Additionally, this study performed on only one case diagnosed with sacroiliac joint (SIJ) dysfunction who observed in Tobruk Medical Center in 2018. The study showed that sacroiliac joint dysfunction has similar signs and symptoms with low back pain that make physiotherapist and orthopedics to confuse between them in the diagnosis. The SIJ dysfunction was diagnosed by manual examination and radiology (X-ray, Magnetic resonance imaging and computed tomography). But sometimes, Sacroiliac joint dysfunction diagnosed as low back pain, especially in Tobruk Medical Center because there is no advanced technology and in devices examination like therapeutic intra-articular or peritricular injection or nerve blocks. For these reasons, just one case had been found in Tobruk Medical Center during the study period. This study showed the SIJ dysfunction does not related to age, but it may be affected by lifestyle activity or gender where females were more commonly affected with SIJ dysfunction.

Keywords: SIJ; dysfunction; Tobruk; Prevention; Treatment; Physiotherapy..

Abbreviations

SIJ: Sacroiliac joint dysfunction

LBP:Low back pain

P1: patient

TENS :Transcutaneous nerve stimulators

INTRODUCTION

The human back is a highly complicated structure. The vertebrae, intervertebral discs, apophyseal joints, sacroiliac joints, the bones of the pelvis, the ribs, the spinal cord and its membranes, spinal nerves with their branches, the muscles and their aponeuroses and tendons, fascias, blood vessels, connective tissue, subcutaneous tissue, ligaments, and the skin are the principal components of this part of the human body. There are two sacroiliac joints, one on the left and one on the right that often match each other but are highly variable from person to person (Vleeming, A et al 2012).

The sacroiliac joint within these structures and it surrounded with important structure, when SIJ have problem may cause pain for it or near structures (Solonen, K. A. 1957).

The sacroiliac joint could be a possible source of pain, but the frequency of its responsibility is not really know. They were used sacroiliac anesthetic blocks, the gold standard for diagnosis, to determine this frequency the anaesthetics was a relief pain (Maigne et al 2005). The sacroiliac (SI) joint dysfunction lead to low back pain (Fortin, J. D. 1993).

The most symptoms common is a pain bottom of the back and often confuse between them and low back pain, they are two different cases but have the same symptoms. The pelvic girdle pain and may extend to thigh and leg until foot (Steven G. Reviewed 2017). Pain with long sitting or standing (stureson et al 1989; stureson et al 2000).

Women are more susceptible due to the structural difference of the pelvic area in women because the fact that God has the advantage of pregnancy for men, also because the weakness of the bone structure between them and the disorder of hormones after menopause may increase exposure to osteoporosis in women (Cohen, S. P. 2018).

Accident as a result of sudden fall or impact, may cause damage or breakage in the joint area and carry heavy objects suddenly (Jenny Hills ,.web)

Athletes: It is the most widespread among athletes due to excessive physical activity and some sports that has suddenly motion may cause stress of the muscles or joint as weightlifting (Fortin, J. D. 1993).

Work place for example, the teacher has long time in the standing position, which lead to the pressure on his/her joint, also the student is always in the sitting position, this may cause pressure on his/her joint, especially if it is position of sitting is wrong or the seat is not suitable. Medically, all these reasons enhance the likelihood of infection (Jenny Hills. 2017).

The prevention include avoiding all above reasons with the exercise periodically to strengthen the muscles of the abdomen, low back, pelvis, legs and follow a healthy diet and a healthy lifestyle (Douglas I. Allen, DO , 2018).

Treatment by medication: Analgesics, anti inflammatory and surgery but it is very rare (Giles, L. 2009; Douglas I. Allen, DO , 2018).

Physiotherapy: bed rest is very important in acute phase. Exercise therapy to relief or less sacroiliac joint pain, there some exercises can be very helpful (Jenny Hills. 2017), but have to do with physiotherapist, the patients can not do it from his opinion. Electrotherapy by transcutaneous nerve stimulators (TENS): for the relief of chronic pain. Traction is effective in separating the vertebrae which may be necessary to relieve pressure on a disc (Dontigny, R. L. 1979). Massage for low back by oil especially almond oil can help to relieve pain (Jenny Hills. 2017).

Materials and Methods

This study was carried out during the period between January to April 2018. In this research, one case has been found in the Tobruk Medical Centre and recorded for the physical assessment as shown in a Table (1). The diagnosis was performed by manual examination and radiology (X-ray and CT scan) as in Figure (1) and (2). The physiotherapy department in Tobruk Medical Center provides care including medications supply, assessment of pain relief, recovery muscles, rehabilitation, and advices about managing problems. Services include exercise therapy, electrotherapy, hot therapy, ice therapy and others. However, the physiotherapy department still requires more progress and development.

The patient 's therapeutic program includes medications like (Mobital / Indomethacin / Thiomed). Physical Therapy was exercise therapy by strengthen and stretching muscles for 10 minutes / 3 times in week. Ultrasound therapy was for 10 minutes / 3 times in week. Electrotherapy by Transcutaneous Nerve Stimulators (TENS) was for 10 minutes / 3 times in week.



Figure 1: Sacroiliac joint region and vertebral column by Computed Tomography scan for patient (p1)



Figure 2: Sacroiliac joint region radiographic image by X-ray for patient (p1).

1. Results and Discussion

This research was a study about sacroiliac joint dysfunction according to causes, symptoms, prevention and treatment or relief pain. Only, one case was found in the Tobruk Medical Centre during the study period as in a Table (1). The patient had sacroiliac joint dysfunction. He had pain in the muscles of the lower limbs with his activity, and he had injury sudden holding of heavy objects. Also, he felt worse when sitting position for long time. He was a student and he felt better after physiotherapy by (Exercise, Ultrasound Therapy And Tens) for 6 Weeks in Tobruk medical centre with Medication by (Mobicil / Indomethacine / Thiomed).

This study showed the sacroiliac joint dysfunction patient has symptoms are similar to low back pain. For this reason, it is difficult to diagnose and differ between them. The sacroiliac joint dysfunction is a primary source for low back pain because all structures of back for example muscles, nerves, ligaments and other are affected with sacroiliac joint if it has any problem vice versa (Fortin, J.

D., 1993). For this reasons, only one case (P1) was reordedasScroiliac joint dysfunction. Also the SIJs' primary responsibility is to transfer the weight of the upper body to the lower extremities as seen in Table (1) when he was sitting for long time so that he had worse pain.

Most common causes of SIJs pain have noted with heavy weight lifting is like pregnant, obesity and athletes as with cobducted study Fortin, J. D., (1993) and (Jenny Hills. 2017)that agreement with this study where P1 injured as result to sudden holding of heavy objects.

The Sacroiliac joint pain do not combine with age, it can infects young and old age for instance, the case used in this studywhonoted with a P1 in a Table (1) was 19 years ago.

The sacroiliac joint dysfunction are most common in women more than man because women have a lot of difference in pelvic girdle region as result for pregnancy in female as in conducted study for Cohen, S. P. (2018).

Table (1) implied that patienr (P1) has improving with physiotherapy, but physiotherapy that involve exercise should be do with physiotherapist because some exercises is very denger may increase pain or lead to complications. The exercscises is very useful to strength muscles and prevent contraction to protect muscles (Dontigny, R. L. 1979). In addition to use some medications to relif pain as Analgesics as with a P1 in a Table (1) it helps him to reduce pain.

Maigne et al., (2005) reported that the sacroiliac joint could be a possible source of pain and the anesthetic was a relief pain andGiles, L. (2009)implied that analgesics and anti-infalmmatory were to decrease pain. This study is agree with them. The study found that patient had symptoms were samilar to low back pain and analgesics may essential for relief pain.

This study revealed many of facts are agreement or defferent with other studies. As mentioned in last part, Tobruk Medical Centre recorded only one case (P1) and other cases record as low back pain as result the similar symtomes between the sacroiliac joint dysfunction and low back pain where this result was agreement with other studies.

Table .(1). phycial Assessment of Patient.

Name : P1/male	Date :10/4/2018	Age: 19
CHIEF COMPLAINT: What orthopaedic problem brings you here today? Pain in the muscles of the lower limbs which interferes with his activity		
HISTORY OF PRESENT INJURY: How did it happen? Sudden holding of heavy objects		
WORK RELATED? No		
HAS IT GOTTEN WORSE RECENTLY?		

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No
WHAT MAKES IT BETTER Analgesics
WHAT MAKES IT WORSE? Sitting position for long time
ANY PREVIOUS TREATMENTS? Medication(mobitol/ indomethacine/thiomed) Physical therapy IN TMC (exercise, Ultrasound therapy and TENS) for 6 weeks .
PAST MEDICAL HISTORY/ILLNESSES: Any serious medical problems? (Diabetes, rheumatoid arthritis, high blood pressure, heart attacks, infections, etc.) NO history of chronic illness
SURGERIES: (Previous surgery? When & What type of surgery?) appendectomy
MEDICATIONS: List all medications you take routinely. Name of medicine and strength. How many times a day. NO
ALLERGIES: Are you allergic to any medications, foods, prep solutions, or materials? NO
FAMILY HISTORY: Any medical problems in your family, Mother? Or Father? NO
SOCIAL HISTORY: What kind of work do you do? Student
DO YOU PARTICIPATE IN ANY RECREATIONAL ACTIVITIES? ANY OTHER INTERESTS? NO
DO YOU SMOKE TOBACCO? If so, how much? NO
DO YOU DRINK ALCOHOL? If so, how much? NO

Conclusion

The sacroiliac joint dysfunction symptoms are similar to low back pain. One case was only monitored during the period of the study in Tobruk Medical Center. This research provides many advices: should avoid any exercises or sports that cause extra pressure on the sacroiliac joints or need heavy weight lifting, and should be carefully use dietary program to avoid obesity. Women should do smooth exercise during pregnancy to avoid extra pressure. Also, worker should avoid sitting in uncomfortable position for long time or use uncomfortable chair.

