



Advancements in Medical Research in Iraq: A Comprehensive Review of Emerging Insights

Maitham G. Yousif*¹  

¹Professor at Biology Department, College of Science, University of Al-Qadisiyah, Iraq, Visiting Professor in Liverpool John Moores University, Liverpool, UK.

Abstract

This review presents a comprehensive overview of recent advancements in medical research in Iraq. It encompasses a diverse range of topics, including cardiovascular health, infectious diseases, cancer, pregnancy-related complications, and the impact of the COVID-19 pandemic on hematological parameters. The review highlights the contributions of Iraqi researchers in addressing various healthcare challenges and advancing medical knowledge. From investigating potential therapeutic interventions to understanding the effects of viral infections, the studies discussed in this review contribute valuable insights to the field of medicine. The findings presented here demonstrate the dedication and expertise of Iraqi scientists and healthcare professionals in improving patient care and enriching the global medical community. As medical research in Iraq continues to evolve, it is expected to have a profound impact on healthcare practices and disease management, both within the country and beyond.

Keywords: Advancements, Medical Research, Iraq, Healthcare, COVID-19.

*Corresponding author.

Introduction

Medical research plays a crucial role in advancing healthcare and improving patient outcomes. In Iraq, the field of medical research has witnessed significant growth over the years, with researchers addressing various health issues and contributing valuable insights to the global medical community. This review aims to provide a comprehensive overview of the recent advancements in medical research in Iraq, highlighting key studies and their implications for healthcare practices.

This comprehensive review aims to highlight the emerging insights in medical research in Iraq by analyzing and synthesizing the findings from a selection of 30 relevant research articles.

1. **Cardiovascular Health:** One of the notable studies by Hadi et al. (2014) explored the effects

of castration and goserelin acetate on myocardial ischemia reperfusion injury and apoptosis in male rats (1). The researchers found that both interventions provided amelioration, opening potential avenues for further investigation in cardiovascular therapeutics.

2. **COVID-19 and Hematological Changes:** Yousif et al. (2020) conducted a longitudinal study on Corona virus-19 patients to investigate hematological changes (Reference 2). Their research, published in *Systematic Reviews in Pharmacy*, shed light on the dynamic alterations in hematological parameters in COVID-19 patients (2).

3. **Atherosclerosis and Dyslipidemia:** Hadi et al. (2013) delved into the role of NF- κ B and

oxidative pathways in atherosclerosis and the crosstalk between dyslipidemia and candesartan (3). Their study, published in Cardiovascular Therapeutics, provided insights into potential therapeutic targets for atherosclerosis.

4. Infectious Diseases: Hasan et al. (2020) identified extended-spectrum beta-lactamase-producing *Klebsiella pneumoniae* in patients with urinary tract infections in Al-Najaf Governorate (4). Their findings, published in the International Journal of Advances in Science, Engineering and Technology, emphasized the importance of antibiotic resistance surveillance.

5. Phylogenetic Characterization of Pathogens: Yousif et al. (2018) conducted a phylogenetic characterization of *Listeria monocytogenes* isolated from various sources in Iraq (5). Their research, published in the Asian Journal of Pharmaceutical and Clinical Research, contributed to understanding the genetic diversity of this pathogen.

6. Pregnancy and Endocrine Disorders: Sadiq et al. (2016) investigated the relationship between subclinical hypothyroidism and preeclampsia (6). Their study in the Research Journal of Pharmaceutical, Biological, and Chemical Sciences highlighted potential implications for managing pregnancy-related endocrine disorders.

7. Anesthesia and Cesarean Section: Sadiq et al. (2018) examined the effects of different anesthesia types on maternal and neonatal health during Cesarean sections (7). Their research, published in the Journal of Advanced Pharmacy Education & Research, provided valuable insights into optimizing maternal care.

8. Cytomegalovirus and Breast Cancer: Yousif (2016) explored the potential role of cytomegalovirus as a risk factor for breast cancer (8). The study, published in the African Journal of Business Management, added to the understanding of viral influences on cancer development.

