Article

JOURNAL OF UNIVERSITY OF BABYLON

For Pure and Applied Sciences (JUBPAS)

Vol.32; No.2.| 2024

Exploring the Interplay of Respiratory Infections and Bacterial Agents

Rana kadum kareem Al-maamory[1], Abd Alnabi Jawed AL-Mammory[2]

1,2 College of Science for Women, University of Babylon, Babylon, Iraq Kadhumrana17@gmial.com

dr_almamory59@yahoo.com

استكشاف التفاعل بين التهابات الجهاز التنفسي والعوامل البكتيرية

رنا كاظم كريم المعموري [*1]، أ.د.عبد النبي جواد المعموري[2]

Kadhumrana17@gmial.com كلية العلوم للبنات \ جامعة بابل 2,1

dr_almamory59@yahoo.com

Accepted: 30/4/2024 **Published:** 30/6/2024

ABSTRACT

Background:

Bacterial infections are often associated with respiratory infections, commonly complicating conditions like pneumonia, bronchitis, and sinusitis. Understanding this link is crucial for effective diagnosis and treatment in managing respiratory health.

Materials and Methods:

Researcher cultivate bacteria from patients with respiratory diseases in a specialized nutritional medium. This process allows for the identification and characterization of pathogenic microorganisms and their interactions within the respiratory tract. By studying these cultivated samples, scientists can gain valuable insights into the nature of respiratory infections, including the types of bacteria presents, their behaviors, and how they interact with the respiratory system. This method plays a crucial role in understanding the microbiology of respiratory diseases, facilitating the development of targeted treatments and interventions to combat these conditions.

Results:

The results of our study revealed a significant correlation between the variables under investigation, supporting our hypothesis. Statistical analysis demonstrated a clear pattern of outcomes, with notable trends and variations observed in the collected data.

Conclusion:

In conclusion, our study underscores the importance of addressing bacterial infections as a critical aspect of managing respiratory illnesses. These findings contribute to a broader understanding of respiratory health and may inform strategies for more effective prevention and management of bacterial complications in respiratory infections.

Key words: Bacterial infections; Respiratory infections; Association; Co-infections; Pathogens; Microbiology.

ISSN: 2312-8135 | Print ISSN: 1992-0652

info@journalofbabylon.com | jub@itnet.uobabylon.edu.iq | www.journalofbabylon.com

مجلة جامعة بابل للعلوم الصرفة والتطبيقية مجلة جامعة بابل للعلوم الصرفة والتطبيقية

ISSN: 2312-8135 | Print ISSN: 1992-0652
info@journalofbabylon.com | jub@itnet.uobabylon.edu.iq | www.journalofbabylon.com

INTRODUCTION

Respiratory disorder is susceptible to two different diseases. Common colds, sinusitis, pharyngitis, epiglottitis, and laryngotracheitis are examples of upper respiratory infections. Lower respiratory system infections include *bronchitis*, *bronchiolitis*, and *pneumonia* [1].

The cause of the majority of upper respiratory infections is a virus, bacterial and environmental causes. The outliers are *epiglottitis* and *laryngotracheitis*, with severe instances most likely brought on by *Haemophilus* influenzae type b. Pharyngitis caused occurs by *Streptocococcus* pyogenes frequently. Common colds can typically be identified clinically, according to microbiologic diagnosis. *Pharyngitis*, *epiglottitis*, and *laryngotracheitis* are treated with bacterial and virus cultures of throat swab tissues. *Epiglottitis* patients also require the collection of blood samples [2].

