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Assessment of Mothers' Knowledge of the Health Benefits of Olive Oil in Benghazi, Libya

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ABSTRACT

Olive oil contains a wide range of essential nutrients and bioactive compounds that contribute to its recognized health-promoting properties. Its regular intake has been consistently associated with a reduced risk of cardiovascular diseases and other chronic health conditions. These beneficial effects are primarily attributed to its rich composition of monounsaturated fatty acids, antioxidant phytochemicals, vitamins, and minerals. This study aimed to assess mothers' knowledge regarding the medical uses and health benefits of olive oil. A structured questionnaire was administered to a sample of 82 mothers, including both employed mothers and housewives, residing in Benghazi, Libya. The questionnaire comprised 26 indicators designed to evaluate participants' awareness of olive oil's therapeutic applications, appropriate methods of use, potential interactions with medications, and its perceived benefits in conditions such as indigestion, joint inflammation and pain, diabetes, and dyslipidemia.

Results showed varied levels of knowledge, significantly associated with age and education. Most participants (82.9%) were employed. Nearly half (48.8%) considered herbal medicine a form of alternative treatment. About 51.2% believed olive oil helps manage central nervous system disorders such as nerve pain and headaches. Only 12.2% acknowledged potential side effects. Moreover, 57.8% reported benefits for chronic illnesses, including diabetes, rheumatoid arthritis, and hypertension. Less than half (43.9%) believed olive oil is suitable for everyone. However, 81.7% recommended its use for hypertension and cholesterol regulation.

تقييم معرفة الأمهات بالاستخدامات الصحية لزيت الزيتون في مدينة بنغازي

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الكلمات المفتاحية:

ارتفاع ضغط الدم
التهاب المفاصل
الطب البديل
الكوليسترول
زيت الزيتون.

الملخص

يحتوي زيت الزيتون على العديد من العناصر الغذائية والمركبات الفعالة التي لها فوائد صحية هامة، مثل الدهون الصحية غير المشبعة الهامة لصحة القلب، والمعادن الفيتامينات، ومضادات الأكسدة، لذا يرتبط استهلاك زيت الزيتون بانخفاض خطر الإصابة بأمراض القلب والأوعية الدموية، وغيرها من الأمراض. يهدف هذا البحث إلى تقييم مستوى معرفة الأمهات بالاستخدامات الطبية والفوائد الصحية لزيت الزيتون، من خلال توزيع استبيان على 82 عينة من الأمهات (ربات البيوت، والعاملات) في مدينة بنغازي، شملت الدراسة 26 مؤشراً منها معرفة الأمهات باستخدامات زيت الزيتون في المجال الطبي، طريقة الاستخدام المثلّي لزيت الزيتون، فوائد زيت الزيتون لعسر الهضم، وفي التهابات الأم والمفاصل، لمرضى السكر والكوليسترول، أظهرت النتائج تفاوتاً في مستوى المعرفة بين الأمهات، حيث تبين أن الفئة العمرية والتعليمية تلعب دوراً مهماً في مدى وعيهم بفوائد زيت الزيتون، بعض المشاركات يستخدمه بشكل يومي، معظم أفراد عينة الدراسة (82.9%) كنّ عاملات، وحوالي (48.8%) من عينة الدراسة (48.8%) ذكرن أن الطب بالأعشاب هو طب بديل، أكثر من نصف عينة الدراسة (51.2%)

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ذكر أن زيت الزيتون مفيد في علاج أمراض الجهاز العصبي المركزي (الأم الأعصاب والصداع)، نسبة قليلة من عينة الدراسة (12.2٪) ذكر أن لزيت الزيتون آثار جانبية، وكان أكثر من نصف عينة الدراسة (57.8٪) ذكر أن زيت الزيتون مفيد في الأمراض المزمنة (السكري، التهاب المفاصل الروماتويدي، وارتفاع ضغط الدم)، أقل من نصف عينة الدراسة (43.9٪) ذكر أن زيت الزيتون مفيد لجميع الناس، معظم عينة الدراسة (81.7٪) نصحن الأشخاص الذين يعانون من ارتفاع ضغط الدم باستخدام زيت الزيتون، كما أن معظم عينة الدراسة (81.7٪) ذكر أن هناك علاقة بين زيت الزيتون والكوليسترول.

