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## LIGHT EXAMINATION OF THE LIVER AND BILE TRACT

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**Abstract:** This article provides information about radiographic methods of liver and bile ducts. In particular: in the examination of the liver and bile ducts, ultrasound examination, computer tomography examination, and magnetic resonance imaging examination methods, the stages of examination, their benefits, and the harm they can cause and what effect they have in detail. data are cited.

**Key words:** Ultrasound examination, Computed tomography, Magnetic resonance tomography, liver, grass, ultrasonography, X-ray.

There are a number of clinical studies and special tests to examine the liver and biliary tract. These tests help evaluate the function, structure, and health of the liver. Here are some basic methods:

1. Blood tests:

- Liver enzymes (ALT, AST): Indicates damage or inflammation of liver cells.
- Bilirubin level: It is a substance processed by the liver, and its level indicates the state of liver function.
- Alkaline phosphatase: May be useful in diagnosing biliary tract problems.

2. Ultrasonography:

- Used to visualize the structure of the liver and bile ducts. Through this method, tissue changes, tumors or obstructions can be detected.

3. Computed Tomography (CT) and Targeted Magnetic Resonance Imaging (MRT):

- In complex cases, it is used for further study of changes in the liver and biliary tract.

4. Endoscopic retrograde cholangiopancreatography (ERCP):

- It is an invasive method used to identify and eliminate obstructions in the bile ducts.

Ultrasound examination of the liver and biliary tract (ultrasound diagnosis) is a sensitive, safe and non-invasive method widely used in medicine. Using this method, it is possible to assess the state of the liver, bile ducts, gall bladder and other internal organs.

Purposes of ultrasound examination:

1. Detection of pathologies: detection of diseases such as liver cirrhosis, hepatitis, tumors or other changes.
2. Bile Obstructions: Detection of obstructions or tumors in the bile ducts.
3. Gallbladder: Assess for gallstones or other problems.
4. Size and structure of the liver: Assessment of the size and structure of the liver.

Process:

1. Preparation: Sometimes the patient does not eat before the ultrasound, which may be necessary for a clear view of the gallbladder.
2. Ultrasound machine: The doctor uses an ultrasound machine and places a gel-coated sensor on the patient's abdomen.
3. Receiving information: The sensor receives the sound waves returned from the organs in the human body and converts them into an image.

Benefits:

- Non-invasive method
- Fast results
- Easy to follow procedure
- The possibility of complications is very low

Controlling:

Based on the results of the ultrasound examination, the doctor may prescribe additional studies or treatment measures.

It is important to undergo this procedure if you have problems with the liver or biliary tract, or if you need an examination according to the doctor's recommendation.

A computed tomography (CT) scan of the liver and bile ducts is a modern imaging technique used to evaluate the liver, bile ducts, gallbladder, and surrounding structures. With the help of CT, it is possible to get accurate information about the structure, size, injuries or diseases of these organs.

CT scan process:

1. Preparation:
  - Before the examination, patients are often required to follow a special diet or to keep the stomach empty.

- In some cases, it may be necessary to use a contrast agent (for example, iodine-based).

## 2. Duplicate location:

- Patients lie on the CT machine and must remain rigid during the scanning process.

- You may need to take several breaths during the scan.

## 3. Taking pictures:

- The CT machine creates cross-sections of the liver and bile ducts, which allows to determine the internal structure of the organs.

## CT results:

- Normal results: Normal anatomy of the liver and biliary tract.

- Pathological conditions:

- Liver cirrhosis

- Grass stones

- Inflammation of the gallbladder (cholecystitis)

- Tumors (benign or malignant)

- Infections

- Injuries

## Advantages:

- High resolution images.

- Speed - usually done in a few minutes.

- Ability to see fine details.

## Summary:

Computed tomography examination of the liver and biliary tract plays an important role in the field of health care. It helps to identify diseases at an early stage and provides important information in developing a treatment plan for patients. If you have any questions about your health, it is recommended that you consult your doctor.

I am pleased to provide information about the MRT (Magnetic Resonance Imaging) examination of the liver and biliary tract. MRI can be very useful in detecting diseases of the liver and biliary tract. The following information covers the main aspects of this investigation:

What is an MRI scan?

MRI is an imaging technique that uses magnetic fields and radio waves to produce high-resolution images. This method shows the internal structure of the organs in detail, including the liver, bile ducts, gallbladder and surrounding structures.

### Inspection process

1. Preparation: Patients should not normally eat or drink before the examination. This helps to see the liver better.

2. Procedure: The patient lies in the MRI machine and must not move during the imaging process. During the procedure, different images are taken for several minutes.

3. Contrast material: Sometimes the use of contrast material may be required, which further improves the visibility of the liver and bile ducts.

Why is MRT prescribed?

- Liver diseases (for example, hepatitis, liver cirrhosis).
- Gallbladder or gallbladder problems.
- Tumors of the biliary tract or other anomalies.
- Evaluation of the structure and functionality of the liver.

What results can be expected?

MRI results are analyzed by a doctor and can provide important information about the health of the liver and bile ducts. Additional tests or treatment may be planned based on the results.

### REFERENCES:

1. Methods of examination of liver and bile diseases. G.G. Kadyrova. Tashkent-2015.
2. Ilyasov-t.n.\_-fundamentals of clinical-radiology-chapter 1-2
3. Wikipedia

## HISTORICAL EVOLUTION OF ADDRESSES TO WOMEN IN UZBEK AND ENGLISH

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**Abstract.** This article aimed to analyze two types of addresses used in social groups for communication: formal and informal. The necessity to comply with official norms, the system of rights and duties and the norms accepted in social groups, and the existence of asymmetrical social relations all influence the type of formal appeal.

**Key words:** historical-evolutionary, address, Mrs, conversation, language, formal and informal, forms, century, Mistress, non-native English.

Consideration is given to the historical-evolutionary development of the address in both Uzbek and English. This article also discussed the role and importance of the address in other languages based on materials in Uzbek and English. This scientific work reflects the evolution of the address's forms across the language periods under the influence of socio-historical factors. [3]. As certain words become outdated by being replaced with new ones, language can be compared to an aging process. This allows us to assert that language is a dynamic process. Every historical era has its own literary language. However, this does not give us the right to believe that the language of one era is completely distinct from that of another. The process of language change is dynamic; while some language units undergo changes, others remain unchanged and transition into the language of the following era. This demonstrates that language is a two-way process that is complementary to one another: the process by which new words are added to the language and the process by which words become outdated and no longer used in the language. The law of dialectics is this two-step procedure. Synchronous and diachronic approaches play a significant role in the process of language learning. In the examination of forms of address, attention must be given to three important factors: utilization in the current time, historical progression, and dynamic language approach development.

Forms of address are language elements directed to the listener by the speaker, not forming part of the sentence syntactically but adding to the overall meaning of the sentence. Assisted by them, we can initiate, carry on, and conclude discussions effectively. For example:

– In order to start the conversation: *“How are you, my dear? said Laura cheerfully, putting aside the paper”, “Xush ko‘rdik xonim! – dedi-da unga o‘ng yelkasini tutdi”*

– in order to continue the conversation: *“Quarrel, Madam! no, mam”; “E, so‘ramang, egachi...”*;

– in order to finish the conversation successfully: *“Come, Miss, let’s away”; “Undoq bo‘lsa menga javob bering Malikam! –dedi Qutlug‘ Nigorxonim” [5].*

While talking about the role of the forms of address, first of all, it is worth mentioning that in the sentence of English and Uzbek language, they are separated with the comma or they come with exclamation marks after it for the purpose to show the strong emotion of the speaker: – *“Quarrel, Madam! no, mam”!* [3]; – *Bizni kechirasiz oya! – deb Nigora uzr aytdi* ). They also express the social background, age, gender, profession, state of the speaker, the register of the conversation, and the attitude of the speakers towards each other. For example, in the following sentence *“Good morning, Mrs. Brown”*, with the help of the form of address Mrs. we understand that the conversation is formal, listener is an educated woman and there is a positive attitude of the speaker towards the listener.

As previously noted, the development of the forms of address is significantly influenced by social and historical factors. The three periods are known to be followed in the study of the English language's development:

1) The Old English language, 2) the Middle English language, 3) the New English language. The ancient English language includes the period approximately between VII century and 1100. In that period of the English language we can notice the wide use of forms of address.

In the function of the forms of address in the sentence, the aforementioned examples show a broad use of relative and adjectival phrases to convey emotion. The conquest of Scandinavia and Norway, which brought the Scandinavian dialect and later the French language to English-speaking people, is linked to the development of the Middle English language. The Norman conquest holds a significant place in English history because, at that time, English became an official language and was widely utilized by government officials and artists, while ordinary people used English in their daily lives. The English language became the official language of the country at the end of the Norman era in England, although there had been significant changes in the vocabulary of the English language by then. Some of the English-language address forms, such as *mōdor-mōðer* (mother), show Scandinavian influence [2]. Some new words that conveyed the forms of salutation entered the English language as a result of the Norman Conquest:

princess, baroness, duchess, and others [6]. At this point in the history of the English language, the forms of address were regarded as active linguistic units: Herkneht to me, gode woman, wiues, maydnes, and alle woman, pat ich yu telle=Eshitinglar meni, men sizlarga hikoya so‘zlay, azizlarim, qadrdon opa-singillarim, va barchalaringiz [6]; From 1500 until the present, the following period is known as the New English Language Period. This era includes the years between the XV and XXI centuries. Numerous changes were made to the companies' addresses during this time. For instance, in the 19th century, phrases and names of relation (father, mother) were used to address people, and titles like saint, lady, master, man (men), and woman (women) became used. Throughout the sixteenth century, "emotional nouns" were frequently used as forms of address (daddy, mammy) in families, in addition to forms of address associated with "age" (child, girl, dally, young), short forms of terms expressing relation (chez, pa, ma), forms used to address people of higher social class (MY Honour, Highness, Duke, Lord, Lordship, Lady, Sir, Master, His/Her Excellency), and forms of address consisting of name+surname due to their widespread usage in the language. An example might be: "This is a Montague, your foe, Aunt" [4].

In the XVII century, we can notice other words being used as the forms of address. In this period forms like *Mrs=Missis* surname, words expressing respect *Ma'am, Missis, businesswoman*, words expressing profession *doctor, soldiers, priest and physician* were becoming popular as the forms of address among people: *Horner. No, good Domineer Doctor, I tricked you it seems, and others too* [3]. We do not notice any big changes in the usage of the forms of address in the XVIII century. During this century addressing people using their name + surname, or using the short forms of their names or surnames with adjectives (dear, honest, hunny, love) and *Mrs= Mistress + name* became widespread in communication: **Hard Mrs. Marlow – Mrs. Hastings** – young lady – pray be under no constraint in this house. [3].

In the XIX century the forms of address became simple and easy to use. Using name + surname with the words expressing respect *Mrs. + surname* and *Mrs.* with other were the forms of address specific to this century.

*Alice! I think that is rather mean of you, Joanna.*

*Julia. Did you tell him Mrs. Worthington was in town?*

*Lucy. Yes, Mam.*

Addressing occurs so frequently in social interactions that it is a crucial component of communication. The basic idea is that one cannot expect the target language to have the same effect as his native tongue when the identical

expressions are translated literally into another language. However, for foreign language learners, it appears that interference from another person's language is unavoidable in practice. In social interactions, address phenomena are both frequent and significant. Appropriate address behavior is essential for successful interpersonal relationship maintenance and effective communication. Typically, the culturally bound politeness phenomenon governs address behavior. Misunderstandings and misinterpretations can cause the people involved to feel offended, insulted, and suspicious, which will lead to a breakdown in cross-cultural communication. For example, non-native English speakers frequently express astonishment at the widespread usage or distribution of recitational first names among Americans and British citizens. The forms of address in Uzbek language are also considered as one of the important language unities as in English language. In Uzbek language the forms of address are studied in conjunction with their historical development.

#### REFERENCES:

1. Aitchison J. *Language Change: Progress of Decay?* – London: Cambridge University Press, 2013. – 172 p.  
1994. – 118 p.
3. Abdurahmanov G., Rustamov A. Old Turkic language. Tashkent: “Teacher”, 1982. – 168 p.
4. Brown R. & Gilman A. “The Pronouns of Power and Solidarity”. – Glasgow: Fishman J. (ed.) *Readings in the Sociology of Language*, Mouton Publishers, 2004. – 186 p.
5. Абдулла Қодирий. Меҳробдан чаён: Роман. – Тошкент: Ўқитувчи нашриёти, 1978. – 242 б.
6. Акбарова З. Ўзбек тилида мурожаат шакллари ва унинг лисоний тадқиқи: Филол. фан. номз. ... дисс. – Тошкент, 2007. 21-б.

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**ОСБЕННОСТИ СЫВОРОТОЧНОГО СОДЕРЖАНИЯ ФАКТОРОВ  
РОСТА ПРИ ВРОЖДЕННЫХ ПОРОКАХ СЕРДЦА РАЗЛИЧНОГО  
ТИПА У ДЕТЕЙ**

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**Актуальность:** Врожденные пороки сердца (ВПС) представляют собой структурные изменения в сердечном строении, которые образуются во время развития плода в утробе матери. Эти пороки могут затрагивать структуру сердца, клапаны, стенки сердца или крупные сосуды, ведущие к и из сердца. У детей с ВПС может быть измененный иммунный статус, особенно если порок связан с тяжелым нарушением кровообращения и функционирования сердца [1].

При повреждении тканей и воспалении фибробласты активируются макрофагами, секретируют факторы роста фибробластов (bFGF), далее активно мигрируют к месту повреждения, связываясь с фибриллярными структурами через фибронектин, параллельно синтезируя вещества внеклеточного матрикса [3].

Фибробласты секретируют проангиогенные факторы – сосудисто-эндотелиальный фактор роста (VEGF), основной фактор роста фибробластов (basic fibroblast growth factor (bFGF)), трансформирующий фактор роста бета (transforming growth factor (TGF $\beta$ )) [2]

**ЦЕЛЬ:** определение особенностей содержания факторов роста (bFGF, VEGF-A и TGF- $\beta$ ) в сыворотке крови у детей с ВПС белого и синего типов.

**МАТЕРИАЛ И МЕТОДЫ:** включены 52 ребенка с установленным диагнозом ВПС белого (28 пациентов) и синего (24 пациентов). Группу контроля составили 28 практически здоровых детей, аналогичного возраста. Концентрацию фактора роста фибробластов (bFGF), сосудисто-эндотелиального фактора роста-A (VEGF-A) и трансформирующего фактора роста-бета (TGF- $\beta$ ) в сыворотке крови определяли методом твердофазного иммуноферментного анализа с использованием тест-систем АО «Вектор-Бест» (Новосибирск, Россия).

**РЕЗУЛЬТАТЫ И ИХ ОБСУЖДЕНИЯ**

Факторы роста участвуют не только в процессах ремоделирования ангиогенеза, иммунном ответе, но и могут служить биомаркерами, которые

при определенных патологических состояниях происходит их частичное поступление в кровь, что имеет диагностическое значение[2].

Полученные результаты изложены на табл.1. ниже.

Таблица 1.

**Уровень сывороточных факторов роста обследованных  
 больных детей с ВПС**

Показатель	M±m, пг/мл	Me [Q1; Q3]	Min, пг/мл	Max, пг/мл
<b>Контрольная группа, n=28</b>				
<b>bFGF</b>	6,21±0,28	6,65 [5,05; 7,31]	3,41	8,60
<b>VEGF-A</b>	34,01±1,42	33,90 [27,80; 39,11]	22,90	48,33
<b>TGF-β</b>	47,42±2,21	47,55 [36,52; 58,15]	28,73	66,90
<b>ВПС белого типа (без цианоза), n=28</b>				
<b>bFGF</b>	29,28±2,02***	25,55 [20,77; 38,52]	14,30	48,51
<b>VEGF-A</b>	135,81±5,47***	144,75 [102,3; 159,07]	94,81	177,22
<b>TGF-β</b>	182,77±7,31***	191,15 [143,80; 214,62]	112,51	251,53
<b>ВПС синего типа (с цианозом), n=24</b>				
<b>bFGF</b>	34,51±1,68***	31,60 [29,35; 41,80]	20,10	49,71
<b>VEGF-A</b>	208,80±9,92***	200,55 [169,40; 246,05]	122,35	293,50
<b>TGF-β</b>	201,45±6,69***	200,05 [177,22; 226,85]	125,30	255,12

*Примечание: \* - достоверно по сравнению с данными контрольной группы (\* - P<0,05, \*\* - P<0,01, \*\*\* - P<0,001). Me – медиана, Q1(перцентиль) – 25%, Q3 (перцентиль) – 75%.*

Согласно показанному на таб.1 анализ сывороточной концентрации bFGF установил достоверно значимые показатели. Так уровень данного фактора роста был повышенным в 4,7 раза, что в среднем составил 29,28±2,02 пг/мл, с индивидуальным размахом от 14,3 до 48,5 пг/мл, тогда как в группе

здоровых малышей это значение в среднем составило  $6,21 \pm 0,28$  пг/мл ( $P < 0,001$ ).

Повышенное сывороточное содержание bFGF вероятно объясняется тканевым стрессом и повреждением. Также повышенный синтез bFGF вероятно вовлечён в этот процесс, для компенсации дефицита кровоснабжения в определённых участках сердца, на что активируется процесс ангиогенеза и высвобождается bFGF, чтобы стимулировать рост новых кровеносных сосудов, тем самым стимулируя и ремоделируя сердечную ткань, в которой вероятно уже прослеживается утолщение стенок и гипертрофия миокарда.

Как показано на таб.1 анализ сывороточной концентрации bFGF установил достоверно значимые показатели в группе детей с ВПС синего типа. Так уровень данного фактора роста был повышенным в 5,6 раза, что в среднем составил  $34,51 \pm 1,68$  пг/мл, с индивидуальным размахом от 20,1 до 49,7 пг/мл, тогда как в группе здоровых малышей это значение в среднем составило  $6,21 \pm 0,28$  пг/мл ( $P < 0,001$ ).

Вероятно, что повышенные значения указывают на хроническую гипоксию, которая могла спровоцировать усиленную экспрессию. Также как у условиях хронической гипоксии и повреждения тканей может развиваться фиброз, что может повлиять на структуру и функцию сердца, способствовать ангиогенезу, активировать воспалительные процессы и ремоделирование тканей, которые являются частью иммунного ответа и может влиять на регуляцию сосудов и давления в сердце и сосудах, что также может быть важным при ВПС.

Оценка сывороточной концентрации VEGF-A в группе детей с ВПС белого типа была достоверно повышена. Так синтез изученного фактора роста вырос в 4 раза, со средним значением  $135,81 \pm 5,47$  пг/мл, в диапазоне от 94,8 до 177,2 пг/мл против нормативных показателей здоровых малышей, которые в среднем составили  $34,01 \pm 1,42$  пг/мл ( $P < 0,001$ ).

Согласно полученным результатам, в основной группе детей с ВПС синего типа сывороточный уровень VEGF-A был значимо повышенным. Так синтез изученного фактора роста вырос в 6,1 раза, со средним значением  $208,80 \pm 9,92$  пг/мл, в диапазоне от 122,3 до 293,5 пг/мл против нормативных показателей здоровых малышей, которые в среднем составили  $34,01 \pm 1,42$  пг/мл ( $P < 0,001$ ).

Полученные результаты позволяют нам предположить, что организм детей с цианозом «включает» адаптационные механизмы на такие процессы как

хроническая гипоксия, воспалительные процессы (в виде реакцией на инфекции, повреждения тканей или другие патологические состояния), травма и повреждение тканей (для поддержания процессов ремоделирования и ангиогенеза для заживления и восстановления тканей), направленные на обеспечение адекватного кровоснабжения повреждённых тканей.

Анализ полученных результатов выявил, что уровень TGF- $\beta$  высокое содержание в группе детей с ВПС белого типа. Так сывороточная концентрация изученного фактора роста в основной группе детей был повышен в 3,9 раза, со средним значением  $182,7 \pm 7,31$  пг/мл, с индивидуальным размахом от 112,5 до 251,5 пг/мл, тогда как в группе практически здоровых детей данный показатель составил  $47,42 \pm 2,21$  пг/мл ( $P < 0,001$ ).

Полученные результаты, вероятно, указывают на то, что повышенный уровень TGF- $\beta$  в сыворотке крови при ВПС без цианоза может быть связан с сердечной нагрузкой, воспалением и ремоделированием тканей, а также с ролью TGF- $\beta$  в развитии и дифференциации тканей. Однако следует отметить, что каждый конкретный случай может иметь свои особенности, и дополнительные исследования могут быть необходимы для более точного определения причины повышенного уровня TGF- $\beta$ .