Acknowledgement

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Chemical Composition and Antimicrobial Activities of Cold-Pressed Oils Obtained From *Nigella sativa* and *Prunus amygdalis*

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Abstract

*The aim of this study is to put forward the antimicrobial activity of cold pressed oils obtained from seeds of *Nigella sativa* and *Prunus amygdalis*. Oils of these seeds were analysed for their antibacterial and antifungal activities by the disk diffusion and MIC tests against fifteen microorganisms, *Staphylococcus epidermidis* DSMZ 20044, *Staphylococcus aureus* ATCC 25923, *Salmonella typhimurium* SL 1344, *Salmonella kentucky*, *Salmonella infantis*, *Salmonella enteritidis*, *Pseudomonas fluorescens* P1 ATCC 13075, *Pseudomonas aeruginosa* DSMZ 50071, *Klebsiella pneumoniae*, *Escherichia coli* ATCC 25922, *Enterococcus faecium*, *Enterococcus faecalis* ATCC 29212, *Enterobacter aerogenes* ATCC 13048, *Candida albicans* DSMZ 1386 and *Bacillus subtilis* DSMZ 1971. The results were compared against 11 standard antibiotics, which are cefazolin, clindamycin, chloramphenicol, ciprofloxacin, amoxicillin/clavulanic acid, sulfamethoxazole/trimethoprim, ceftriaxone, gentamicin, ampicillin, cephalothin, cefuroxime and vancomycin. The extracts*

were also chemically analysed by using GC-MS. As a result, *Prunus amygdales* oil is observed to be active against all microorganisms except for *C. albicans*, *Staph. Aureus*, *B. subtilis*, *Staph. epidermis*, *Pseudomonas arginosa* and *E. coli*, where *Nigella sativa* oil is not active against all microorganisms

Keywords: *Chemical Composition, Cold-Pressed Oil, Antimicrobial Activity, Prunus amygdales, Nigella sativa.*

INTRODUCTION

Our prophet Mohammed said: (Black cumin cures all malady except the death) [Al-Bukhari and Muslim] (Hussain, D. A., et al, 2016).

A lot of medicinal plants and their pure ingredients have been shown beneficial curative potentials. Seeds of *Nigella sativa*, a dicotyledon of the Ranunculaceae family, have been utilised for thousands of years as a flavouring and food preservative. The oil and seed ingredients, in particular, thymoquinone (TQ) (Salem, M. L, 2005) have shown medicinal characteristics, in traditional medicine (Khan, M. A, 1999). As we noticed in the recent history there are a lot of findings provide clear evidence that both the oil and its active ingredients Importance, especially, thymoquinone, own reproducible anti-oxidant effects through augment the oxidant scavenger system, which as a consequence lead to antitoxic effects (Salem, M. L, 2005; Johnson-Ajinwo, 2014). The oil and thymoquinone of *Nigella Sativa* (Çörekotu Tohumu) content have effective anti-inflammatory effects on numerous inflammation-based including experimental of Encephalomyelitis, Colitis, Peritonitis, inhibition of Oedema and Arthritis into abolition of the inflammatory prostaglandins and leukotrien. The oil and active elements have given good properties for immunity system by raise the T cell and natural killer cell mediated immune responses and not only that the most important, in *Nigella sativa* both the oil and its active elements represent antimicrobial and anti-tumor characteristic against various microbes and cancers (Salem, M. L, 2005; Khanna, M., 1999).

Black cumin, (*Nigella sativa*) is widely grown in different parts of the world and the seed of black cumin (*Nigella sativa*) has been used to enhance health for countries in particular, in the Middle East and Southeast Asia (Kazemi, M., et al, 2015). Black cumin seeds have been widely used in traditional medicine as diuretic and antihypertensive (Masson, R., et al, 2000), digestive and appetite stimulant (Gilani, A. U. H., et al, 2004), antidiarrheal (Gilani, A. H., et al, 2001), analgesic (Khanna, M., 1999), anthelmintic (Bhuiya, B. A, 1998) and antibacterial. Additionally, recent studies have shown black cumin to be antidiabetic (Meral, I., et al, 2004), anticancer, anti-inflammatory, spasmolytic and bronchodilatory ((Gilani, A. H., et al, 2001; Al-Ghamdi, M. S. 2001), hepatoprotective (Janbaz, K. H., et al 2003; Guler, T., et al 2006). Renal protective (Badary, O. A., et al 2001) and possessing antioxidant properties

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(Masson, R., et al, 2000). Black cumin(*Nigella sativa*) its seeds are consist of a Volatile oil (0,5; 1,6%), a Fixed oil (35,6-41,6%), Protein (22,7%) (Guler, T., et al 2006) and Amino acids (Guler, T., et al 2006;Al-Gaby, A. M. A. 1998). In addition, the seeds of black cumin (*N.sativa*) consist fat, crude fibre, minerals; for instance Na, Cu, Zn, Ca, Fe, P and vitamins (Thiamine, niacin, pyridoxine, Ascorbic acid and Folic acid) (Guler, T., et al 2006;Takruri, H. R., &Dameh, M. A, 1998), Black cumin (*Nigella sativa* seeds) output esters of fatty acids, free sterols and sterol esters (Guler, T., et al 2006; Menounos, P., et al 1986).

Prunusamygdalus is referred to the Rosaceae family (Bombarely, A., et al, 2010). Almond core contains high level of unsaturated fatty acids, mainly mono-unsaturated fatty acids (MUFA) that perform a vital role in body diet, food (Balta, M. F. 2013).

Almond is an exporter of food and medicine, they extend from India to Persia, the tree had spread to east and occident of its region thousands of years. Almond is good sources of antioxidant nutrients. Almonds (*Prunusamygdalus*) involvement proteins, fiber, vitamin and certain minerals e.g. magnesium and calcium, potassium, low in saturated fatty acids and rich in unsaturated fatty acids (Agunbiade, S. O., &Olanlokun, J. O, 2006; Mangalagiri Mandal, G. D, 2012), for this reason it is reduce coronary heart disease risk factorsJenkins, (D. J. A., et al. 2003).

Almonds (*Prunusamygdalus*) are a useful food a cure for anaemia. It's beneficial in the remediation of constipation and various skin diseases like eczema, pimples. Almonds are helpful in heal gastroenteritis, kidney pains, diabetes, head lice, facial neuralgia and gastric ulcer and wound healing, skin cleaner, chapped lips and hand (Mangalagiri Mandal, G. D, 2012; Khan, I. A., &Abourashed, E. A. 2011).

Oil of Almond had used for the skin as a moisturiser which curbs the skin from drying and peeling skin, from old, *Prunusamygdalus* oil had used as the comforting cure for skin allergies, and to treat minor hurt. In addition, most widespread use of *Prunusamygdalus* oil is in massage because it is outstanding skin lotion (Khan, I. A., &Abourashed, E. A. 2011). Its properties make it popular with massage therapists' worldwide. Almond oil of seed does not have any oleaginous effect and will take a tiny bit of time before it is absorbed by the skin. utilise it for a massage makes a human body feel comfortable (Khan, I. A., &Abourashed, E. A, 2011;Pratima, N. A., &Shailee, T, 2012).

(*PrunusAmygdalus* L.) of the family Rosaceae was investigated for the oil seed characteristics. The physico-chemical properties and fatty acid composition of the seed oil were examined. Physicochemical properties of the oil were

performed according to AOAC procedures and fatty acids were determined by gas chromatography (GC)(Popa, V. M.,et al, 2013).

1. Materials and Methods

Plant samples

Nagillasativus and *PrunusAmygdalus* seeds were purchased from a local company in Turkey (ÖzşenLokmanHekim).

Oil extraction

The oil was obtained through a cold-press production (MP-001 Screw Press, Turkey (fig 1). One kilogram of each seed was pressed, filtered and allowed to stand overnight. After 24 hours the upper clear layer of oil was separated through a separation funnel. Obtained oils were kept in cold (4°C) and dark until used in test. The yield percentage for all plant samples were found to be 17% (w/w) for *P. Amygdalus*, 60% (w/w) for *N. sativus* (fig 2).



Figure 1:Pressing machine oil that use to extract oil.



Figure 2: One kilogram of *P. Amygdalus* got 60% of oil as shown in A, *N. sativa* got 17% of oil as in B.