1. Introduction

The health and therapeutic benefits of olive oil were first mentioned by Hippocrates, the father of medicine, who referred to it as "the great therapeutic." He recommended olive oil for curing ulcers, cholera, and muscular pains [1]. In Mediterranean civilizations, olive oil was historically utilized for lamp fuel, religious rituals (e.g., anointing royalty and warriors), medicinal ointments, cosmetic applications (skin and hair care), soap production, and embalming practices. Culinary consumption was rare in ancient records, with its transition to a dietary staple occurring later due to cultural and economic changes [2]. Olive oil is a vegetable oil obtained by pressing olive fruit. Olive trees are primarily cultivated in the Mediterranean area, which is why olive oil is a central component of the Mediterranean diet. This diet has numerous health benefits, including a decreased risk of heart diseases, stroke, breast and lung cancer, as well as anti-inflammatory effects. The main active ingredients of olive oil are monounsaturated fatty acids, such as oleic acid, and phenolic compounds, such as oleuropein, hydroxytyrosol, and tyrosol, along with vitamins like vitamin E and carotenoids [3]. Olive oil has the advantage of being rich in monounsaturated fatty acids, making it very useful for cardiovascular health. It does not contain cholesterol and helps lower total blood cholesterol, triglycerides, and LDL levels while maintaining HDL levels. This improves major cardiovascular risk factors, including lipoprotein profile, blood pressure, glucose metabolism, and antithrombotic profile [4]. Additionally, olive oil contains polyphenols, such as oleuropein, hydroxytyrosol, and tyrosol, which exhibit antimicrobial activity. These compounds disrupt fungal cell membranes and inhibit enzyme activity, and interfere with fungal adhesion and biofilm formation [5]. Olive oil plays an important role in the prevention of osteoporosis. Diets rich in olive oil may help prevent memory loss in healthy elderly individuals. Observational studies have shown that the intake of monounsaturated fats found in olive oil may be protective against serious cognitive decline and Alzheimer's disease [6]. Populations consuming a typical Mediterranean diet have lower cancer incidence rates. Additionally, a Mediterranean diet enriched with olive oil has been linked to improved cognitive function in older adults [7].

The natural chemical oleocanthal, found in olive oil, acts as an anti-inflammatory painkiller similar to ibuprofen [8]. Olive oil is associated with healthier aging and increased longevity, and it has a positive influence on depression [9]. Olive oil contains antioxidants such as vitamin E, carotenoids, and phenolic compounds. Phenols inhibit platelet aggregation and act as anti-inflammatories. Oleuropein, a phenolic compound, encourages the formation of nitric oxide, which is a powerful vasodilator and exerts a strong antibacterial effect, protecting against damage from free radicals and the formation of cancer. Olive oil decreases the risk of breast and bowel cancer [10]; [11]. Moreover, olive oil contains oleic acid, which lowers the production of prostaglandins derived from arachidonic acid, a compound that plays a significant role in tumor production and development [12]. Finally, olive oil has a favorable effect on the skin by reducing the incidence of melanomas [13]. Regular consumption of olive oil decreases both systolic (maximum) and diastolic (minimum) blood pressure [14]. An olive oil-rich diet can prevent or delay the onset of diseases, improve blood sugar control, and enhance insulin sensitivity. Experience shows that there is less obesity among Mediterranean populations, who consume the most olive oil. An olive oil-rich diet leads to greater and longer-lasting weight loss than a low-fat diet [15].

Olive oil intake enhances the immune system's ability to fend off external attacks from microorganisms, such as bacteria and viruses,

and may be effective in the treatment of some autoimmune diseases [3]. Additionally, olive oil reduces the risk of the reflux of food and gastric juices from the stomach to the esophagus (antiemetic) [16]. Olive oil stimulates the digestion of lipids by emulsifying them with bile, which also helps prevent the onset of gallstones [17]. The consumption of olive oil, particularly extra virgin olive oil (EVOO), appears to have protective effects against pregnancy complications such as gestational diabetes, preeclampsia, and abnormal birth weights [18].