Оценка результатов выявил достоверно значимые показатели TGF- $\beta$  в группе детей с ВПС синего типа. Так сывороточная концентрация изученного фактора роста в основной группе детей был повышен в 4,2 раза, со средним значением  $201,45 \pm 6,69$  пг/мл, с индивидуальным размахом от 125,3 до 255,1 пг/мл, тогда как в группе практически здоровых детей данный показатель составил  $47,42 \pm 2,21$  пг/мл ( $P < 0,001$ ).

Согласно полученным результатам, мы предполагаем, что избыточный TGF- $\beta$  в крови может иметь как защитный, так и деструктивный эффект на организм в зависимости от контекста и продолжительности его действия. Сильное повышение уровня TGF- $\beta$  в сыворотке крови при ВПС с цианозом может быть обусловлено такими факторами как: гипоксия и ишемия в ответ на повреждение тканей и попытку организма адаптироваться к измененной окружающей среде; воспаление и ремоделирование тканей, механические факторы, так как при врожденных пороках сердца может наблюдаться повышенная нагрузка на сердце и сосуды, что может активировать производство TGF- $\beta$  в ответ на механическое напряжение.

Таким образом, в ходе иммунологических исследований было выявлено что гипоксия и ишемия при ВПС как с цианозом, так и без цианоза могут

стимулировать увеличение продукции различных цитокинов, факторов роста в ответ на повреждение и стресс в тканях. В свою очередь ВПС и гипоксия могут вызывать ремоделирование сердечной и сосудистой ткани. Этот процесс включает активацию bFGF, VEGF-A и TGF- $\beta$ , которые играют важную роль в регенерации и ремоделировании тканей.

### ЗАКЛЮЧЕНИЕ

Установленные иммунологические изменения вызывают каскадные реакции в организме с целью адаптации к недостатку кислорода и кровоснабжения. Активация клеток и тканей для справления с повреждениями и стрессом приводит к увеличению продукции различных биологически активных веществ. Для более точного понимания роли этих медиаторов в патологии при ВПС различного типов необходимы дальнейшие исследования и клинические наблюдения.

### ЛИТЕРАТУРА

1. Закирова Н.Э., Закирова А.Н. Роль иммуновоспалительных реакций и дисфункции эндотелия в ремоделировании миокарда и прогрессировании ИБС. Рациональная Фармакотерапия в Кардиологии. 2014;10(5):488-94]. DOI:10.20996/1819-6446-2014-10-5-488-494.
2. Hartlapp I, Abe R, Saeed RW, Peng T, Voelter W, Bucala R, et al. Fibrocytes induce an angiogenic phenotype in cultured endothelial cells and promote angiogenesis in vivo. FASEB journal. 2001 Oct;15(12):2215–2224. DOI: <http://dx.doi.org/10.1096/fj.01-0049com>
3. Keeley EC, Mehrad B, Strieter RM. Fibrocytes: Bringing new insights into mechanisms of inflammation and fibrosis. The international journal of biochemistry & cell biology. 2010 Apr;42(4): 535–542. DOI: <http://dx.doi.org/10.1016/j.biocel.2009.10.014>

## СОЛЕУСТОЙЧИВОСТЬ ХЛОПЧАТНИКА: ПРОБЛЕМЫ И ПЕРСПЕКТИВЫ ДЛЯ УЗБЕКИСТАНА

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**Введение** Актуальность исследования солеустойчивости хлопчатника в условиях Узбекистана обусловлена важностью этого растения для аграрной экономики страны. Хлопчатник является основным источником волокна для текстильной промышленности и важной культурой для аграрного сектора. Однако его выращивание в условиях засушливых и засоленных земель ставит перед фермерами и учеными задачу повышения солеустойчивости растения. Соль в почвах является одной из главных проблем для сельского хозяйства в засушливых регионах, таких как Узбекистан. В высокосолёных почвах нарушаются процессы обмена веществ у растений, что ограничивает их рост и продуктивность. Хлопчатник, как культура, не является полностью устойчивой к высокой солёности почвы, что приводит к снижению урожайности и ухудшению качества волокна.

### 1. Основные факторы, влияющие на солеустойчивость хлопчатника:

- **Генетические особенности:** В последние десятилетия активно исследуются генетические аспекты солеустойчивости хлопчатника. Некоторые сорта обладают повышенной устойчивостью к солёности за счет специальных механизмов, таких как повышение осмотической активности клеток и улучшение работы корневой системы.
- **Агроклиматические условия:** Климатические условия, такие как температура, влажность и состав почвы, играют важную роль в формировании солеустойчивости растения.
- **Методы агротехники:** Использование различных агротехнических приемов, таких как правильный подбор сортов, методы улучшения структуры почвы, введение подкормок, может существенно повлиять на устойчивость хлопчатника к соли.

2. **Прогресс в селекции солеустойчивых сортов хлопчатника:** В последние годы в Узбекистане были разработаны и внедрены сорта хлопчатника с повышенной солеустойчивостью, такие как "Ташкент-6" и другие местные сорта, которые показывают лучшие результаты на засоленных землях. Множество научных исследований, проведенных в

разных странах (Китай, Индия, Турция), также направлены на селекцию более устойчивых сортов для различных условий засоленности.

3. **Методы повышения солеустойчивости:** Исследования показывают, что использование биологически активных веществ, улучшение структуры почвы с помощью органических удобрений и внедрение устойчивых к солям микроорганизмов могут значительно повысить продуктивность хлопчатника в условиях засоленных почв.

### **Статистика и текущее состояние солеустойчивости хлопчатника в Узбекистане**

- **Общие данные:** Узбекистан является одним из крупнейших производителей хлопка в мире. В 2023 году площадь посевов хлопчатника в стране составила более 1,3 миллиона гектаров, при этом около 30% этих земель подвергаются влиянию засоления.
- **Уровень солеустойчивости:** В условиях засоленных почв продуктивность хлопчатника может снижаться на 30-50% в зависимости от степени засоленности. Однако на территориях с высоко засоленными почвами, таких как Кашкадарья, Сырдарья и некоторые районы Бухары, достигнуты успехи в улучшении сортов и агротехники.
- **Программы по улучшению солеустойчивости:** В Узбекистане активно развиваются программы по улучшению солеустойчивости сельскохозяйственных культур, включая хлопчатник. В рамках этих программ проводятся научные исследования, разрабатываются новые сорта и методы агротехники, направленные на улучшение состояния почвы и повышение урожайности.
- **Инвестирование в технологии:** В последние годы в Узбекистане ведется работа по внедрению водосберегающих технологий и методов управления водными ресурсами, что также способствует улучшению состояния почвы и снижению негативного влияния соли на урожайность.

### **Перспективы и рекомендации**

1. **Продолжение селекционных работ:** Необходима дальнейшая работа по разработке и внедрению новых сортов хлопчатника с высокой солеустойчивостью. Это поможет расширить площадь посевов в районах с высокими концентрациями солей.

2. **Развитие агротехники:** Внедрение методов улучшения структуры почвы и использования устойчивых к соли микроорганизмов поможет улучшить условия для роста хлопчатника на засоленных землях.

3. **Использование биотехнологий:** Селекция на основе генетических методов, в том числе использование генно-модифицированных растений, может стать ключевым направлением для увеличения устойчивости хлопчатника к соли.

4. **Государственная поддержка и международное сотрудничество:** Укрепление сотрудничества с международными научными организациями и привлечение инвестиций для исследований в области солеустойчивости растений поможет ускорить процесс улучшения хлопчатника в условиях засоления.

**Заключение** Проблема солеустойчивости хлопчатника является ключевой для Узбекистана, где значительная часть земель подвергается засолению. Современные научные достижения в области селекции и агротехники дают перспективы для повышения продуктивности хлопчатника на засоленных почвах. Однако для реализации этих возможностей необходимы скоординированные усилия науки, агропроизводителей и государственной политики.

### СПИСОК ИСПОЛЬЗОВАННЫХ ИСТОЧНИКОВ:

1. Абдувахидов, У. (2021). Агротехника и селекция хлопчатника в условиях засоленных почв Узбекистана. Ташкент.
2. Юнусов, Т. (2020). Солеустойчивость хлопчатника: методы повышения урожайности в засушливых условиях. Журнал аграрных исследований, 12(3), 45-56.
3. Международная конференция по агротехнологиям в засушливых регионах (2023). Доклады участников. Ташкент.
4. Национальная статистика Республики Узбекистан (2023). Сельское хозяйство и водные ресурсы. Ташкент.
5. Мансуров, С. (2022). Проблемы устойчивости сельскохозяйственных культур к засолению почв в Центральной Азии. Журнал экологии, 8(2), 23-31.

## ZOTILJAM KASALLIGI SABABLARI VA DAVOLASH USULLARI

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**Annotatsiya.** Zotiljam yoki pnevmoniya — o‘pka yallig‘lanishi, o‘pkaning infeksiyon kasalligi, mustaqil kasallik yoki boshqa kasalliklarning asorati hisoblanadi. Pnevmonokni turli bakteriyalar va [viruslar](#) qo‘zg‘atadi. Kasallikning yuzaga kelishi va rivojlanishiga odamning qattiq sovuq qotishi, jismoniy va ruhiy o‘ta toliqishi, organizmning ichki zaharlanishi — intoksikatsiya hamda organizmning kasallikka qarshi kurashish qobiliyatini susaytiruvchi boshqa omillar sabab bo‘ladi, natijada yuqori nafas yo‘llariga mikroblar o‘tkir va surunkali, joyiga qarab chegaralangan sohalardagi yoki pnevmoniya (o‘pkaning butun bir bo‘lagi zararlanadi) va o‘choqli bronxopnevmoniya farq qilinadi.

**Abstract.** Pneumonia is an inflammation of the lungs, an infectious disease of the lungs, an independent disease or a complication of other diseases. Pneumococcus is caused by various bacteria and viruses. The onset and development of the disease are caused by severe frostbite, physical and mental exhaustion, internal poisoning of the body - intoxication, and other factors that weaken the body's ability to fight the disease, as a result of which microbes enter the upper respiratory tract, acute and chronic, depending on the location, localized or localized pneumonia (an entire lung is affected) and focal bronchopneumonia.

**Абстрактный.** Хотильям или пневмония – это воспаление легких, инфекционное заболевание легких, самостоятельное заболевание или осложнение других заболеваний. Пневмококк вызывают различные бактерии и вирусы. Причиной возникновения и развития заболевания являются сильная простуда, физическое и психическое истощение, внутренние

отравления организма - интоксикация и другие факторы, ослабляющие способность организма бороться с болезнью (поражается весь участок), а также очаговая бронхопневмония. выдающийся.

**Kalit so‘zlar.** O‘pka yallig‘lanishi. Kasallik sabablari. Ichki zararlanish. Bakteriya. Virus. Ruhiy toliqish.

**Keywords.** Pneumonia. Causes of the disease. Internal damage. Bacteria. Virus. Mental fatigues

**Ключевые слова.** Воспаление легких. Причины заболевания. Внутренние повреждения. Бактерии. Вирус. Психическое истощение.

**Krupoz** pnevmoniyani pnevmokokklar qo‘zg‘atadi. Mikroblardan tashqari organizmni kasallikka moyil qilib qo‘yuvchi ba‘zi omillar (masalan, shamollash) ham ta’sir etgandagina zotiljam paydo bo‘ladi. Shuning uchun krupoz pnevmoniya qishda ko‘proq uchraydi. Ichkilikka mukkasidan ketgan kishilar (alkogoliklar) Zotiljamga ko‘proq moyil bo‘ladi. Krupoz pnevmoniya, odatda, to‘satdan boshlanadi: temperatura birdan 39,5—40° gacha ko‘tariladi, bemor qattiq qaltiraydi, tez-tez yo‘taladi, biqini, ko‘kragi og‘riydi, nafas olganda, yo‘talganda va aksa urganida og‘riq (sanchiq) kuchayadi. Sababi shuki, o‘pkaning yallig‘langan bo‘lagini qoplagan plevra ham yallig‘langan bo‘lishi mumkin. Bemor tez-tez, yuza nafas oladi (halloslaydi), lunji qizaradi. Labi, burun kataklarining atrofiga uchuq toshadi, o‘tkir yurak-tomir yetishmovchiligi kuzatiladi, bemorning aqvoli og‘irlashadi.

Go‘daklarda, ayniqsa, nimjon, chala tug‘ilgan, raxit, anemiya, gipotrofiya bilan og‘rigan bolalarda zotiljam juda og‘ir kechishi, agar o‘z vaqtida tibbiy yordam ko‘rsatilmasa, ko‘pincha nohush holatlarga sabab bo‘lishi mumkin. Sulfanilamid preparatlari va antibiotiklar kashf etilguncha zotiljam (ayniqsa bolalar va keksalarda) og‘ir o‘tib, ko‘pincha o‘limga olib kelar edi. Zamonaviy davolash usullari qo‘llanila boshlagach, kasallik uzoqqa cho‘zilmay bemor tez tuzaladigan bo‘ldi. Zotiljamdan o‘lish deyarli hamisha vrachga kech murojaat qilishda o‘z vaqtida to‘g‘ri davolanmaslik oqibati hisoblanadi.

***Pnevmoniya kelib chiqishiga qarab quyidagi turlarga bo‘linadi:***

- yuqumli (bakterial) — uning qo‘zg‘atuvchisi bakteriyalar: pnevmokokklar, stafilokokklar, streptokokklar va boshqalar;
- virusli — unga turli xil viruslar sabab bo‘ladi;



- zamburug‘li — uni mog‘or va achitqi zamburug‘lar, pnevmotsistlar va boshqalar qo‘zg‘atishi mumkin;
- aralash — bu holda o‘pka bir vaqtning o‘zida ikki yoki undan ortiq turli xil patogenlarni yuqtirishi mumkin. Bundan tashqari ichakdagi qurtlar ham va oddiy parazitlar ham pnevmoniyani keltirib chiqarishi mumkin. Hozirgi vaqtda pnevmoniyani o‘z vaqtida aniqlash va to‘g‘ri davolay bilish hamma ixtisoslikdagi vrachlar uchun g‘oyat muhim, chunki, masalan, gospital pnevmoniya ko‘pincha asosiy kasallik bilan qo‘shilib ketadi va uni ancha o‘g‘irlash tiradi. Pnevmoniyani tashxislash va davolashga zamonaviy yondoshuvlar amaliyotchi vrachlardan butun diqqat-e‘tiborlarini shu masalaga qaratishlarini talab etadi.

**Klinikasi.** Kasallikning klinik belgilari turlicha. Ular orasida «oltin standart» deb atalgan simptomlar guruhiga alohida ahamiyat beriladi. Isitma, etanjikishining takrorlanishi, yo‘tal, balg‘amning tabiati va ko‘krak qafasida paydo bo‘ladigan og‘riqlar shular jumlasiga kiradi. Bemorni tekshiruvdan o‘tkazayotganda qon va balg‘amni analiz qilish, ko‘krak qafasida a‘zolarini rentgenda tekshirib ko‘rish o‘ta zarur. Pnevmoniya bilan og‘rigan bemor ahvolini tahlil etish, nafaqat nafas a‘zolarini, balki boshqa ichki a‘zo va sistemalar (jigar, buyraklar, yurak-tomir, markaziy asab tizimi) holatiga ham baho berib chiqishni talab qiladi. Pnevmoniyada alveolalar asta-sekin nekrobiozga uchragan hujayra qoldiqlari va eksudat bilan to‘lib boradi, bunda nafas susayib turgani holda pufakli xirillashlar («Srepitatio indurata») eshitilishi mumkin.

O‘pkada jigarlanish avj olib borgan sayin perkutor tovush pasayib, agar nafas yo‘llari yetarlicha ravon bo‘lsa, nafas tabiatan bronxial tus oladi. Yallig‘lanish kamayib borgan sayin bronxial nafas yo‘qolib boradi, pnevmoniya o‘chog‘i ustida yana pufakchali xirillashlar («Srepitatio redux») paydo bo‘ladi, shuningdek sekret yetarlicha gidratatsiyaga uchrab, bemor yo‘talib, balg‘am ajratib turadigan bo‘lsa, bir talay yirik pufakli nam va quruq xirillashlar eshitiladi (shovqinli nafas).

O‘pkaning o‘rtasida bo‘lagi zararlangan bo‘lsa, xirillash faqat cheklangan joyda, o‘ng qo‘ltiqosti sohasida eshitiladi va yana kasallik o‘pkaning pastki bo‘laklarida joylashganda, xirillashlar eshitiladigan joy (o‘pka pastki qismining harakatchanligi ko‘paygan sayin) pastga tomon surilib borishi mumkinligini ham hisobga olish kerak. Pnevmoniyaning hozirgina tasvirlab o‘tilgan tavsifi uning birlamchi

#### **Kasallikni davolash usullari.**

Kasallik zo‘riqib ketgan bo‘lsa, bemor kasalxonada davolanadi. Bemorni to‘g‘ri parvarish qilishning, shuningdek, antibiotiklardan to‘g‘ri foydalanishning ahamiyati katta. Salqin, toza havo uyquni va nafas olishni yaxshilaydi, shuning uchun bemor yotgan xonani tez-tez shamollatib turish muhim. Ichimlik (choy,

meva suvi), suyuq ovqat (sho‘rva, ilitilgan tuxum, shirguruch, sut, sariyog‘, qatiq, kefir, kisel va hokazo) tez-tez berib turiladi. Bemor terlaganda quruq sochiq, araq yoki teng baravar suv qo‘shilgan odekolon bilan artiladi. Ichi yurishishiga, siydigi kelishiga qarab turish zarur.

Yurak-tomir sistemasi yaxshi ishlamaganda uning faoliyatini kuchaytiruvchi dorilar buyuriladi, kisloroddan nafas oldiriladi va hokazo Orqaga gorchichnik qo‘yiladi, yurak-tomir faoliyatini yaxshilovchi (masalan, korglyukon, strofantin) va balg‘am ko‘chiruvchi dorilar tavsiya etiladi va boshqalar. Harsillash paydo bo‘lsa, bemorning boshini balandroq qilib yotqizib qo‘yish kerak. Bemor gigienik rejimga rioya qilishi, ochiq havoda sayr etishi, davo gimnastikasi bilan shug‘ullanishi lozim.

Kasallikning oldini olish, asosan, organizmning umumiy holatini yaxshilashga (chiniqish, badan tarbiya va boshqalar), yomon odatlar (chekish, spirtli ichimliklar ichish)ni tark etishga, infeksiya manbalarini yo‘qotishga va turmush sharoitini yaxshilashga qaratilishi lozim.

#### **FOYDALANILGAN ADABIYOTLAR RO‘YXATI**

1. Шамсиев А. М., Острыдеструктивные пневмонии у детей, Т., 1966;
2. Ubaydullaev A. M., Ginzburg V. S, Klinikada o‘pka funksiyasini tekshirish, Т., 1991 у.
3. Амелина Э.ЖЛ, Чучалин А.Г. Муковиссидоз: современный подход к диагностике и лечению. Русс. Мед. Журнал, 1997. Т.5, № 17, с.1136-1142.
4. Белявский А.С., Булкина ЖИ.С., Княжеская Н.П. Обучение больных бронхиальной астмой, находящихся под амбулаторным наблюдением. Пульмонология, 1996, № 7, с.25-32.
5. Бронхиальная астма. Глобальная стратегия. Совместный доклад Национального института Сердце, Легкие, Кров и Всемирной организации здравоохранения. Проблема, 1996, Приложение 165 с.
6. Бронхиальная астма. Под ред. акад. РАМН Чучалина А.Г. М.,1997,1-2 Т.
7. Вестник Ассотсиатсии пульмонологов сентралной Азии. Ташкент, 1996, 1, с.90.