Microorganisms

Several Gram positive and Gram negative microorganisms were selected to analyse the activity of the oils. The fifteen microorganisms used in this study are *Staphylococcus epidermidis* DSMZ 20044, *Staphylococcus aureus* ATCC 25923, *Salmonella typhimurium* SL 1344, *Salmonella kentucky*, *Salmonella infantis*, *Salmonella enteritidis*, *Pseudomonas fluorescens* P1 ATCC 13075, *Pseudomonas aeruginosa* DSMZ 50071, *Klebsiella pneumoniae*, *Escherichia coli* ATCC 25922, *Enterococcus faecium*, *Enterococcus faecalis* ATCC 29212, *Enterobacter aerogenes* ATCC 13048, *Candida albicans* DSMZ 1386 and *Bacillus subtilis* DSMZ 1971.

Inoculum

Microorganisms used in this study were cultured in line with their requirements as stated in some previous studies (Altuner and Çetin, 2009; Altuner and Canli, 2012; CanlıAltuner&Akata, 2015).

For inoculum, microorganisms were suspended in sterile physiological saline solution (Canlı, Altuner, Akata, Türkmen&Üzek, 2016; Canlı, Yetgin, Akata&Altuner, 2016a and b; Canlı, Yetgin, Akata&Altuner, 2017a) and to adjust equal the number of the colonies in the solution, 0.5 McFarland standard was used (Hammer, Carson & Riley, 1999; Altuner, Akata&Canli, 2012a and b).

Disk diffusion method

Diffusion method adopted according to Kavanagh. We have prepared a petri dish, then took anointed of the bacteria and fungi that prepared in a test tube by sterile swabs. Wipe swap on plate gently by spreading process, rotate the plate 60 degrees clockwise and again spread the bacteria going left to right, top to bottom After that, distributed the discs that contain extracts (oil) by a sterile needle with different concentration 15 µg/disc, 5 µg/disc and zero for control, plates were incubated at 37°C for 18 to 24 After the incubation, the plates were examined for inhibition zone. The inhibition zone was measured by using a ruler and recorded. The test was repeated three times to ensure reliability as shown in (fig 3).

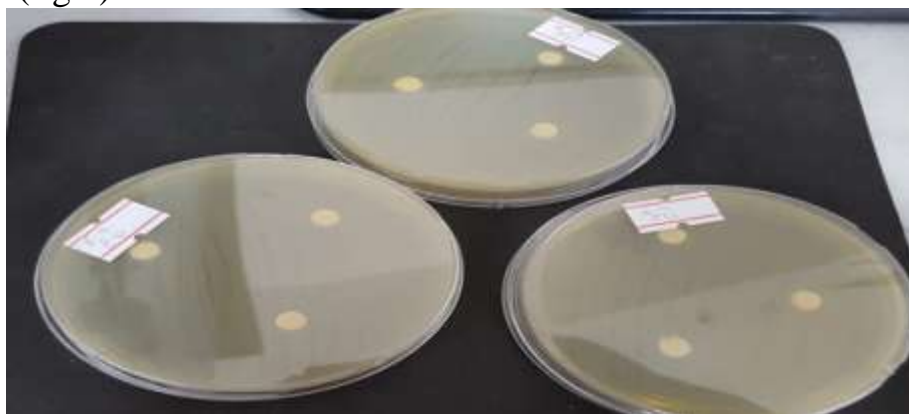


Figure 3: repeated three times to ensure reliability.

Determination of MIC

The MIC values for all oil samples were identified as stated previously (Balouiri, Sadiki & Ibensouda, 2016). The concentration range was between 100 to 0.195 µg/mL.

Determination of chemical composition by GC-MS

For the identification of chemical components, each sample was analyzed by GCMS QP 2010 Ultra (Shimadzu) equipped with Rtx-5MS capillary column (30m·0.25 mm; coating thickness 0.25 µm). Analytical conditions were injector temperature, 250 °C; carrier gas Helium at 1 mL/min; injection mode: split, split ratio 1:10; volume injected: 1 µL of a solution in hexane of the oil; and oven temperature programmed from 40°C to 240°C at 4°C/min, pressure:100kPa, purge flow:3 ml/min. The MS scan conditions used included a transfer line temperature of 250°C, an interface temperature of 250°C, an ion source temperature of 200°C. Identification of the constituents was based on comparison of the retention times and on computer matching against Wiley Data library. When possible reference compounds were cochromatographed to confirm GC retention times.

Controls

Empty SAD was used as negative controls for disk diffusion test and sterilized broth medium for MIC test. In addition, microorganisms were inoculated in Mueller Hinton broth in order to control the viability of each microorganism. As positive controls eleven standard antibiotics, which are cefazolin, clindamycin, chloramphenicol, ciprofloxacin, amoxicillin / clavulanic acid, sulfamethoxazole / trimethoprim, ceftriaxone, gentamicin, ampicillin, cephalothin, cefuroxime and vancomycin are used.

statistical Analysis

ANOVA, Descriptive and Homogeneous were performed to test for difference in size of inhibitory zone formed by oil for *Prunus amygdalus* against different bacteria by IBM spss version 24.

1. Results and Discussion

The results obtained by GC-MS analyses of cold-pressed oils of *Nigella sativa* and *Prunus amygdalus* are presented in (Table 1, 2, 3 and 4). We chose the components more than 3 percent as the main components and other components have seen tables. Sixteen compounds were identified in fatty acid scanning of *N. sativa*. GC-MS analyses revealed that *N. sativa* contained Hexadecanoic acid, methyl ester (5.03%), 9,12-Octadecadienoic acid (Z,Z)-, methyl ester (23.44%), 9-Octadecenoic acid (Z)-, methyl ester (11.05%), (9E)-Octadecenoic acid (40.47%), (R)-(-)-14-Methyl-8-hexadecyn-1-ol (4.09%), Methyl 5,11,14-eicosatrienoate (10.38%), Cyclohexanecarboxylic acid, decyl

Chemical Composition and Antimicrobial Activities of Cold-Pressed Oils Obtained From *Nigellasativa* and *Prunus amygdales*

ester (22.94%), Glycidol stearate (4.35%) as the major compounds as shown (Table1).

Table. (1). *Nigella Sativa*: Fatty Acid Scanning Results.

Peak	R,Time	Area	Area %	Name
1	3.660	298342	1.09	<i>2,5-cyclohexadiene-1,4-dione, 2-methyl-5-(1-ethyl)-(CAS)</i>
2	14.018	559892	0.22	<i>Meth tetradecanoate</i>
3	19.305	1376413	5.03	<i>Hexadecanoic acid, methyl ester</i>
4	23.489	6415955	23.44	<i>9.12-Octadecadienoic acid.(Z,Z)-</i>
5	23.616	3023630	11.05	<i>9-Octadecadienoic acid(Z,Z)-,methyl ester (CAS)</i>
6	23.743	281371	1.03	<i>9-Octadecadienoic acid(Z)-, methyl ester(CAS)</i>
7	24.206	498281	1.82	<i>Methyl stearate</i>
8	24.503	2865988	10.47	<i>9-Octadecadienoic acid, (E)</i>
9	28.065	1118474	4.09	<i>(R)-(-)-14-Methyl-8-hexadecyl-1-ol</i>
10	28.701	46919	0.17	<i>Eicosanoic acid, methyl ester (CAS)</i>
11	31.963	2841221	10.38	<i>Methyl 5,11,14-eicosatrienoate</i>
12	32.047	6277096	22.94	<i>Cyclohexanecarboxylic acid, decyl ester</i>
13	32.674	1189666	4.35	<i>Glycidol stearate</i>
14	38.424	380238	1.39	<i>9-Octadecadienoic acid, 1,2,3-propanetriyl ester, (E,E,E)-</i>
15	38.857	616019	2.25	<i>E,E,Z-1,2,12-NONADECATRIENE-5,14-DIOL</i>
16	41.184	76506 27366011	0.28 100.0 0	<i>1,3-Benzeneedic arboxylic acid, bis(2-ethylhexyl)ester</i>

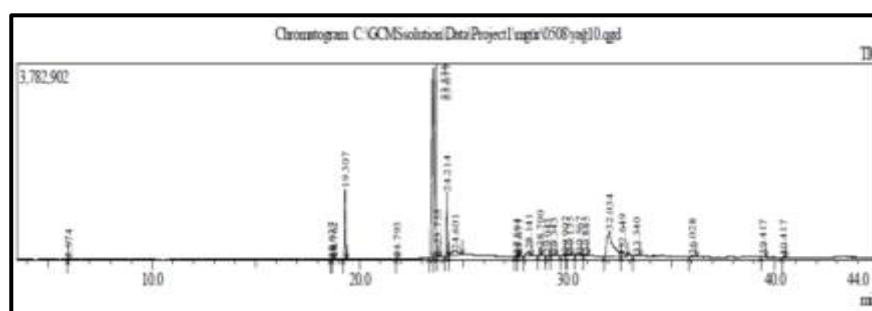


Figure 3: *Nigella sativa* fatty acid scanning results.

Twelve compounds were identified in essential oil scanning of *N. sativa*. GC-MS analyses revealed that *N. sativa* contained 9-OCTADENOIC acid, 1.2.3-propanetriyl ester. (E.E.E)-, E.E.Z-1.3.12-Nonadecatriene-5.14-diol and 9.12-Octadecadienoyl chloride.(Z.Z)-(8.73%), (57.32%) and (33.72%), respectively as the major compounds as shown (Table 2) and (fig 2).

Table .(2).Nigella Sativa: Essential oil scanning.