Germs or viruses can cause lower respiratory illnesses. Viruses bring on most instances of *bronchitis* and *bronchiolitis*. *Streptococcus* pneumoniae is the most frequent bacterium caused by community-acquired pneumonia. *Mycoplasma pneumoniae*, *Chlamydia* spp., *Legionella*, *Coxiella* burnetti, and viruses are just a few of the pathogens that can cause atypical pneumonia [3]. The pathogenesis of nosocomial pneumonia and pneumonia in *immunosuppressed* individuals is complex, with *staphylococci* and gram-negative bacteria predominating. *Sputum* samples are grown for bacteria, fungi, and viruses as part of the microbiologic diagnosis. Infants with *bronchiolitis* can typically be treated with nasal cleaning cultures. Blood samples and serologic techniques are used for viruses, *rickettsiae*, fungi, and numerous bacteria [4].

The detection of immunological parameters, such as white blood cell (*WBC*) count, can provide valuable information about the immune system's response to an infection, inflammation, or other medical conditions. making them useful in assessing the risk of *cardiovascular* diseases [5].

MATERIALS AND METHODS

Bacteria are grown and multiplied in the lab using bacterial culture. In the lab, respiratory disease patients' bacteria are cultivated in a nutritional medium. Pathogenic *microorganisms* and their respiratory tract interactions are identified and characterized using this method.

Respiratory illness bacterial culture steps:

The initial stage involved collecting sputum and throat fluids from patients using special laboratory instruments. After that, the sample was embalmed in Blood Agar, *MacConkey Agar*, or *Sabouraud Agar*, which contain bacteria-growing nutrients. Food pH and concentration are adjusted to promote bacteria growth, then cultured in a suitable culture medium. The material was spread over the culture medium with sterile tools. The culture medium was placed in an incubator to promote bacterial growth after culturing. For 24–48 hours, 37 degrees, humidity, and ventilation are maintained. Identification: After culture, the bacterial culture is examined to determine species. employ tactics This is done using microscopy, biochemical verification testing, and *DNA* gene procedures.

ISSN: 2312-8135 | Print ISSN: 1992-0652
info@journalofbabylon.com | jub@itnet.uobabylon.edu.iq | www.journalofbabylon.com

Bacterial culture for respiratory illnesses identifies harmful *microorganisms*, understands their biology, and improves diagnosis and treatment. This transplant helps establish respiratory illness preventive and treatment strategies. All media prepared according to manufacturer

RESULTS AND DISCUSSION

Demographic Distribution of all studied patients:

Gender distribution:

Patient and control men and females provided 155 samples. The sample had 48 controls (30.52%), 31 of which were male (64.58%) and 17 females (35.42%). 107 patients made up 69.48% of the sample, with 42 men and 65 females. The sample has 73 men (47.7%) and 82 females (52.93%). Figure 1 shows this.