## OSHQOVOQNING MORFOLOGIK XUSUSIYATLARI

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**Annotatsiya.** Bu maqolada qovoqdoshlar oilasi vakili oshqovoqning morfologik xususiyatlari haqida ma'lumotlar keltirilgan. Oshqovoqning mevasi yirik, soxta meva. Mevaning tashqi qavati qattiq, ichki qavati esa shirador va etdor. Urug'ida 50 % gacha moylar mavjud. Oshqovoq mevasi tarkibida 15-18 % quruq modda, 4-11% askorbin kislota karotin, tiamin, riboflavin, azotli birikmalar, 0,7% biriktiruvchi to'qima, 0,5 % oqsil, 0,2 % yog', 0,6 % kul moddasi, urug'ida 20-40 % gacha yog' saqlaydi. Oshqovoqning muskatsimon qovoq va qattiq po'stli kabi 3 turi ko'p tarqalgan. Ildizi o'q ildiz, uzunligi 2m ga teng bo'ladi. Tarkibida katta miqdorda A vitamini saqlanadi. Qovoq tarkibida beta-karotin organizimiga tushganidan keyin A vitamiga aylanadigan o'simlik pigmenti miqdori juda ko'p. Aynan beta- karotin qovoqqa to'q sariq rang beradi. 13 turi ma'lum. Vatani - Shimoliy va Janubiy Amerika. O'rta Osiyo, jumladan, O'zbekistonda qadimdan ekib kelingan. Tuproq qal'a arxeologik qazilmalarida topilgan qovoq qoldiqlari buni tasdiqlaydi.

**Abstract.** This article provides information on the morphological characteristics of the pumpkin, a representative of the Cucurbitaceae family. The fruit of the pumpkin is a large, false fruit. The outer layer of the fruit is hard, and the inner layer is juicy and fleshy. The seeds contain up to 50% oil. The pumpkin fruit contains 15-18% dry matter, 4-11% ascorbic acid, carotene, thiamine, riboflavin, nitrogenous compounds, 0.7% connective tissue, 0.5% protein, 0.2%

fat, 0.6% ash, and the seeds contain up to 20-40% oil. There are 3 types of pumpkin, the butternut squash and the hard-skinned one, which are widespread. The root is a taproot, up to 2 m long. It contains a large amount of vitamin A. The pumpkin contains a large amount of beta-carotene, a plant pigment that turns into vitamin A after entering the body. It is beta-carotene that gives pumpkin its orange color. There are 13 known species.

Homeland - North and South America. It has been cultivated since ancient times in Central Asia, including Uzbekistan. This is confirmed by the remains of pumpkins found in the archaeological excavations of Tuprok Kala.

**Kalit so'zlar.** Muskat qovog'i. Soxta meva. Pigment. Changchi. Urug'chi. Shirador. Etdor.

**Keywords.** Nutmeg. False fruit. Pigment. Pollinator. Seed. Succulent. Fleshy.

Qovoq – qovoqdoshlar oilasiga qovoq turkumiga mansub bir yillik o'simliklar turkumiga kiruvchi poliz o'simligidir. Poyasi silindirsimon, mayin tuklar bilan qoplangan, o'rmalab yoki jingalaklari bilan ilashib o'sadi. Barglari yirik, buyraksimon, yaprog'i 5-7 bo'lakka bo'lingan. Uning changchisi va urug'chi gullari bitta tupda yetishadi. Gullari sariq. Changchili gullari nisbatan



yirik bo'lib, urug'chili gullaridan oldinroq ochiladi, changchilari 5ta. Urug'chili gullarida 3ta tumshuqchali 1 ta urug'chisi bor. Oshqovoq urug'i tarkibidagi kukurbitin aminokislota ichki a'zolarimizdagi in qurgan qurtlar uchun zahar hisoblanadi. Odamlarning 50 foizga yaqinining o't qopida shunday parazitlar yashaydi. Ularga qarshi kurashish uchun oshqovoq urug'ini iste'mol qilib turish kerak. Agar 3 kun mobaynida har kun ertalab nonushta o'rniga 100 grammdan oshqovoq urug'i iste'mol qilib, ustidan choy yoki suv ichib turilsa juda katta foyda beradi. Qovoq – ko'pchilik sevib iste'mol qiladigan mahsulot. U shunchaki mazali emas, organizm uchun foydali hamdir. Tarkibida katta miqdorda vitamini saqlanadi. Yanada aniqroq qilib aytadigan bo'lsak, qovoq tarkibida beta-karotin – organizmga

tushganidan keyin A vitaminiga aylanadigan o‘simlik pigmenti miqdori juda ko‘p. Aynan beta-karotin qovoqqa to‘q sariq rang beradi. A vitamini organizm uchun muhim moddalar sirasiga kiradi. Tanamiz bu vitaminni mustaqil ravishda ishlab chiqara olmaydi: vitamin organizm tomonidan tayyor holatda yoki karotinoidlar ko‘rinishida qabul qilinadi. Iste‘mol qilinayotgan mahsulotlar tarkibida A vitamini miqdori kam bo‘lsa, bu salomatlikka salbiy ta‘sir ko‘rsatmasdan qolmaydi: ko‘rish qobiliyati yomonlashadi, immunitet tushib ketadi, tananing turli a‘zolari va to‘qimalari – suyaklardan tortib miya faoliyatigacha sekinlashadi. Tarkibida katta miqdorda beta-karotin saqlanadigan mahsulot ehtimoliy gipovitaminozning oldini olishga yordam beradi. Organizm A vitaminining bir kunlik me‘yorini qabul qilishi uchun kuniga 300 gr qovoq yeyish kerak bo‘ladi. Uni o‘zingizga yoqqan ko‘rinishda – qirg‘ichdan o‘tkazilgan, qaynatilgan, dimlab pishirilgan, quritilgan yoki boshqa biror usul bilan tayyorlab iste‘mol qilishingiz mumkin. Qovoq boshqa turdagi ozuqaviy moddalarga ham boy qovoq o‘z tarkibida A vitaminidan tashqari quyidagilarni ham saqlaydi:– oqsil;– uglevodlar, jumladan ovqat hazm qilish jarayoni uchun o‘ta muhim bo‘lgan kletchatka;– C, E, B2 (riboflavin) vitaminlari;– minerallar (kaliy, rux, marganes, temir, magniy)Salomatlikka zarar keltiruvchi to‘yingan yog‘lar, xolesterin va natriy (ular odatda yurak, tomirlar, buyraklar, oshqozon va boshqa a‘zolariga zarar yetkazadi) qovoq tarkibida deyarli mavjud emas. Qovoq yordamida ozish mumkin. Qovoq etining 94 foizi suvdan iborat. Bu esa uning kam kaloriyali mahsulot ekanligidan darak beradi: 100 gr qovoqning ozuqaviy qiymati bor-yo‘g‘i 20 kkal ga teng. Ustiga-ustak, kaloriyalarning katta qismi organizmga uglevodlar, jumladan kletchatka ko‘rinishida yetkaziladi. Kletchatka esa foydali xususiyatga ega: u oshqozon-ichak traktiga tushganidan keyin namlikni o‘ziga singdirib oladi, o‘lcham jihatidan kattalashadi va to‘qlik hissini paydo qiladi. Shuning uchun ham qovoq iste‘mol qilinayotgan kaloriyalar miqdorini kamaytirish, ortiqcha vazndan xalos bo‘lish va ochlik hissiga qarshi kurashishni istagan insonlar uchun mukammaldarajada mos keladi. Qovoq urug‘lari ozuqa moddalari, kaloriya, yog‘, oqsil va kletchatkaga boy. 100 gramm qovoq urug‘ida 574 kaloriya, 49 gramm yog‘, 6,6 gramm kletchatka va 30 gramm oqsil mavjud. Urug‘ tarkibidagi yog‘lar asosan mono to‘yinmagan yog‘ bo‘lib, ular sog‘liq uchun foydalidir. Shuningdek, urug‘lar B1, B2, B3, B5, B6, B9, C, E va K



*2-rasm. Oshqovoq urug‘i ko‘rinishi*

vitaminlarini o'z ichiga oladi. Shuningdek, kalsiy, temir, magniy, marganets, fosfor, kaliy, natriy, sink va boshqa mikroelementlar uchraydi. Qovoq urug'lari tarkibidagi E vitamini va karotinoidlar tufayli kuchli antioksidantdir. Vitaminlarning barini o'zida jam qilgan qovoq yuzlab kasalliklarga davo bo'ladi. Yana tarkibida kaliy, temir, kalsiy, magniy ko'p bo'lgani uchun asablarni tinchlantirishda, bo'y o'smaslikda, raxit kasalida, yurak-qon tomir xastaliklarida yordam bera oladi. Qovoqning et qismi ishqorli moddalarga nihoyatda boy. Shu sababli uni yuqori kislotali gastrit bilan og'riqan bemorlarga tavsiya qilamiz. Qovoq qabziyat, varikoz, ateroskleroz, qandli diabet, podagra, o't-tosh kasalini davolashda ham kerakli. Yana uning kuchli siydik haydovchi va organizmni tozalovchi xususiyati borligini ham unutmaslik kerak. Aynan shuning uchun shifokorlar uni homilador ayollarga yurak, buyrak ishini yaxshilash, shishlarni yo'qotish uchun tavsiya qilishadi. Ushbu antioksidantlar yallig'lanishni kamaytiradi va organizmni turli tashqi ta'sirlardan himoya qiladi. Yurak uchun foyda. Xuddi shu antioksidantlar yurakni qator kasalliklardan himoya qiladi. Qovoq urug'idagi magniy qon bosimini pasaytiradi. Bundan tashqari, zararli xolesterin (LDL) va triglitseridlarni kamaytiradi. Saratondan himoya qiladi. Urug'larni muntazam iste'mol qilish magniy qonda qand darajasini pasaytirishga yordam beradi, bu diabetga chalinganlar uchun, ayniqsa, foydalidir. Shu bois bunday bemorlarga urug'larni iste'mol qilish tavsiya etiladi. Immunitetni mustahkamlaydi. Teri yog'li bo'lsa, qovoqni qirg'ichdan o'tkazib, 1 osh qoshig'iga bir dona tuxum sarig'i va bir choy qoshiq asal qo'shib, yuzga surtish ham ancha foydali. Qovoq yuzni oqartirib, terini silliqlash xususiyatiga ega. Quruq teri uchun esa qovoq pishgan bo'lishi shart.

### **FOYDANILGAN ADABIYOTLAR RO'YXATI**

1. V.I.Zuyev, A.G.Abdullaev - Sabzavot ekinlari va ularni yetishtirish texnologiyasi T, O'zbekiston, 1997
2. X.CH.Bo'riyev, V.I.Zuyev, O.Qodirxo'jaev -Sabzavot ekinlari seleksiyasi, urug'chiligi va urug'shunosligi - T, Mehnat, 1997.
3. В.И.Зуев, А.А.Умаров, О.Кодирхужаев - Интенсивная технология возделывания овоще-бахчевых культур и картофеля,- Т. Mehnat, 1987.
4. В.И.Зуев, А.Г. Абдуллаев - Овощеводство защищенного грунта - Т, Уқитувчи, 1982
5. N.N.Balashov, G.O.Zeman - Sabzavotchilik T, O'qituvchi 1981.
6. «Sabzavotchilikdan amaliy mashg'ulotlar»-T, «O'qituvchi» 1983.
7. «O'zbekiston qishloq xo'jaligi» jurnali.

## INTERVENTIONAL ENDOSCOPIC PROCEDURES IN PATIENTS WITH EXTRAHEPATIC BLOCK OF BILE FLOW

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### **Abstract.**

The problem of gallstone disease, despite the current level of health care development, remains mainly a surgical problem, although a number of clinical situations require an integrated solution involving therapists, endoscopists, radiologists and doctors of other specialties. The study included 611 patients with gallstone disease complicated by mechanical jaundice, who, according to indications, underwent endoscopic retrograde cholangiopancreatography and endoscopic interventions. At the time of admission to the clinic, 174 patients had no mechanical jaundice, while 144 patients had a history of intermittent mechanical jaundice, and 30 patients had choledocholithiasis or choledoch ectasia on ultrasound. Being a minimally invasive intervention, endoscopic manipulations belong to the primary priority methods of diagnosis and treatment of patients with obstructive jaundice, however, despite their high diagnostic and therapeutic effectiveness, a rational approach is needed, taking into account the likely risk factors for the development of complications specific to this type of intervention.

**Key words:** cholelithiasis; mechanical jaundice; endobiliary interventions; endoscopic papillosphincterotomy.

**The relevance of the problem.** The problem of gallstone disease, despite the current level of health care development, remains mainly a surgical problem, although a number of clinical situations require an integrated solution involving therapists, endoscopists, radiologists and doctors of other specialties.

In patients with gallstone disease (GD), choledocholithiasis occupies a leading place and is observed in 8.1-26.8% of cases [1, 4], and in the group of patients older than 60 years, its frequency reaches 28.1% [3].

The introduction into clinical practice of endoscopic retrograde cholangiopancreatography (ERCP), endoscopic papillosphincterotomy (EPST), endoscopic balloon papillodilation, endobiliary prosthetics, as well as methods of laparoscopic sanitation of the common bile duct and the technology of minidos-tupa to the gallbladder, has opened up great opportunities for clinicians in the diagnosis and treatment of complicated forms of gallstone disease [1, 2, 5-11].

Dissatisfaction with the results of treatment of GD, especially with a combination of mechanical jaundice and purulent cholangitis, has determined the need for comprehensive treatment of this category of patients using endovideosurgical techniques, endoscopic and endobiliary interventions.

**Research materials and methods.** The study included 611 patients with gallstone disease complicated by mechanical jaundice who were in the clinic of the State Institution "Republican Specialized Scientific and Practical Medical Center for Surgery named after academician V.Vakhidov" for the period from 2021 to 2023, who, according to indications, underwent ERCP (or isolated ERCG, ERPG) and endoscopic interventions: Endoscopic papillosphincterotomy (EPST) or suprapapillary choledohodenostomy, after preliminary a suprapapillary fistula superimposed with a needle electrode. There were 249 (40.7%) patients with acute calculous cholecystitis, 362 (59.3%) patients with chronic calculous cholecystitis. The clinic of mechanical jaundice was observed in 436 patients (71.4%). The duration of anamnesis in 295 patients (48.3%) was 10 days or more, in other cases, patients were admitted to the clinic within 10 days from the onset of mechanical jaundice. Indications for emergency ERCP were ultrasound data and hyperbilirubinemia.

Diagnostic ERCP revealed that the main cause of mechanical jaundice in the study group of patients were: choledocholithiasis in 484 patients (79.2%); choledocholithiasis in combination with stenosing papillitis of the large duodenal papilla in 99 patients (16.2%); stenosis of the terminal choledochus in combination with stenosing papillitis of the large duodenal papilla in 20 patients (3.3%) and Mirizzi syndrome in 9 patients (1.4%).

**Research results and discussion.** At the time of admission to the clinic, 174 (28.5%) patients had no mechanical jaundice, while 144 patients had a history of intermittent mechanical jaundice, and 30 patients had choledocholithiasis or choledoch ectasia on ultrasound.

In the comprehensive assessment of mechanical jaundice according to the classification of Fedorov V.D. et al. (2000), which included the determination of

not only bilirubin parameters, but also an assessment of the functional status of the liver – a severe degree was detected in 62 (10.1%) patients.

In our opinion, this is of fundamental importance in determining the prognosis of the disease, since in severe cases the mortality rate reaches 40%.

When performing ERCG, bile duct contrast was obtained on the first attempt in 562 (92%) patients. In the remaining 49 (8%) cases, cannulation was performed with repeated manipulation, which was facilitated by portoned endoscopic papillotomy or suprapapillary fistula. According to the indications, endoscopic interventions were performed: EPST was performed in 462 (75.6%) patients, and suprapapillary choledochodenostomy was performed in 149 (24.4%) patients. At the same time, out of 300 observations of choledocholithiasis during EPST in 222 (74.1%) patients, it was possible to extract a concretion into the lumen of the duodenum 12. In the group of patients with choledocholithiasis, where suprapapillary choledochodenostomy was performed (117 patients), concretion from the choledochus was reduced in 73 (62.5%) cases. The length of the choledochodenostomy averaged 12 mm.

With inadequate EPST and suprapapillary choledochodenostomy, additional dissection was performed to extract relatively larger concretions, usually within 4-6 mm. Thus, an additional expansion of the papillotomy opening was performed in 46 patients (7.5%), and an additional expansion of the suprapapillary choledochodenostomy was performed in 49 patients (8.0%).

As can be seen from the above diagram, EPST was most often used in choledocholithiasis (79.3%) and its combination with papillitis (71%), and the frequency of suprapapillary choledochodenostomy in this pathology, on the contrary, was low, 20.7% and 29%, respectively. However, in the group of patients with terminal department of choledochus stenosis that makes EPST difficult, the frequency of suprapapillary choledochodenostomy was 78.6%, and EPST was only 21.4%. In Mirizzi syndrome, the frequency of both types of endoscopic interventions was the same.

Among the etiological causes of mechanical jaundice, according to ERCG, choledocholithiasis was detected in 96.6% of cases and in 92% its combination with papillitis of the large duodenal papilla. Stenosis of the terminal choledochus was determined in 19 (61.1%) patients, Mirizzi syndrome in 11 (33.3%) patients. The comparative diagnostic effectiveness according to ultrasound data was only 38.8%, whereas according to ERCG data it was 93.5%.

An analysis of the frequency of complications depending on the type of endoscopic intervention performed showed that after suprapapillary interventions, bleeding of

varying intensity was observed in 19 (12.5%) cases, after EPST in 31 cases (6.8%), and pancreatitis was observed in 8 (7.7%) and 16 (5%) cases, respectively. In 1 case, during suprapapillary choledohodenostomy, a perforation of the wall of the duodenum occurred, which required surgical intervention.

Thus, the incidence of complications with suprapapillary fistula and suprapapillary choledohodenostomy in patients with GI was higher and amounted to 21.2%, with EPST this indicator was 11.8%.

In 91% of cases after EPST, bleeding from papillotomic edges was stopped by additional coagulation, 2 (9.1%) patients underwent emergency surgery due to ineffective hemostasis. 1 patient died. In suprapapillary choledohodenostomy, ineffective endoscopic hemostasis was found in 2 patients, which amounted to 15.4%. 1 patient died after the operation. 4 patients were operated on for acute pancreatitis provoked by retrograde intervention after EPST and suprapapillary choledohodenostomy. Mortality in the development of acute pancreatitis was 6.3% in the EPST group and 12.5% in the suprapapillary choledohodenostomy group.

In general, the ineffectiveness of conservative measures for complications after endoscopic interventions required emergency surgery in 6 (15.8%) after EPST and in 7 (31.8%) after suprapapillary choledohodenostomy.

Among the total number of endoscopic interventions in 477 (78.0%) patients, the latter were effective in resolving the cause of mechanical jaundice. Thus, their effectiveness turned out to be virtually the same for the two methods, amounting to 78.9% (in 364 out of 462 patients) for EPST and 75% (in 112 out of 149 patients) for suprapapillary choledohodenostomy.

Among the entire group of patients with gallstone disease, 457 patients were operated on. At the same time, traditional interventions were performed in 172 cases and laparoscopic cholecystectomy was performed in 283 patients.

The total mortality rate was 4.9% (32 cases). Of this number, the mortality rate after traditional interventions was 11.7% (20 patients), endoscopic interventions – 5.5% (10 observations) and 0.5% (2 patients) after laparoscopic cholecystectomy. The main cause of mortality in severe mechanical jaundice was hepatic or multiple organ failure. In milder degrees of mechanical jaundice, mortality was due to myocardial infarction and pulmonary embolism.

**Conclusion.** Being a minimally invasive intervention, endoscopic manipulations belong to the primary priority methods of diagnosis and treatment of patients with obstructive jaundice, however, despite their high diagnostic (93.5%) and therapeutic effectiveness (78%), a rational approach is needed, taking into account

the likely risk factors for the development of complications specific to this type of intervention.

Performing atypical endoscopic transpapillary interventions causes an increased risk of developing specific complications, as the bleeding rate was 12.5% versus 6.8% for EPST, and ERCP-provoked acute pancreatitis was 7.7% versus 5%, respectively. At the same time, the ineffectiveness of conservative measures for complications after endoscopic interventions required emergency surgery in 6 (15.8%) after EPST and in 7 (31.8%) after suprapapillary choledochodostomy.

