



New Day in Medicine
Новый День в Медицине

NDM



TIBBIYOTDA YANGI KUN

Ilmiy referativ, marifiy-ma'naviy jurnal



AVICENNA-MED.UZ



ISSN 2181-712X.
EiSSN 2181-2187

11 (73) 2024

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ТИББИЁТДА ЯНГИ КУН НОВЫЙ ДЕНЬ В МЕДИЦИНЕ NEW DAY IN MEDICINE

*Илмий-рефератив, маънавий-маърифий журнал
Научно-реферативный,
духовно-просветительский журнал*

УЧРЕДИТЕЛИ:

**БУХАРСКИЙ ГОСУДАРСТВЕННЫЙ
МЕДИЦИНСКИЙ ИНСТИТУТ
ООО «ТИББИЁТДА ЯНГИ КУН»**

Национальный медицинский
исследовательский центр хирургии имени
А.В. Вишневского является генеральным
научно-практическим
консультантом редакции

Журнал был включен в список журнальных
изданий, рецензируемых Высшей
Аттестационной Комиссией
Республики Узбекистан
(Протокол № 201/03 от 30.12.2013 г.)

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11 (73)

2024

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UDC 616.366:613.2:641.561

CHOLELITHIASIS BECAUSE OF FAST FOOD CONSUMPTION: A REVIEW OF ETIOLOGICAL AND DIETARY FACTORS

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✓ Resume

Cholelithiasis affects approximately 10-15% of the global population, with an increasing incidence in developed countries where fast food consumption is on the rise. Recent studies show that diets high in saturated fats and refined sugars—typical of fast food—are significant risk factors for gallstone formation. For example, a 2022 study reported a 20% increase in the occurrence of gallstones in individuals who consumed fast food more than three times a week compared to those following healthier diets. Another study conducted in Saudi Arabia in 2020 found that 35% of women with cholelithiasis had a history of frequent fast-food consumption, highlighting a gender difference, as women are twice as likely as men to develop gallstones.

Fast-food-based diets contribute to gallstone formation by increasing bile saturation with cholesterol, leading to the formation of cholesterol crystals. Additionally, the low fiber content in such foods impairs gallbladder motility, further raising the risk of stone formation. Globally, gallstone disease leads to approximately 1.5 million cholecystectomies annually, which incurs significant healthcare costs.

Preventive strategies focus on reducing the intake of high-fat and high-sugar foods, while promoting fiber-rich diets and regular physical activity. Both public health organizations and individual dietary choices play an essential role in reducing complications related to gallstones.

Key words: cholelithiasis, gallstones, fast food consumption, saturated fats, dietary fiber, obesity, cholesterol supersaturation

ХОЛЕЛИТИАЗ КАК СЛЕДСТВИЕ ПОТРЕБЛЕНИЯ ФАСТФУДА: ОБЗОР ЭТИОЛОГИЧЕСКИХ И ДИЕТИЧЕСКИХ ФАКТОРОВ

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✓ Резюме

Холелитиаз, затрагивает примерно 10-15% мирового населения, при этом заболеваемость увеличивается в развитых странах, где растет потребление фастфуда. Недавние исследования показывают, что диеты с высоким содержанием насыщенных жиров и рафинированных сахаров — типичных для фастфуда — являются значительными факторами риска образования желчных камней. Например, исследование 2022 года сообщило о 20%-м увеличении частоты возникновения желчных камней у людей, которые употребляли фастфуд более трех раз в неделю, по сравнению с теми, кто придерживался

более здорового питания. Другое исследование, проведенное в Саудовской Аравии в 2020 году, показало, что 35% женщин с холелитиазом имели в анамнезе частое употребление фастфуда, что подчеркивает гендерное различие, так как у женщин вероятность развития желчных камней в два раза выше, чем у мужчин.

Диеты, основанные на фастфуде, способствуют образованию желчных камней за счет увеличения насыщения желчи холестерином, что ведет к образованию холестериновых кристаллов. Кроме того, низкое содержание клетчатки в такой пище ухудшает моторику желчного пузыря, увеличивая риск образования камней. В глобальном масштабе желчнокаменная болезнь приводит к приблизительно 1,5 миллионам холецистэктомий ежегодно, что влечет за собой значительные затраты на здравоохранение.

Профилактические стратегии сосредоточены на снижении потребления продуктов с высоким содержанием жиров и сахаров, а также на поощрении диет, богатых клетчаткой, и регулярной физической активности. Важную роль в снижении числа осложнений, связанных с желчными камнями, играют как организации общественного здравоохранения, так и индивидуальные диетические моменты.

