AMERICAN JOURNAL OF APPLIED MEDICAL SCIENCE
ISSN: 2996-5101 (online) | ResearchBib (IF) = 10.81 IMPACT FACTOR
Volume-3| Issue-11| 2025 Published: |30-12-2025|

CHRONIC VIRAL HEPATITIS B - EPIDEMIOLOGY, PATHOGENESIS, CLINICAL FEATURES, DIAGNOSIS, AND CURRENT THERAPEUTIC STRATEGIES (LITERATURE REVIEW)

https://doi.org/10.2861/zenodo.18045265

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Annotation

Chronic viral hepatitis B (CHB) remains a major global public health concern due to its high prevalence, long-term complications, and significant mortality. Despite the availability of effective vaccination and antiviral therapies, hepatitis B virus (HBV) infection continues to cause progressive liver disease, including cirrhosis and hepatocellular carcinoma (HCC). This review summarizes current knowledge on the epidemiology, virology, pathogenesis, clinical manifestations, diagnostic approaches, and modern treatment strategies for chronic hepatitis B. Emphasis is placed on recent advances in antiviral therapy and disease monitoring aimed at reducing liver-related morbidity and mortality.

Keywords

chronic hepatitis B, hepatitis B virus, liver cirrhosis, hepatocellular carcinoma, antiviral therapy.

Introduction. Hepatitis B virus infection is one of the most common chronic viral infections worldwide and a leading cause of chronic liver disease. According to the World Health Organization (WHO), approximately 250–300 million people are chronically infected with HBV, and nearly one million deaths occur annually due to HBV-related complications, primarily cirrhosis and hepatocellular carcinoma.

Chronic hepatitis B is defined by the persistence of hepatitis B surface antigen (HBsAg) in the blood for more than six months. The disease course is highly variable and influenced by viral factors, host immune response, age at infection, and comorbid conditions. Many patients remain asymptomatic for years, which delays diagnosis and treatment, allowing progressive liver damage to develop silently.

This narrative review aims to provide a comprehensive overview of chronic viral hepatitis B, focusing on its etiopathogenesis, clinical course, diagnostic criteria, and current evidence-based treatment options.

Materials and Methods. This review is based on an extensive analysis of scientific literature published between 2005 and 2024. Data were collected from international databases including PubMed, Scopus, Web of Science, and Google Scholar. Clinical guidelines and reports from the World Health Organization, European Association for the Study of the Liver (EASL), and American Association for the Study of Liver Diseases (AASLD) were also reviewed. Relevant articles were selected based on their scientific relevance, methodological quality, and clinical significance.

Epidemiology of chronic hepatitis B. HBV infection demonstrates marked geographic variability. High endemic regions include sub-Saharan Africa, East and Southeast Asia, and parts of the Middle East and Central Asia. In these areas, transmission often occurs perinatally or during early childhood, leading to a high risk of chronic infection.

In contrast, low-endemic regions such as Western Europe and North America report lower prevalence rates, with transmission occurring mainly through sexual contact or parenteral exposure in adulthood. Chronic infection develops in more than 90% of neonates infected at birth, compared to less than 5% of adults, highlighting the importance of age at exposure.

Despite the success of universal vaccination programs, chronic hepatitis B remains a substantial burden due to existing infections and limited access to diagnosis and treatment in resource-poor settings.

Virology and pathogenesis. HBV is a partially double-stranded DNA virus belonging to the Hepadnaviridae family. The virus primarily targets hepatocytes and replicates through a unique reverse transcription process. The formation of covalently closed circular DNA (cccDNA) within the nucleus of infected hepatocytes plays a central role in viral persistence and represents a major obstacle to complete viral eradication.

Liver injury in chronic hepatitis B is predominantly immune-mediated rather than caused by direct cytopathic effects of the virus. Cytotoxic T lymphocytes recognize HBV-infected hepatocytes and initiate inflammatory responses, leading to hepatocellular damage. Persistent immune activation results in chronic inflammation, fibrosis, and eventual progression to cirrhosis and hepatocellular carcinoma.

Clinical manifestations. The clinical presentation of chronic hepatitis B varies widely. Many patients remain asymptomatic for prolonged periods, with the

disease detected incidentally during routine laboratory testing. When present, symptoms are usually nonspecific and include fatigue, weakness, anorexia, nausea, and right upper quadrant discomfort.