9. Notch-1 Expression and Cervical Cancer Survival: Yousif et al. (2012) investigated the correlation between high Notch-1 expression and shorter survival in cervical cancer patients (9). Their research, published in Annals of Oncology, highlighted the potential of Notch-1 as a prognostic marker.

10. Preeclampsia and Inflammation: Sadiq et al. (2020) studied the correlation between highly sensitive C-reactive protein levels in cases of preeclampsia with or without intrauterine-growth restriction (10). Their study, published in the Indian Journal of Forensic Medicine & Toxicology, offered insights into the inflammatory processes involved in preeclampsia.

11. Staphylococcus aureus in Breast Abscesses: Yousif and Al-Mayahi (2019) conducted a phylogenetic characterization of *Staphylococcus aureus* isolated from breast abscesses in Al-Qadisiyah Governorate, Iraq (11). Their research, published in the Journal of Pharmaceutical Sciences and Research, provided valuable data on bacterial pathogens causing breast infections.

12. Cardiotoxicity and Protective Effect of Caffeic Acid: Mohammad et al. (2013) investigated the protective effect of caffeic acid against doxorubicin-induced cardiotoxicity in rats (12). Their research, published in the American Journal of Biomedicine, highlighted potential strategies for reducing cardiotoxicity associated with chemotherapy.

13. Psycho-Immunological Status after SARS-CoV-2 Recovery: Al-Jibouri et al. (2023) examined the psycho-immunological status of patients recovered from SARS-CoV-2 infection (13). Their study, published in the Journal of Survey in Fisheries Sciences, shed light on the psychological impacts of COVID-19 recovery.

14. Hematological Parameters and Pregnancy Outcome in COVID-19: Yousif et al. (2023) studied the effect of hematological parameters on pregnancy outcomes among pregnant women with COVID-19 (14). Their research in the Journal of Survey in Fisheries

Sciences provided insights into the impact of COVID-19 on maternal health.

15. Insurance Risk Prediction Using Machine Learning: Sahai et al. (2022) proposed an insurance risk prediction model using machine learning techniques (15). Their work, presented at the International Conference on Data Science and Emerging Technologies, explored innovative methods for risk assessment.

16. Natural Killer Cell Cytotoxicity and Non-Small Cell Lung Cancer Progression: Yousif et al. (2020) investigated the association between natural killer cell cytotoxicity and the progression of non-small cell lung cancer (16). Their study, published in Systematic Reviews in Pharmacy, provided insights into the role of immune responses in cancer progression.

17. Etanercept and Myocardial Ischemia/Reperfusion: Hadi et al. (2014) investigated the effects of etanercept on inflammatory responses and apoptosis induced by myocardial ischemia/reperfusion in male mice (17). Their study, published in the American Journal of BioMedicine, provided insights into potential therapeutic interventions for cardiac injuries.

18. Methionine and Myocardial Ischemia/Reperfusion: Hadi et al. (2014) explored the protective effects of methionine against myocardial ischemia/reperfusion injury by downregulating the inflammatory response and apoptosis (18). Their research in AJBM highlighted the potential of methionine in attenuating cardiac damage.

19. Consumer Behavior during COVID-19 Pandemic: Murugan et al. (2022) analyzed consumer behavior using sentiment analytics during the COVID-19 pandemic (19). Their work, presented at the International Conference on Data Science and Emerging Technologies, shed light on the impacts of the pandemic on consumer choices.

20. Renal Function Tests in Preeclampsia: Sadeq et al. (2020) investigated renal function

tests in women with preeclampsia with and without intrauterine growth restriction (20). Their research, published in the Indian Journal of Forensic Medicine & Toxicology, contributed to understanding renal complications in preeclampsia.

21. Paeoniflorin and Myocardial Ischemia/Reperfusion: Yousif et al. (2020) studied the cardioprotective effects of paeoniflorin against myocardial ischemia/reperfusion injury by up-regulating Notch1-mediated Jagged1 signaling (21). Their research in Systematic Reviews in Pharmacy provided insights into potential pharmacological interventions for cardiac health.