Pea k	R, Tim e	Area	Area %	Name
1	43.840	2039839 3	8.73	<i>9-OCTADENOIC acid, 1.2.3- propanetriyl ester. (E.E.E)-</i>
2	49.665	2230980 8	57.32	<i>E.E.Z-1.3.12-Nonadecatriwne-5.14-diol</i>
3	50.810	100883	7.72	<i>9.12-Octadecadienoyl chloride.(Z.Z)-</i>
13	21.546	789694	0.34	<i>Thymoquine</i>
		7610179 8	100.0 0	

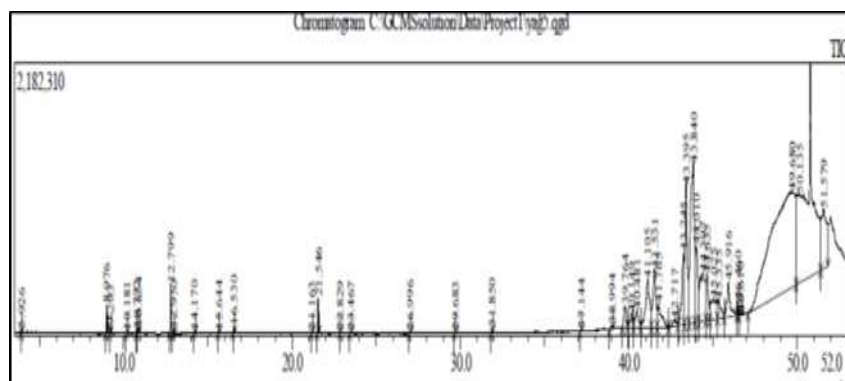


Figure 4:Nigella Sativa: Essential oil scanning.

Thirty-five compounds were identified in fatty acid scanning of PrunusAmygdalus. GC-MS analyses revealed that P. amygdalus contained Hexadecanoic acid, methyl ester (6.23%), 9,12-Octadecadienoic acid (Z,Z)-, methyl ester (16.52%), di-(9-octadecenoyl)-glycerol (12.03%: This compound has seen in five different retention times), Methyl stearate (3.17%), Tricyclo[20.8.0.0(7,16)]triacontane, 1(22),7(16)-diepoxy- (15.83%), as the major compounds as shown (Table 3).

Table.(3).PrunusAmygdalus: Fatty Acid Scanning Results (GC-MS).

Peak	R,Time	Area	Area %	Name
1	14.005	32631	0.03	<i>Tetradecanoic acid, methyl ester (CAS)</i>
2	18.663	39793	0.03	<i>9-Hexadecanoic acid, methyl ester, (Z)- (CAS)</i>
3	18.782	779918	0.66	<i>9-Hexadecanoic acid, methyl</i>

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				<i>ester, (Z)-</i>
4	19.387	7311680	6.23	<i>Hexadecanoic acid, methyl ester</i>
5	21,241	129476	0.11	<i>CIS-10-HEPIADECENOIC ACID ME</i>
6	21.818	66795	0.06	<i>Heptadecanoic acid, methyl ester(CAS)</i>
7	23.250	326367	0.28	<i>9-OCTADENOIC acid, 1.2.3-propanetriyl ester. (E.E.E)-</i>
8	23.544	19392020	16.52	<i>9.12-Octadecenoic acid.(Z.Z), methyleeaster-</i>
9	23.771	4405015	37.52	<i>9.Octadecenoic acid, methyle ester, (E)-</i>
10	24.019	1056604	0.90	<i>DI-(9-OCTADENOYL)-GLYCEROL</i>
11	24.236	3726884	3.17	<i>Methylestearte</i>
12	24.531	988751	0.84	<i>9-OCTADENOIC acid, 1.2.3-propanetriyl ester. (E.E.E)-</i>
13	24.655	765693	0.65	<i>9.12-Octadecenoic acid.(Z.Z), methyleeaster-</i>
14	24.840	785908	0.67	<i>DI-(9-OCTADENOYL)-GLYCEROL</i>
15	25.106	692234	0.59	<i>8-Hexadecenal,14- methyl ester, (Z)-</i>
16	25.364	417306	0.36	<i>DI-(9-OCTADENOYL)-GLYCEROL</i>
17	25.607	293997	0.25	<i>13-Octaddecenal, (Z)-</i>
18	25.898	130465	0.11	<i>9-OCTADENOIC acid, 1.2.3-propanetriyl ester. (E.E.E)-</i>
19	26.071	120397	0.10	<i>Glycidol stearate</i>
20	26.277	198875	0.17	<i>Glycidol stearate</i>
21	26.602	45263	0.04	<i>Cycleohexanecarboxylie acid,undec-10-enyl ester</i>
22	26.915	111309	0.09	<i>DI-(9-OCTADENOYL)-GLYCEROL</i>
23	27.095	482935	0.41	<i>2-Methyl-Z-Z-3,13-octadecadienol</i>
24	27.293	319595	0.27	<i>13-Octaddecenal, (Z)-</i>
25	27.571	73454	0.06	<i>Opaneoctanic acid, 2-[[2-[(2-ethylcyclopropyl)methyl]cyclopropyl]methyl</i>
26	28.161	330319	0.28	<i>11-Escosenoic acid, methyl ester</i>
27	28.719	211484	0.18	<i>11-Escosenoic acid, methyl ester (CAS)</i>
28	29.855	32418	0.03	<i>Naphth[1,2-b]oxirne,decahydro-1a,7-dimethyl-</i>
29	31.391	18580341	15.83	<i>Tricle[20.8.0.0(7,16)]triacontane, 1(22),7(16-diepoxy-</i>
30	32.060	11756612	10.01	<i>DI-(9-OCTADENOYL)-</i>

<i>GLYCEROL</i>				
31	33.390	31711	0.03	<i>Methyle 20-methy-beneisanoate</i>
32	37.460	629054	1.54	<i>E,E,Z-1,3,12,3-Propanetriyl ester, (E,E,E)-</i>
33	37.058	1927061	1.64	<i>9-OCTADENOIC acid, 1.2.3-propanetriyl ester. (E.E.E)-</i>
34	38.365	1410136	0.20	<i>Adipic acid, dec-4-enyl dodecyl ester</i>
35	40.877	147657	0.13	<i>Gamma.-TOCOPHEROL</i>
		31173956 58	100.0 0	

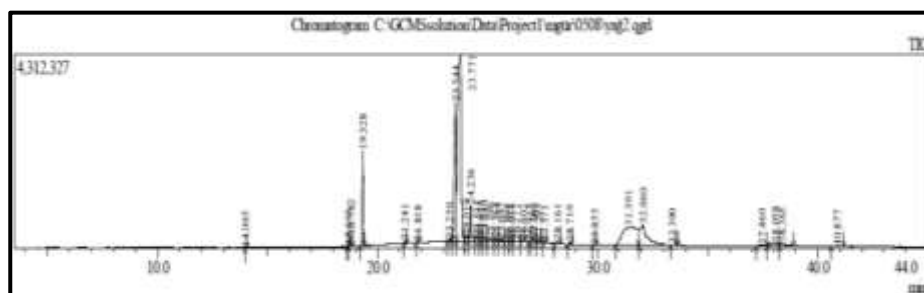


Figure 5:Prunusamygdalus fatty acid scanning results.

Nine compounds were identified in essential oil of PrunusAmygdalus. GC-MS analyses revealed that P. amygdalus contained (51.10%) of 9.12-Octadecadienoyl chloride.(Z.Z)-, (21.6%) 9-OCTADENOIC acid, 1.2.3-propanetriyl ester. (E.E.E)- and (11.0%) Hexadecanoic acid, 2-(hydroxymethyl)-1,3-proparpnediyle ester (CAS) as major compound as shown (table 4) and (fig 6).

Table.(4).PrunusAmygdalus: essential oil Scanning Results (GC-MS).

Pea k	R, Tim e	Area	Area %	Name
1	43,230	7424458	51.10	<i>9.12-Octadecadienoyl chloride.(Z.Z)-</i>
2	43.861	43455974	21.6	<i>9-OCTADENOIC acid, 1.2.3-propanetriyl ester. (E.E.E)-</i>
3	50.815	2329942	11.09	<i>Hexadecanoic acid, 2-(hydroxymethyl)-1,3-proparpnediyle ester (CAS)</i>

Chemical Composition and Antimicrobial Activities of Cold-Pressed Oils Obtained From *Nigella sativa* and *Prunus amygdalus*

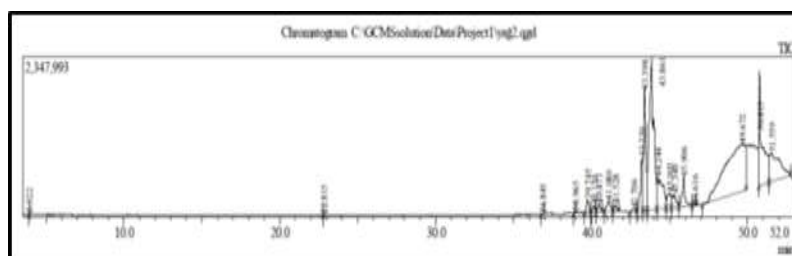


Figure 6: *Prunus amygdalus* essential oil results.