As the disease progresses, signs of advanced liver disease may appear, including jaundice, ascites, splenomegaly, portal hypertension, and hepatic encephalopathy. Patients with long-standing CHB are at increased risk of developing hepatocellular carcinoma, even in the absence of cirrhosis.

The natural history of chronic hepatitis B is commonly divided into several phases, including immune-tolerant, immune-active, inactive carrier, and reactivation phases, each characterized by distinct virological and biochemical features.

Diagnostic evaluation. The diagnosis of chronic hepatitis B relies on a combination of serological, virological, biochemical, and imaging studies. Key serological markers include HBsAg, HBeAg, anti-HBe, and antibodies to hepatitis B core antigen (anti-HBc). Quantitative measurement of HBV DNA is essential for assessing viral replication and guiding treatment decisions.

Biochemical evaluation focuses on liver enzyme levels, particularly alanine aminotransferase (ALT), as a marker of hepatic inflammation. However, normal ALT levels do not exclude significant liver damage. Assessment of liver fibrosis is crucial for prognosis and treatment planning. Non-invasive methods such as transient elastography (FibroScan) are widely used, while liver biopsy remains the gold standard in selected cases.

Current treatment strategies. The primary goals of chronic hepatitis B treatment are to suppress viral replication, reduce hepatic inflammation, prevent disease progression, and lower the risk of cirrhosis and hepatocellular carcinoma. Complete viral eradication is rarely achievable due to the persistence of cccDNA.

First-line antiviral therapies include nucleos(t)ide analogues such as entecavir and tenofovir, which are potent inhibitors of HBV replication with a high genetic barrier to resistance. Pegylated interferon-alpha may be used in selected patients due to its immunomodulatory effects, although its use is limited by side effects. Treatment is typically long-term and requires regular monitoring of virological response, liver function, and potential adverse effects. Early initiation of antiviral therapy has been shown to significantly improve long-term outcomes.

Prevention and public health perspectives. Vaccination remains the most effective strategy for preventing hepatitis B infection. Universal infant immunization, combined with timely birth-dose vaccination, has dramatically reduced HBV prevalence in many countries. Screening of pregnant women and antiviral prophylaxis in high-risk cases further reduce vertical transmission.

Public health efforts should also focus on improving access to diagnostic testing and antiviral therapy, particularly in low- and middle-income countries, to achieve the global goal of hepatitis B elimination.

Conclusion. Chronic viral hepatitis B continues to pose a significant global health challenge. Advances in diagnostic techniques and antiviral therapy have improved disease management and patient outcomes; however, early detection and sustained treatment remain critical. Strengthening prevention strategies, expanding vaccination coverage, and improving access to care are essential to reduce the long-term burden of HBV-related liver disease.

REFERENCES:

1. World Health Organization. Global Hepatitis Report. Geneva, 2017.
2. Terrault N.A., et al. Update on prevention, diagnosis, and treatment of chronic hepatitis B. Hepatology. 2018.
3. Хасанова Мохира Фархадовна (2023). ПЕРВОСТЕПЕННЫЕ ПРОБЛЕМЫ ОБУЧЕНИЯ СТУДЕНТОВ В МЕДИЦИНСКОМ ВУЗЕ ПРЕДМЕТА ФТИЗИАТРИЯ НА ПРИМЕРЕ УРГЕНЧСКОГО ФИЛИАЛА ТАШКЕНТСКОЙ МЕДИЦИНСКОЙ АКАДЕМИИ. International scientific review, (XCII), 11-14.
4. Khasanova, M. F., & Farkhadovna, K. M. (2022). Course of Tuberculosis in Combination with Arterial Hypertension. *International Journal on Orange Technologies*, *4*(1), 69-73.
5. ХАСАНОВА, М. НАУКА И ОБРАЗОВАНИЕ СЕГОДНЯ. *НАУКА И ОБРАЗОВАНИЕ СЕГОДНЯ*, (4), 55-58.
6. Хасанова, М. Ф., & Юсупов, Ш. Р. (2025). Особенности течения первичных форм туберкулеза у детей и подростков. *Academy–2025 год*, (2), 82.
7. Хасанова, М. Ф., & Юсупов, Ш. Р. (2025). Современные аспекты лечения больных кавернозным туберкулезом. *Вестник науки и образования*, 107-109.
8. Атаджанова, О. Н., & Хасанова, М. Ф. (2024). ПЕРСПЕКТИВА ПРИМЕНЕНИЯ ФИТОТЕРАПИИ У БОЛЬНЫХ ТУБЕРКУЛЕЗОМ ЛЕГКИХ. *Вестник науки и образования*, (1 (144)-2), 73-77.
9. Хасанова, М. Ф., & Юсупов, Ш. Р. (2024). Изучение иммунологических аспектов диагностики аллергического бронхита у больных туберкулезом легких. *Academy*, (4 (80)), 23-27.