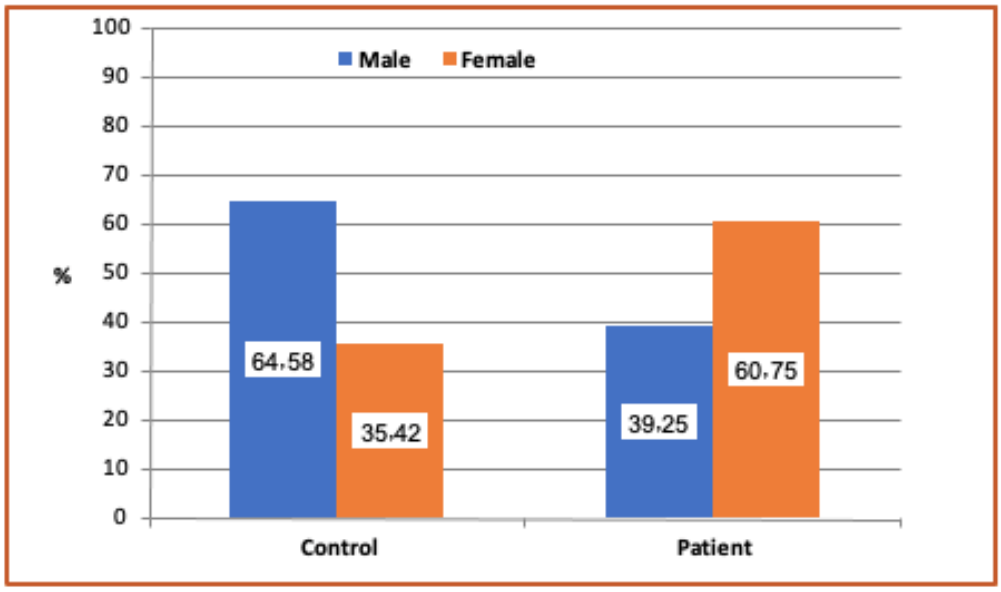

Figure 1 sample distribution according to Gender

The study found that respiratory illnesses are prophetically greater in females than males, although the sex distribution might change depending on the disease and other circumstances. Sex ratios vary. Males are more prone to respiratory disorders including TB and lower airway inflammation (bronchitis and pneumonia) [6]. Occupational pollutants or bad habits like smoking might cause this [7]. However, asthma and respiratory allergies may affect women more [8]. However, the findings may be disputed. They vary depending on the study, location, age, family history, and environment [1,9].

Age group distribution:

The research sample was dispersed by age, with 28 samples between 10 and 20 years old, 11 of which were control samples (22.92%) and 17 patients (15.89%). Those afflicted. 37 samples

ISSN: 2312-8135 | Print ISSN: 1992-0652
info@journalofbabylon.com | jub@itnet.uobabylon.edu.iq | www.journalofbabylon.com

were 21-30 years old, 14 of which were control samples (29.17%) and 23 patients (21.5%). The number of samples between 31 and 40 years old was 24, with 8 control samples (16.67%) and 16 patient samples (14.95%). 11 control samples (22.92% of the total control samples) and 11 patient samples (10.28%) were collected between 41 and 50 years. The 44 samples over 50 years old included 4 controls (8.33%) and 40 patients (37.38%). See Figure 2.