#### REFERENCES:

1. Briskin B.S., Gudkov A.N., Bryunin A.V., Kotovchikhina Y.A., Gaitukiev T.L., Mishina E.V. Modern tactics for cholelithiasis in patients with a high degree of operational risk // Annaly hirurgicheskoy gepatologii, 2002. - No1. – pp. 91-92. (In Russ.).
2. Karimov S.I. Endobiliary surgery in the treatment of mechanical jaundice // Annaly hirurgicheskoy gepatologii, 1996. - No1. – pp. 91-97. (In Russ.).
3. Nazirov F.G., Saatov R.R., Strussky L.P., Turakulov U.N., Saidazimov E.M. Endoscopic technologies in patients with external biliary fistulas // Materialy XI Moskovskogo Mezhdunarodnogo kongressa po jendoskopicheskoy hirurgii. – Moscow, 2007. – pp. 248-249. (In Russ.).
4. Kachmazova A.V., Teterin Yu.S., Tigiev L.R., Yartsev P.A., Rogal M.L., Bayramov R.S. Endoscopic treatment of patients with mechanical jaundice in Klatskin tumor // Hirurgija. Zhurnal imeni N.I. Pirogova, 2023. - No4. – pp. 55-60. (In Russ.).
5. Shuleshova A.G., Fomicheva N.V., Balalykin A.S., Danilov D.V. Confocal laser endomicroscopy in the diagnosis of extrahepatic bile duct strictures // Dokazatel'naja gastrojenterologija, 2018; 7(4): 12-19. (In Russ.).
6. Vazquez-Iglesias J.L., Gonzalez-Conde B., Lopez-Roses L. et al. Endoscopic sphincterotomy for prevention of the recurrence of acute biliary pancreatitis in patients with gallbladder in situ: long-term follow-up of 88 patients. Surg Endoscopy 2004; 18: 10: 1442-1446.
7. Курьязов, Б. Н., Бабаджанов, А. Р., Рuzматов, П. Ю., & Бабаджанов, К. Б. (2024). Эффективность использования минилапаротомного доступа в хирургическом лечении больных желчнокаменной болезни. Journal of Universal Science Research, 2(2), 373-381.
8. M.M. Akbarov, R.Yu. Ruzibaev, D.Sh. Sapaev, P. Yu. Ruzmatov, F.R. Yakubov. (2020). Modern Trends in the Prevention of

Liver Echinococcosis. *Indian Journal of Forensic Medicine & Toxicology*, 14(4), 7433–7437. DOI: <https://doi.org/10.37506/ijfmt.v14i4.12823>

9. Сапаев, Д. Ш. Современная диагностика и хирургическое лечение нагноившегося эхинококкоза печени [Текст] / Д. Ш. Сапаев, Р. Ю. Рузibaев, Ф. Р. Якубов // *Инфекции в хирургии*. –2018. –Т. 16, No1-2. –С. 10-11.

10. Рузibaев Р.Ю., Курьязов Б.Н., Сапаев Д.Ш., Якубов Ф.Р., Рузibaев П.Ю., & Бабаджанов А.Р. (2019). Современная оценка проблем диагностики и хирургического лечения эхинококкоза. *Вестник Национального медико-хирургического Центра им. Н. И. Пирогова*, 14 (1), 134-139.

11. Акбаров М.М., Рузibaев Р.Ю., Сапаев Д.Ш., Рузibaев П.Ю., Якубов Ф.Р. Современные пути лечения и профилактики эхинококкоза печени. *Проблемы биологии и медицины*. –2020; 120(4):12-18. DOI: <http://doi.org/10.38096/2181-5674.2020.4.00181>

## ОСТЕОМИЕЛИТ ГРУДИНЫ ПОСЛЕ ОПЕРАЦИЙ НА СЕРДЦЕ

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**Аннотация:** В статье исследуется остеомиелит грудины как редкое, но опасное осложнение кардиохирургических операций, в частности аортокоронарного шунтирования (АКШ). Рассматриваются патофизиологические механизмы развития заболевания, факторы риска, клинические проявления и современные методы диагностики. Особое внимание уделяется хирургическому и антибактериальному лечению, а также профилактическим мерам, направленным на снижение заболеваемости и улучшение исходов.

**Ключевые слова:** остеомиелит грудины, кардиохирургия, осложнения после операций, диагностика, лечение, аортокоронарное шунтирование.

**Введение.** Остеомиелит грудины – это инфекционно-воспалительное поражение костной ткани грудины и окружающих структур, часто возникающее после операций на сердце. Наиболее частым предрасполагающим фактором является стернотомия, проводимая для доступа к сердцу во время аортокоронарного шунтирования (АКШ), операций на клапанах или трансплантации сердца.

Несмотря на прогресс в кардиохирургии, частота остеомиелита грудины остается на уровне 0,5–5%. Заболевание сопровождается высокой смертностью (до 25%) и значительными затратами на лечение. Возбудителями чаще всего являются грамположительные бактерии, такие как *Staphylococcus aureus*, а также коагулазонегативные стафилококки.

Цель исследования – изучить патогенез остеомиелита грудины, факторы риска, современные методы диагностики и лечения, а также предложить эффективные меры профилактики.

Материалы и методы

Объекты исследования:

1. Пациенты: 150 пациентов с остеомиелитом грудины после операций на сердце. Возраст: 45–75 лет.

2. Инструментальные и лабораторные данные: Компьютерная томография (КТ), магнитно-резонансная томография (МРТ). Микробиологические исследования выделений из раны.

Методы исследования:

1. Клинический анализ: Изучение анамнеза, включая сопутствующие заболевания (диабет, ожирение, иммунодефицит). Выявление симптомов: боль, отек, гнойные выделения.

2. Лабораторные методы: Общий анализ крови (лейкоцитоз, уровень С-реактивного белка). Бактериологическое исследование раневых выделений.

3. Инструментальная диагностика: КТ для оценки деструкции костной ткани. МРТ для изучения изменений в мягких тканях. ПЭТ-КТ с использованием  $^{18}\text{F}$ -ФДГ для выявления активных очагов инфекции.

4. Методы лечения: Хирургическая санация раны, реконструкция грудины. Антибиотикотерапия с учетом данных микробиологических исследований.

Результаты

1. Распространенность и факторы риска: Сахарный диабет выявлен у 40% пациентов. Избыточная масса тела ( $\text{BMI} > 30$ ) у 35% пациентов. Длительность операции ( $> 4$  часов) в 30% случаев. Возраст  $> 65$  лет у 45% пациентов. Предшествующие инфекционные осложнения (10% случаев).

2. Клинические проявления: У 90% пациентов выявлены боли в области грудины. Гнойные выделения из раны наблюдались в 75% случаев. Лихорадка ( $38\text{--}39^\circ\text{C}$ ) была характерна для 85% пациентов. Отек и покраснение в области послеоперационного шва у 80% пациентов.

3. Диагностика. КТ: позволила выявить участки деструкции костной ткани у 95% пациентов. МРТ: показала наличие воспаления и отека мягких тканей в 88% случаев. ПЭТ-КТ: была эффективна для выявления очагов инфекции в 97% случаев. Бактериологическое исследование: *Staphylococcus aureus* обнаружен у 65% пациентов, коагулазонегативные стафилококки – у 20%.

4. Методы лечения и их эффективность: Хирургическая санация раны проведена у 85% пациентов. Реконструкция грудины с использованием аутоотканей выполнена у 20% пациентов. Антибиотикотерапия: ванкомицин и пиперациллин/тазобактам показали эффективность в 90% случаев. Повторные операции потребовались у 12% пациентов.

5. Исходы: Полное выздоровление наблюдалось у 85% пациентов. Летальность составила 5%, что ниже среднего уровня.

Обсуждение. Остеомиелит грудины – это серьезное осложнение после кардиохирургических операций, требующее своевременной диагностики и комплексного лечения.

Диагностика: Современные методы визуализации, такие как ПЭТ-КТ, позволяют с высокой точностью выявить активные очаги инфекции. КТ и МРТ являются стандартами для оценки состояния костной и мягкотканной структуры. Лечение: Хирургическая санация раны в сочетании с антибактериальной терапией остаются основными методами лечения. Использование аутологичных тканей для реконструкции грудины снижает риск рецидивов.

Профилактика: Контроль гликемии, сокращение времени операции и использование современных стерильных методик являются ключевыми мерами.

### **Заключение**

Остеомиелит грудины после операций на сердце – это редкое, но серьезное осложнение, требующее междисциплинарного подхода. Своевременная диагностика, комплексное лечение и эффективная профилактика значительно снижают риск рецидивов и улучшает прогноз. Дальнейшие исследования необходимы для разработки новых методов лечения и профилактики.

### **ИСПОЛЬЗОВАНИЕ ЛИТЕРАТУРЫ:**

1. El Oakley, R., & Wright, J. (1996). "Postoperative mediastinitis: Classification and management." *The Annals of Thoracic Surgery*, 61(3), 1030-1036.
2. Loop, F. D., et al. (1990). "Sternal wound complications after open-heart surgery." *JAMA*, 263(3), 566-569.
3. Robinson, P. J., et al. (2019). "PET imaging for sternal osteomyelitis." *Nuclear Medicine Communications*, 40(7), 681-687.
4. Kumar, S., et al. (2018). "Current trends in managing sternal osteomyelitis." *Journal of Cardiothoracic Surgery*, 13(1), 43.
5. Vuorisalo, S., et al. (2005). "Risk factors for sternal wound infection." *European Journal of Cardio-Thoracic Surgery*, 27(6), 1257-1261.
6. Francel, T. J., et al. (1995). "Management of deep sternal wound infection." *Plastic and Reconstructive Surgery*, 96(2), 291-297.
7. Lazar, H. L., et al. (1993). "Role of diabetes in postoperative wound infection." *The Annals of Thoracic Surgery*, 56(4), 876-883.

## PEDAGOGICAL CONDITIONS FOR ACTIVATING STUDENTS' OUTSIDE-COURSE LEARNING ACTIVITIES THROUGH DIGITAL TECHNOLOGIES

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**Abstract.** *This article clarifies the concept of pedagogical conditions and proposes pedagogical conditions for activating students' extracurricular educational activities using digital technologies.*

**Keywords:** *digital technology, pedagogical condition, mobile technology, information and educational environment, educational platform, website.*

In general secondary schools, adherence to pedagogical conditions is of great importance in activating students' extracurricular activities. Properly selected and systematically implemented pedagogical conditions allow achieving high results in practical activities with the teacher and the learner at different levels of the educational process [1].

Therefore, it is necessary to clarify the pedagogical conditions for activating students' extracurricular activities. To this end, it is first considered appropriate to clarify the meaning of the concept of "pedagogical condition" and determine its functions in programming languages, based on an analysis of scientific and methodological literature.

The concept of pedagogical conditions is discussed in the works of N.G. Bajenova [2], I.V. Khludeyeva [2], V. Kupriyanov [3], S.A. Dinina [3], which summarize and define various groups of conditions. These scientists argue that, depending on the nature of the impact, there are objective and subjective conditions, and according to the specific characteristics of the object of impact, there are general and private conditions, as well as spatial and others.

Some researchers and scientists associate pedagogical conditions with the pedagogical system (N.V. Ippolitova [4], S.N. Pavlov [5], A.Kh. Khushbakhtov [6], etc.). The authors conclude that pedagogical conditions are one of the components of the pedagogical system, reflecting the totality of the possibilities of the educational and material-spatial environment, which have a personal and procedural impact. Aspects of this system are to ensure its effective functioning and development.

According to U.M. Mirsanov, pedagogical conditions are a set of specially based, organized circumstances and directions of pedagogical activity that determine the educational process, its various stages, and the achievement of educational effectiveness in general [7].

Based on this definition, the pedagogical conditions for activating students' extracurricular activities through digital technologies were identified:

1. To form a culture of using the global network among students;
2. Encourage students to use mobile technologies for educational resources;
3. To develop students' skills in using information and educational environments, educational platforms, and educational websites related to biology during extracurricular hours;
4. To develop the competence of biology teachers in organizing students' extracurricular activities using cloud services and learning environments.

Thus, by implementing the above conditions, a culture of effective use of the global network and mobile technologies will be formed among secondary school students. It also helps to effectively organize extracurricular activities in biology. As a result, students' interest in biology is increased and their ability to learn independently is developed.

### Literature

1. Mirsanov U.M. Pedagogical conditions for increasing the efficiency of programming language teaching // *Cience and innovation in the education system International scientific-online conference.* – Italy, 2022. – P. 96-98.
2. Bajenova N. G., Khludeeva I. V. pedagogicheskie usloviya, orientirovannye na razvitie: teoreticheskiy aspekt // [file:///C:/Users/Mirsanov/Downloads/pedagogicheskie-usloviya-orientirovannye-na-razvitie-teoreticheskiy-aspekt%20\(1\).pdf](file:///C:/Users/Mirsanov/Downloads/pedagogicheskie-usloviya-orientirovannye-na-razvitie-teoreticheskiy-aspekt%20(1).pdf)
3. Kupriyanov B. V., Dynina S. A. Sovremennye podkhody k opredeleniyu sushchnosti category «pedagogical conditions» // *Vestnik Kostromskogo gos. to the university N. A. Nekrasova.* 2001. – No. 2. – S. 101–104.
4. Ippolitova N.V. Analysis of the concept of "pedagogical conditions": sustainability, classification / N.V. Ippolitova, N.S. Sterkhova // *General and Professional Education.* 2012. – No. 1. – S. 11. (S. 8-14.)
5. Pavlov S. N. Organizatsionno-pedagogicheskie usloviya formirovaniya obshchestvennogo mneniya organami mestnogo self-management // *Avtoreferat dissertatsii na soiskanie uchenoy stepeni kandida pedagogicheskikh nauk.* - Magnitogorsk, 1999. - 23 p.

6. Khushbakhtov, A. X. Terminology «pedagogicheskie usloviya» // Molodoy uchenyy. 2015. – No. 23 (103). - S. 1020-1022.
7. Mirsanov U. M. Improving the methodology of teaching programming technologies in the system of continuous education // Dissertation prepared for the degree of Doctor of Pedagogical Sciences (DSc). – Navoi, 2023. – 332 p.

## DIDACTIC POTENTIAL OF WEB-QUEST EDUCATIONAL TECHNOLOGY IN DEVELOPING STUDENTS' COMPETENCIES IN BIOLOGY

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**Abstract.** This article discusses web-quest educational technology and its didactic potential. Additionally, it highlights the advantages of using web-quest educational technology in developing students' competencies in biology.

**Keywords:** web-quest, hyperlink, website.

In general secondary schools, web-quest educational technology plays an important role in increasing the effectiveness of teaching biology and developing students' competencies. This is because web-quest educational technology integrates active teaching methods with the advantages of interactive technologies by using the global network to search for necessary educational materials [1]. Therefore, utilizing web-quest educational technology in developing students' competencies in biology is considered appropriate.

In this regard, U.M. Mirsanov [1], G.A. Vorobyov [2], Ye.A. Igumnova [3], I.V. Radetskaya [3], M.V. Andreyeva [4], O.V. Volkova [5], and O.V. Gorbunova [6] have conducted research, and according to their findings, web-quest educational technology possesses the following features: it provides the opportunity to acquire knowledge by searching for subject-related information through hyperlinks; enhances positive motivation in learning; ensures differentiated learning; creates opportunities for independent learning; and develops learners' competencies by generating intellectually challenging situations.

Summarizing the views of these scholars, it can be stated that web-quest educational technology, first and foremost, develops the ability to use the global network to search for educational information. Secondly, it enhances the effectiveness of lessons by creating a problem-solving environment aimed at developing students' active cognitive activity.

Considering the above-mentioned potential of web-quest educational technology, we concluded that it should be utilized in general secondary schools to enhance the effectiveness of teaching biology, improve students' knowledge of natural sciences, and develop the necessary competencies.

A distinctive feature of using web-quest educational technology in teaching biology is that it directs students to independently or collaboratively solve assigned

problems using the global network. In this approach, students are tasked with collecting educational information from the global network on a specific topic related to biology and solving the problem using the gathered data. Some references are provided by the teacher, while others can be independently found through traditional search engines [4-6]. This, in turn, provides the following opportunities:

- Encouraging students to explore new material related to biology;
- Directing students towards purposeful research to complete practical tasks in biology;
- Enhancing students' abilities to conduct experiments.

At the same time, using web-quest educational technology in teaching biology and solving problems helps develop a number of competencies in students: using information technologies to solve environmental problems and search for necessary educational materials on websites and databases; enhancing the ability to make independent decisions; developing the ability to find multiple methods for solving environmental problems, selecting the most effective option, and justifying their solution.

Thus, web-quest educational technology enables the activation of students' research activities and enhances their critical thinking skills and abilities when working with large volumes of information related to biology. It helps develop skills such as making choices, taking responsibility for those choices, evaluating the effectiveness of information search, and determining the appropriate amount of information to present.

Additionally, web-quest educational technology is implemented in biology education for the following purposes:

- Educational: Engaging each student in an active learning process and enhancing their skills and competencies in organizing both individual and group activities;
- Developmental: Increasing students' interest in biology, developing their creative abilities, and shaping skills for independent work with research, public speaking, literature, and internet resources;
- Creative: Developing a sense of responsibility in completing practical tasks related to biology.

In conclusion, web-quest educational technology is a modern teaching method aimed at solving problems independently through searching the global network. Therefore, it is essential to use web-quest educational technology to develop students' biological competencies.

### References

1. Mirsanov U.M. The potential of web-quest educational technology to enhance the effectiveness of teaching programming languages // O'zMU News. – Tashkent, 2022. – No. 1/11. – pp. 158-160.
2. Vorobyov G.A. Web-quest technologies in teaching sociocultural competence (English language, linguistic university) // Dissertation for the degree of Candidate of Pedagogical Sciences. – Pyatigorsk, 2004. – 220 p.
3. Igumnova E.A., Radetskaya I.V. Quest technology in education // Teaching manual. Chita, Transbaikal State University, 2016. – 164 p.
4. Andreyeva M.V. Web-quest technology in the formation of communicative and sociocultural competence // Information and Communication Technologies in Foreign Language Teaching. Proceedings of the I International Scientific and Practical Conference. – Moscow, 2014. – pp. 58-62.
5. Volkova O.V. Preparing future specialists for intercultural communication using web-quest technology // Abstract of the dissertation for the degree of Candidate of Pedagogical Sciences. – Belgorod, 2010. – 25 p.
6. Gorbunova O.V. Web-quest in pedagogy as a new didactic model of teaching // School Technologies. 2016. – No. 2. – pp. 3-7.

## INNOVATSION HAVO TRANSPORT TARMOG‘I – HAVO YO‘LIDA ISHLAYDIGAN SHAHAR ICHKI TRANSPORT TIZIMI

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**Annotatsiya:** Ushbu maqolada shahar ichki transport muammolarini yechish, turizmni rivojlantirish uchun innovatsion transport xizmatlarini joriy etish va havo orqali harakatlanish tizimi yordamida yangi turistik marshrutlarni ochish haqida so‘z yuritiladi.

**Kalit so‘zlar:** Turizm, aeromobil, urbanizatsiya, havo transport tizimi, reaktiv dvigatel, infratuzilma, elektr energiyasi sarfi.

Bugungi urbanizatsiya sharoitida yer ustidagi tirbandlik va transportning ekologiyaga salbiy ta‘sirini bartaraf etish uchun havo yo‘llarida ishlaydigan, elektr energiyasida harakatlanadigan aeromobillar tizimini yaratish zarurati oshmoqda. Ushbu transport vositalari sayohatchilar, mahalliy aholi va turistlarga qulay, tez va ekologik toza xizmat ko‘rsatish imkoniyatini yaratishi mumkin.

Aeromobillar – bu havoda uchishga qodir, yerda esa odatdagi avtomobillar kabi harakatlanadigan transport vositalaridir. Ularning ishlash prinsipi asosan quyidagi texnologiyalar va kontseptsiyalar asosida quriladi:

1. *Reaktiv yoki turbovintli dvigatellar:* Aeromobillarda, ko‘pincha, turbovintli dvigatellar yoki reaktiv dvigatellar o‘rnatiladi, ular havo kuchini yaratib, transport vositasining havoda uchishini ta‘minlaydi. Dvigatelning kuchi aeromobilni yuqoriga ko‘tarishga xizmat qiladi.
2. *Yerdagi harakatlanish:* Aeromobillar yer yuzida avtomobil kabi harakatlanishi uchun ularda odatdagi avtomobil dvigatellari yoki elektr motorlar bo‘lishi mumkin. Ular shinalar yoki maxsus izlar orqali yer yuzasida harakat qiloladi.
3. *Gidrodinamik va aerodinamik dizayn:* Aeromobillarning havodagi ko‘rsatkichlarini optimallashtirish uchun maxsus dizayn qilingan. Ko‘plab aeromobillar qanotlar yoki vertikal ko‘tarilish uchun mo‘ljallangan rotorlar bilan jihozlangan bo‘ladi.
4. *Boshqaruv tizimi:* Aeromobilning boshqaruvi odatdagi avtomobil boshqaruvi bilan bir xil prinsipga asoslanadi, ammo havoda harakatlanish uchun

qo'shimcha tizimlar kerak bo'ladi. Aeromobilni boshqarish, odatda, maxsus joystick yoki elektron boshqaruv tizimlari yordamida amalga oshiriladi.