10. Хасанова, М. Ф. Диагностика аллергического бронхита с иммунологическими изменениями у больных туберкулезом. *European research*, (4), 81.

11. Хасанова, М. Ф. (2021). Опасность туберкулеза с сочетанной вич-инфекцией. *European science*, (6 (62)), 46-50.

12. Хасанова, М. Ф. (2023). ПЕРСПЕКТИВЫ РАЗВИТИЯ СПОРТА СРЕДИ СТУДЕНТОВ ТАШКЕНТСКОЙ МЕДИЦИНСКОЙ АКАДЕМИИ УРГЕНЧСКОГО ФИЛИАЛА. *Журнал Наука, техника и образование*, 83-86.

13. Аскарова, Р. И., Юсупов, Ш. Р., & Хасанова, М. Ф. (2023). Атаджанова ОН Основные меры профилактики населения Приаралья от туберкулеза для детей и подростков. *Проблемы современной науки и образования*, (7), 185.

14. Хасанова, М. Ф. (2023). Эффективность Арт терапии для развития эмоционального интеллекта пожилых пациентов больных туберкулезом. *Вестник науки и образования*, (1 (132)-1), 99-102.

15. Хасанова, М. Ф., Атаджанова, О. Н., & Худойберганов, Р. Т. (2024). Сравнительный анализ социальных, экономических факторов развития туберкулеза среди подростков школьного возраста. *Вестник науки и образования*, (4 (147)-2), 92-96.

16. Атаджанова, О. Н., Юсупов, Ш. Р., & Хасанова, М. Ф. (2024). Анализ социальных, экономических факторов развития туберкулеза среди подростков школьного возраста. *ВЕСТНИК НАУКИ И ОБРАЗОВАНИЯ*, 65-67.

17. Хасанова, М. Ф. (2024). Особенности формирования иммунологического ответа при аллергическом бронхите у больных туберкулезом легких. *Наука и образование сегодня*, (4 (81)), 55-58.

18. Атаджанова, О. Н., Хасанова, М. Ф., Юсупов, Ш. Р., & Аскарова, Р. И. (2024). Туберкулез у пациентов преклонного возраста на этапе стационарного ведения больных. *Вестник науки и образования*, (4 (147)-1), 65-68.

19. Каюмов, У. К., Хатамова, Д. Т., Саипова, М. Л., Бадритдинова, М. Н., Алимов, С. С., & Исмаилов, К. Я. (2007). Продолжительность болевого приступа у больных ишемической болезнью сердца при наличии отдельных компонентов метаболического синдрома. *Кардиология Узбекистана*, (3), 47-50.

20. Ismailov, K. Y., & Djabbarova, Z. I. (2024). OBESITY AND ISCHEMIC HEART DISEASE. *European Journal of Modern Medicine and Practice*, *4*(11), 364-367.

21. Ismailov, K. Y. (2017). Means to detect harmful for children content and measures to prevent its spread. In *International Scientific and Practical Conference World Science* (Vol. 1, No. 4, pp. 15-17). ROST.

22. Исмоилова Зиёда Актамовна, Юлдашев Ботир Ахматович, & Ахматов Аблокул Ахматович (2019). Хронический пиелонефрит у детей на фоне нарушенного обмена мочевой кислоты: особенности анамнеза и клинико-лабораторная характеристика. Вопросы науки и образования, (4 (49)), 165-176.