Hexadecanoic acid, methyl ester compound was seen in cold-pressed oil of *N. Sativa* and *P. amygdalus* plants as percentages of (5.03%), (6.23%), respectively. Octadecadienoic acid (Z,Z)-, methyl ester compound was determined in cold-pressed oil of *N. Sativa*, and *P. amygdalus* plants as percentages of 23.44, 16.52, respectively. 9-Octadecenoic acid, methyle ester, (E)-compound has highest determined in cold-pressed oil of *P. amygdalus* plants as percentages of 37.52. 9,12-Octadecadienoic acid.(Z,Z)-compound has highest determined in cold-pressed oil of *N. Sativa* plants as percentages of (23.44%).

The *Prunus amygdalus* fatty acid are with Gruia et al (2013) reported linoleic acid, oleic acid and Palmic acid 30.05%, 57.32%, 9.46% respectively (Popa, V. M., et al, 2013) higher than in the present study. However, with Youssef et al (2013), Standards et al (2004) and Rathee et al (1984) where reported in *N. sativa* was linoleic acid and oleic acid as major compounds Youssef, M. K. E., et al, 2013; Standards, N.C.f.C.L., 2004; Rathee, P. S., et al, 1982) this is agreement in the present study.

In this study agreement with Salem, M. L, (2005) that conduct the oil and seed of *N. sativa* ingredients, in particular, thymoquinone (TQ) whears its precente is 0.34% in this study

The results for disk diffusion test of *N. sativa* and *P. amygdalus* are given in Table 5 and the results for standard antibiotic disks are given in Table 6 too. The MIC values observed *N. sativa* and *P. amygdalus* are given in Table 7.

According to the results *P. amygdalus* seed oil was observed to be active all bacteria except for *B. subtilis*, *Staph. epidermis*, *Pseudomonas arginosa*, *E. coli*, *Staph. Aureus* and fungi *Candida albicanis* the average of inhibition zone ranging (7-8mm) as shown in table 5 whears the highest antimicrobial activity against *P. flore* in 15µ/disc concentration about 8,5±0,4 and on *E. facium* about 8,5±0,5 the MIC values were observed to be between 12.5 and 25 µg/mL.

N. sativaseed oil was observed to be active just for *S. enteritis*, *E.aerogens* and *S. infantis* and the MIC values were observed to be 100 µg/mL with same bacteria that affected in disc diffusion test.

Table .(5). Disk diffusion test results for 5 µL and 15 µL of cold press oils obtained from seeds *Prunus amygdalus* and *Nigella sativa* (Inhibition zones in mm).

Microbial	<i>Prunus amygdalus</i>		<i>Nigella sativa</i>	
	5 µg/disc	15 µg/disc	5 µg/disc	15 µg/disc
<i>S. enteritis</i>	7.1	7.5	-	2
<i>C. albicans</i>	-	-	-	-
<i>Staph. aureus</i>	-	-	-	-
<i>E. faecium</i>	7.5	8.5	-	-
<i>E. faecalis</i>	7.1	7.5	-	-
<i>S. typhimurium</i>	7.1	7.5	-	-
<i>E.aerogens</i>	7.1	7.5	-	6.8
<i>S. infantis</i>	7.1	7.5	-	6.8
<i>S. Kentucky</i>	6.7	7.5	-	-
<i>Pseud.florescans</i>	-	8.5	-	-
<i>Kleb.pneumonia</i>	6.7	7.5	-	-
<i>B. subtilis</i>	-	-	-	-
<i>Staph.epidermis</i>	-	-	-	-
<i>Pseudomonas arginosa</i>	-	-	-	-
<i>E.coli</i>	-	-	-	-

“-”: No activity

Table .(6). The results for standard antibiotic disks (Inhibition zones in mm).

	CFZ	CLI	CAM	CPR	AMC	SXT	CR O	GE N	AM P	CE F	CX M	VA N
<i>B. subtilis</i>	44	34	37	36	56	42	38	30	41	36	44	20
<i>C. albicans</i>	-	-	-	-	-	-	-	-	-	-	-	-
<i>E. aerogenes</i>	14	-	26	30	9	24	21	23	-	-	16	-
<i>E. faecalis</i>	14	-	19	19	28	29	-	13	14	-	-	15
<i>E. faecium</i>	40	30	11	28	43	34	31	28	32	24	33	26
<i>E. coli</i>	18	-	22	-	16	12	-	20	6	6	6	6

Chemical Composition and Antimicrobial Activities of Cold-Pressed Oils Obtained From *Nigellasativa* and *Prunus amygdales*

<i>K. pneumoniae</i>	-	-	22	30	9	6	6	22	6	6	6	-
<i>P. aeruginosa</i>	-	-	9	28	-	-	-	15	-	-	-	-
<i>P. fluorescence</i>	10	8	22	19	26	26	-	12	14	-	-	16
<i>S. enteritidis</i>	23	-	28	36	28	31	27	24	16	-	16	-
<i>S. infantis</i>	22	-	28	24	26	24	26	24	14	-	17	-
<i>S. kentucky</i>	22	-	29	34	26	27	30	13	15	-	19	-
<i>S. typhimurium</i>	22	-	27	35	26	21	27	23	13	-	14	-
<i>S. aureus</i>	31	24	21	22	30	27	16	24	25	22	29	16
<i>S. epidermidis</i>	37	35	33	34	45	32	26	25	24	26	32	21

“-”: No activity observed, CFZ: Cefazolin, CLI: Clindamycin, CAM: Chloramphenicol, CPR: Ciprofloxacin, AMC: Amoxicillin/Clavulanic acid, SXT: Sulfamethoxazole/Trimethoprim, CRO: Ceftriaxone, GEN: Gentamicin, AMP: Ampicillin, CEF: Cephalothin, CXM: Cefuroxime, VAN: Vancomycin

Table .(5). MIC values ($\mu\text{g/mL}$) for

Microorganisms	<i>Prunus amygdalus</i>	<i>Nigella sativa</i>
<i>S. enteritidis</i>	25	100
<i>Candida albicans</i>	-	-
<i>Staph. aureus</i>	-	-
<i>E. faecium</i>	12.5	-
<i>E. faecalis</i>	25	-
<i>S. typhimurium</i>	25	-

<i>E. aerogens</i>	12.5	100
<i>S. infantis</i>	25	100
<i>S. Kentucky</i>	25	-
<i>Pseudomonas flowerscans</i>	25	-
<i>Klebsella pneumonia</i>	25	-
<i>B. subitits</i>	-	-
<i>Staph. epidermis</i>	-	-
<i>E.coli</i>	-	-
<i>Pseudomonas arginosa</i>	-	-

“-” implies no effect.

As the current literature is concerned there are several studies for the antimicrobial activity of *N. sativa*, and *P. amygdalus* against several microorganisms. But only a minute amount of them are the antimicrobial activity of seed oils.

Neogi et al (2008) studied the fatty acid profile and the antimicrobial effect of *P. amygdalus*. Tested the antimicrobial of the *P. amygdalus* seeds oil against 7 microorganisms. They have found determined inhibition zone of well disc diffusion against *S. typhimurium*, *E. coli*, *S. aureus* and *P. aeruginosa* of bacteria $20\pm 0.9\text{mm}$, $14\pm 0.5\text{mm}$, $17\pm 1.3\text{mm}$ and $17\pm 0.6\text{mm}$ respectively. And *Penicillium notatum*, *C. albicans* and *A. niger* of fungi $20\pm 0.8\text{mm}$, $15\pm 1.2\text{mm}$ and $18\pm 0.7\text{mm}$ respectively. where in our study have the lowest determined inhibition zone of agar disc diffusion between $6.7\pm 0.025\text{mm}$ and $8.5\pm 0.4\text{mm}$ and MIC value 12.5%- 25% $\mu\text{g/mL}$. There are two reasons for this differences; (1) the method for extraction was different, so the oil composition may be different, Neogi et al (2008) extracted the oil from seeds by using Soxhlet apparatus, but we have extracted oils by direct cold pressing, (2) the test method was different Neogi et al (2008) tested by well disc diffusion, but we have agar disc diffusion.

Chaudhry et al (2008) studied the fatty acid profile and the antimicrobial effect of *N. sativa* seeds against 20 microorganisms of bacteria. They have found determined inhibition zone of Disc diffusion assay against *Staphylococcus aureus*, *Streptococcus intermedius*, *Streptococcus morbillorium*,

Streptococcus mutans, *Streptococcus salivarius* and *Streptococcus sanguis* $19.6 \pm 1.8\text{mm}$, $13.6 \pm 1.5\text{mm}$, $16.5 \pm 4.9\text{mm}$, 16.9 ± 3.9 , 8.5 ± 0.8 and 14.6 ± 2.4 respectively. But no affected on *pseud. aerogenisa* and *klep. P.* where in our study have abit affect against *E. aerogenes*, *S. enteritidis* and *S. infantis* There are two reasons for this differences; (1) the method for extraction was different, Chaudhry et al (2008) boiling 10g of *N. sativa* in 100ml distilled water. (2) Chaudhry et al (2008) seeds were purchased from the local market of Karachi, Pakistan and they boiling 10g of *N. sativa* seeds in 100ml distilled water.

Grasas et al (2005) studied the antimicrobial effect of *N. sativa* seeds oil against twenty-four affected of bacteria. They have found determined inhibition zone of Agar Disc diffusion between 7mm to 37mm. There are two reasons for this differences; (1) the method for extraction was different, (1) grasses et al (2005) extracted for 10 h in a Soxhlet extractor with 500 ml n-hexan. (2) seeds were grown in five different regions.