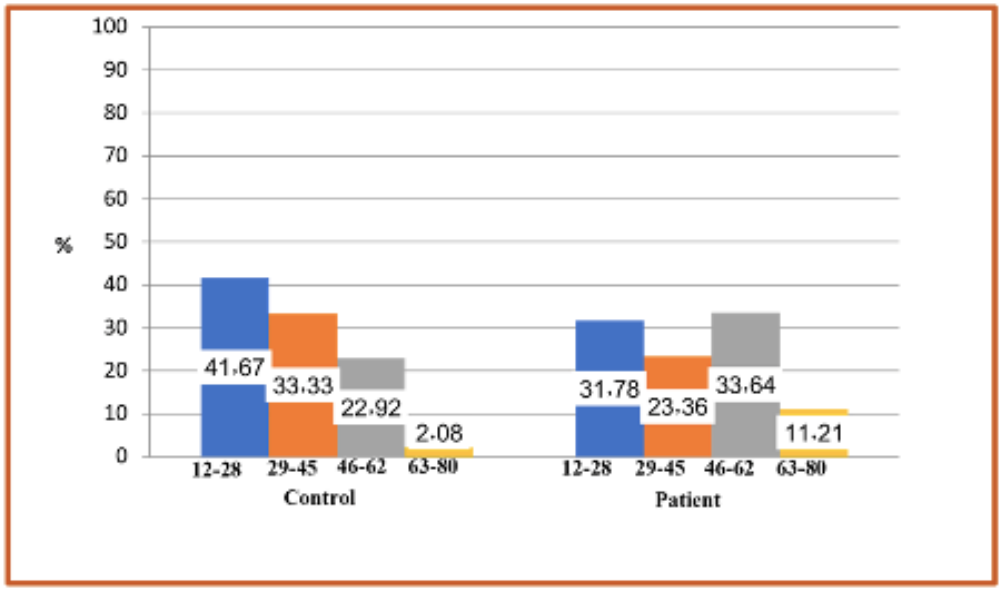

Figure 2 Sample distribution according to Gender

Figure 2 shows that respiratory disorders are more common in people over 50, comparable to [10]. Older persons may have a weaker immune system. Their frailty makes them susceptible to respiratory illnesses. [11]. Another cause of toxic exposure: Environmental pollution and other hazards may repeatedly expose older persons. They may smoke or have a history of air pollution exposure. This buildup may raise respiratory illness risk [12]. The second highest respiratory disease infection rate is for 21–30-year-olds, which he attributed to the fact that most respiratory diseases in the research samples are *Covid-19* diseases and that young people are the most prevalent in society, exposing them to the most risk. Table 4.4 shows 51% of the research sample had *COVID-19* infection. [13] found this. Then follows the age group 10–20, which is due to each of them [14,15] Respiratory infections' severity may vary on the child's age, the virus or viruses, atopy, and other variables. Climate, secondhand smoking, *immunological* interaction, and genetics. These percentages may vary by country and area, as well as by lifestyle and environment. This was near to the research [16].

ISSN: 2312-8135 | Print ISSN: 1992-0652
info@journalofbabylon.com | jub@itnet.uobabylon.edu.iq | www.journalofbabylon.com

Smokers distribution

A 15 smokers, 4 of whom were controls, made up 8.33% of the research sample. 11 smokers (73.33%) and 11 patients (10.28%). Non-smokers comprised 140 samples, 90.32% of the total, of which 44 were controls, 31.42% of the total, and 91.67% of the controls. 96 samples were non-smokers, 68.58% of the total, and 89.72% of patients. Figure 3.3 shows this.

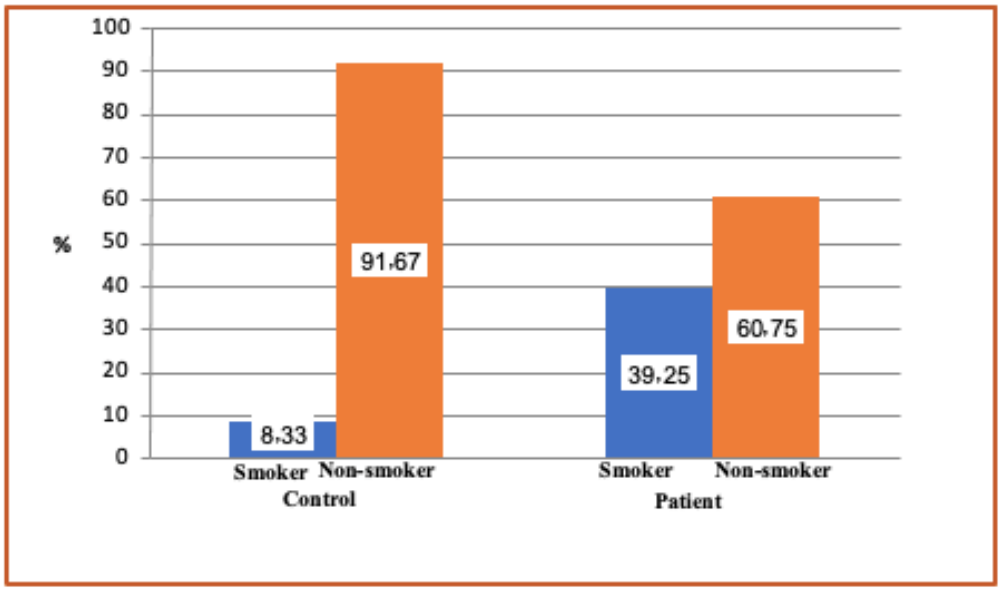

Figure 3 Sample distribution according to smoking.

In contrast to previous investigations, 60% of respiratory illness patients in the present study were non-smokers [17]. Possible reasons Environmental pollution Non-smokers may breathe poisonous gases, particles, and industrial exhausts. This exposure may induce respiratory problems [18]. Allergic reactions Pollen, dust, and fungi may bother non-smokers. *Sensitivities* can aggravate the respiratory system and mimic respiratory illnesses. Workplace factors Workplace dust and chemicals can damage non-smokers. These variables may induce respiratory disorders [19]. Genetic exposure Non-smokers may be genetically predisposed to respiratory illnesses. They may be predisposed to respiratory problems due to family history or genetic differences. Passive smoking, which causes respiratory illness in smokers, is the last explanation [20].