Oleic acid also seems to exert a positive influence on growth, bone mineralization, and development during infancy [19]. An analysis of 19 case-control studies from 1990 to 2011 suggests that higher olive oil consumption is linked to a reduced cancer risk, particularly for breast and digestive system cancers, although the specific protective mechanisms remain to be fully understood [20]. The Mediterranean diet, along with extra virgin olive oil (EVOO), shows protective effects due to bioactive compounds like polyphenols. EVOO exhibits antioxidant, anti-inflammatory, and anticancer properties, modulating cancer hallmarks and offering potential for prevention and therapy [21]. Olive oil contributes to the development of the brain and bones in children. Daily use of about 40 grams of olive oil markedly reduces the dosage of blood pressure medication by approximately 50% in hypertensive patients. Olive oil is recommended as the primary fat source for managing hypertension due to its high omega-3 fatty acids and antioxidant polyphenols, benefiting both healthy individuals and those with heart conditions [22]. Hydroxytyrosol is the most potent phenolic antioxidant in olive oil and is associated with an increase in plasma antioxidant capacity [23]. Daily intake of about 40 grams of extra virgin olive oil, in combination with a daily supplement of 16 grams of fish oil for three months, leads to a less atherogenic plasma lipid profile in patients with peripheral vascular disease [24]. However, regular intake of high doses of olive oil can lead to obesity due to its caloric content. So far, a small but substantial number of studies investigating the effects of high polyphenol extra virgin olive oil (HP-EVOO) on metabolically unhealthy obesity have been completed, yet the results remain unclear [25]. The importance of this study lies in its potential to benefit health education programs, ultimately improving the health of children and the population in general.

Aims of This Study:

1. Estimate the knowledge of mothers regarding the medical uses and health benefits of olive oil.
2. Study variables that may influence this knowledge, such as age, education, and occupation.

Material and Method:

This study is a descriptive cross-sectional survey conducted among mothers in Primary Health Care Centers in Benghazi, Libya. The study focuses on the knowledge of mothers about the medical uses of olive oil. It was a randomized trial involving 82 mothers.

The study took about six months, and the survey contained approximately 26 indicators. The questions addressed the main effects of olive oil on heart diseases, its relationship with cholesterol, the effect of olive oil on the skin, its association with cancer, and its impact on diabetic patients. The mothers answered the questions in the survey, and we collected data from their responses, which were analyzed using a statistical program.

Results:

The total number of participants in the study was 82, with most of them (79.3%) being over 30 years old, as shown in Table 1. The distribution of the study group according to mothers'

knowledge about who uses olive oil more—females or males—and their job status is presented below.

Tab 1. Distribution of the study sample according to mothers' knowledge.

| Job | Who are the most using of olive oil | | Total |
|--------------|-------------------------------------|---------------|-----------|
| | female | With other | |
| Housewife | 14 (100%) | 0 | 14 |
| Employed | 13 (19.1%) | 55 (80.9%) | 68 |
| Total | 27 | 55 | 82 |

$X^2 = 34.390$ $df = 1$ $P = 0.00$

There is a statistically significant difference ($P = 0.00$) between housewives and employed women in olive oil use. Fourteen housewives use it by themselves, while only 13 employed women do so. In contrast, 55 employed women (80.9%) use olive oil with others.

Tab 2. Distribution of study group according to knowledge of mothers about the possible routs for application of olive oil and job.

| Job | Routs for application of olive oil | | | Total |
|--------------|------------------------------------|-------------------|---------------|-----------|
| | As drink | Topically on skin | Both of them | |
| Housewife | 8 (57.1%) | 5 (35.7%) | 1 (7.2%) | 14 |
| Employed | 0 | 4 (5.9%) | 64 (94.1%) | 68 |
| Total | 8 | 9 | 65 | 82 |

$X^2 = 59.350$ $df = 2$ $P = 0.00$

The results revealed a statistically significant difference in the methods of olive oil use between housewives and employed women. Housewives tend to use olive oil either orally or topically as separate practices, whereas the majority of employed women utilize it through a combined approach, using it both orally and topically. These findings indicate that employment status significantly influences both the quantity and method of olive oil use. Housewives are more inclined toward traditional and individual usage patterns, while employed women adopt integrated methods. Additionally, approximately 48.8% of the participants had completed their education up to the university level.

Most of study groups (82.9 %) were employed as shown in figure 1.

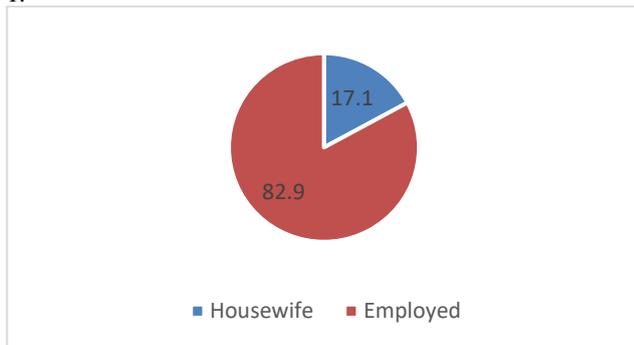


Fig 1. The Proportional Distribution of Housewives and Employed

Near half (48.8 %) of study group said that herbal medicine is alternative medicine as shown in table 3.