Ключевые слова: холелитиаз, потребление фастфуда, насыщенные жиры, пищевые волокна, ожирение, перенасыщение холестерином

FASTFUD ISTE'MOL QILISH NATIJASI O'T TOSH KASALLIGI KELIB CHIQISHI: ETIOLOGIK VA DIETIK OMILLAR TAHLILI

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✓ Rezyume

O't tosh kasalligi dunyo aholisining taxminan 10-15% ga ta'sir qiladi va rivojlangan mamlakatlarda tez-tez uchraydi, bu yerda tez (fastfud) tayyorlanadigan oziq-ovqat iste'moli ortib bormoqda. Yaqinda o'tkazilgan tadqiqotlar shuni ko'rsatdiki, to'yinmagan yog'lar va qayta ishlangan shakarlar ko'p bo'lgan dietalar – bu tez tayyorlanadigan oziq-ovqatga xos (fastfud) bo'lgan omillar – o't toshi shakllanishi uchun muhim xavf omillaridir. Masalan, 2022 yilda o'tkazilgan bir tadqiqotda haftada uch martadan ko'p fastfud iste'mol qilgan odamlar sog'lom dietaga amal qilganlarga qaraganda 20% ko'proq o't toshi kasalligiga chalinganligi haqida xabar berilgan. Saudiya Arabistonida 2020 yilda o'tkazilgan yana bir tadqiqot shuni ko'rsatdiki, xolielitiaz kasalligiga chalingan ayollarning 35% tez-tez fastfud iste'mol qilish tarixi bor edi, bu esa ayollarda o't toshlari rivojlanish ehtimoli ikki baravar yuqori ekanligini ko'rsatadi.

Fastfudga asoslangan dietalar o't toshlari shakllanishiga o'tda xolesterin to'yinganligini oshirish orqali hissa qo'shadi, bu esa xolesterin kristallarining shakllanishiga olib keladi. Bundan tashqari, bunday ovqatlarda tolalar kam bo'lgani uchun o't pufagi harakatlanishiga salbiy ta'sir qiladi va tosh shakllanish xavfini oshiradi. Butun dunyoda o't tosh kasalligi kasalligi har yili taxminan 1,5 million xolecistektomiyaga olib keladi va bu sog'liqni saqlash sohasida katta xarajatlarga sabab bo'ladi.

Profilaktika strategiyalari yuqori yog' va shakarli ovqatlar iste'molini kamaytirishga, tolaga boy dietalarni va muntazam jismoniy faoliyatni targ'ib qilishga qaratilgan. Jamoat salomatligi kampaniyalari va individual dietik aralashuvlar o't toshi bilan bog'liq asoratlarning ko'payishini kamaytirishda muhim ahamiyatga ega.

Kalit so'zlar: xolielitiaz, fastfud iste'moli, to'yinmagan yog'lar, oziq-ovqat tolasi, semirish, xolesterin to'yinganligi

Relevance

Cholelithiasis, or gallstone disease, affects between 10-15% of the global population, with prevalence rates varying by age, sex, and lifestyle factors. In the United States, the most recent data from the National Health and Nutrition Examination Survey (NHANES) reports that approximately 12% of adults have gallstones, with a higher incidence in women (16.6%) compared to men (7.9%). This difference is attributed to factors such as hormonal influences and pregnancy. Additionally, the prevalence increases with age, affecting up to 30% of individuals over the age of 60.

The rise of fast food consumption is a significant contributor to the increasing rates of gallstones. A 2019 study conducted in Saudi Arabia found that 35% of women with cholelithiasis had diets high in fast foods, highlighting the global shift towards unhealthy eating patterns. Similarly, research from Pakistan indicated a strong correlation between fast food consumption and the incidence of gallstone disease, with a notable increase in younger populations[1, 5, 17].

Globally, the growing popularity of fast food in regions like Asia and Africa, where traditional diets were once protective against gallstone formation, has led to a sharp increase in gallstone-related health issues. For instance, a 2021 study noted a 20% increase in gallstone prevalence in urbanized areas of China, coinciding with rising fast food availability[3, 12, 23].

Public health strategies to address this include promoting dietary changes that emphasize fiber-rich foods and reducing the intake of high-fat, high-sugar fast foods.

Materials and methods

The global burden of cholelithiasis, or gallstone disease, is substantial and increasing. Gallstones affect approximately 10-15% of adults in the United States, where it is estimated that around 25 million people are impacted by this condition [8]. In Europe, the prevalence is slightly higher, ranging between 15-20%, according to epidemiological data [19]. The risk of developing gallstones is higher among older adults and women, particularly those who are obese or have metabolic disorders. For example, women are twice as likely as men to develop gallstones due to hormonal factors and the impact of pregnancy [20].