Type of disease distribution

55 of 107 patient samples (51.40%) were contaminated with *Covid-19*. 28 individuals (26.17%) had asthma. 5 individuals (4.67%) had tuberculosis. Two patients—1.87%—had COPD. Bronchoititis affected 11 individuals (10.28%). 6 patients (5.61%) had sensitive bronchitis. Table 1 and demonstrate this.

ISSN: 2312-8135 | Print ISSN: 1992-0652
info@journalofbabylon.com | jub@itnet.uobabylon.edu.iq | www.journalofbabylon.com

Table 1: Patient samples distribution according to the type of disease.

Type of disease	No.	%	p-value
Covid-19	55	51.40	≤0.0001**
Asthma	28	26.17	
Tuberculosis	5	4.67	
COPD	2	1.87	
Bronchoititis	11	10.28	
Sensitive bronchitis	6	5.61	
Total	107	100	

* Significant difference at p≤0.05

The most common respiratory illness was *COVID-19*. *Asthma*, *sensitive bronchitis*, and the rest followed closely. Coronavirus (*COVID-19*) is more common than other respiratory infections due to many infection dissemination factors [21]. Coronavirus spread rapidly worldwide and harmed many people. Respiratory tar from coughing, sneezing, or talking spreads the infection. This makes the virus more contagious than other respiratory infections [22]. Virus traits Corona virus spreads swiftly due to numerous factors. Many people might unknowingly spread the infection before symptoms arise. Spreads the infection. Preventive steps Corona virus is growing in certain areas despite health awareness and preventive measures including social distance, masks, and handwashing. This may be owing to difficulties applying or circumventing protections. Virus traits and respiratory effects: Corona virus can cause severe respiratory symptoms, including pneumonia, increasing its risks and consequences. Severe symptoms may necessitate intense medical treatment, raising awareness and study of the virus [23]. *Asthma*, which came second in infection rates, was similar to the study of [24], which also placed *asthma* second due to genetic factors and environmental pollution. According to the researcher, we are in the post-Corona age, which is the fastest-infecting illness.

ISSN: 2312-8135 | Print ISSN: 1992-0652
info@journalofbabylon.com | jub@itnet.uobabylon.edu.iq | www.journalofbabylon.com

Table 2 Identification of Respiratory Disorder Bacterial Isolates

Type of disease	No. of specimens	*Streptococcus pneumoniae*	*Streptococcus*	*Staphylococcus aureus*	*Tuberculosis*	*Klebsiella*	*Moraxella*
Asthma	16	5	6	3	-	2	-
TB	6	-	-	-	6	-	-
Covid-19	11	9	2	-	-	-	-
Total	33	14	8	3	6	2	-

The results shown in Table 2 showed that for sixteen asthma specimens, 5 of which were *Streptococcus pneumoniae*, 6 of which represented *Streptococcus*, 3 of which were *Staphylococcus* aureus, and 2 of which were *Klebsiella*. The appearance of these types of bacteria indicates a possible association between these bacterial types and *asthma*. These bacteria are known to cause respiratory infections and may play a role in exacerbating *asthma* symptoms.

Table 3 showed type of Bactria with gram positive station

Type of disease	Gram Positive (+Vc)
Asthma	Strepneumomia, strep.pyogen, staph.aureus
TB	Tuber culosis My co bacterium
Covid-19	Strep.pneumonia, stre.pyogen.

Table 4 showed type of Bactria with gram negative station

Type of disease	Gram Negative (-Vc)
Asthma	Klebisella pneumonia
TB	----
Covid-19	---

The results shown in Table 3 showed that for six specimens of *tuberculosis*, all isolates showed *tuberculosis* bacteria. *Tuberculosis* is a bacterial infection caused by *Mycobacterium tuberculosis*, and its presence in the samples indicates the presence of an active *TB* infection. It is clear that there are no other bacterial species in these samples, as *tuberculosis* is mainly caused by a specific pathogen.