2. Conclusion

This study has revealed the *P. amygdalus* and *N. sativa* are a rich source of fatty acid as scannig by Gas chromatography–mass spectrometry (GC-MS) analysis and this medicinal plants can use them as Antimicrobial, but this depend on the ways that have use, in this study had use oil that extract from seeds with $5\mu\text{g}/\text{disc}$ and $15\mu\text{g}/\text{disc}$ concentration may if increase rate of concentration it will giving more well affect or by use leaves or cruch seeds. In addation *P. amygdalus* oil it very useful for skin wheares can use for skin therapy

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Profile of Prematurity in Tobruk Medical Center Risk Factors, Complications, and Outcome 2017-2018

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Abstract

: Preterm birth is a major determinant of neonatal mortality and morbidity and has long-term adverse consequences for health. The main target in our study is to determine the risk factors, complications, outcome and incidence of prematurity in Tobruk Medical Center. This prospective study was conducted on 174 preterm neonates which delivered at Tobruk Neonatal Intensive Care Unit from January 2017 to January 2018. The 174 preterm newborns were aged between 28 to 36 weeks. The main risk factor is maternal (48%), fetal (24%) and idiopathic (20%). The maternal risk factors for preterm delivery were (27.5%) with premature rupture of membranes, (23.5%) urinary tract infection, (13.2%) with vaginal infection, (13.2%) idiopathic, (12.6%) have bleeding, (10.9%) hypertensive, (9.7%) diabetic and (1%) other causes. The complications present were respiratory (33.9%), sepsis (22.9%), apnea (17.8%), metabolic (8.6%), central nervous system (6.8%), congenital malformation (6.8%), and gastro intestinal complication was (0.5%). Outcome was 126 discharged (72.4%), 44 died (25.2%), and 4 transferred (2.2%), cause of death was 85% respiratory, 14% sepsis, and 1% GIT (necrotizing enterocolitis). This study found that the incidence of prematurity was 22.8% in Tobruk Medical Center during one year. The predominant risk factor for prematurity was maternal and the respiratory was the most common complication.

Key Words: Prematurity; Maternal factors; Complications; Outcome..

INTRODUCTION

Preterm birth defined as childbirth occurring at less than 37 completed weeks or 259 days of gestation. It is a major determinant of neonatal mortality and morbidity and has long-term adverse consequences for health ^[1,2]. The birth of premature infants is associated with several problems, such as frequent hospital admissions, infections, apnea and others ^[3]. Despite the comprehensive efforts to prevent premature delivery and birth of premature infants, the birth rates of such infants are high due to some medical problems, social status and infertility treatment ^[4,5]. In the United States, there are about 250,000 premature and low birth weight infants each year, accounting for 8.8% of births ^[6]. In 2010, approximately 15 million babies were born preterm, and more than 1 million died due to complications during the first month of life^[9]. In Iran, 5000 neonates are born daily, about 12% of them are underweight.^[7] Globally, among all neonatal deaths in 2013, 35% cases were caused by preterm birth complications alone.^[8] Research that expands our understanding of the causes and risk factors of preterm birth and how to identify women and adolescents at risk is particularly needed to decrease the global neonatal mortality rate.^[9] Without accurate, comprehensive background information describing the existing state of preterm neonatal births, risk factors, and national mortality, an international improvement in preterm neonatal care would be extremely challenging to achieve. Despite a progressive decline in neonatal mortality rates between 1990 and 2013, the national neonatal mortality rate remains high, at 11 neonatal deaths per 1000 live births in 2013.^[8] Population-based studies reporting the outcomes of preterm birth using standardized mortality definitions are highly recommended in low- and middle resource settings.^[10] Children who are born prematurely have higher rates of cerebral palsy, sensory deficits, learning disabilities and respiratory illnesses compared with children born at term. The morbidity associated with preterm birth often extends to later life, resulting in enormous physical, psychological and economic costs.^[11,12] In recent years, the care provided in Neonate Intensive Care Units (NICU) settings increased the survival of premature infants but at the same time increased duration of hospitalization and costs. As a result, the care of premature neonates currently accounts for a large proportion of the total in-hospital costs worldwide.^[13] the frequency of preterm labor varies considerably between countries, almost 90% of these premature births occur in developing countries in Africa and Asia.^[14] In 2014, the rate of preterm births was 10% in the US ^[15] while in Europe in 2010, preterm birth rates varied markedly from 5 to 10.6% among live births.^[16] Cyprus is characterized by the highest premature birth rate in Europe, reaching 10.6% and 13.1% in 2010 and 2014 respectively.^[17, 18] partly due to increase of multiple pregnancies following in-vitro fertilization.^[19] Ethiopia is among the top 15 countries that contribute to two-thirds of the world's preterm babies with an estimated preterm birth rate of 14.1%.^[20] In 2015, 5.9 million children under

the age of five died across the globe. Of these, 44% or 2.6 million deaths occurred within the first month of life. Just over a third of these babies died as a result of prematurity-related causes.^[21] Estimates indicate that in 2005, the costs to the United States of America alone in terms of medical and educational expenditure and lost productivity associated with preterm birth were more than US\$ 26.2 billion.^[22] Of all early neonatal deaths (deaths within the first 7 days of life) that are not related to congenital malformations, 28% are due to preterm birth.^[23] Complications from preterm births are the leading direct cause of neonatal deaths accounting for 35% of all newborn deaths, and are also a contributing cause in an additional 40 to 60% of neonatal deaths. Mortality rates increase proportionally with decreasing gestational age or birth weight ^[24, 25]. In Ethiopia, of the estimated 91,700 neonatal deaths in 2010, more than one-third were estimated to be due to complications of preterm birth ^[26]. Preterm birth rates have been reported to range from 5% to 7% of live births in some developed countries, but are estimated to be substantially higher in developing countries.^[27] Approximately 45–50% of preterm births are idiopathic, 30% are related to preterm rupture of membranes (PROM) and another 15–20% are attributed to medically indicated or elective preterm deliveries.^[28,29] Estimation of preterm birth rates and their proper categorization (e.g. spontaneous versus indicated) are essential for accurate determination of global incidence in order to inform policy and programs on interventions to reduce the risk of premature labor and delivery.^[30] No data have been published on the global incidence of preterm birth. Preterm birth rates available from some developed countries, such as the United Kingdom, the United States and the Scandinavian countries, show a dramatic rise over the past 20 years.^[30] Changes in the definitions of fetal loss, stillbirth and early neonatal death may also have contributed to the substantial increases in preterm birth rates recorded in developed countries in the past two decades.^[31]

In addition to determining the causes of preterm birth, a better understanding of the events leading to deaths in preterm infants is needed. Similar to term infants, preterm infants may suffer from multiple morbidities, such as sepsis, asphyxia, respiratory distress syndrome, major congenital malformations, and metabolic disorders ^[32, 33]. In developing countries, accurate and complete population data and medical records usually do not exist. Furthermore, estimates of the rate of preterm birth in developing countries are influenced by a range of factors including varying procedures used to determine gestational age, national differences in birth registration processes, heterogeneous definitions used for preterm birth, differences in perceptions of the viability of preterm infants and variations in religious practices such as local burial customs, which can discourage the registering of preterm births^[34]. Preterm birth (PTB, <37 gestational weeks) has become an increasingly important global health concern, because of its association with infant mortality.^[35]

Materials and Methods

This Prospective study over 12 months period was conducted on 174 premature babies admitted in the nursery of Tobruk Medical Center from January 1st2017 to January 1st 2018.

Inclusion criteria: This study includes all preterm newborns admitted in the nursery.

No exclusion criteria.

Interventions: All mothers were subjected to complete history file including age of gestation from the last menstrual period or ultrasound in the first trimester, history of urinary tract infection, vaginal infection, symptoms of chorioaminionitis, as foul smelling vaginal discharge, fever and abdominal Pain, time of onset and duration of premature rupture of membranes & administration of antenatal corticosteroids. All newborns were subjected to complete history file thorough clinical examination including vital signs (Heart rate, respiratory rate and blood pressure) anthropometric measurements (birth weight, length and skull circumference), mode of delivery and APGAR score. Detailed clinical examination of all body systems, feeding history include types and onset of feeding. **Laboratory:** All newborns were subjected to: random blood sugar, serum electrolytes as Na, K, Ca, renal & liver function when needed. Complete blood picture: a sample collected through venipuncture from all preterm neonates. **Radiology:** Chest X-ray for preterm newborns with respiratory distress. Other investigations as cranial and abdominal ultrasonography were done as needed. **Statistical analysis (Using standard computer program):** The description of data was in the form of mean (\pm)SD for quantitative data, and frequency and proportion for qualitative data.

Results and Discussion

This study performed on 174 preterm newborns, (52,2% males and 47,7% females), with gestational age arranged from (28-36 weeks) and birth weight varied from (670-2900 grams). Duration of admission arranged from (1-40 days).