23. Ахмеджанова Наргиза Исмаиловна, Ахмеджанов Исмаил Ахмеджанович, Исмаилова Зиёда Актамовна, & Гаппарова Гули Нурмуминовна (2023). Оценка функционального состояния почек при ренальных осложнениях у детей в период пандемии COVID-19: обсервационное когортное ретроспективное клиническое исследование. Кубанский научный медицинский вестник, 30 (3), 25-33. doi: 10.25207/1608-6228-2023-30-3-25-33

24. Исмоилова, З. А., Тажиева, З. Б., & Ражабова, Н. Т. COVID-19 ЎТКАЗГАН БОЛАЛАРДА ЎТКИР БУЙРАК ШИКАСТЛАНИШИНИ ҚИЁСИЙ БАҲОЛАШ. *ДОКТОР АХБОРОТНОМАСИ ВЕСТНИК ВРАЧА DOCTOR'S HERALD*, *72*.

25. Исмоилова Зиёда Актамовна, & Ахматов Аблокул Ахматович (2019). Состояние сердечно сосудистой системы у детей с хроническим пиелонефритом на фоне гиперурекемии. Вопросы науки и образования, (4 (49)), 177-185.

26. Ismoilova, Z. A., & Ahmedjanova, N. I. (2023). The role of lipocalin-2 associated with neutrophil gelatinase (ngal) in the development of acute nephrological pathology in children against the background of covid-19. *European International Journal of Multidisciplinary Research and Management Studies*, *3*(06), 151-156.

27. Aktamovna, I. Z., Ismoilovna, A. N., & Sajid, M. A. A. (2022). Clinic and laboratory characteristics of acute kidney failure in children during the COVID-19 pandemic.

28. Aktamovna, I. Z., Abdullayevna, K. T., & Sajid, M. A. A. (2022). Comparative assessment of renal complications in children during the COVID-19 pandemic.

29. Klicheva T.A., & Ismailova Z.A. (2021). Allergy In Children With Atopic Dermatitis. *The American Journal of Medical Sciences and Pharmaceutical Research*, *3*(01), 171–174. https://doi.org/10.37547/TAJMSPR/Volume03Issue01-26

30. Rajabova, N. T., Ismailova, Z. A., & Klicheva, T. A. (2021). The Effect Of Uric Acid Metabolism Disorders On The Cardiovascular System In Children With Pyelonephritis. *The American Journal of Medical Sciences and Pharmaceutical Research*, *3*(01), 167-170.

31. Ismoilova, Z. A., & Ishankulova, N. N. (2021). Rational Use Of Drugs In The Comprehensive Treatment Of Bronchoobstructive Syndrome In Children. *The American Journal of Medical Sciences and Pharmaceutical Research*, *3*(01), 175-178.

32. Ismailova, Z. A., Djumaniyazova, Z. F., Rajabova, N. T., Rajapov, A. A., & Yakubov, R. F. (2019). Condition of the cardiovascular system in children with chronic pyelone-phritis on the background of hyperuricemia. *International Journal of Advanced Science and Technology*, *28*(14), 100-104.

33. Исмоилова, З. А., Тилавова, Ю. М., & Камариддинзода, М. К. (2019). ОСОБЕННОСТИ АНАМНЕЗА И КЛИНИКО-ЛАБОРАТОРНОЙ ХАРАКТЕРИСТИКИ ХРОНИЧЕСКОГО ПИЕЛОНЕФРИТА У ДЕТЕЙ НА ФОНЕ НАРУШЕННОГО ОБМЕНА МОЧЕВОЙ КИСЛОТЫ. In *Завадские чтения* (pp. 71-74).

34. Мехроджева, Ш., Юлдашев, Б., Ахматов, А., Ахматова, Ю., & Исмаилова, З. (2017). Клинико-лабораторная характеристика проявления нефротического синдрома у детей по данным специализированного нефрологического стационара. *Журнал вестник врача*, *1*(2), 30-32.

35. Ismailov, K. Y., & Abdullaev, I. K. Research of the Distribution and Transmission of Covid-19 Infection. *JournalNX*, 686-691.

36. Ismailov, K. Y. (2025). THE FACTORS CAUSING ISCHEMIC HEART DISEASE AMONG THE POPULATION OF THE SOUTHERN ARAL SEA REGION HEVE BEEN STUDIED. *Journal of Multidisciplinary Innovation in Science and Education*, *1*(2), 413-418.