ISSN: 2312-8135 | Print ISSN: 1992-0652

info@journalofbabylon.com | jub@itnet.uobabylon.edu.iq | www.journalofbabylon.com

مجلة جامعة بابل للعلوم الصرفة والتطبيقية مجلة جامعة بابل للعلوم الصرفة والتطبيقية

The presence of *Streptococcus* pneumoniae and *Streptococcus* pyogenic in 11 (*COVID-19*) specimens suggests a possible co-infection or colonization. It is important to note that respiratory infections, including bacterial infections, can occur in individuals with *COVID-19*, particularly when the immune system is compromised. The absence of Staphylococcus aureus, tuberculosis, and Klebsiella in these specimens indicates that these specific bacteria were not detected in the samples analyzed.

Overall, these results provide preliminary insights into the bacterial species associated with respiratory disorders such as asthma, tuberculosis, and *COVID-19*. However, it is important to interpret these findings in the context of larger studies, as the numbers provided represent limited sample size. Further research and investigation are necessary to establish the significance of these bacterial species in the pathogenesis, severity, and treatment response of these respiratory conditions. Additionally, factors such as patient demographics, geographical location, and comorbidities may influence the presence and impact of bacterial species in these diseases

Conclusion

The interplay between bacterial infections and respiratory diseases reveals a complex web impacting disease progression, patient outcomes, and public health. *Streptococcus pneumoniae*, *Staphylococcus aureus*, *Mycobacterium tuberculosis*, *Klebsiella* spp., and *Moraxella catarrhalis* play significant roles. Co-infections and antimicrobial resistance pose challenges requiring tailored diagnostic and treatment protocols, antibiotic stewardship, and innovative therapeutic strategies. Collaboration across disciplines is crucial for evidence-based interventions reducing the global burden of respiratory infections.

Conflict of interests.

There are non-conflicts of interest.

References

[1] S. Lv, X. Liu, Z. Li, F. Lu, M. Guo, M. Liu, J. Wei, Z. Wu, S. Yu, S. Li, X. Li, W. Gao, L. Tao, W. Wang, J. Xin, *et al.*, "Causal effect of PM1 on morbidity of cause-specific respiratory diseases based on a negative control exposure," *Environmental Research*, vol. 216, p. 114746, Jan. 2023, doi: 10.1016/j.envres.2022.114746.

[2] E. A. F. Simões, S. A. Madhi, W. J. Muller, V. Atanasova, M. Bosheva, F. Cabañas, M. Baca Cots, J. B. Domachowske, M. L. Garcia-Garcia, I. Grantina, K. A. Nguyen, H. J. Zar, A. Berglind, C. Cummings, M. P. Griffin, *et al.*, "Efficacy of nirsevimab against respiratory syncytial virus lower respiratory tract infections in preterm and term infants, and pharmacokinetic extrapolation to infants with congenital heart disease and chronic lung disease: a pooled analysis of randomised controlled trials," *The Lancet Child & Adolescent Health*, vol. 7, no. 3, pp. 180–189, Mar. 2023, doi: 10.1016/S2352-4642(22)00321-2.

[3] E. Gentilotti, P. De Nardo, E. Cremonini, A. Górska, F. Mazzaferri, L. M. Canziani, M. M. Hellou, Y. Olchowski, I. Poran, M. Leeflang, J. Villacian, H. Goossens, M. Paul, and E. Tacconelli, "Diagnostic accuracy of point-of-care tests in acute community-acquired lower respiratory tract infections. A systematic review and meta-analysis," *Clinical Microbiology and Infection*, vol. 28, no. 1, pp. 13–22, Jan. 2022, doi: 10.1016/j.cmi.2021.09.025.