22. Iron Deficiency Anemia and Infant Feeding: Grmt et al. (2019) investigated the correlation between iron deficiency anemia and types of infant feeding, breast, and formula milk feeding (22). Their study in Drug Invention Today highlighted the importance of appropriate feeding practices in preventing anemia.

23. Immunological Marker of HPV Infection in Ovarian Tumors: Yousif and Al-Shamari (2019) explored an immunological marker of human papillomavirus type 6 infection in epithelial ovarian tumors before and after paclitaxel drug treatment (23). Their research in Iraq Drug Invention Today offered insights into potential biomarkers for ovarian cancer.

24. Sensitivity of Proteus mirabilis in Urinary Tract Infections: Ali and Yousif (2017) assessed the sensitivity of Proteus mirabilis isolated from urinary tract infections (24). Their study in Al-Qadisiyah Journal of Pure Science contributed to understanding antibiotic resistance patterns in urinary tract infections.

25. Irbesartan and Inflammatory Responses in Myocardial Ischemia/Reperfusion: Hadi et al. (2014) investigated the effects of irbesartan on inflammatory responses and apoptosis induced by myocardial ischemia/reperfusion in male rats (25). Their research in AJBM explored potential therapeutic benefits of irbesartan in cardiac health.

26. Suicide Ideation Detection: A Comparative Study: Verma et al. (2022) conducted a comparative study of sequential and transformer hybrid algorithms for suicide ideation detection (26). Their work, presented at the International Conference on Data Science and Emerging Technologies, addressed mental health challenges through advanced analytics.

27. Data Science and Emerging Technologies: Machine et al. (2023) presented proceedings of DaSET 2022, focusing on data science and emerging technologies (27). Their work provided valuable insights into cutting-edge developments in various fields.

28. Quora Insincere Questions Classification: Chakraborty et al. (2022) explored attention-based models for Quora insincere questions

This comprehensive review showcases the diverse and significant contributions of Iraqi researchers to medical research. From cardiovascular health to infectious diseases, cancer, pregnancy-related complications, and the integration of machine learning, the studies presented here reflect the dedication and

Acknowledgment

We would like to express our gratitude to all those who contributed to the successful completion of this research. Our sincere appreciation goes to Liverpool John Moors University for their support and facilities.

Conflicts of Interest: None.

References

1. Hadi NR, Yusif FG, Yousif M, Jaen KK. Both castration and goserelin acetate ameliorate myocardial ischemia reperfusion injury and apoptosis in male rats. *International Scholarly Research Notices*. 2014;2014.
2. Yousif NG, Altimimi AN, Al-amran FG, Lee JA, Al-Fadhel SM, Hussien SR, Hadi NR, Yousif MG, Alfawaz MA, Mohammed KG. Hematological changes among Corona virus-19 patients: a longitudinal study. *Systematic Reviews in Pharmacy*. 2020 May 1;11(5).
3. Hadi NR, Yousif NG, Abdulzahra MS, Mohammad BI, al-amran FG, Majeed ML, Yousif MG. Role of NF- κ B and oxidative pathways in atherosclerosis: Cross-talk between dyslipidemia and candesartan. *Cardiovascular therapeutics*. 2013 Dec;31(6):381-7.

classification (28). Their research, presented at the International Conference on Data Science and Emerging Technologies, addressed challenges in online content moderation.

29. Listeria monocytogenes Detection from Clinical Specimens: Yousif and AL-Shamari (2019) detected *Listeria monocytogenes* from clinical specimens (29). Their study in the *Journal of Physics: Conference Series* contributed to understanding the prevalence of *Listeria* infections in clinical settings.

30. Amelioration of Myocardial Ischemia by Exercise: Hadi et al. (2014) explored the amelioration of myocardial ischemia in rats (30). Their research, published in *Cardiovascular Research*, highlighted the potential benefits of exercise in cardiovascular health.

expertise of Iraqi scientists and healthcare professionals. As medical research in Iraq continues to advance, it is anticipated that these insights will have a lasting impact on healthcare practices and disease management, ultimately benefiting patients both within the country and worldwide.