37. Абдуллаев, И. К., Исмаилов, К. Я., Курбанов, С. Р., & Матякубов, Ж. Р. ТИББИЁТ ОЛИЙГОҲЛАРИДА ЖАМОАТ САЛОМАТЛИГИ ВА СОҒЛИҚНИ САҚЛАШНИ БОШҚАРИШ ФАНИНИ ЎҚУВ ДАСТУРИГА КУРС ИШИНИ КИРИШНИНГ АМАЛИЙ АҲАМИЯТИ. *Султанов ГН–ректор, д. м. н. Зам. главного редактора*, 31.

38. Ismailov, K. (2019). THEORETICAL-LEGAL APPROACHES TO THE PROBLEMS OF INFORMATION-ANALYTICAL ACTIVITIES OF THE NATIONAL POLICE AT THE MODERN STATE OF COOPERATION. *European Reforms Bulletin*, 109.

39. Bochkoviy, O., Khankevich, A., Boiko-Dzhumelia, V., Chichyan, O. O., Baadzhi, N. A., Zaiets, H. V., ... & Smolka, O. V. (2020). European Reforms Bulletin.

40. Jaloladdin o‘g‘li, M. M., & Ernazarovich, S. S. (2025). COMORBID INFECTIONS IN YOUNG CHILDREN: CLINICAL FEATURES AND ANALYSIS OF OBSERVATIONS. *Multidisciplinary Journal of Science and Technology*, *5*(4), 362-366.

41. Ibraximova, H. R., & Sadullaev, S. E. (2025). THE EFFECT OF PROPER NUTRITION ON IMMUNITY IN CHILDREN. *Multidisciplinary Journal of Science and Technology*, *5*(6), 1229-1233.

42. Sadullaev, M. S. S. M. S., & Sh, S. M. D. (2023). THE COURSE OF CORONAVIRUS AGAINST THE BACKGROUND OF CHRONIC HEPATITIS.

43. Туйчиев, Л. Н., Худайкулова, Г. К., Джураева, Н., & Эралиев, У. Э. (2023). A study of the factors affecting the effectiveness of COVID-19 rehabilitation.

44. Matkarimov, M., & Sadullaev, S. (2025). BOLALARDA INFEKSION MONONUKLEOZNING XUSUSIYATLARI. *Journal of science-innovative research in Uzbekistan*, *3*(4), 169-177.

45. Ernazarovich, S. S., Zarifboyevich, O. S., Rustombekovich, N. R., & Kadamovna, A. D. (2025). DYNAMICS OF THE COVID-19 PANDEMIC AND ITS CLINICAL CONSEQUENCES. *Multidisciplinary Journal of Science and Technology*, *5*(5), 85-90.

46. Kadamovna, A. D., Rustombekovich, N. R., Zarifboyevich, O. S., & Ernazarovich, S. S. (2025). COMBINATIONS OF HEPATITIS B WITH PULMONARY TUBERCULOSIS. *Multidisciplinary Journal of Science and Technology*, *5*(5), 60-65.

47. Rustombekovich, N. R., Zarifboyevich, O. S., Kadamovna, A. D., & Ernazarovich, S. S. (2025). THE STATE OF THE ANTIOXIDANT DEFENSE SYSTEM IN CHRONIC HEPATITIS C. *Multidisciplinary Journal of Science and Technology*, *5*(5), 79-84.

48. Артиков, И. А., Отажанов, Ш. З., & Садуллаев, С. Э. (2025). ПАТОМОРФОЛОГИЧЕСКИЕ АСПЕКТЫ ДЕТСКОГО ЛИМФОБЛАСТНОГО ЛЕЙКОЗА. *Multidisciplinary Journal of Science and Technology*, *5*(6), 257-264.

49. Raximboyevich, Y. S., Rustamovna, I. H., Sabirovna, M. S., & Ernazarovich, S. S. (2025). CLINICAL FEATURES OF ESCHERICHIOSIS IN CHILDREN. *Multidisciplinary Journal of Science and Technology*, *5*(6), 220-224.

50. Khusanov, A. M., Kh, N. A., & Sadullaev, S. E. (2024, March). THE STRUCTURE OF COMORBID PATHOLOGY IN CHILDREN WITH COVID-19. In *CONFERENCE ON THE ROLE AND IMPORTANCE OF SCIENCE IN THE MODERN WORLD* (Vol. 1, No. 2, pp. 27-28).