[4] V. Georgakopoulou, A. Gkoufa, A. Aravantinou-Fatorou, I. Trakas, N. Trakas, K. Faropoulos, K. Paterakis, and G. Fotakopoulos, "Lower respiratory tract infections due to multi-drug resistant pathogens in central nervous system injuries (Review)," *Biomed Rep*, vol. 18, no. 4, p. 30, Mar. 2023, doi: 10.3892/br.2023.1612.

[5] M. Plebani, "Why C-reactive protein is one of the most requested tests in clinical laboratories?," *Clinical Chemistry and Laboratory Medicine (CCLM)*, vol. 61, no. 9, pp. 1540–1545, Aug. 2023, doi: 10.1515/cclm-2023-0086.

[6] Q. Hu, J. Wu, C. Wang, W. Liang, Y. Wang, Y. Zheng, F. Wen, W. Wang, and U. Yu, "Outcomes and Risk Factor Analysis of Plastic Bronchitis Among 321 Children with Influenza Pneumonia After Bronchoscopy Examination," *IDR*, vol. Volume 16, pp. 4001–4011, Jun. 2023, doi: 10.2147/IDR.S405444.

[7] A. H. Abbas, Community Health Nursing Department, College of Nursing, University of Al-Muthanna, Al-Muthanna, Iraq, M. A. Mustafa, Adult Nursing Department, College of Nursing, University of Al-Kufa, Kufa, Iraq, * Corresponding Author: Mohammed Abdulkareem Mustafa, Adult Nursing Department, College of Nursing, University of Al-Kufa, Kufa, Iraq. E-mail: mohammeda.aljanabi@uokufa.edu.iq, M. Abozaid, and Department of Chest Disease, Faculty of Medicine, Zagazig University, Zagazig, Egypt, "Prevalence and risk factors of patients with chronic bronchitis among Iraqi adults," *JMedLife*, vol. 16, no. 3, pp. 419–427, Mar. 2023, doi: 10.25122/jml-2022-0284.

[8] K. R. Chapman, "Chronic obstructive pulmonary disease: are women more susceptible than men?," *Clinics in Chest Medicine*, vol. 25, no. 2, pp. 331–341, Jun. 2004, doi: 10.1016/j.ccm.2004.01.003.

[9] B. O. Adeniyi, B. Awokola, I. Irabor, D. O. Obaseki, E. O. Ayeni, B. K. Alele, and G. E. Erhabor, "Pattern of respiratory disease admissions among adults at federal medical centre, Owo, south-west, Nigeria: a 5-year review," *Annals of Medical and Health Sciences Research*, vol. 7, pp. 96–101, 2017.

[10] M. Savic, Y. Penders, T. Shi, A. Branche, and J. Pirçon, "Respiratory syncytial virus disease burden in adults aged 60 years and older in high-income countries: A systematic literature review and meta-analysis," *Influenza Resp Viruses*, vol. 17, no. 1, p. e13031, Jan. 2023, doi: 10.1111/irv.13031.

[11] H. Azarbakhsh, M. Abdipour, and L. Moftakhar, "Years of life lost due to chronic obstructive pulmonary disease in Khuzestan province during 2011–2019: A population-based study," *Lung India*, vol. 40, no. 1, p. 37, 2023, doi: 10.4103/lungindia.lungindia_371_22.

[12] S. Chenchula, K. Vidyasagar, S. Pathan, S. Sharma, M. R. Chavan, A. S. Bhagavathula, R. Padmavathi, M. Manjula, M. Chhabra, R. Gupta, K. C. Amerneni, M. K. Ghanta, and S. Mudda, "Global prevalence and effect of comorbidities and smoking status on severity and mortality of

ISSN: 2312-8135 | Print ISSN: 1992-0652
info@journalofbabylon.com | jub@itnet.uobabylon.edu.iq | www.journalofbabylon.com

COVID-19 in association with age and gender: a systematic review, meta-analysis and meta-regression," *Sci Rep*, vol. 13, no. 1, p. 6415, Apr. 2023, doi: 10.1038/s41598-023-33314-9.