5. *Energiya manbai:* Aeromobillarda energiya manbai sifatida an'anaviy benzin yoki dizel dvigatellari, elektr batareyalari yoki gibrid tizimlar ishlatilishi mumkin. Elektr energiyasi aeromobilni quvvatlashda va uning uchishini ta'minlashda muhim rol o'ynaydi.

Aeromobillar kelajakda transport infrastrukturasi va texnologiyasining bir qismi sifatida muhim o'rin tutishi mumkin. Bugungi kunda ba'zi prototiplar sinovdan o'tkazilayotgan bo'lsa-da, ular hali keng miqyosda tijorat foydalanishiga o'tmagan. Havo yo'lida ishlaydigan shahar ichki transport tizimini joriy etish bir qator dolzarb muammolarni bartaraf etishi va qator qulayliklarga ega bo'lishi mumkin: Shahar ichki transport muammolarini yechish (tirbandlik, vaqt yo'qotilishi va yoqilg'i iste'molini kamaytirish); Turizmni rivojlantirish uchun innovatsion transport xizmatlarini joriy etish; Havo orqali harakatlanish tizimi yordamida yangi turistik marshrutlarni ochish.

Keling avvalo ushbu havo yo'lida ishlaydigan shahar ichki transport tizimi qnday ishlashiga nazar tashlasak:

- **Havo yo'llari:** Maxsus "shahar aerokoridorlari" yaratiladi. Ushbu yo'llarda aeromobillar oson harakatlanadi.
- **Elektr energiyasi bilan ishlash:** Aeromobillarning atrof-muhitga zarar yetkazmasligi uchun elektr dvigatellaridan foydalaniladi.
- **Autopilot tizimi:** Har bir aeromobil avtomatlashtirilgan boshqaruv tizimi orqali xavfsizlikni ta'minlaydi. Bu esa turli xil halokatlar va to'qnashuvlarning oldini oladi.
- **Stansiyalar:** Shahar bo'ylab "aeromobil bekatlari" o'rnatiladi, u yerdan foydalanuvchilar transportni ijaraga olishi yoki o'z marshrutini belgilab aeromobillardan foydalanishi mumkin bo'ladi.

Ushbu globallashuv davrida sayohlik va turizm infratuzilmasi shiddat bilan o'zgarib borayotgan bir vaqtda bu tizimning quyidagi bir qator afzalliklari bo'lishi mumkin:

**Tezkorlik:** Aeromobillar yer ustidagi oddiy transport vositalaridan 3-5 barobar tezroq harakat qila oladi bu esa, yo'lovchilarga ancha qulaylik yaratishga xizmat qiladi.

**Ekologik tozaligi:** Aeromobillar yoqilg'i emas, elektr energiyasi bilan ishlaydi, bu esa atrof-muhitga turli xil gazlar tarqalishini oldini oladi va tabiatni ham asrashga hissa qo'shadi.

**Turizm rivoji:** Aeromobillar orqali Sayohatchilar va turistlar yangi joylarni ko‘rish imkoniyatiga ega bo‘ladi. Masalan, shahar ustidan parvoz qilish orqali yangi joylardan va manzaralardan zavqlanishadi, bu esa turistlarni keyinchalik bu yerlarga kengroq jalb etish istiqbolini yaratadi, demak aeromobillar turizm rivojlanishi uchun reklama vazifasini ham o‘taydi.

**Infratuzilmaga minimal ta‘sir:** Agar biz aeromobillar tizimini yaratolsak yer usti yo‘llariga yoki ko‘priklarga ehtiyoj qolmaydi, bu esa ortiqcha xarajatni oldini oladi va mablag‘larning to‘g‘ri va maqsadli sarflanishini ta‘minlaydi.

Xo‘sh ushbu tizimning texnik imkoniyatlari qanday? Bugungi kunda ushbu tizimni joriy etish uchun nimalarga ahamiyat berish lozim?

○ **Dron uslubidagi transport:** Aeromobillar dron uslubida ham bo‘lishi mumkin, bunda har bir aeromobil ikki-uch kishini tashiy oladigan kichik havo transport vositalaridan foydalaniladi.

○ **Elektr zaryad stansiyalari:** Tabiiyki aeromobillar zaryad orqali ishlaydi, shuning uchun bu transport vositalari to‘xtaydigan har bir bekatda avtomobil zaryadini tezkor quvvatlantirish tizimi yaratilgan bo‘ladi.

○ **IoT tizimi:** Transport vositalarini boshqarish va masofadan kuzatib borish uchun elektron smart dastur yaratilgan bo‘ladi va bu dastur yordamida aeromobillarni oson nazorat qilib turish mumkin bo‘ladi.

Havo yo‘lida ishlaydigan shahar ichki transport tizimining muammo va yechimlari nimalardan iborat?

✓ **Xavfsizlik:** Aeromobillarda kuchli xavfsizlik choralari ko‘rilgan bo‘ladi masalan, avtomatik to‘qnashuvdan saqlash tizimi yaratiladi va bir vaqtning o‘zida bir nechta aeromobil havoda harakatlanganda sodir bo‘lishi mumkin bo‘lgan halokatlarning oldi olinadi.

✓ **Narxi:** To‘g‘ri bu tizim boshida qimmat bo‘lishi mumkin, lekin masshtab kengaygani va asta-sekin ommalashib borgani sari narxi ham arzonlashib boradi.

✓ **Texnologiya cheklovlari:** Texnologiya rivojlangani sayin uchish batareyalarining quvvati ortib boradi.

O‘zbekiston sharoitida Aeromobillar yordamida Buxoro, Samarqand, Xiva Toshkent kabi yurtimizning dunyoga mashhur va tarixiy shaharlaridagi diqqatga sazovor joylarni havodan ko‘rish imkoniyatlari mavjud bo‘ladi, bu esa yurtimiz shaharlarini dunyoga tanitish va turizmni ham rivojlantirishga juda katta hissa qo‘shadi. Qishloq joylaridagi turizmni rivojlantirish uchun ham ushbu transport vositalaridan foydalanish mumkin bo‘ladi.

**Birinchi bosqichdagi aeromobil (kichik):** Har bir aeromobilning narxi taxminan 500,000-1,000,000 AQSh dollari atrofida bo‘lishi mumkin, bu avvalgi prototiplar

va hozirgi texnologiyalar asosida hisoblangan lekin agar O‘zbekistonda aeromobillarni masshtabli va seriyali ishlab chiqarish yo‘lga qo‘yilsa, narx bir necha barobar arzonlashadi, ammo hozirgi bosqichda bunday ishlab chiqarishni tashkil etish uchun mablag’ va investitsiyalar zarur.

Infratuzilma narxi – elektr zaryad stansiyalari va bekatlar, Aeromobillarning zaryad olishi uchun har bir yuqori texnologik zaryad stansiyasi va aeromobil turish joyi tashkil etishga 300,000-500,000 AQSh dollari miqdorida investitsiya kerak bo‘lishi mumkin. Havo yo‘llari va aerokoridorlar, shahar ustidagi havo yo‘llarini tashkil qilish uchun boshlang‘ich investitsiya miqdori 5-10 million AQSh dollariga yetishi mumkin. Bu summaga alohida koridorlar, navigatsiya tizimlari, texnik xizmat ko‘rsatish punktlari va boshqa zarur infrastruktura kiradi.

Bugungi kunda ushbu tizim – Dubayda 2026-yilgacha havo taksilarini ishga tushirish rejalashtirilmoqda. Dubayda uchar taksilar ishga tushadi, birinchi parvozlar 2026-yilga rejalashtirilgan. Bu haqda Azernews xabar bermoqda. Uchar taksilar Dubay aeroporti, shahar markazi, sohil (Dubay Marina) va Palm-Jumeyra kabi shaharning asosiy nuqtalarini bog‘lashi kutilmoqda. Parvoz 10 daqiqa davom etadi, bu esa yer usti transportiga nisbatan yo‘l vaqtini sezilarli darajada qisqartiradi. Uchadigan taksilar elektr tortish vositasida ishlaydi va tezligini soatiga 320 km gacha oshiradi.

Aeromobillarni O‘zbekiston sharoitida ishga tushirishga qachon kirishish mumkinligi bir nechta omillarga bog‘liq. Aeromobillarni samarali va xavfsiz ishlatish uchun quyidagi asosiy shartlar zarur:

1. *Texnologik tayyorgarlik:* Aeromobillar hali keng tarqalgan texnologiya emas va ularni ishlab chiqarish va saqlash uchun rivojlangan infratuzilma zarur. O‘zbekistonda aeromobillarga mos keladigan texnologik infratuzilma va ishlab chiqarish bazasi mavjud bo‘lishi kerak va bu tizim rivojlangani sari asta-sekinlik bilan yaratib boriladi.
2. *Havolarni boshqarish tizimi:* Aeromobillarni ishlatish uchun havodagi yo‘llarni boshqarish, xavfsizlikni ta’minlash va ularni nazorat qilish tizimi talab etiladi. O‘zbekistonning havodagi transport tizimi ham bu texnologiyaga mos kelishi kerak bo‘lmasa havoda harakatlanadigan bu texnologiyani joriy qilish qiyinlashadi.
3. *Qonuniy va me’yoriy bazalar:* Aeromobillarni davlat tomonidan tasdiqlangan qonunlar, nizomlar va standartlarga asoslanib ishlatish mumkin bo‘ladi. Bu, o‘z navbatida, xavfsizlikni ta’minlash va texnologiyaning tartibli rivojlanishini nazarda tutadi.
4. *Havola va energiya ta’minoti:* Aeromobillarni ishlatish uchun zarur bo‘lgan energiya manbalarini tashkil etish lozim. Elektrli aeromobillar uchun

quvvatlantirish punktlari, yo‘l-transport infratuzilmasi va benzin yoki boshqa energiya resurslari asosida ishlovchi aeromobillarni qo‘llab-quvvatlash tizimi yaratilishi kerak.

Xulosa qilib aytganda, aeromobillarning keng joriy etilishi uchun texnologiya rivojlanishi, qonunchilikni moslashtirish va infastruktura tizimlarini tayyorlashga hali vaqt ketadi. Bu jarayon taxminan olib borilayotgan ishlarga va harakatga qarab 15-20 yil ichida amalga oshishi mumkin, ammo vaqtinchalik sinovlar va kichik hududlarda foydalanish imkoniyatlari mavjud bo‘lishi mumkin.

#### **Foydalanilgan adabiyotlar:**

1. Kamilova F.K. Xalqaro turizm marketingi. - Toshkent: TDIU, 2007.
2. Kamilova F.K. Mexmonxona va restoran xo‘jaligi marketingi. - Toshkent: \* TDIU, 2007.
3. Kotler F. Dj Bouen. Dj. Meykenz Marketing. Gostepriimstvo. Turizm. Uchebnik. YUNITI, 2004
4. Kornilova F.K. Tourism marketingi. O‘quv qo‘llanma. - Toshkent: Uzinkomsentr, 2003.
5. [www.travel.ru](http://www.travel.ru)
6. [www.Uzreport.uz](http://www.Uzreport.uz)
7. [www.Uzbekturizm.uz](http://www.Uzbekturizm.uz)
8. [www.world-turizm.org](http://www.world-turizm.org)

## BACHADON BO‘YNI DISPLAZIYASINI KELIB CHIQISH SABABLARI VA DAVOLASH USULLARI

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**Abstract:** Cervical dysplasia, or cervical intraepithelial neoplasia (CIN), is a precancerous condition marked by abnormal cellular changes in the cervical epithelium. The study aims to identify its causes, risk factors, diagnostic approaches, and modern treatment options. Human papillomavirus (HPV) infection is the predominant cause, with other contributing factors such as smoking, immune suppression, and prolonged hormonal contraceptive use. Diagnostic advancements like HPV testing and colposcopy have enhanced early detection rates. Treatment options range from conservative management for low-grade lesions to surgical procedures for advanced cases. Preventive strategies, especially HPV vaccination, show promise in reducing disease prevalence.

**Keywords:** Cervical dysplasia, Cervical intraepithelial neoplasia (CIN), HPV, Diagnosis, Treatment, Prevention, Colposcopy

**Introduction.** Cervical dysplasia is a prevalent condition that poses a significant risk of developing into invasive cervical cancer if left untreated. According to global health reports, cervical cancer remains one of the leading causes of cancer-related deaths among women. The primary cause of cervical dysplasia is persistent infection with high-risk HPV types, notably HPV-16 and HPV-18. This study seeks to analyze the causes and explore contemporary diagnostic and treatment approaches to manage cervical dysplasia effectively.

**Methods:** A comprehensive review of the literature was conducted, focusing on cervical dysplasia's etiology, risk factors, diagnostic methods, and treatment options. Data was sourced from databases such as PubMed, Scopus, and WHO reports. Guidelines from leading health organizations like the American Society for Colposcopy and Cervical Pathology (ASCCP) were also reviewed. Clinical studies conducted over the last ten years were prioritized to ensure up-to-date insights.

## Results. Etiology and Risk Factors

1. Human Papillomavirus (HPV): Persistent infection with high-risk HPV strains is the primary cause of cervical dysplasia.
2. Lifestyle Factors: Smoking doubles the risk by affecting immune response and epithelial cell integrity.
3. Immune Suppression: Conditions like HIV and long-term immunosuppressive therapy increase susceptibility.
4. Hormonal Factors: Long-term use of oral contraceptives is linked to an elevated risk of dysplasia progression.
5. Sexual Behavior: Early sexual activity and multiple sexual partners contribute to higher HPV exposure rates.

## Diagnostic Methods

1. Cytology (Pap Smear): Identifies abnormal cervical cells and classifies them into low-grade (CIN 1) and high-grade (CIN 2/3) dysplasia.
2. HPV DNA Testing: Detects high-risk HPV strains, aiding in early diagnosis.
3. Colposcopy and Biopsy: Provides a detailed evaluation of abnormal areas for definitive diagnosis.
4. Liquid-Based Cytology (LBC): Enhances detection accuracy compared to conventional Pap smear.

## Treatment Approaches

1. Conservative Management: Recommended for low-grade CIN, especially in younger women, as many lesions regress spontaneously. Regular follow-ups with cytology and HPV testing are essential.
2. Surgical Treatments: Cryotherapy: Freezes abnormal cells, suitable for small lesions. Loop Electrosurgical Excision Procedure (LEEP): Removes abnormal tissue with minimal discomfort. Cold Knife Conization: Used for high-grade lesions or cases involving glandular dysplasia.
3. Advanced Therapies:  
HPV vaccines, such as Gardasil and Cervarix, provide significant protection against high-risk HPV types. Immunomodulatory therapies are under investigation for high-risk individuals.
4. Post-Treatment Monitoring: Regular cytology and HPV testing are crucial to detect potential recurrence.

Discussion The integration of HPV testing into screening programs has improved early detection, allowing for timely intervention. However, access to these advanced diagnostic tools remains limited in low-resource settings, emphasizing the need for global efforts to ensure equitable healthcare access. HPV vaccination

programs have demonstrated a significant reduction in cervical dysplasia incidence, particularly in younger populations. Future research should focus on improving vaccine coverage and addressing barriers to healthcare access.

### **Conclusion**

Cervical dysplasia, primarily caused by persistent HPV infection, remains a preventable condition. Early diagnosis through effective screening, coupled with appropriate treatment strategies, significantly reduces the progression risk to cervical cancer. Preventive measures, such as HPV vaccination and public health education, are pivotal in combating this public health challenge. Continuous advancements in diagnostic and therapeutic methods are essential to improve patient outcomes and reduce disease burdens.

### **References:**

1. Arbyn, M., et al. (2020). "HPV screening: Progress and challenges." *The Lancet Oncology*, 21(5), 631-640.
2. Saslow, D., et al. (2018). "Screening guidelines for cervical cancer prevention." *CA: A Cancer Journal for Clinicians*, 68(4), 312-317.
3. Basu, P., et al. (2019). "The role of HPV vaccines in cervical dysplasia prevention." *International Journal of Cancer*, 145(6), 1401-1410.
4. Moscicki, A. B., et al. (2021). "Cervical dysplasia: Pathophysiology and clinical management." *Obstetrics & Gynecology Clinics of North America*, 48(3), 543-556.
5. WHO (2022). "Comprehensive guide to cervical cancer prevention and control." *World Health Organization Guidelines*.
6. Solomon, D., et al. (2020). "The impact of HPV testing on cervical dysplasia diagnosis." *American Journal of Obstetrics & Gynecology*, 223(3), 299-307.

## **TEACHING TECHNOLOGIES FOR ENGLISH VOCABULARY TO SCHOOL STUDENTS**

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### **ABSTRACT**

The acquisition of vocabulary is a fundamental aspect of learning a new language, and English is no exception. With the increasing role of technology in education, various modern teaching technologies have been introduced to enhance vocabulary learning for school students. This article explores a variety of digital tools, including language-learning apps, interactive platforms, multimedia resources, and gamification techniques, that can significantly improve students' vocabulary retention. These technologies provide a dynamic and engaging environment for learning, making vocabulary acquisition more effective and enjoyable. By incorporating tools such as Quizlet, Duolingo, Memrise, and VR/AR, educators can tailor learning experiences to meet students' individual needs, thereby fostering better understanding and use of the English language.

### **KEYWORDS**

Vocabulary acquisition, English language, educational technology, digital tools, language-learning apps, interactive platforms, gamification, multimedia resources, personalized learning, spaced repetition, VR/AR.

### **INTRODUCTION**

In today's interconnected world, proficiency in English has become a crucial skill for students, as it opens doors to global communication, academic opportunities, and professional growth. A fundamental aspect of learning any language, including English, is vocabulary acquisition. A strong vocabulary base not only helps students improve their reading, writing, listening, and speaking skills but also enhances their overall language proficiency. Traditional methods of teaching vocabulary often rely on rote memorization and repetitive exercises, which can be tedious and disengaging for young learners. However, with the rapid advancement of technology, new educational tools have emerged that offer dynamic and interactive approaches to vocabulary learning. Digital platforms, mobile applications, and innovative teaching techniques can transform vocabulary instruction from a monotonous task into an engaging and enjoyable experience. This article examines the various teaching technologies that can be used to enhance the process of teaching English vocabulary to school students. By

integrating these modern tools, educators can create more personalized, engaging, and effective learning experiences, ensuring that students not only memorize words but also develop a deeper understanding of their usage in real-life contexts. Through the use of these technologies, students are empowered to expand their vocabulary in a way that is both fun and impactful.

### **RELEVANCE OF THE TOPIC**

The relevance of teaching English vocabulary to school students through modern technologies cannot be overstated, especially in today's rapidly evolving educational landscape. English has become a global lingua franca, and mastering it is essential for students' academic success, career opportunities, and cross-cultural communication. As the demand for proficient English speakers increases, traditional methods of teaching vocabulary—often limited to rote memorization and static exercises—are no longer sufficient to meet the diverse needs of learners. Incorporating technology into vocabulary instruction addresses the limitations of conventional approaches by providing more engaging, interactive, and personalized learning experiences. The use of digital tools and platforms enables students to learn at their own pace, access a variety of resources, and practice vocabulary in real-world contexts. This not only enhances vocabulary retention but also helps students develop critical thinking and problem-solving skills as they engage with language in innovative ways. Furthermore, the integration of technologies such as gamification, spaced repetition, and multimedia resources is increasingly important as students are becoming more accustomed to digital environments in their daily lives. By aligning language instruction with the digital experiences that students are already familiar with, educators can create a more motivating and effective learning environment. Therefore, the topic of teaching English vocabulary through technology is highly relevant and timely, as it responds to the growing need for more effective and engaging language education methods.

In today's globalized world, mastering a second language, especially English, has become essential. For school students, expanding their English vocabulary is one of the most crucial aspects of language learning. However, traditional methods of vocabulary instruction may not always be sufficient or engaging. This article explores modern teaching technologies that can significantly enhance the learning of English vocabulary for school students.

#### **1. The importance of vocabulary acquisition**

Vocabulary acquisition is at the heart of language learning. Without a rich vocabulary, students may struggle with comprehension, communication, and writing. A strong vocabulary allows students to understand texts more easily, express themselves more clearly, and perform better in language exams.

For young learners, the process of acquiring vocabulary should be both systematic and enjoyable. By using technology, educators can create dynamic and interactive learning environments that motivate students and facilitate better retention of new words.

## 2. Digital tools and applications

In recent years, the use of digital tools has transformed the way vocabulary is taught. Several educational apps and platforms have been developed to provide students with engaging ways to learn new words:

**Quizlet:** Quizlet allows students to create personalized flashcards and test their knowledge through various interactive games and quizzes. The visual and auditory aspects of the platform enhance memory retention.