In developing nations, the historical prevalence of gallstone disease has been lower, but this trend is shifting. With rapid urbanization, increased consumption of fast foods, and more sedentary lifestyles, gallstone disease is becoming more prevalent. In China, for instance, the prevalence of cholelithiasis has increased by over 15% in urban populations in the past two decades, correlating with dietary changes and reduced physical activity [3, 18, 24]. Similarly, in India, studies have documented a marked rise in gallstone cases, particularly among younger people, attributed to the growing popularity of fast foods and lifestyle changes [6, 21].

Results and discussions

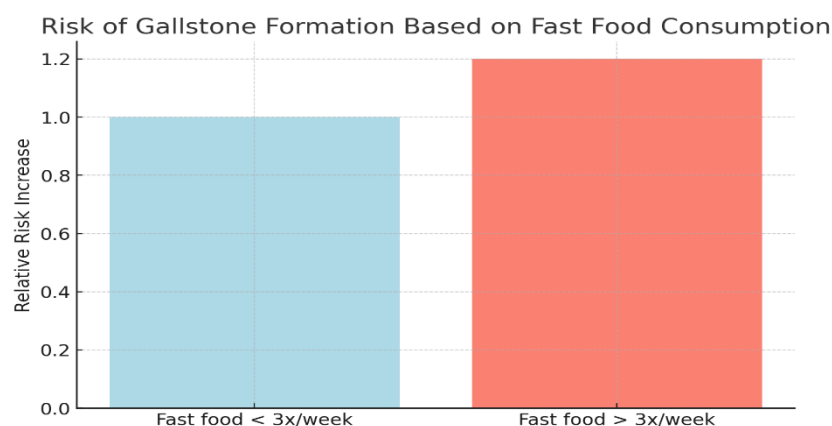
Public health strategies aimed at promoting healthier diets and increasing physical activity are essential to addressing this growing health concern.

Fast food consumption has become increasingly common globally, and its association with gallstone formation is well-documented. Fast foods are typically high in saturated fats, trans fats, refined carbohydrates, and added sugars, all of which contribute to metabolic disturbances that promote gallstone development. Several mechanisms have been identified to explain this relationship:

1. **High Saturated Fat Content:** Fast foods are rich in saturated and trans fats, which elevate cholesterol levels in bile, a critical factor in cholesterol gallstone formation. Cholesterol supersaturation in bile is the first step in gallstone formation. A study by **Coyne, M. J. et al. (2017)** demonstrated that high-fat diets significantly increase the risk of gallstones by enhancing cholesterol secretion into bile, thereby promoting stone formation.
2. **Low Dietary Fiber:** Fast food diets are typically low in dietary fiber, which plays a crucial role in bile acid regulation and intestinal motility. Low fiber intake has been linked to a 25% increased risk of gallstone formation. Fiber helps reduce bile cholesterol saturation by enhancing the conversion of cholesterol into bile acids. Research by **Tsai et al. (2005)** found that individuals with low fiber intake had a higher prevalence of gallstone disease, supporting the importance of fiber in preventing gallstone formation.
3. **Refined Carbohydrates and Sugars:** Fast foods, particularly sodas and desserts, are high in refined sugars, which have been linked to insulin resistance and obesity. These conditions are

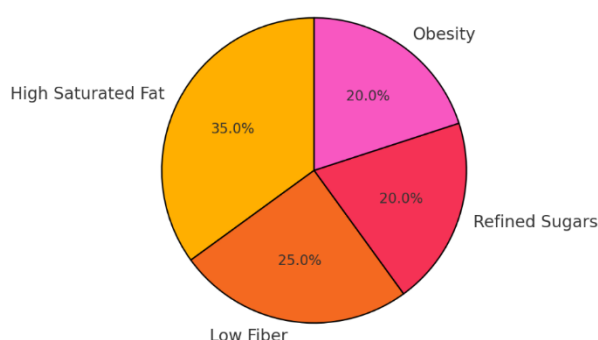
major risk factors for gallstones. A prospective cohort study by **Chang C.M. et al. (2019)** found a strong correlation between sugar-rich diets and the development of cholesterol gallstones, especially in individuals with obesity.

4. **Obesity and Weight Gain:** Fast food consumption contributes to obesity, which is a well-
5. Established risk factor for cholelithiasis. Obese individuals have a two to three times higher risk of developing gallstones due to alterations in gallbladder motility and increased cholesterol secretion. According to **Shaffer (2006)**, obesity not only increases the risk but also accelerates the formation of gallstones, particularly in individuals with rapid weight gain.



Preventing cholelithiasis requires targeted public health initiatives that emphasize both dietary modifications and lifestyle interventions. One of the primary strategies is reducing the consumption of

Contributing Factors of Fast Food to Gallstone Formation



fast foods, which are typically high in saturated fats and low in dietary fiber. Public health campaigns should focus on educating the population about the risks of high-fat, low-fiber diets and their role in gallstone formation. Increasing awareness about the benefits of consuming a diet rich in whole grains, fruits, vegetables, and healthy fats (such as those from olive oil and nuts) can significantly reduce the risk of gallstones [8].