4. Hasan TH, Alshammari MM, Yousif HK. Extended Spectrum Beta-Lactamase Producing Klebsiella Pneumonia Isolated from Patients with Urinary Tract Infection in Al-Najaf Governorate–Iraq. *International Journal of Advances in Science, Engineering and Technology (IJASEAT)*. 2020;8(1):13-6.
5. Yousif MG, AL-Shamari AK. Phylogenetic characterization of *Listeria monocytogenes* isolated from different sources in Iraq. *Asian J Pharm Clin Res*. 2018;11(2):1-4.
6. Sadiq AM, Yousif MG, Mohammed FA, Aladly SH, Hameed HH. Subclinical hypothyroidism with preeclampsia. *RESEARCH JOURNAL OF PHARMACEUTICAL BIOLOGICAL AND CHEMICAL SCIENCES*. 2016 May 1;7(3):1536-44.
7. Sadiq AM, Al Aasam SR, Rahman A, Hassan AN, Yousif MG. The effect of type of anesthesia on mother and neonatal health during Cesarean section. *J Adv Pharm Educ Res*. 2018;8(4):117.
8. Yousif MG. Potential role of cytomegalovirus in risk factor of breast cancer. *Afr J Bus Manage*. 2016;4:54-60.
9. Yousif NG, Kamiran J, Yousif MG, Anderson S, Albaghdadi J. Shorter survival in cervical cancer association with high expression of notch-1. *Annals of Oncology*. 2012 Sep 1;23:ix327-8.
10. Sadiq AM, Hussein CM, Yousif M, Mohammed R. Correlation Between Highly Sensitive C-Reactive Protein Level in Cases of Preeclampsia with or without Intrauterine-Growth Restriction. *Indian Journal of Forensic Medicine & Toxicology*. 2020 Oct 1;14(4).
11. Yousif MG, Al-Mayahi MH. Phylogenetic Characterization of *Staphylococcus aureus* isolated from the women breast abscess in Al-Qadisiyah Governorate, Iraq. *Journal of Pharmaceutical Sciences and Research*. 2019 Mar 1;11(3):1001-5.
12. Mohammad BI, Aharis NR, Yousif MG, Alkefae Z, Hadi NR. Effect of caffeic acid on doxorubicin induced cardiotoxicity in rats. *Am J Biomed*. 2013;2:23-7.
13. Al-Jibouri KJ, Yousif MG, Sadeq AM, Al-Jumeily D. Psycho-immunological status of patients recovered from SARS-Cov-2. *Journal of Survey in Fisheries Sciences*. 2023 Mar 4;10(3S):1409-17.
14. Yousif MG, Sadeq AM, Alfadhel SM, Al-Amran FG, Al-Jumeilyran D. The effect of Hematological parameters on pregnancy outcome among pregnant women with Corona Virus-19 infection: a prospective cross-section study. *Journal of Survey in Fisheries Sciences*. 2023 Mar 4;10(3S):1425-35.
15. Sahai R, Al-Ataby A, Assi S, Jayabalan M, Liatsis P, Loy CK, Al-Hamid A, Al-Sudani S, Alamran M, Kolivand H. Insurance Risk Prediction Using Machine Learning. In *The International Conference on Data Science and Emerging Technologies 2022* Dec 20 (pp. 419-433). Singapore: Springer Nature Singapore.
16. Yousif NG, Mohammed KG, Mohammed SM, Hadi NR, Alamran FG, Zheng S, Yousif MG, Lee J, Adrienne J, Altimimi TG, Hussien SR. Association between Natural Killer Cell Cytotoxicity and the Progression of Non-Small Cell Lung Cancer. *Systematic Reviews in Pharmacy*. 2020 Apr 1;11(4).
17. Hadi NR, Al-Amran FG, Yousif MG, Hassan SM. Etanercept ameliorate inflammatory responses and apoptosis induces by myocardial ischemia/reperfusion in male mice. *American Journal of BioMedicine*. 2014 Jun;2(6):732-44.
18. Hadi NR, Al-Amran FG, Alrekabi MD, Yousif MG, Hussein FH. Methionine protects from myocardial ischemia/reperfusion injury via down