**Duolingo:** This popular language-learning app uses a gamified approach to help students learn new vocabulary. The app provides regular practice through fun, bite-sized lessons and challenges.

**Memrise:** Memrise uses mnemonic techniques and spaced repetition to help students memorize vocabulary effectively. It also includes real-world video clips of native speakers, which helps students learn vocabulary in context.

## 3. Interactive Platforms and Online Dictionaries

Interactive platforms such as Google Classroom and Edmodo offer teachers the opportunity to assign vocabulary exercises, monitor progress, and facilitate discussions in a virtual classroom. These platforms also support collaboration, allowing students to share words and phrases they encounter during their studies. Online dictionaries like WordReference and Merriam-Webster provide students with not only word definitions but also examples of how words are used in sentences. Some of these dictionaries include audio pronunciations, which can help improve listening and pronunciation skills.

## 4. Multimedia Resources

The integration of multimedia resources such as videos, songs, and interactive websites can make vocabulary learning more enjoyable and memorable. For instance, YouTube channels dedicated to English learning, like English Addict with Mr. Duncan or BBC Learning English, offer videos that teach vocabulary in context. Furthermore, using songs to teach new vocabulary can help students remember words more effectively. Music engages both the auditory and emotional aspects of memory, making vocabulary retention easier.

## 5. Gamification

Gamification is one of the most powerful tools in modern education. It makes learning fun and interactive, encouraging students to engage actively with the material. Games like Kahoot!, Wordwall, and Boggle can be used to practice vocabulary in a

competitive yet supportive environment. These games foster healthy competition and help students internalize words through repetition and context.

#### 6. Spaced repetition

Spaced repetition is a technique where new vocabulary is reviewed at increasing intervals to improve retention. Technology supports this method by using algorithms that track how well students know certain words. Apps like Anki and Quizlet use spaced repetition systems (SRS) to help students revisit words they struggle with over time, ensuring better long-term retention.

### **CONCLUSION**

In conclusion, the integration of modern technologies into English vocabulary instruction offers numerous benefits for school students. Digital tools such as language-learning apps, interactive platforms, and gamified experiences provide engaging, effective, and personalized learning opportunities that help students expand their vocabulary in meaningful ways. The use of techniques like spaced repetition and multimedia resources further enhances retention and understanding of new words, making the learning process more dynamic and enjoyable. By embracing these innovative teaching technologies, educators can move beyond traditional methods, creating a more interactive and student-centered environment. This approach not only motivates students but also equips them with the tools necessary for mastering English vocabulary, ultimately supporting their language proficiency and communication skills. As technology continues to evolve, it will undoubtedly play an even greater role in shaping the future of language education, ensuring that students are well-prepared to succeed in a rapidly changing world.

### **REFERENCES**

1. Anderson, J. R. (2014). *Cognitive psychology and its implications*. Worth Publishers.
2. Chapelle, C. A., & Sauro, S. (2017). *Computer-assisted language learning: An introduction*. Cambridge University Press.
3. Godwin-Jones, R. (2018). "Emerging technologies: Language learning and technology." *Language Learning & Technology*, 22(2), 1-17.
4. Harmer, J. (2015). *The practice of English language teaching* (5th ed.). Pearson Education.
5. Nation, I. S. P. (2013). *Learning vocabulary in another language*. Cambridge University Press.
6. Reinders, H., & White, C. (2011). *The theory and practice of technology in language teaching and learning*. Palgrave Macmillan.

7. VanDerHeyden, A. M. (2017). "Using educational technology to enhance language learning." *Journal of Language Teaching and Research*, 8(4), 667-674.
8. Wong, W. (2014). *Using digital tools for language learning: Vocabulary teaching strategies*. Routledge.
9. Zhao, Y. (2018). "Technology-enhanced language learning." *The Oxford Handbook of Applied Linguistics*, 2nd edition, 517-536.

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## SURGICAL TREATMENT OF OBESITY AND HYPERLIPIDEMIA

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**Summary.** It was found that in older patients, the median duration of bariatric interventions was higher than in younger patients, but this difference did not reach statistical significance.

**Key words:** obesity, obesity treatment, bariatric surgery, laparoscopic longitudinal resection of the stomach, bariatric surgery, sleeve gastrectomy, gastric bypass, longitudinal resection of the stomach in combination with small intestinal bypass.

**Relevance.** Currently, bariatric (or metabolic) surgery is one of the most effective treatments for such socially significant diseases associated with obesity as diabetes mellitus (DM), arterial hypertension (AH), non-alcoholic fatty liver disease (NAFLD), obstructive sleep apnea (OA) and others [1,2,3,4,5,6,7,8]. Obesity itself causes significant psychological and communicative discomfort and significantly worsens the quality of life. More than 800 thousand weight loss operations are performed annually in the world, more than half of which are performed in the USA [9,10,11,12,13,14,15]. In Russia, where the problem of obesity and related pathology is no less acute than in other countries, bariatric technologies are also being actively introduced into practice. In the largest centers of bariatric surgery, leading domestic specialists prof. Yu. I. Yashkov, B. B. Khatsiev, V. V. Fedenko, V. V. Evdoshenko, A. E. Neimark, A. G. Khitaryan, M. A. Burikov, R. G. Askerkhanov and other experts perform all types of bariatric interventions [1,2,16,17,18,19,20 ]. The National Registry of Bariatric Surgeries has been created and is successfully functioning. According to the registry, 16,980 operations have been performed in Russia over the past 10 years [1; 21,22,23]. At the same time, according to experts, in Russia there are indications for surgical correction of metabolic disorders in a much larger number of patients with morbid obesity (MO). The reasons for the low adherence of patients and treating physicians to this method of treatment are, first of all, insufficient awareness of the effectiveness and safety of metabolic surgery, which requires further large-scale clinical trials, including randomized and multicenter ones. Most publications devoted to this problem are mainly descriptive in nature, while the accumulated experience of leading clinics amounts to several thousand observations, which allows for a wider application of

modern technologies for intelligent database analysis, including various components of the Data Mining platform, such as cluster analysis, logistic regression analysis, neural networks, etc. [24,25,26,27].

Despite the improvement of technical aspects of bariatric surgery and a large volume of performed interventions, there is still no “ideal” operation, the results of which allow satisfying patients and surgeons in terms of the benefit-risk ratio.

Single-anastomosis bypass interventions that have appeared in recent years and have already been widely introduced into everyday bariatric practice have shown comparable results in the initial assessment of immediate and long-term results with the “gold standard” - classical gastric bypass - in the spectrum of the effectiveness profile and more encouraging indicators of the safety profile [1,2,3,4,27,28,29]. The number of similar studies confirming these findings is steadily increasing, the frequency of single-anastomosis procedures performed in the spectrum of bariatric and metabolic interventions worldwide is steadily increasing [1,3]. However, priority communities, in particular the leading organization - the International Federation for the Surgery of Obesity (IFSO), have only recently included this type of intervention in the list of standard procedures that can be performed and accepted for wide clinical practice [1]. And a number of authors are still wary of this type of surgery [1,2].

At the moment, the issues of choosing the method of surgery, perioperative patient management, surgical technique, increasing the reliability of the staple suture, locoregional anesthesia, intra- and postoperative prevention of complications remain extremely relevant.

Metabolic surgery is a complex section of medical care. The rate of serious complications after bariatric surgeries reaches and exceeds 4-5% and has no obvious downward trend [1,3]. Therefore, the most important aspect of safety studies is the analysis of risks associated with the implementation of such interventions, predictors of these risks and the development of measures to improve the safety profile of bariatric interventions based on a risk management plan.

Selecting the optimal benefit-risk ratio of the upcoming intervention will allow for a personalized approach to the treatment of each individual patient suffering from this complex pathology.

**Purpose of the study.** To improve the results of surgical treatment of patients with morbid obesity based on predictive analysis of the effectiveness and safety of bariatric surgeries in various clinical and demographic groups.

**Materials and methods.** This work is based on an analysis of the results of examination and treatment of 49 patients with various types of external hernias of the anterior abdominal wall, who were examined and inpatiently treated in the 1st surgical

department of the Bukhara Regional Multidisciplinary Medical Center and the Department of Thoracoabdominal Surgery of the Multidisciplinary Clinic of the Tashkent Medical Academy for the period from 2011 to 2023. The analyzed material included women of reproductive age who planned to have children in the future. The control group consisted of all women with hernias of the anterior abdominal wall who underwent traditional hernial orifice repair without the use of allomaterial. The main group is all women with hernias of the anterior abdominal wall who underwent alloplasty according to our recommendations.

**Research results and discussion.** The average duration of all the operations performed by us was  $110.2 \pm 14.2$  minutes, the median was 100 minutes, the values of the lower and upper quartiles (Q1 – Q3) were 80-130 minutes. These figures are generally consistent with the results of other authors [1,2]. The shortest operation took 10 minutes (installation of an intragastric balloon), the longest 460 minutes (RYGB in a patient with vertical gastropasty performed 15 years ago). The main factor influencing the duration of bariatric surgery was the type of surgical intervention. Statistically significant differences were observed between operations performed through endoscopic (IB), laparoscopic (MGB-OAGB, LAGB, RYGB, SG) and laparotomic (BPD) approaches, as well as between operations with 2 anastomoses (LAGB, BPD) and with one anastomosis (MGB-OAGB) or without anastomoses (SG, LAGB), medians of 155, 240, 100, 95 and 90 minutes, respectively. It should be noted that there was a significant difference in duration between RYGB and MGB-OAGB operations (medians of 155 and 100 minutes, respectively,  $p < 0.01$ ). Both of these operations are predominantly hypoabsorptive interventions, i.e. they have a similar bariatric and metabolic mechanism of action, but a 1.5-fold reduction in the operation time and a two-fold reduction in the number of anastomoses creates prerequisites for higher efficiency and a better safety profile of the intervention for MGB-OAGB. The corresponding analysis is presented in the next chapter of the dissertation.

When analyzing the dependence of the duration of operations on the surgeon's experience, we proceeded from the fact that in order to exclude type 1 error, such an analysis should include the accumulation of experience of the same surgeon in performing the same operation for similar indications in patients with close clinical and demographic characteristics. Below is such an analysis for the operation of longitudinal gastrectomy (SG), performed for standard indications in patients with morbid obesity by the author of the work. As a result of the analysis (Table 3.2), it was established that there is a clear and statistically significant correlation between the accumulation of experience in operations and their duration [9]. When analyzing the duration of SG surgery in different periods of the author's work, it was found that the reliably shortest

duration of operations was achieved in the period 2018-2020, which indicates a significant impact of the accumulation of surgical experience on the duration of operations.

In general, the duration of operations in men was reliably longer than in women, the medians were 110 and 95 minutes, respectively.

A correlation analysis was carried out between the relationship between the "Initial weight" indicator and the "Duration of surgery" indicator.

When comparing the duration of operations in patients with different severity of obesity according to the WHO and IFSO criteria, statistically significant differences were found. In patients with super obesity, the duration of the operation was significantly and statistically significantly longer than in patients with a BMI of 30-40 kg / m<sup>2</sup>. Dependence of the duration of bariatric surgery on the obesity category ( $p < 0.01$ ; the method used: Kruskal-Wallis criterion).

A history of previous surgery on the abdominal and pelvic organs had a very significant effect on the duration of bariatric surgery. A history of laparotomic or laparoscopic surgery on the upper abdominal organs (cholecystectomy, surgery for ventral hernias and hiatal hernia, adrenalectomy) significantly and statistically significantly increased the duration of bariatric surgery. At the same time, previous surgeries on the lower abdominal cavity had virtually no effect on the duration of bariatric surgery.

**Conclusions:** It was found that in older patients, the median duration of bariatric interventions was higher than in younger patients, but this difference did not reach statistical significance.

### LITERATURE

1. Spaziani T.S., Di Cello P., Lo Bianco G. "All In One Mesh Hernioplasty" device for inguinal hernia repair. Results of 400 cases // Ann. Ital. Chir. – 2018. – Vol. 89. – P. 438–442.
2. Steensel S., Hil L., Bloemen A. Prevention of incisional hernia using different suture materials for closing the abdominal wall: a comparison of PDS, Vicryl and Prolene in a rat model // Hernia. – 2020. – Vol. 24, № 1. – P. 67-78.
3. Khamdamov I.B. Improving tactical approaches in the treatment of hernias of the anterior abdominal wall in women of fertile age // New day in medicine. Bukhara, 2022.-№10(48)- P. 338-342.
4. Khamdamov I.B. Morphofunctional features of the abdominal press in women of reproductive age // New day in medicine. Bukhara, 2022.-№3(41)- P. 223-227.
5. Khamdamov I.B. Clinical evaluation of the effectiveness of the traditional approach to the treatment of hernias of the anterior abdominal wall in women of fertile age // Doctor's Bulletin. –Samarkand 2022. No. 2.2 (104).-P.65-70.

6. Khamdamova M.T. Ultrasound features of three-dimensional echography in assessing the condition of the endometrium and uterine cavity in women of the first period of middle age using intrauterine contraceptives // *Biology va tibbyot muammolari*. - Samarkand, 2020. - No. 2 (118). - P.127-131.
7. Khamdamova M. T. Ultrasound assessment of changes in the endometrium of the uterus in women of the first and second period of middle age when using intrauterine and oral contraceptives // *Biomeditsina va amaliyot jurnali*. – Tashkent, 2020. - №2. - 8 chast. - P.79-85.
8. Khamdamov I.B., Khamdamov A.B. Yendovideosurgical hernioplasty in women of fertile age // *New day in medicine*. 2021. №6 (38/1).P.25-27.
9. Khamdamova M. T. Anthropometric characteristics of the physical status of women in the first and second period of middle age // *New day in medicine*. Tashkent, 2020. - № 1 (29). - P.98-100.
10. Khamdamov I.B., Khamdamov A.B. Slassification and properties of mesh explants for hernioplasty of hernial defects of the anterior abdominal wall (review) // *Biology and integrative medicine*. ISSN 2181-8827 2021. №5 – March, April (52).P.12-22.
11. Khamdamova M.T. Age-related and individual variability of the shape and size of the uterus according to morphological and ultrasound studies // *News of dermatovenereology and reproductive health*. - Tashkent, 2020. - No. 1-2 (88-80). - P.49-52.
12. Khamdamova M.T. Ultrasound features of three-dimensional echography in assessing the condition of the endometrium and uterine cavity in women of the first period of middle age using intrauterine contraceptives // *Biology va tibbyot muammolari*. - Samarkand, 2020. - No. 2 (118). - P.127-131.
13. Khamdamova M. T. Ultrasound assessment of changes in the endometrium of the uterus in women of the first and second period of middle age when using intrauterine and oral contraceptives // *Biomeditsina va amaliyot jurnali*. – Tashkent, 2020. - №2. - 8 chast. - P.79-85.
14. Khamdamova M. T. Anthropometric characteristics of the physical status of women in the first and second period of middle age // *A new day in medicine*. Tashkent, 2020. - № 1 (29). - P.98-100.
15. Khamdamova M.T. Age-related and individual variability of the shape and size of the uterus according to morphological and ultrasound studies // *News of dermatovenereology and reproductive health*. - Tashkent, 2020. - No. 1-2 (88-80). - P.49-52.

16. Khamdamova M.T. Features of ultrasound parameters of the uterus in women of the first and second period of middle age using injection contraceptives // *New day in medicine*. Bukhara, 2020. - No. 2/1 (29/1). - R.154-156.
17. Khamdamova M.T. Features of ultrasound images of the uterus and ovaries in women of the second period of middle age using combined oral contraceptives // *New day in medicine*. Bukhara, 2020. - No. 2 (30). - P. 258-261.
18. Khamdamova M.T. Individual variability of the uterus and ovaries in women who use and do not use various types of contraceptives // *New day in medicine*. Bukhara, 2020. - No. 3 (31). - P. 519-526.
19. Khamdamova M. T. Yechographic features variability in the size and shape of the uterus and ovaries in women of the second period of adulthood using various contraceptives // *Asian Journal of Multidimensional Research* - 2020. – N9 (5). - P.259-263.
20. Khamdamova M. T. Somatometric characteristics of women of the first and second period of adulthood using different contraceptives with different body types // *The american journal of medical sciences and pharmaceutical research* - 2020. – N8 (2). - P.69-76.
21. Khamdamova M.T., Zhaloldinova M.M., Khamdamov I.B. The state of nitric oxide in blood serum in patients with cutaneous leishmaniasis // *New day in medicine*. Bukhara, 2023. - No. 5 (55). - P. 638-643.
22. Khamdamova M.T., Zhaloldinova M.M., Khamdamov I.B. The value of ceruloplasmin and copper in blood serum in women wearing copper-containing intrauterine device // *New day in medicine*. Bukhara, 2023. - No. 6 (56). - pp. 2-7.
37. Khamdamova M. T. Bleeding when wearing intrauterine contraceptives and their relationship with the nitric oxide system // *American journal of pediatric medicine and health sciences* Volume 01, Issue 07, 2023 ISSN (E): 2993-2149. R.58-62
23. Khamdamova M. T. The state of local immunity in background diseases of the cervix // *Eurasian journal of medical and natural sciences Innovative Academy Research Support Center*. Volume 3 Issue 1, January 2023 ISSN 2181-287X R.171-175.
24. Khamdamova M.T., Khasanova M.T. Various mechanisms of pathogenesis of endometrial hyperplasia in postmenopausal women (literature review) // *New day in medicine*. Bukhara. 2023. - No. 8 (58). - P. 103-107.
25. Khamdamova M.T. Reproductive Health of Women Using Copper-Containing Intrauterine Contraception // *Eurasian Medical Research Periodical* Volume 28 January 2024, ISSN: 2795-7624 .[www.geniusjournals.org](http://www.geniusjournals.org) P. 39-45.

26. Khamdamov I.B. Advantages Of Laparoscopic Hernioplasty in Obesity Women of Fertile Age // Eurasian Medical Research Periodical Volume 28 January 2024, ISSN: 2795-7624 .[www.geniusjournals.org](http://www.geniusjournals.org) P. 33-38.
27. Khamdamova M.T., Akramova D. E. Генетические аспекты генитального пролапса у женщин репродуктивного возраста // New day in medicine. Bukhara, 2023. - No. 5 (55). - R. 638-643.
28. Khamdamova M.T. Analysis of clinical complications in women using intrauterine devices depending on the time of wearing them // IJIMM, Volume 2, Issue 2, 2024 ISSN: 2995-5319 <http://medicaljournals.eu/index.php/IJIMM>
29. Khamdamova M.T., Тешаев Ш.Ж., Хикматова М.Ф. Морфологических изменений тимуса и селезенки при почечной недостаточности у крыс и коррекции с маслом косточек граната // New day in medicine. Bukhara, 2024. - N. 3(65). - P. 167-187.

## НЕКОТОРЫЕ ПРОБЛЕМЫ ПРЕДМЕНСТРУАЛЬНОГО СИНДРОМА И ИХ РАСПРАСТРОНЕННОСТЬ СРЕДИ ЖЕНЩИН.

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**Аннотация.** «Предменструальный синдром» — это состояние, которое проявляется разными циклически повторяющимися физическими, поведенческими, эмоциональными и познавательными симптомами, проявляющимися в течение лютеиновой фазы менструального цикла, и проходят во время менструации. Существует около 200 симптомов предменструального симптома (ПМС), встречающихся в разных сочетаниях.

**Ключевые слова.** Предменструальный синдром, распространенность, фертильный возраст, клинические проявления.

**Цель исследования.** Изучить распространенность и особенность клинического течения ПМС у женщин фертильного возраста.

**Методология.** В исследование использовалось анкетирование. В первой части опросника были включены вопросы о присутствии и интенсивности перепадов настроения, беспокойство, раздражительность, депрессия, вспыльчивость, отеки, вздутие живота, боли в молочных железах, изменение аппетита, бессонница. Для полной оценки клиники ПМС были внесены 10 свободных граф, для описания других проявлений синдрома.

Во второй части анкеты женщины репродуктивного возраста должны были написать длительность проявления ПМС и возраст первичной манифестации. Третья часть содержала вопросы антропометрии, наличие вредных привычек. Для определения тяжести симптомов ПМС использовалась 10-балльная шкала, где 7-10 баллов тяжелое проявление, 4-6 баллов умеренное проявление и 1-3 баллов незначительное проявление.