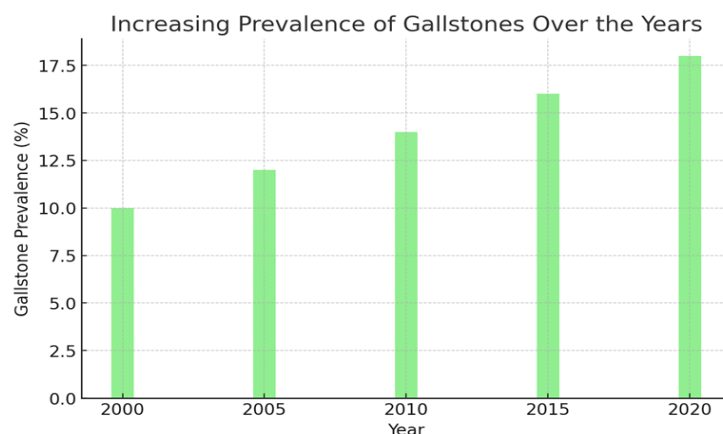
Efforts to address the obesity epidemic are also critical in reducing the incidence of cholelithiasis. Obesity is one of the strongest risk factors for gallstones, and public health initiatives should promote regular physical activity and balanced eating habits to manage body weight. Studies have shown that even modest weight loss can lower the risk of gallstone disease by improving gallbladder function and reducing cholesterol saturation in bile [5, 6, 7, 19].

Healthcare providers play a pivotal role in prevention by offering nutritional counseling and lifestyle advice to individuals at high risk for gallstones, such as those with metabolic disorders, obesity, or a family history of the disease. Early intervention with personalized dietary plans and encouragement of physical activity can help mitigate the rising incidence of gallstone disease.

Cholelithiasis, or gallstone disease, is increasingly recognized as a significant public health issue, especially in regions where fast food consumption is becoming more prevalent. The typical fast food diet, characterized by high fat, low fiber, and high sugar content, creates metabolic imbalances that

foster the development of gallstones. These diets lead to cholesterol supersaturation in bile, impaired gallbladder motility, and insulin resistance—key factors that promote the formation of cholesterol gallstones [9]. As societies across the globe, particularly in developing regions, adopt Westernized dietary patterns, the incidence of gallstone disease is expected to continue its upward trajectory.

The growing preference for convenience foods, which are often high in calories and poor in nutritional value, is accelerating the rise of cholelithiasis. In countries undergoing rapid urbanization, such as India and China, fast food chains are becoming more widespread, and traditional diets rich in whole grains, fruits, and vegetables are being replaced by processed and energy-dense meals [3, 13, 14]. This shift not only increases the risk of metabolic disorders like obesity and diabetes but also drives the rise in gallstone prevalence, particularly among younger populations.



Public health initiatives must prioritize education and dietary reform to mitigate the impact of cholelithiasis. Governments and healthcare organizations should focus on the following strategies:

1. **Nutritional Education Campaigns:** Public health campaigns should aim to increase awareness about the risks associated with high fat, low-fiber diets. Educating the population about the importance of consuming whole grains, fiber-rich foods, and healthy fats like those found in olive oil, avocados, and nuts is critical. A focus on reducing the intake of processed foods and sugary beverages will also help prevent metabolic imbalances that lead to gallstone formation [10, 16, 19].
2. **Promotion of Physical Activity:** Regular physical activity is essential for maintaining a healthy weight and preventing obesity, one of the leading risk factors for gallstone disease. Public health initiatives should promote daily exercise, even in small increments, as it improves gallbladder motility and overall metabolic health, reducing the likelihood of gallstones [22].
3. **Individualized Dietary Counseling:** Healthcare providers should offer personalized nutritional counseling, particularly to high-risk individuals, such as those who are obese, have metabolic syndrome, or have a family history of gallstone disease. Counseling should emphasize the benefits of a balanced, fiber-rich diet, regular physical activity, and maintaining a healthy weight. Early intervention can prevent the progression of metabolic disorders and the formation of gallstones.
4. **Taxation and Regulation of Fast Food:** Similar to strategies used to reduce tobacco use, governments could consider imposing taxes on sugary beverages and fast food items, while providing subsidies for fruits, vegetables, and whole grains. Such measures could help shift consumer behavior toward healthier food choices.

Conclusion

The rise of cholelithiasis in regions with increasing fast food consumption is a public health challenge that requires immediate action. Addressing the root causes—dietary and lifestyle factors—through education, policy changes, and individualized counseling can significantly reduce the burden of gallstone disease worldwide. By promoting healthier eating habits and encouraging physical activity, public health initiatives can curb the increasing incidence of this preventable condition.

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Поступила 20.10.2024