Tab 3. Participants' Perspectives on the Use of Herbal Medicine as a Form of Alternative Medicine

| Category | Frequency | Percent |
|--------------------------------|-----------|------------|
| alternative medicine | 40 | 48.8 |
| In the pharmaceutical industry | 17 | 20.7 |
| many benefits | 25 | 30.5 |
| Total | 82 | 100 |

More than half of study group (51.2 %) said that olive oil useful in treatment of CNS diseases (nervous pain and headache) as shown in table 4.

Tab 4. Participants' Belief in The Effectiveness of Olive Oil

for Treating Nervous System Diseases.

| Diseases | Frequency | Percent |
|---------------------------|-----------|------------|
| CNS diseases | 42 | 51.2 |
| Rheumatism, Skin diseases | 40 | 48.8 |
| Total | 82 | 100 |

Fewer of study group (12.2 %) said that olive oil has side effect, most of study groups (87.8 %) are used olive oil for medical purpose as shown in figure 2.

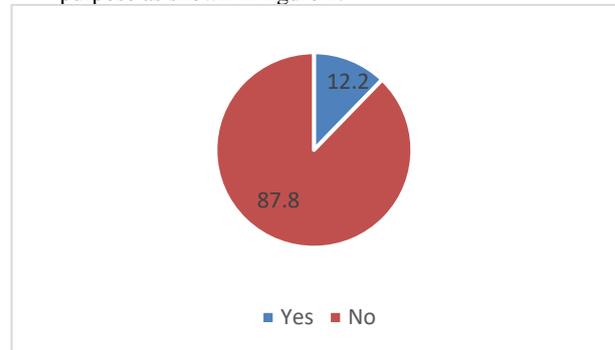


Fig 2. presents responses about olive oil side effects

More than half of study group (57.8 %) said that olive oil is useful in chronic diseases (diabetes, rheumatoid arthritis and hypertension) as shown in table 5.

Tab 5. Belief in the Usefulness of Olive Oil in Chronic Diseases

| Medical Use | Yes (Frequency) | Yes (%) | No (Frequency) | No (%) | Total |
|----------------|-----------------|---------|----------------|--------|-------|
| Blood Pressure | 67 | 81.7 | 15 | 18.3 | 82 |
| Diabetes | 53 | 64.6 | 29 | 35.4 | 82 |
| Arthritis | 80 | 97.6 | 2 | 2.4 | 82 |

Less than half of study group (43.9 %) said that olive oil is useful for all people as shown in table 6.

Tab 6. Percentage of Those Who Said Olive Oil Is Beneficial for All People

| Category | Frequency | Percent |
|--------------|-----------|------------|
| Older | 20 | 24.4 |
| Children | 18 | 21.9 |
| All | 36 | 43.9 |
| Women | 8 | 9.8 |
| Total | 82 | 100 |

Most of study groups (81.7 %) advice people who have hypertension to use olive oil as shown in figure 3

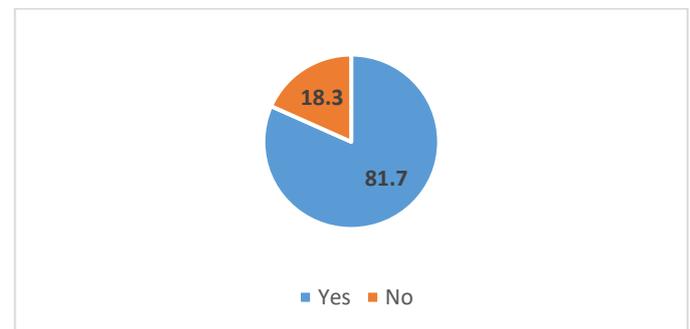


Fig 3. Percentage of participants who recommend using olive oil for people with hypertension.

Most of study group (81.7 %) said that there's a relationship between olive oil and cholesterol as shown in figure 4.