51. Ибрахимова, Х. Р., Матьякубова, О. У., Садуллаев, С. Э., & Абдуллаева, Д. К. (2023). ГЕЛЬМИНТЫ У ДЕТЕЙ СРЕДИ НАСЕЛЕНИЯ УЗБЕКИСТАНА. *IMRAS*, *6*(7), 323-327.

52. Sadullaev, S. E., Ibragimov, S. J., Bobojonov, Y. B., & Mamatqulov, T. T. (2025). INTESTINAL IMMUNITY. *Multidisciplinary Journal of Science and Technology*, *5*(2), 485-488.

53. Sadullaev, S. E., Ibragimov, S. J., Bobojonov, Y. B., Yoqubov, Q. Y., Abdullayeva, D. K., & Khasanova, J. R. (2024). PREVALENCE OF DIARRHEAL DISEASES IN THE REPUBLIC OF UZBEKISTAN. *International Journal of Education, Social Science & Humanities*, *12*(3), 356-363.

54. Sadullaev, S. E., Bobajanov, A. O., Khusinbayev, I. D., Durdiev, E. S., & Ismoilova, A. R. (2025). PSYCHOLOGICAL REHABILITATION DURING THE CORONAVIRUS PANDEMIC. *Multidisciplinary Journal of Science and Technology*, *5*(2), 429-433.

55. Ералиев, У. Э., & Садуллаев, С. Э. (2020). Molecular genetic characteristics of rotavirus infection in children. *Молодой ученый*, (38), 46-48.

56. Ibrakhimova, H. R., Matyakubova, O. U., Sadullaev, S. E., & Abdullayeva, D. K. (2023). *HELMINTISES IN CHILDREN AMONG THE POPULATION IN UZBEKISTAN. IMRAS, 6 (7), 323–327.*

57. Artikov, I. A., Sadullaev, S. E., Ibrakhimova, H. R., & Abdullayeva, D. K. (2023). *RELEVANCE OF VIRAL HEPATITIS EPIDEMIOLOGY. IMRAS, 6 (7), 316–322.*

58. Masharipov, S., Sadullaev, S. E., & Sh, M. D. (2023). THE COURSE OF CORONAVIRUS AGAINST THE BACKGROUND OF CHRONIC HEPATITIS. *Научный импульс*, *78*.

59. Sadullayev, S. E. (2024). THE COURSE OF NOSOCOMIAL PNEUMONIA IN PATIENTS ON LONG-TERM ARTIFICIAL LUNG VENTILATION. *O'ZBEKISTONDA FANLARARO INNOVATSIYALAR VA ILMIY TADQIQOTLAR JURNALI*, *2*(26), 80-84.

60. Tuychiev, L. N., Khudaykulova, G. K., Eraliev, U. E., Djuraeva, N. K., & Sadullaev, S. E. (2023). A STUDY OF THE FACTORS AFFECTING THE EFFECTIVENESS OF COVID-19 REHABILITATION.

61. Рахматуллаева, Ш. Б., Муминова, М. Т., Нурматов, А. Х., & Саъдуллаев, С. Э. (2023). Особенности течения COVID-19 у детей с коморбидной патологией. *Педиатрия. Восточная Европа*, (3 Часть 12), 436-442.

62. Sadullayev, S. E., Abdullayeva, D. K., Ibragimov, S. J., & Yoqubov, Q. Y. (2024). ANALYSIS OF THE EPIDEMIOLOGICAL FEATURES OF DIARRHEAL DISEASES IN CHILDREN IN THE SOUTHERN ARAL REGION. *Multidisciplinary Journal of Science and Technology*, *4*(2), 345-351.

63. Сабировна, Ш., & Машарипова, А. И. А. Садуллаев Сирож Эрназарович, и Абдуллаева Дилфуза Кадамовна. 2022.«. *ТЕЧЕНИЕ КОРОНАВИРУСНОЙ ИНФЕКЦИИ НА ФОНЕ ГЕПАТИТОВ». Новости образования: исследование в XXI веке*, *1*(5), 573-77.

64. Sadullayev, S. E., Matyakubova, O. U., Artikov, I. A., Nurllayev, R. R., Ibadullayeva, S. S., & Yakubov, K. Y. (2023). Results Of Studies On The Level Of Population Knowledge About Parasitic Diseases And Its Prevention. *Western European Journal of Medicine and Medical Science*, *1*(4), 15-20.