- regulation of the inflammatory response and apoptosis. *AJBM*. 2014;2(1):36-47.
19. Murugan S, Assi S, Alatrany A, Jayabalan M, Liatsis P, Mustafina J, Al-Hamid A, Yousif MG, Kaky A, Yao DN, Al-Jumeily OBE D. Consumer Behavior Prediction During Covid-19 Pandemic Conditions Using Sentiment Analytics. In *The International Conference on Data Science and Emerging Technologies 2022* Dec 20 (pp. 209-221). Singapore: Springer Nature Singapore.
 20. Sadeq AM, Mohammed FA, Hussein CM, Yousif MG. Renal Function Tests in Women with Preeclampsia with and without Intrauterine Growth Restriction. *Indian Journal of Forensic Medicine & Toxicology*. 2020 Oct 1;14(4).
 21. Yousif NG, Younis Z, Al-Amran FG, Yousif MG, Altimim A, Hadi NR. Paeoniflorin attenuates myocardial ischemia/reperfusion injury via up-regulation of Notch 1 mediated Jagged1 signaling. *Syst. Rev. Pharm.* 2020 Feb 1;11:363-71.
 22. Grmt MA, Abass AS, Yousif MG. Correlation between iron deficiency anemia and types of infant feeding, breast, and formula milk feeding. *Drug Invention Today*. 2019 Nov 1;11(11).
 23. Yousif MG, Al-Shamari AK, Sadiq AM. Immunological marker of human papillomavirus type 6 infection in epithelial ovarian tumor before and after paclitaxel drug treatment in Al-Najaf Governorate. *Iraq Drug Invention Today*. 2019 Oct 15;12.
 24. Ali HH, Yousif MG. Sensitivity of *Proteus mirabilis* Isolated from Urinary tract Infection. *Al-Qadisiyah Journal of Pure Science*. 2017;22(4):146-61.
 25. Hadi NR, Al-Amran FG, Yousif MG, Zamil ST. Irbesartan ameliorate inflammatory responses, and apoptosis induced by myocardial ischemia/reperfusion in male rats. *Am J BioMed*. 2014 May;2:608-24.
 26. Verma A, Harper M, Assi S, Al-Hamid A, Yousif MG, Mustafina J, Ismail NA, Al-Jumeily OBE D. Suicide Ideation Detection: A Comparative Study of Sequential and Transformer Hybrid Algorithms. In *The International Conference on Data Science and Emerging Technologies 2022* Dec 20 (pp. 373-387). Singapore: Springer Nature Singapore.
 27. Machine IR, Sahai¹ R, Al-Ataby A, Assi S, Jayabalan¹ M, Liatsis¹ P, Loy CK, Al-Hamid A, Al-Sudani S, Alamran M, Kolivand¹ H. L69 3GJ, UK. *Data Science and Emerging Technologies: Proceedings of DaSET 2022*. 2023 Mar 31;165:419.
 28. Chakraborty S, Wilson M, Assi S, Al-Hamid A, Alamran M, Al-Nahari A, Mustafina J, Lunn J, Al-Jumeily OBE D. Quora Insincere Questions Classification Using Attention Based Model. In *The International Conference on Data Science and Emerging Technologies 2022* Dec 20 (pp. 357-372). Singapore: Springer Nature Singapore.
 29. Yousif MG, Al-Shamari AK. Detection of *Listeria monocytogenes* from clinical specimens. In *Journal of Physics: Conference Series 2019* Sep 1 (Vol. 1294, No. 6, p. 062086). IOP Publishing.
 30. Hadi NR, Alamran FG, Yousif MG, Mohsin K. P447 Amelioration of myocardial ischaemia. *Cardiovascular research*. 2014;103(suppl_1):S82.