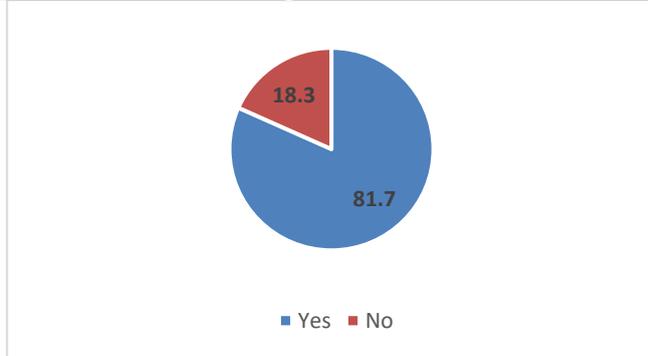


Fig 4: Belief that there is a relationship between olive oil and cholesterol

Discussion:

This study used a survey to assess mothers' knowledge of the medical uses and health benefits of olive oil and to explore the potential influence of demographic factors on their level of awareness. A significant number of participants were aware of olive oil's therapeutic properties, reflecting the growing recognition of its health benefits across diverse populations. This awareness aligns with the broader understanding in the literature, where olive oil has been recognized for its wide range of health-promoting effects, particularly in the context of cardiovascular health, cancer prevention, and anti-inflammatory properties. In this study, mothers showed significant awareness. The participants who were educated up to the college level exhibited greater awareness of health-related topics, including herbal medicine. A significant number of mothers indicated that they view herbal medicine as a form of alternative medicine, which aligns with the WHO definition that includes herbal medicine as part of complementary and alternative medicine [25]

1. Health Benefits of Olive Oil

(Lopez-Miranda et al., 2010) The study showed that many mothers believe olive oil helps manage chronic illnesses such as diabetes, arthritis, and high blood pressure. These findings are consistent with existing scientific evidence. Studies have confirmed that extra virgin olive oil (EVOO) can support cardiovascular health, improve blood pressure, and aid in glucose regulation [13]; [4]. The high level of monounsaturated fats especially oleic acid supports a healthy cholesterol profile, which lowers the risk of heart disease [3].

Participants also associated olive oil with cancer prevention, particularly for breast and digestive system cancers. This reflects current research showing that olive oil contains compounds with antioxidant, anti-inflammatory, and anticancer properties [20] One of these compounds, oleocanthal, has anti-inflammatory effects similar to ibuprofen and may help slow the development of cancer [8]

Many mothers reported using olive oil for skin-related problems. This practice is supported by evidence that EVOO has therapeutic effects on various skin conditions. Oleocanthal in olive oil has antibacterial effects, which help fight infections such as *Staphylococcus aureus*. Olive oil also shows antifungal activity against *Candida albicans*, a common cause of athlete's foot. Its anti-inflammatory properties can relieve irritation and inflammation in chronic skin conditions like eczema and psoriasis.

Another finding from the study was the belief that olive oil supports brain health and reduces the risk of cognitive decline, including Alzheimer's disease. This aligns with findings by [6], who showed that diets rich in olive oil may protect memory and slow cognitive deterioration in older adults. Olive oil has also been linked to healthier aging, a lower risk of osteoporosis [7], and reduced symptoms of depression [9].

2. Knowledge Gaps and Misconceptions

Interestingly, a small portion of the study group (12.2%) mentioned the possibility of side effects from olive oil. While olive oil is generally considered safe, excessive consumption can lead to an increase in calorie intake, potentially contributing to obesity, which is a known risk factor for metabolic disorders [24].

This finding suggests that some participants may have limited knowledge about the caloric density of olive oil and its role in weight management.

3. Influence of Socioeconomic Factors on Knowledge

The study found a significant correlation between the level of education and awareness of olive oil's health benefits. A higher percentage of participants with university education were more likely to recognize the diverse therapeutic uses of olive oil. This aligns with previous studies suggesting that education plays a crucial role in enhancing awareness of natural remedies and their effects [15]. Additionally, the role of employment status and the primary use of olive oil (as a topical or oral remedy) further reflected socioeconomic influences on health practices.

4. Implications for Health Education Programs

This study highlights the importance of including olive oil education in health programs, especially in areas with limited awareness. The findings suggest that increasing knowledge about the various benefits of olive oil could improve public health, particularly in managing chronic diseases and promoting longevity. The positive health outcomes associated with olive oil consumption provide a solid foundation for developing public health strategies that prioritize the quality of dietary fats over their quantity, especially in Mediterranean and similar diets.

Conclusion

In conclusion, the study confirms existing research that emphasizes olive oil as a key component of a healthy diet, with significant therapeutic properties. However, there is still a need to address misconceptions about its calorie content and potential side effects. Health education programs should focus on increasing public awareness, particularly among mothers, to fully harness the potential of olive oil in improving public health.

Recommendations:

- Create smart apps and tools to help mothers understand the importance of healthy foods and their nutritional value.
- Encourage collaboration between nutrition, medical, and tech experts to develop practical solutions that improve public health and promote sustainability.
- Build an intelligent research platform that uses AI to gather health and nutrition data, provide accurate guidance, and support decisions based on evidence.

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