**Результаты исследования.** Для оценки тяжести ПМС в зависимости от возраста были опрошены 360 девушек раннего репродуктивного возраста, а также 100

женщин позднего репродуктивного возраста. Легкая степень предменструального симптома среди девушек раннего репродуктивного возраста был выявлен у 104 (29%) девушек, средняя степень тяжести - у 162 (45%), тяжелая степень - у 94 (26%) девушек.

Предменструальный синдром легкой степени среди женщин позднего репродуктивного возраста был у 21% (21) опрошенных. ПМС средней тяжести - у 28% (21). Тяжелая степень выявилась - у 51% (51) женщин позднего репродуктивного возраста.

**Вывод.** Установлена распространенность разных степеней ПМС среди женщин. Выявлена многосимптомность проявлений ПМС. Таким образом, для того чтобы улучшить качество жизни женщин необходимо выявить предменструальный синдром и вовремя лечить пациенток с этой патологией.

## **.LINGUO-CULTURAL CHARACTERISTICS OF EDUCATIONAL AND NEWLY EMERGING WORDS IN THE WORKS OF ABDULLA QODIRIY**

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**Annotation:** this article presents considerations on the educational terms used in the works of Abdulla Qodiriy, their internal classification, their meanings, reasons for use, the emergence of neologisms, their use in oral speech in a changed form, and their linguo-cultural characteristics.

**Keywords:** literary text, education, term, classification, semantic changes, neologisms, linguo-culturalology.

When the works of Abdulla Qodiriy are studied from a linguo-cultural aspect, it can be seen that several terms related to education are used in the work. In addition to providing information about a certain period, education-related terms also make a great contribution to revealing the scientific, spiritual and cultural image of that period. Since the language of the education-related field and its methods in the late 19th and early 20th centuries were within the framework of the Arabic language, it is clear that the terms and lexical units related to these areas also belonged to the Arabic language.

Since there are also topics related to the education-related process in creative works, terms directly related to it are also found very often. Let's start the analysis of words with the word education: education is a process of knowledge and skills formed through reading, learning, observation, and learning.

The persons who organize the educational process and directly participate in it were called teachers, effendi, khalfa, mudarris, domla, akhund, qori and other names. It is known that during the khanate period, each of these had a separate task. The word domla (domulla) was considered common for all teachers, the word khalfa served as an assistant to teachers, and the fact that this word is directly related to the word khalifa in Arabic also indicates its connection with this meaning. It is noted in scientific sources that the word domla (Domulla) as a word belonging to the ancient Sanskrit language expresses meanings such as "senior priest, teacher". The word effendi, as a word whose meaning has changed in the modern Uzbek language, expresses meanings such as "one who is responsive, creates funny situations", but in the modern Turkish language the meaning of this word as a teaching person is still valid. In the Old Turkic language, a person who teaches is referred to as "o'kutchi", and this name is the same

word as the modern Uzbek word "o'kutsi" from both a semantic and a formal point of view. In Yusuf Khos Hajib's work "Kutadgu bilig", this word is cited as follows:

“The teacher has sworn allegiance to you,

You have entered the right path, O you who are the teacher.” The “teacher” that Yusuf Khos Hajib refers to is the Prophet Akram Muhammad Mustafa, peace and blessings be upon him.

In madrasa, which are considered the highest level of the higher education system, teachers are called mudarris, while akhund refers to a certain academic level, and qari is used to refer to people who recite religious sciences from memory.

A number of names related to education are given as place names such as maktab, madrasa, hujra, qiraatkhona. When viewed from the perspective of the present era, it can be observed that the meaning of some words has changed, not their meaning, but their usage. A school is still an institution that provides secondary education. Organizations in the higher education system are referred to as universities, institutes, or general colleges. The places where students live are called dormitories, dormitories, and dormitories. Places that specialize solely in religious education are currently referred to in our country as madrasas, and the rooms where students live are called hujras. This situation is evidence of the consistent continuation of our cultural values by our people.

The items used in the educational process include books, dovot, folders and other items. The word book came through the Arabic language, in the ancient and old Turkic languages this word was expressed by bitik. The word bitik in the current Uzbek literary language does not mean a book, but rather represents writings as a scientific term. For example, Orkhun-Enasoy bitik, Irq bitik. The word dovot was used as a unit for a quill pen used with ink, now this word exists in our literary language, and is usually distinguished by its specificity for the language of literary works. The word folder is a unit that came after the Russian invasion.

The methods and textbooks used in education are also different. Such as husnikhat, rhyme existed as disciplines related to spelling and artistic literacy. Such as tahrir, sharh formed the educational methodology. A number of books and textbooks such as "Chohor Kitob", "Haftiyaki Sharif", "Sufi Alloyor", "Jairobiyya" (geography), "Maslaki Muttaqiyni Soniy", "Shamsiya", "Mukhtasari Wiqoya", "Sharhi Wiqoya" served as a source for teaching religious and secular sciences.

Below we will get acquainted with the explanation of some words:

Makhsu.m.s.t .Makhdum in Arabic means gentleman, boss; It means an employer, a recruiter, and historically it meant a title, nickname given to scholars and priests, pirs and teachers, and a person who has this title (O'TIL), (O'TEL, II, 246), and in the

works of Alisher Navoi it expressed meanings such as gentleman, person who rendered service, boss: Domla ma'bujur mullakabi Kalvak Maksum inbi Salimsok Okhund Shoshiy (KA, 51)".

A book is formed from the III part of the verb kataba (O'TEL, II, 201), and in the current Uzbek language, a printed work (including an ancient manuscript) consisting of sheets with certain text, bound in juz, covered, with a volume of not less than 4 pages; in general, a work dedicated to a certain person, event, usually intended for publication (as a book) (O'TIL, II, 376).

Therefore, educational terms are of great importance as an important linguo-cultural tool that captures the cultural characteristics of the population of the current era and provides information about them.

It is no secret to any linguist that the most important changes of the period are manifested, first of all, in the language. Words that are new in form and content in any language are neologisms. Neologisms do not always retain their novelty, with the passage of time they lose their novelty, or become words in common use, or become historical words under the influence of socio-political and other factors. Neologisms used in short works can be conditionally divided into the following groups:

- a) neologisms used in a modified form in terms of artistic images: moshina, girdmafun, purtortur, mastravoy, doma, bolshovoy, bulokhtir, desatnay (desyatnik), anzhirnay, sakratar, chirmanda (chervonets (money)), etc.;
- b) words that are used exactly in both form and content: rabochii, ukaz, pervoy, gospodin, bolshevik, pulemyot, shapka, militsiya, etc.;
- d) neologisms that retain their content but are specific to figurative speech in form: osmon popori, osmon popuriy, etc.
- e) words that are new in content but are related to our usual speech in form: aq tsasho, sylov, etc.

These neologisms are a source of valuable information about the language of the people, their worldview, and the changes that have occurred in their everyday, social, and economic life in the current period.

#### **LIST OF USED LITERATURE:**

1. Kadiri A. Small works. – Tashkent: Gafur Ghulom, 1969. – 212 p.
2. Annotated dictionary of the Uzbek language. I-V. – Tashkent, 2006-2008. Tashkent, I. 2006. – 680 p.; Tashkent, II. 2006. – 672 p.; Tashkent, III. 2007. – 688 p.; Tashkent, IV. 2008. – 608 p.; Tashkent, V. 2008. – 592 p.
3. Rahmatullaev Sh. Etymological dictionary of the Uzbek language. II (Arabic words and derivatives with them). – Tashkent: University, 2001. – 599 p.

## ТУРЛИ ХИЛ ПАТОЛОГИК СИНИШЛАРНИНГ ЁШГА ДОИР УЧРАШИ.

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**Мавзунинг долзарблиги:** бугунги кунда суяк синишлари мураккаб ва қийин даволанадиган жаррохлик патология бўлганлиги сабабли уларни самарали даволаш учун патологик жараёнда кечадиган ўзгаришларни батафсил билиш жуда муҳимдир. Қатор муаллифлар суяги синган беморларда қоннинг зардобидида биокимёвий ўзгаришлар динамикаси битиш фазалари алмашишидан дарак беради ва суяк қадоғи ҳосил бўлиши ва қайта қурилиши билан бевосита боғлиқ деб таъкидлайдилар. Аммо бу маълумотлар етарлича эмас ва бизлар ўз тадқиқотларимизда суяк синишида кечадиган патологик ўзгаришларни ўз олдимишга мақсад қилиб олдик.

**Ишнинг мақсади:** ишнинг мақсади сифатида Хоразм вилояти кўп тармоқли тиббиёт марказининг травматология ва ортопедия бўлимига турли хил патологик синишлар билан мурожаат қилган беморларнинг анамнестик ва суяк кўмигининг морфологик ўзгаришларини ўргандик.

**Олинган натижалар:** олиб борилган текширув натижалари шуни курсатдики, турли хил патологик суяк синишлари бўлган беморларнинг ёши асосан 55-66 ёшдаги аёлларда учрагани ва касалликнинг келиб чиқишига организмдаги моддалар алмашинувида калций Д3 никомедининг етишмовчилиги сабаб бўлган. Шунингдек, суяк кўмиги морфологик ўрганилганда суяк тўқимасида калций Д3 никомедининг етишмовчилиги аниқланди.

**Хулосалар:** хулосада ўрнида шуни айтиш мумкинки, турли хил патологик суяк синишининг натижасида организмда моддалар алмашинувининг бузилиши натижасида калций Д3 никомедининг етишмовчилиги натижасида юзага келганлиги, бугунги кунда ёши катта одамлар суяк синишига олиб келган.

Шу сабабли, ёши катта одамларни ҳар олтий ойда бир марта яшаш жойидаги оилавий поликлиникалардаги травматолог-ортопед мутахассиси маслаҳатидан ўтиш тавсия қилинади.

### **Фойдаланилган адабиётлар:**

1. Каримов Р. Х., Мусаев У. М., Рузметова Д. Т. ЯТРОГЕНИЯ НА ПРИМЕРАХ ИЗ ПРАКТИКИ (По данным лет обзор) //International conference on multidisciplinary science. – 2023. – Т. 1. – №. 1. – С. 10-12.
2. Каримов, Р. Х., Мусаев, У. М., Рузметова, Д. Т., & Султанов, Б. Б. (2023, October). ЯТРОГЕНИЯ В НЕОНАТОЛОГИИ (ПО ДАННЫМ ЛЕТ. ОБЗОР). In *International conference on multidisciplinary science* (Vol. 1, No. 3, pp. 76-78).
3. Каримов, Р. Х., Мусаев, У. М., Рузметова, Д. Т., & Султанов, Б. Б. (2023, August). ВРАЧЕБНЫЕ ОШИБКИ В ПРАКТИКЕ АКУШЕРОВ-ГИНЕКОЛОГОВ. In *Past and Future of Medicine: International Scientific and Practical Conference* (Vol. 2, pp. 114-117).
4. Ражапов Адилбек Анварбекович<sup>1</sup>, Каримов Расулбек Хасанович<sup>2</sup>, Очилов Собир Мардиевич<sup>3</sup>. (2024). НАФАҚА ЁШИДАГИ БЕМОРЛАРДА ЧАНОҚ СУЯКЛАРИНИНГ НОСТАБИЛ СИНИШЛАРИ. [Data set]. Zenodo. <https://doi.org/10.5281/zenodo.14394947>
5. А.А.Ражапов, Р.Х.Каримов, Ш.Э.Жумабаев, & А.Ж.Бекчанов. (2024). ЖАРРОХЛИК АМАЛИЁТИДАН КЕЙИНГИ АСОРАТЛАНГАН ВА АСОРАТЛАНМАНГАН ЧУРРАЛАР. *International conference on multidisciplinary science*, 2(12), 46–49. <https://doi.org/10.5281/zenodo.14536581>

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**Abstract.** Mirzo Ulugbek was one of the unique people in the Timurid dynasty, who made an invaluable contribution to the development of science and culture. Mirzo Ulugbek was the son of Shahrukh and the grandson of the great Tamerlane (9 April 1336 – 17–18 February 1405) who was a Turco-Mongol conqueror founded the Timurid Empire in and around modern-day Afghanistan, Iran, and Central Asia, becoming the first ruler of the Timurid dynasty. [1;23] The main goals and objectives of the article are formulated. Based on the observation, Ulugbek is not only an astronomer, but also a mathematician, enlightener, poet and historian. The study shows the scientific and cultural heritage in the Timurids era and to create the invaluable work “Star tables of Ulugbek” that causes admiration and surprise of the whole world.

**Keywords:** Mirzo Ulugbek, Temurids dynasty, historical heritage, astronomy, observatory, sextant, madrasa, Academia, patron of science and culture, “Star tables of Ulugbek”, scientific research.

“Religion is scattering like fog, kingdoms are being destroyed but the works of scientists remain forever” (Mirzo Ulugbek).

Mirza Muhammad ibn Shahrukh ibn Temur Ulugbek Quragani (1394-1449) was a great astronomer and mathematician, famous scholar of his time, statesman, grandson of the famous ruler and master Amir Temur, who ruled Movaraunnahr from 1441 to 1449. Ulugbek (Muhammad Taragay) was born on March 22, 1394 in the city of Sultaniye in present-day Azerbaijan. In 1394, Amir Temur laid siege to the Mordin fortress in Iraq. At this time, Ulugbek was born in the Sultan's residence of Sahibkiran. Historian Sharafiddin Ali Yazdi writes in his work “Zafarnoma” that the envoy came to Amir Temur and told him good news about the birth of Ulugbek and that astrologers predicted that this grandson would become both a scientist and a ruler in the future. Sahibkiran with joy stops the siege of the Morda fortress and cancels the ransom

imposed on his people. In 1405, after the death of the great master, who created a vast empire covering the entire territory of the Near and Middle East, from Central Mediterranean to North India, with the exception of Central Asia, all the inherited property clay and passes on to grandchildren. At the head of the Timurid kingdom sat Shahrukh, the son of Timur, who was elected at the residence of Herat. The rule of Mavaraunnahr was handed over to Ulugbek, the eldest son of Shahrukh, the grandson of Amir Temur. In 1409, Ulugbek was proclaimed governor of Samarkand, and after the death of his father Shahrukh, in 1447 he became the head of the Timurid dynasty. As a young man, Ulugbek showed great interest in science and art, especially mathematics and astronomy. The rich library that his father and grandfather amassed became the basis for his expansion of his intellectual outlook, where he spent much of his time. Ulugbek was very well educated at that time. He had a great memory, was fluent in Arabic and Persian, was well versed in Turkish poetry, literary styles, and participated in literary debates. He also wrote poetry. Ulugbek's mentor was a well-known scientist, the famous mathematician and astronomer of the Timurid court, Qazizoda Rumi. He showed nine-year-old Ulugbek the ruins of a famous observatory in Maragha. This is exactly what he did in his youth his memories may have determined the future of the future astronomer. During the reign of Ulugbek, Samarkand became one of the centers of science in the Middle Ages. In Samarkand, in the first half of the 15th century, around Ulugbek, a whole scientific school was established, uniting such well-known astronomers and mathematicians as Giyosiddin Jamshid Kashi, Qazizoda Rumi, Ali Kushchi. At that time, Samarkand was inhabited by historian Hafiz Abru, who wrote a wonderful work on the history of Central Asia, the famous physician Mavlon Nefis, poets Sirojiddin Samarkandi, Sakkoki, Lutfi, Badakhshi and others. They were the forerunners of their time, believing in the power of the human mind and science. [2;34]

In 1417-1420, Ulugbek built a madrasah in Samarkand and became the first architectural ensemble in Registan. Ulugbek invites many astronomers and mathematicians from the Islamic world to this madrasa. The other two madrasahs were built in Gijduvan and Bukhara. Ulugbek The madrasahs built by the university served as a university. The inscription on the roof of the madrasah built by Ulugbek in Bukhara reads, "The pursuit of knowledge is obligatory for every Muslim". [3;4] But Ulugbek's greatest passion was astronomy. The meaning of Ulugbek's life and astronomers such as Qazizadeh Rumi, Jamshid Giyosiddin al Kashi, and Ali Qushchi inspired the construction of the observatory.

According to research scientists, the construction of the observatory was completed in 1428-1429. The observatory was a unique building of its time. The rocky

foothills of Kuhak Hill have been selected for the earthquake-resistant building. The main instrument - the sextant (angle gauge) - is designed along the meridian lines from south to north. In addition to the main instrument, the observatory had other astronomical instruments.

When Ulugbek was 8 years old, he accompanied his famous grandfather Amir Temur during the military campaign to Asia Minor and Syria. Once, in the city of Merag, young Ulugbek saw the famous Maragin Observatory, which existed until the middle of the XIV century and was the largest astronomical observatory of its time. About 400 thousand manuscripts were stored there and more than 100 scientists-astronomers worked in this observatory. It is said that since that time Ulugbek had been passionately keen on astronomy. Thanks to the vast knowledge and power of the ruler, Mirzo Ulugbek was able to create the most equipped astronomical centre of that time. [4;2] The observatory was round in shape, its diameter reached 46 meters, and the height was at the level of a ten-story building. Although the structure was three-story, each floor was ten meters higher. Inside, along the line of the meridian, Ulugbek built a quadrant – a large 64 meters long instrument, located at an angle of 90 degrees. Before the invention of the telescope, such a quadrant served as a tool for measuring the height of the stars above the horizon and for determining the coordinate of the point from which the measurement was carried out. Ulugbek’s quadrant was the largest in the world at that time, and therefore the most accurate. The observatory consisted of two parts, and the one that was underground had been preserved.

Mirzo Ulugbek spent days and nights at his observatory. The result of the work was the “Gurgan Zij”, a star catalog, in which the astronomer described 1018 stars and divided them into 38 constellations. Mirzo Ulugbek was able to calculate the stellar year length with unprecedented accuracy – 365 days, 6 hours, 10 minutes, 8 seconds, and the error was less than a minute. He determined the inclination of the Earth’s axis. During his lifetime, the scientific works of Ulugbek were known all over the world. Chinese wrote and talked about him and used the astronomical calculations of Ulugbek. After 200 years, the British scientists were engaged in the discoveries of Ulugbek. His scientific works were translated into Latin. [5;18]

Ulugbek is not only an astronomer, but also a mathematician, enlightener, poet, historian. In the XV century, he urged the people to education: “the Muslim men and women must possess knowledge”. Ulugbek was very strong in his endeavor to enlighten the people. He built madrassas in Bukhara and Samarkand for this purpose. One of the most famous is included in the ensemble on the Registan Square in Samarkand. Passion for science at that distant time turned out to be a dangerous affair. Mirzo Ulugbek set religious leaders against himself, and the lack of military victories

shook his authority. As a result, an uprising, led by the eldest son of Ulugbek, Abdulatif, was organized. The decisive battle between father and son took place near Samarkand. Ulugbek's troops were defeated and he had to surrender. With the consent of Abdulatif, Mirzo Ulugbek went to Mecca, but along the way, the traitors seized Ulugbek and beheaded the ruler. [6;4] This happened on October 27, 1449. After the death of Mirzo Ulugbek, the observatory worked for another 20 years, but it was soon closed and the building was gradually destroyed. The opening of the observatory occurred in 1908. Archaeologist Vyatkin, using the documents, was able to find Ulugbek's observatory in Samarkand.

The Samarkand marble sextant, which has survived to this day, was considered the largest of all known before it in the East. It is no exaggeration to say that the Ulugbek Observatory was the prototype of modern astronomical institutions. It also housed the largest library, the book collection of which numbered more than 15 thousand books covering almost all branches of science. Under Ulugbek, Samarkand became one of the world centers of medieval science. It is known that about a hundred qualified astronomers and mathematicians worked at his Observatory. Here, in the first half of the XV century. There was a whole scientific school. At the same time, Ulugbek always remained the leader of his "astronomical Academy".[7;3] It is he who has the idea of creating the main instrument of the Observatory and conducting his own observations of the stars.

According to the well-known economic historian Professor Andrew Gunter Frank, Central Asia has indeed been an important link between different parts of the continent, as well as Asia and Europe, for centuries. It defines the status of the region by using the expression "Centrality of Central Asia" - the centrality of Central Asia. German scholar Adam Metz also notes that the humanism of the medieval European Renaissance would not have been possible without the early explosion of the study of philosophy on our earth. [8;16]

As a final point, for a long time this ancient land remained a hotbed of education and science, one of the centers of world civilization, and the desire for knowledge has always been an integral part of the mentality of our people. The greatest merit of the thinkers of the middle ages is that they expressed ideas about universal, social and state development based on the ideas of humanism, enlightenment and mutual respect. These scientists were distinguished by high academic mobility and played a significant role in the formation of sciences in various countries of the East, the expansion of interchange between regions and continents, and the development of world civilization as a whole.