Table:(1)Demographic Data of Premature Babies

Demographic data	Cases (174)	
	No.	%
	Mean \pm SD	
Gestational age in weeks	32.10	
Birth weight by grams	1876.173	

Profile of Prematurity in Tobruk Medical Center Risk Factors, Complications, and Outcome 2017-2018

Gender	Male	91	52.2%
	Female	83	47.7%

Table (2) Risk Factors for Preterm Delivery

Risk Factor	Percentage %
Maternal	48%
Fetal	24%
Placental	%1
Idiopathic	20%

Maternal Risk Factors for Prematurity **Table (3)**

Maternal risk factor	Number	Percentage%
PROM	48	27.5%
UTI	41	23.5%
Vaginal infection	23	13.2%
Idiopathic	23	13.2%
Bleeding	22	12.6%
HTN	19	10.9%
DM	17	9.7%
Other causes	2	1.1%
HELLP	1	0.5%
Preceptitatedlabour	1	0.5%

Complications among Studied Premature Newborns **Table (4)**

Complication	Number	Percentage%
RDS	59	33.9%
Sepsis	40	22.9%
Apnea	31	17.8%
Metabolic	15	8.6%
Congenital malformation	12	6.8%
CNS	12	6.8%
GIT	1	0.5%

Premature Studied Outcome of **Table(5)**

Outcome	Number	Percentage%
Discharged	126	72.4%
Died	44	25.2%
Transferred	4	2.2%

Table Abbreviations:UTI:Urinary Tract Infection, DM: Diabetes Mellitus, HTN: Hypertension, HELLP: Hemorrhage Elevated Liver enzyme Lower Platelet, PROM: Premature Rupture Of Membrane, RDS: Respiratory Distress Syndrome, CNS: Central Nervous System, GIT: Gastrointestinal Tract.

The complications were respiratory(51.7%), metabolic(8.6%),gastrointestinal(0.5%), sepsis (22.9%) and central nervous system(6.8%). This disagree with a previous study reported thatIVH, BPD, ROP,NEC , pneumothorax and DIC were common complications in the neonatal unit that could responsible for a large number of morbidity and mortality.^[36]

This study found the incidence of prematurity 22.8% in Tobruk Medical Center 2017, while the incidence in US was 12,8% in 2006 and decline to 11.73% in 2011. Italy saw a modest increase from 5,8% in 1990 to 6.5% in 2010, consistent with other European countries.

While a previous studyestimated that in 2005, 12.9 million births, or 9.6% of all births worldwide, were preterm. Approximately 11 million (85%) of these preterm births were concentrated in Africa and Asia, while about 0.5 million occurred in each of Europe and North America (excluding Mexico) and 0.9 million in Latin America and the Caribbean.^[37] The highest rates of preterm birth were in Africa and North America (11.9% and 10.6% of all births, respectively), and the lowest were in Europe (6.2%).Preterm babies contribute 31.06% of the total admissions, 10.18% of the total admissions were preterm babies.^[38]

In general, gestational diabetes mellitus has been found to be associated with medically indicated premature labor and lower gestational age.^[39, 40] However, in our study, we found that the frequency of gestational diabetes was lower in mothers who had premature birth compared to controls. Similar negative associations between pregnancy outcomes and gestational diabetes have been also reported by few recent studies ^[41, 42]. These discrepancies can be attributed to the possibility of good glycemic control of women with gestational diabetes in these studies through good obstetric monitoring, balanced diet and insulin treatment, factors which have not been specifically assessed in our study ^[43, 44]. A recent study demonstrated that although presence of uncontrolled gestational diabetes and obesity during pregnancy is associated with negative prognosis, their effects can be counterbalanced by the application of glycaemic control combined with controlled weight gain ^[45]. Furthermore, comparison with previous studies is inherently difficult as the effect of gestational diabetes on perinatal outcomes is influenced by racial factors ^[46], the different diagnostic criteria for gestational diabetes that are used in each country, the heterogeneity of study populations and differences in the detection programs that are applied in each country, which eventually result in a wide range of gestational diabetes frequency from less than 1% to above 10% across the world.^[43] UTI in pregnancy was associated with premature birth. This was similar to the findings of studies in Iran and Nigeria.^[48, 47] Results of the current study demonstrated that after controlling for confounders, prolonged PROM, PIH and APH

remained significantly associated with preterm birth. These findings are similar to those reported in other studies. PROM has been associated with chorioamnionitis which may be subclinical and chlamydial vaginitis. Microorganisms that cause bacterial vaginosis can easily ascend in prolonged PROM and cause intrauterine infections. It is postulated that subclinical chorioamnionitis and other unidentified infections may trigger the release of inflammatory mediators such as interleukin 1 leading to release of prostaglandins from the uterine decidua that ultimately induce preterm labor. PIH which is one of the major obstetric complications was significantly associated with PTB in the current study. Though the pathophysiology of this condition remains poorly understood, uteroplacental ischemia is a plausible explanation for the poor pregnancy outcomes associated with PIH including preterm delivery and low birthweight. Furthermore, PIH is a common reason for indicated preterm deliveries and this may explain its association with PTB even though this may not be causal in nature. Like PIH, APH is also a major contributor to indicated preterm deliveries whether vaginally or operatively without necessarily having a temporal relationship with PTB ^[49, 48, 47] This study identifies mothers with prolonged PROM, PIH and APH as a high risk group for PTB. These are largely modifiable factors and should form a good basis for prenatal interventions and better management geared towards reducing the burden of PTB. The best intervention for prevention of spontaneous preterm birth in women with risk factors is still unclear.^[50] However, simple cost-effective and research-supported interventions are available to reduce deaths among premature babies;

For example, the promotion of early and exclusive breastfeeding, handwashing, and innovative skin-to-skin care.^[51,52] The prevention of hypothermia and management of respiratory distress syndrome, neonatal pneumonia, sepsis, and hyperbilirubinemia are evidence-based interventions that can greatly increase the survival of small and sick neonates^[51]. Globally, 4 out of 5 newborn deaths result from three preventable and treatable conditions, primarily prematurity.^[52,53] Prematurity is often complicated by infections and respiratory complications, which commonly leads to the death of preterm infants.^[54] These complications can be prevented and treated by skilful and high-quality postnatal care of preterm neonates, especially during the first week of life. The identification of warning signs during pregnancy is an important goal of antenatal care.^[55] Preeclampsia, diabetes, and hypertension, whether pre-existing or gestational, are maternal medical conditions that commonly predict preterm birth^[56], (a finding that is similar to those of this study).

Conclusion

Addressing the major risks associated with the incidence and the mortality of preterm neonates is a priority to reduce the global burden of preterm birth, along

with identifying areas that are crucial to improve the health care systems across countries. The main result of this study found the incidence of prematurity is still high in Tobruk Medical Center. The main risk factor for prematurity was maternal and the main maternal risk factor was PROM and UTI. The main complication was respiratory followed by sepsis. 25% of admitted preterm babies were died. Prevention of prematurity by prevention and control of maternal risk factors is very important target and needs more effort and planes. Plane for prevention and treatment of complication of premature babies to improve outcome is the main target in our center.

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Multidrug Resistant Gram Negative Bacteria Isolated from housefly (*MuscaDomestica*) in Al-Jallaa Hospital, Benghazi

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Abstract

*Recently a number of insect vectors have been identified as potential carriers of antibiotic resistant bacteria, these vectors include house flies which are considered to be the insects with the most in close contact with human beings; where they carry human pathogenic bacteria on the external areas of their bodies or in their digestive tracts. An analytical, descriptive cross-sectional study was conducted to examine bacterial contaminants of house flies *Muscadomestica* and determined the resistance of these bacteria against antibiotics that are most commonly used. The study was performed from 20th of December 2016 to 22nd of March in 2017 in Al-jalla hospital in the city of Benghazi. A total number of 100 house flies were collected from four places, 25 flies from each one. The body surface of house flies was washed using the sterile normal saline and cultured on MacConkey and blood agar. Antibiotic sensitivity testing was performed by Kirby-Bauer disc diffusion methods on Mueller Hinton agar. The most prevalent types of bacteria was *Klebsiella Pneumonia* and *Escherichia Coli*, in addition to *Pseudomonas aeruginosa*, *Acinetobacter SPP*, *Proteus mirabilis* and *Enterobacterspp*. And a high level of multi-drug resistance pattern of the isolated pathogens was demonstrated. We concluded that the house fly could play a vector role for infections in the*

hospitals. Environmental control measures of these vectors are required to reduce the risk of infection

Key words: *House fly, Multi drug resistance, Hospitals, Benghazi.*

INTRODUCTION

House flies are involved in mechanical transmission various pathogens from one place to another, exposing humans to the risk of various diseases (1,2). They are able to transport pathogens by binding them in the mouth, body surface, foot, wings, etc. (3). Moreover, they are always in direct contact with sewage and garbage, where the transfer of these disease-causing by flies home from contaminated areas to the place where human beings live (4). House flies have been identified by the US Food and Drug Administration (FDA) as a major agent in the spread of diseases such as cholera, shigellosis (5). Besides, it has recently been recognized that house flies can act as potential carriers of the bird flu virus, a serious threat to human health, livestock and livestock worldwide (6).

Antibiotic resistance occurs when bacteria change in response to the use of the medications, leading to higher medical costs, prolonged hospital stays, more intensive care required and increase mortality (3). Bacteria resistant in modern medicine, only a few insect species have been screened for them, i. e .antibiotic – resistant human pathogens were found to be carried by flies and cockroaches in hospitals and other urban settings. (7-8-9-10). A study, suggesting that the insect gut may also serve as a mixing ground for bacterial genes (11). Control of the housefly allows reduction of the transmission of these pathogenic bacteria in a hospital and in housing in general. However, the susceptibility or resistance of the bacteria found on these insects in the geographical area would be relevant to a patient who presents an infection.

However, till now, there are no data available on the drug resistance pattern of the fly associated microorganisms in Benghazi. Therefore, the aim of our study was to investigate the types and prevalence of bacteria living on the body surface of house flies from Al Jallaa, Benghazi. Another aim was to investigate if these isolated bacteria are antibiotic resistant.

MATERIALS AND METHODS

House fly collection

Our study was an analytical descriptive cross-sectional study, and was performed from 20 December to 22 March in 2017 in Al-Jallaa hospital. A total number of 100 house flies were collected from four selected sites.

The adult house flies were captured by a sterile nylon net and immediately shipped to the microbiology laboratory. Each one of the collected flies was

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transferred in sterile tubes with 1ml of dextrose. And shaken with a vortex machine for two minutes to wash off any bacteria that is on the external body of insects. Then centrifuged at 2000 rpm for five minutes.

The files were morphologically identified in insect laboratory at public health faculty, university of Benghazi.

Bacteriological analysis

After centrifugation, the deposited part was then cultured in MacConkey agar and blood agar (Merck, Germany) and incubated in 37°C for 24 hours (12). All biochemical tests were used to identify each bacteria, such as Triple Sugar Iron (TSI), urea media and citrate media. The resistance of the isolated bacteria was determined using the disk diffusion method (13).

RESULTS

The Percentage of bacteria isolated from 100 house flies is shown in figure 1. All of the bacteria isolated (69.22 %) were Gram-negative bacilli. The most frequent bacteria isolated from houseflies and coming from the four districts of the hospital were *E. coli* and *Klebsiella spp.*

Types of bacteria isolated from the flies found in four places in the hospital are shown in the table 1. As shown, most types of bacteria were isolated from the garage and kitchen, while only two types of bacteria isolated from the department of neurosurgery.

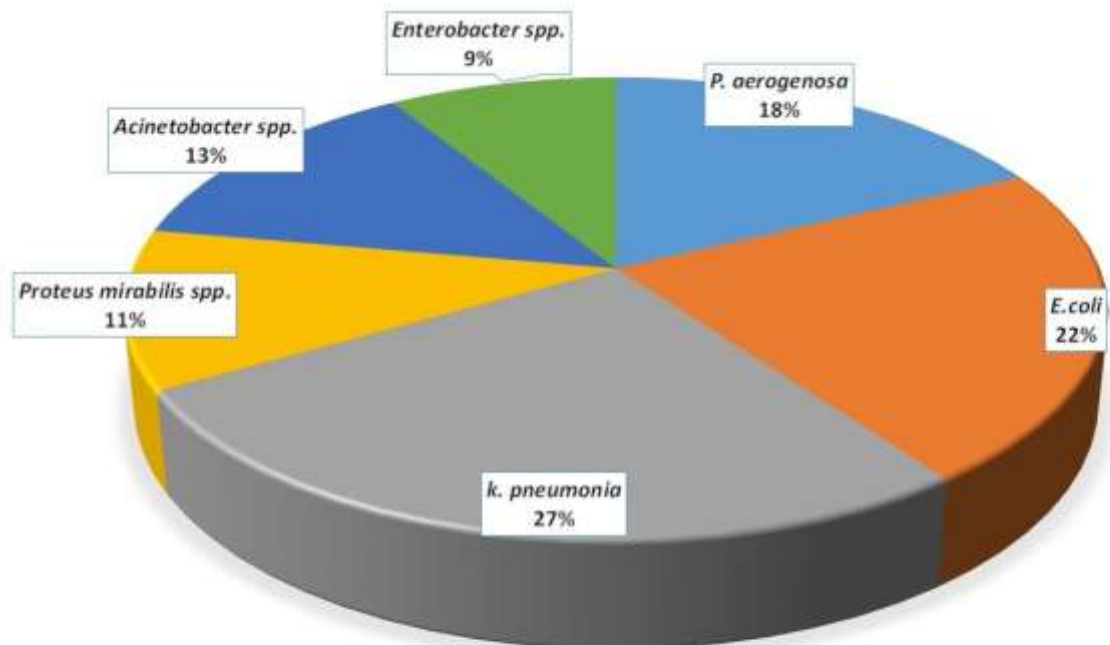


Figure 1:Percentage of bacteria isolated from the external body surface of *Muscadomestic* collected from the hospital

Antibiotic resistance was done for all the isolates against 10 disk antibiotics and multidrug resistant pattern was in nearly all isolates as presented in table Overall, most of the isolated bacteria were resistant to Augmentin, Azithromycin, Tetracycline and Gentamycin. On the other hand, all the isolates were sensitive to the Imipenem and Amikacin

Table 1: Distribution of bacteria isolated from house flies in four places, in the Al-Jallaa hospital

Collection Sites	Isolated bacteria	Percentage of growth
Kitchen (n= 25)	<i>E.coli</i> , <i>EnterobacterSpp</i> , <i>Proteus mirabilis</i> , <i>k. pneumonia</i> and <i>P. aerogenosa</i>	20 %
Garbage (n= 25)	<i>E.coli</i> , <i>EnterobacterSpp</i> . <i>Proteus mirabilis spp</i> , <i>k. pneumonia</i> , <i>P. aerogenosa</i> and <i>Acinetobacter spp</i> .	33.84 %
Burn and plastic surgery (n= 25)	<i>E.coli</i> , <i>k. pneumonia</i> , <i>P. aerogenosa</i> and <i>Acinetobacter spp</i> .	9.23 %
Neurosurgery (n= 25)	<i>E. coli</i> and <i>k. pneumonia</i>	6.15 %
Total percentage of growth		69.22 %

Table 2: Percentage ofresistance of each pathogen to various antibiotics

Isolated bacteria	Ak	IPM	SXT	AMC	CTX	CAZ	AZM	TE	CIP	CN
<i>P.aerogenosa</i>	0%	0%	38%	88%	25%	0%	38%	50%	38%	25%
<i>E. coli</i>	0%	0%	50%	70%	0%	0%	60%	10%	0%	0%
<i>K. pneumonia</i>	8%	0%	25%	83%	17%	25%	50%	33%	0%	8%
<i>Proteus mirabilis</i>	0%	0%	60%	0%	0%	0%	80%	40%	0%	20%
<i>Acinetobacter Spp.</i>	0%	0%	67%	0%	33%	17%	50%	50%	50%	50%
<i>Enterobacter Spp.</i>	0%	0%	50%	0%	0%	0%	25%	75%	0%	75%

AK = Amikacin, IPM=Imipenem , SXT = Trimethoprim, AMC = Amoxicillin-ClavulanteAcide –Sulfamethoxazol, CTX =Cotrimoxazole, , CAZ=Ceftazidime, AZM=Azithromycin , TE= Tetracycline, CIP = Ciprofloxacin and CN=Gentamycin.
SPP. = Species

DISCUSSION

Due to eating habits of flies, especially house flies which feed on animal products, all kinds of food, particularly sweet things and unprotected materials. Therefore, they are responsible for the transferring of pathogens from contaminated places. Thus, in the last decade, attention has been paid to the house flies as a potential mechanical vector of disease transfer (14). Levine et.al demonstrated that the types of bacteria that may be transported by house flies have varied from country to country (15). Our results are in accordance with the reports of Graczyk et al.

Which highlights the importance of house flies in carrying various pathogenic bacteria particularly *K. Pneumoniae* the most important at USA (16). Furthermore, another study indicated that the bacteria type most transmitted by house flies collected from various food products was *E. coli* (14). This finding confirms what we observed in the present study. Moreover, another study in Iran reported nearly all the types of bacteria in our study (17). Anyway the most important point is that all these studies have put emphasis on the fact that house flies are an important carrier of pathogenic bacteria.

The other objective of the current study was to measure the resistance of isolated bacteria to the commonly used antibiotics. The results of our study showed that the resistance of isolated bacteria from house flies in the Aljallaahospital was high. The Gram-negative bacteria that were isolated were multiple resistant to most of the antibiotics used in the hospital. All Gram negative bacilli isolated in this study were susceptible to Imipenem and Amikacin.

Carbapenems which were exclusively used in hospitals, while the aminoglycoside antibiotics are only preferably used there. These results confirm the study of Liu Y, et al., who reported that all bacteria were resistant to such antibiotics as amoxicillin, tetracycline, Cephalothin, and Cefuroxime, while sensitive to Meropenem and Imipenem (18). Recent studies reported that the horizontal transport of resistance genes and virulence can occur in the gastrointestinal tracts of the house fly (19). Furthermore, another study shows that plasmids can mediate the horizontal transfer of resistant genes in the gastrointestinal tracts from domestic flies (20).

CONCLUSION

Our study found that flies collected from hospital environments carried multi-drug resistant pathogens, which are opportunistic to humans. The most prevalent types of bacteria were *Klebsiella Pneumonia* and *Escherichia Coli*, in addition to *Pseudomonas aeruginosa*, *Acinetobacter SPP*, *Proteus mirabilis* and *Enterobacterspp*. Accordingly, it is necessary to control such flies successfully.

Most importantly, hospital environments must be controlled using effective procedures.

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