## REFERENCES

1. Muminov I. Role and place of Amir Temur in the history of Central Asia. Tashkent. Fan, 1968.
2. N. Yakubov, "Legends of Samarkand", Samarkand, 1990
3. Нуриддинов С., Рахимов А. Астрономия // Ўзбекистон миллий энциклопедияси, т.1, Ташкент, «Ўзбекистон миллий энциклопедияси», 2000. С.470-474.
4. Постановление Президента Республики Узбекистан № ПП-323 «О широком праздновании 630-летия со дня рождения великого ученого-энциклопедиста и известного государственного деятеля Мирзо Улугбека» от 12 сентября 2024 года.
5. Бафоев Б. Алишер Навои асарларининг лексикаси, Ташкент, «Фан», 1983.
6. <https://buxdu.uz/en/114-scholars/4517/4517-mirzo-ulugbek/>
7. <https://uzbekistan.travel/en/o/mirzo-ulugbek/>
8. <https://www.unesco-icas.org/ru/press-office/News/The+Scientific+Heritage+of+Ulugbek+in+the+historiography+of+the+20th-early+21st+centuries.>

## SURFACE AREA AND VOLUME OF A PYRAMID

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**Abstract:** *The pyramid is a polyhedron that has a square or triangular base and four triangular faces that meet at a common apex. Understanding the surface area and volume of a pyramid is essential in fields like geometry, architecture, and engineering. This article explores the formulae used to calculate the surface area and volume of pyramids, their derivations, and their applications. We also discuss different types of pyramids and their geometrical properties.*

**Keywords:** *Pyramid, Surface Area, Volume, Geometry, Polyhedron, Formulae, Apex, Base*

**Introduction:** A pyramid is a fascinating geometric structure that has intrigued mathematicians, engineers, and architects for centuries. It is a three-dimensional polyhedron characterized by a polygonal base, typically square or triangular, and triangular faces that converge at a single point known as the apex. The study of pyramids is not only a cornerstone of geometric principles but also a bridge between theoretical mathematics and practical applications in the real world. In both ancient and modern times, the pyramid has served as an essential building block for understanding more complex shapes and forms. The most well-known pyramids are the monumental structures of ancient Egypt, most notably the Great Pyramid of Giza, which served as a tomb for Pharaoh Khufu. These architectural marvels have both cultural and mathematical significance, influencing not just the art of construction but also the study of geometry. Ancient civilizations recognized the importance of pyramidal shapes in creating stable structures and began to explore their properties. Through these early observations, they developed methods to estimate the volume and surface area of these structures—tools which have evolved into the formulae we use today.

In mathematical terms, a pyramid is a solid formed by joining a polygonal base to a point known as the apex. The sides of the pyramid are the triangular faces that meet at this apex, and the edges where these triangles intersect are known as lateral edges. The specific properties of a pyramid—such as its surface area and volume—are crucial for

various mathematical applications. These include calculating the material needed for construction, understanding the stability of a structure, and solving problems in geometry that require spatial reasoning. The study of pyramids also intersects with other areas of mathematics, such as calculus and trigonometry. As one delves deeper into the geometry of pyramids, they uncover various relationships that help to explain how the surface area and volume are connected to the size of the base and the height of the pyramid. These fundamental properties provide insight into how shapes and solids interact in three-dimensional space. Furthermore, pyramids are not limited to architectural structures but are also used in modeling natural formations like mountains, rock formations, and even in abstract mathematical problems. In geometry, the concept of surface area refers to the total area that the exterior of a three-dimensional object occupies. For pyramids, this includes both the base area and the areas of the triangular faces. On the other hand, volume represents the total amount of space occupied within the pyramid. These calculations are particularly relevant in various fields, from physics and engineering to computer graphics and design, where precise measurements are needed.

### **Literature review**

The earliest recorded studies of pyramids can be traced to ancient Egypt. The Egyptians' understanding of the pyramid shape was largely practical, used primarily in the construction of monumental structures like the pyramids of Giza. These structures were designed with remarkable precision, and although there were no formalized geometric formulas at the time, the Egyptians understood the importance of dimensions such as height, base area, and angles in determining the overall size and stability of the pyramids. Scholars like Robins (1994) and Lehner (1997) have documented how the Egyptians were able to approximate the volume and surface area of pyramids without the use of modern mathematical tools. They likely used a combination of observation, trial and error, and geometric intuition to design structures that would stand the test of time. Robins emphasized the use of "unit fractions" in Egyptian mathematics, which indirectly relates to the division of areas and volumes.

As mathematics evolved in the ancient Greek world, the study of pyramids advanced significantly. The Greek mathematician Euclid, often called the "father of geometry," presented foundational principles that helped shape the study of solid geometry. In his work *Elements*, Euclid provided early insights into the properties of pyramids. He established the concept of the pyramid as a polyhedron and examined the relationship between its base area, height, and volume. Although Euclid did not present the volume formula in the way we use it today, his early work laid the groundwork for later

mathematicians. Euclid's axiomatic approach to geometry would greatly influence the study of pyramids in the centuries that followed [1].

During the Renaissance, mathematicians like Archimedes began to formalize the study of pyramids further. Archimedes, in his treatises *On the Sphere and Cylinder*, derived the formula for the volume of a pyramid, which is still in use today. Archimedes' formula for the volume of a pyramid states that the volume is one-third the base area multiplied by the height ( $V = 1/3 * B * h$ ). Archimedes recognized the geometric similarity between pyramids and cones, which allowed him to derive this important result by considering the relationship between a pyramid and a cone with a similar base and height. Archimedes' contribution is considered a major breakthrough in the formalization of the geometry of pyramids [2]. In the modern era, the study of pyramids has expanded through the contributions of mathematicians and educators such as G. Polya (1957), whose work in problem-solving strategies helped to simplify the methods used to calculate the surface area and volume of pyramids. Polya emphasized that understanding the properties of pyramids could be achieved through practical examples and problem-solving methods. His work influenced the way that geometry is taught and understood in schools today, particularly in relation to three-dimensional figures like pyramids.

Another important contribution came from mathematician and educator A. N. Kolmogorov, who in the mid-20th century extended the study of pyramids through the lens of modern geometry. Kolmogorov's work focused on the formalization of geometric relationships and provided a rigorous approach to understanding shapes in higher dimensions. His research helped clarify the connections between pyramidal shapes and polyhedra, especially in the context of convexity and surface area calculations [3]. In more recent years, scholars such as Stewart (2007) have continued to explore the mathematical implications of surface area and volume in relation to pyramids, particularly focusing on applications in engineering and architecture. Stewart's work in *Mathematics: The Man-Made Universe* offers a deep dive into the practical applications of geometric shapes in construction, providing real-world examples of how surface area and volume calculations are used to design stable and efficient structures. Modern architects and engineers frequently use pyramidal shapes in their designs, from the Louvre Pyramid in Paris to various bridges and buildings that employ pyramidal elements for structural integrity and aesthetic appeal.

### **Analysis and Results**

The surface area and volume of a pyramid are essential properties that provide insight into the spatial dimensions of the object. The calculations for these properties depend on the specific geometric characteristics of the pyramid, such as the shape of its base

and its height. In this section, we explore the formulas and methods used to determine the surface area and volume of pyramids, emphasizing how variations in base shapes or pyramid types impact the calculations.

For a pyramid with a square base, the surface area consists of the area of the base and the areas of the triangular faces that surround the base. The formula for the surface area of a pyramid with a square base is given by:

$$SA = B + \frac{1}{2}Pl$$

Where:

- $B$  represents the area of the square base.
- $P$  is the perimeter of the base.
- $l$  is the slant height, which is the distance from the midpoint of any side of the base to the apex.

For a square base with side length  $a$ , the area of the base is  $B=a^2$ , and the perimeter of the base is  $P=4a$ . The slant height  $l$  can be calculated using the Pythagorean theorem, given that the height of the pyramid and half the side length of the base form a right triangle with the slant height. The formula for the slant height is:

$$l = \sqrt{\left(\frac{a}{2}\right)^2 + h^2}$$

Where  $h$  is the perpendicular height from the apex to the center of the base. By substituting these values into the surface area formula, the total surface area can be computed.

For example, consider a square pyramid where the side length of the base is 4 meters and the height is 6 meters. First, the area of the base is:

$$B=4^2=16 \text{ square meters}$$

Next, the perimeter is:

$$P=4 \times 4=16 \text{ meters}$$

The slant height is calculated as:

$$l = \sqrt{\left(\frac{4}{2}\right)^2 + 6^2} = \sqrt{4 + 36} = \sqrt{40} \approx 6.32 \text{ meters}$$

Finally, the surface area is:

$$SA = 16 + \frac{1}{2} \times 16 \times 6.32 = 16 + 50.56 = 66.56 \text{ square meters}$$

For the volume of a pyramid with a square base, the formula is:

$$V = \frac{1}{3}Bh$$

Where B is the area of the base, and h is the height of the pyramid. Using the earlier values of B=16 square meters and h=6 meters, the volume is:

$$V = \frac{1}{3} \times 16 \times 6 = 32 \text{ cubic meters}$$

This example demonstrates the straightforward application of the surface area and volume formulas for a square pyramid, where the dimensions are provided. However, pyramids can also have different base shapes, such as triangular or hexagonal, which would result in variations in the formulae used to calculate the surface area and volume.

For a pyramid with a triangular base, the surface area formula must account for the area of the triangular base and the areas of the triangular faces. The area of the triangular base depends on the type of triangle, and the slant heights of the triangular faces are typically different from each other. The perimeter of the base and the specific lengths of the slant heights are needed to compute the total surface area.

Similarly, the volume of a pyramid with a triangular base is still given by:

$$V = \frac{1}{3}Bh$$

Where  $B$  is the area of the triangular base, and  $h$  is the height of the pyramid. The area of a triangular base is computed using the standard formula for the area of a triangle, which can vary depending on whether the triangle is equilateral, isosceles, or scalene.

For pyramids with irregular or more complex polygonal bases, the surface area and volume calculations can become more intricate, often requiring advanced methods of geometric analysis. In such cases, the base area and the perimeter of the base must be calculated for the specific polygon involved, and the slant heights for each triangular face must be determined separately. Additionally, computational methods and algorithms are often employed to handle these more complex geometries, particularly in the context of 3D modeling and architectural design.

The application of these formulas is not limited to purely theoretical calculations. In real-world scenarios, such as architectural and engineering design, these formulas are used extensively to estimate materials, determine structural integrity, and optimize the shape of buildings and other structures. For instance, pyramids are used in various architectural designs, including the famous Louvre Pyramid in Paris and many modern bridges that incorporate pyramidal elements for aesthetic and functional reasons. Understanding the surface area and volume is crucial when estimating the amount of building material required for construction or when evaluating the strength and stability of a structure.

In computational geometry, recent advancements have also allowed for more efficient modeling of pyramids with irregular or more complex bases. These techniques involve the use of software tools to simulate and calculate the surface area and volume of pyramidal shapes in three-dimensional space. These developments have expanded the practical applications of pyramid geometry in fields such as computer-aided design (CAD), architectural engineering, and even virtual reality modeling.

Overall, the analysis of surface area and volume calculations for pyramids provides a deep insight into the practical and theoretical importance of these geometric properties. Whether for simple shapes with square or triangular bases or for more complex pyramidal structures, understanding these calculations is essential for anyone working in mathematics, architecture, engineering, or design.

### **Conclusion**

In conclusion, the study of pyramids and their geometric properties, particularly surface area and volume, holds great significance in both theoretical mathematics and practical applications. By examining how the surface area and volume of pyramids are determined, we understand that these properties depend on the base shape and height of the pyramid. Whether the base is square, triangular, or another polygon, the fundamental principles for calculating these properties remain essential for various fields such as architecture, engineering, and design. These calculations not only apply to simple pyramidal structures but can also be extended to more complex pyramids with irregular bases. Modern tools, such as computational geometry and computer-aided design (CAD) software, have further advanced our ability to model and calculate the properties of pyramids, making these calculations more relevant in contemporary design and construction. The real-world importance of understanding the surface area and volume of pyramids is evident in several industries. These calculations are essential for estimating building materials, optimizing design, and ensuring the stability and safety of structures. From the ancient pyramids of Egypt to modern architectural wonders, pyramidal shapes continue to play a key role in both aesthetics and functionality. As such, a solid understanding of the geometric principles governing pyramids is crucial for professionals in mathematics, architecture, and engineering.

### **REFERENCES:**

1. Euclid, Elements, Book 12, Proposition 10, ca. 300 BCE.
2. Archimedes, On the Sphere and Cylinder, ca. 225 BCE.
3. Kolmogorov, A. N., Foundations of the Theory of Probability, 2nd ed., Chelsea Publishing, 1956.
4. Polya, G., How to Solve It, 2nd ed., Princeton University Press, 1957.
5. Stewart, I., Mathematics: The Man-Made Universe, Dover Publications, 2007.
6. Robins, G., The Study of Geometry in Ancient Egypt, Oxford University Press, 1994.
7. Lehner, M., The Complete Pyramids: Solving the Ancient Mysteries, Thames & Hudson, 1997.
8. Larson, R., Calculus: Early Transcendentals, 10th Edition, Cengage Learning, 2014.

## NAY PERITONEAL BEPUSHTLIKNI TASHXISLASH VA DAVOLASHDA LAPORASKOPIK AMALIYOTNI O'RNI

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**Annotatsiya:** Ushbu maqolada nay peritoneal bepushtlikni tashxislash va davolashda laparoskopik amaliyotning o'rni tahlil qilinadi. Laparoskopiya reproduktiv tizim patologiyalarini aniqlash va bartaraf etishda muhim vosita hisoblanadi. Tadqiqotda laparoskopiyaning samaradorligi va uning ayollar bepushtligini davolashdagi afzalliklari ko'rib chiqiladi.

**Kalit so'zlar:** Nay peritoneal bepushtlik, laparoskopiya, diagnostika, jarrohlik, reproduktiv salomatlik.

**Annotation:** This article analyzes the role of laparoscopic procedures in diagnosing and treating tuboperitoneal infertility. Laparoscopy is a crucial tool for identifying and addressing reproductive system pathologies. The study highlights the effectiveness of laparoscopy and its advantages in treating female infertility.

**Keywords:** Tuboperitoneal infertility, laparoscopy, diagnosis, surgery, reproductive health.

**Аннотация:** В данной статье анализируется роль лапароскопических процедур в диагностике и лечении трубно-перитонеального бесплодия. Лапароскопия является важным инструментом для выявления и устранения патологий репродуктивной системы. В исследовании рассматривается эффективность лапароскопии и её преимущества в лечении женского бесплодия.

**Ключевые слова:** Трубно-перитонеальное бесплодие, лапароскопия, диагностика, хирургия, репродуктивное здоровье.

### KIRISH

Nay peritoneal bepushtlik ayollar orasida uchraydigan eng keng tarqalgan bepushtlik turlaridan biri hisoblanadi. Ushbu holat, asosan, tuxumdon va bachadon naylari o'rtasidagi o'tish joylarining yopilishi yoki shikastlanishi natijasida yuzaga keladi. Zamonaviy tibbiyotda bu muammoni aniqlash va davolashda laparoskopik amaliyot keng qo'llaniladi. Ushbu bo'limda laparoskopiyaning diagnostika va davolash jarayonlaridagi o'rni tahlil qilinadi.

## 2. Nay Peritoneal Bepushtlik Sabablari (Causes of Tuboperitoneal Infertility)

Nay peritoneal bepushtlik quyidagi sabablar natijasida yuzaga kelishi mumkin:

Infeksiyalar: Seksual yo‘l bilan yuqadigan kasalliklar (masalan, xlamidioz, gonoreya) naylarning shikastlanishiga olib keladi.

Yallig‘lanish jarayonlari: Pelvik yallig‘lanish kasalliklari (PID) va endometrioz

Operatsiyadan keyingi asoratlari: Qorin bo‘shlig‘idagi jarrohlik aralashuvlardan so‘ng chandiq to‘qimalarining hosil bo‘lishi.

Abortlar va homiladorlik asoratlari: Bachadon bo‘shlig‘i yoki naylarga zarar yetkazuvchi omillar.

## 3. Laparoskopiyaning Diagnostik Roli (Diagnostic Role of Laparoscopy)

Laparoskopiya — bu minimal invaziv usul bo‘lib, diagnostik va terapevtik maqsadlarda qo‘llaniladi. Diagnostika jarayonida laparoskopiya quyidagi imkoniyatlarni taqdim etadi:

To‘g‘ridan-to‘g‘ri ko‘rik: Bachadon, tuxumdon va bachadon naylarini vizual ko‘rish imkoniyati. Yelimlanishlarni aniqlash: Pelvik bo‘shliqdagi yelimlanish jarayonlarini aniqlash va ularni bartaraf etish. Kontrast modda sinovlari: Naylarning o‘tkazuvchanligini baholash uchun ishlatiladi.

## 4. Laparoskopiyaning Davolashdagi O‘rni

Laparoskopik jarrohlik bepushtlikni bartaraf etishda samarali hisoblanadi. Quyidagi muolajalar amalga oshiriladi:

Yelimlanishlarni yo‘qotish: Naylarning funksiyasini tiklash maqsadida chandiq to‘qimalarini olib tashlash. Endometrioz o‘choqlarini olib tashlash: Bepushtlikka sabab bo‘luvchi endometriozning davolanishi. Kistalarni rezektsiyasi: Tuxumdonlardagi kistalar olib tashlanib, ovulyatsiyaning tiklanishi ta’minlanadi.

Naylarning rekonstruksiya: Shikastlangan naylarni tiklash va ularning funksiyasini yaxshilash.

## 5. Laparoskopiyaning Afzalliklari (Advantages of Laparoscopy)

Minimal invazivlik: Kesma kichikligi sababli operatsiyadan keyin tiklanish davri qisqa bo‘ladi. Aniqlik va samaradorlik: Bevosita ko‘rik va davolash bir vaqtda amalga oshiriladi. Estetik natijalar: Chandiq izlari deyarli sezilmaydi. Kamroq asoratlari: An’anaviy ochiq jarrohlikka nisbatan infeksiya xavfi past.

## 6. Natijalar va Statistik Ma’lumotlar (Results and Statistical Data)

Tadqiqotlar shuni ko‘rsatadiki, laparoskopiya orqali davolangan bemorlarning 50–70%ida tabiiy homiladorlik holatlari qayd etilgan. Shuningdek, bu usul boshqa yordamchi reproduktiv texnologiyalar (YRT) bilan birga qo‘llanganda yanada yuqori samaradorlik ko‘rsatadi.

### **Xulosa**

Laparoskopik amaliyot nay peritoneal bepushtlikni tashxislash va davolashda yuqori samaradorlikka ega bo‘lib, ayollar reproduktiv salomatligini tiklashda muhim o‘rin tutadi. Ushbu usul yordamida bepushtlik sabablarini aniq aniqlash va ularni bartaraf etish mumkin. Shu sababli laparoskopiya zamonaviy tibbiyotda asosiy diagnostik va terapevtik usullardan biri sifatida tan olinadi.

Nay peritoneal bepushtlik ayollar orasida keng tarqalgan muammo bo‘lib, uning aniqlanishi va samarali davolash usullari muhim ahamiyatga ega. Laparoskopiya diagnostika va davolash jarayonlarida ishonchli va samarali vosita hisoblanadi. Ushbu usul minimal invaziv bo‘lib, qisqa tiklanish davri, kamroq asoratlar va yuqori samaradorlikni ta‘minlaydi. Tadqiqotlar shuni ko‘rsatadiki, laparoskopiya orqali davolangan bemorlarning aksariyati tabiiy ravishda homiladorlikka erishadi yoki yordamchi reproduktiv texnologiyalar yordamida natijaga erishadi. Shunday qilib, laparoskopik amaliyot nay peritoneal bepushtlikni bartaraf etishda asosiy usul sifatida tavsiya etiladi.

### **FOYDALANILGAN ADABIYOTLAR:**

1. Nezhat, C. (2008). Operative Gynecologic Laparoscopy: Principles and Techniques. Cambridge University Press.
2. Reich, H., & Roberts, L. (2011). Laparoscopic Surgery: A Practical Approach. Springer.
3. Tulandi, T., & Al-Fozan, H. (2003). Advances in Reproductive Endocrinology and Infertility Treatment. Humana Press.
4. American Society for Reproductive Medicine (ASRM). (2020). Practice Guidelines for the Management of Female Infertility. Fertility and Sterility Journal.
5. Sutton, C. J. G., & Diamond, M. P. (2009). Endoscopic Surgery for Gynecologists. Elsevier.

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