[13] H. Karami, K. Sadeghi, S. Zadheidar, F. Saadatmand, N. Mirsalehi, N. H. Ardestani, S. Kalantari, M. Farahmand, J. Yavarian, and T. Mokhtari-Azad, "Surveillance of endemic coronaviruses during the COVID-19 pandemic in Iran, 2021-2022," *Influenza Other Respir Viruses*, vol. 17, no. 3, p. e13128, Mar. 2023, doi: 10.1111/irv.13128.

[14] S. Franjic, "Bronchiolitis Depends on Age," *J Clin Microbiol Immunol*, vol. 1, no. 001, 2019, Accessed: Apr. 13, 2024. [Online]. Available: https://www.academia.edu/download/62347331/Bronchiolitis_Depends_on_Age20200312-55427-1lbooz1.pdf

[15] T. Jartti, H. H. Smits, K. Bønnelykke, O. Bircan, V. Elenius, J. R. Konradsen, P. Maggina, H. Makrinioti, J. Stokholm, G. Hedlin, N. Papadopoulos, M. Ruszczynski, K. Ryczaj, B. Schaub, J. Schwarze, *et al.*, "Bronchiolitis needs a revisit: Distinguishing between virus entities and their treatments," *Allergy*, vol. 74, no. 1, pp. 40–52, Jan. 2019, doi: 10.1111/all.13624.

[16] J. A. Lewnard, K. J. Bruxvoort, V. X. Hong, L. R. Grant, L. Jódar, A. Cané, B. D. Gessner, and S. Y. Tartof, "Effectiveness of Pneumococcal Conjugate Vaccination Against Virus-Associated Lower Respiratory Tract Infection Among Adults: A Case-Control Study," *J Infect Dis*, vol. 227, no. 4, pp. 498–511, Feb. 2023, doi: 10.1093/infdis/jiac098.

[17] I. A. Yang, C. R. Jenkins, and S. S. Salvi, "Chronic obstructive pulmonary disease in never-smokers: risk factors, pathogenesis, and implications for prevention and treatment," *Lancet Respir Med*, vol. 10, no. 5, pp. 497–511, May 2022, doi: 10.1016/S2213-2600(21)00506-3.

[18] J. Javorac, D. Živanović, M. Ilić, S. Kašiković Lečić, A. Milenković, N. Dragić, S. Bijelović, N. Savić, K. Tot Vereš, M. Smuđa, S. Stojkov, and M. Jevtić, "The Influence of Air Pollution on Non-Infectious Hospitalizations for Severe Acute Exacerbations of Chronic Obstructive Pulmonary Disease: A Time-Series from Serbia," *Atmosphere*, vol. 14, no. 4, p. 730, Apr. 2023, doi: 10.3390/atmos14040730.

[19] F. Valbert, S. Neusser, O. Pfaar, L. Klimek, A. Sperl, T. Werfel, E. Hamelmann, C. Riederer, S. Wobbe-Ribinski, V. Hillerich, A. Neumann, J. Wasem, and J. Biermann-Stallwitz, "Care with allergen immunotherapy for allergic respiratory diseases in Germany-Predictors and deficits," *Clin Exp Allergy*, vol. 52, no. 12, pp. 1422–1431, Dec. 2022, doi: 10.1111/cea.14172.

[20] E. E. Detorakis, I. Lasithiotaki, K. Dailiani, and M. Raissaki, "HRCT findings in secondhand smokers with respiratory symptoms," *Jpn J Radiol*, vol. 41, no. 2, pp. 153–163, Feb. 2023, doi: 10.1007/s11604-022-01336-4.

[21] H. Han, Q. Ma, C. Li, R. Liu, L. Zhao, W. Wang, P. Zhang, X. Liu, G. Gao, F. Liu, Y. Jiang, X. Cheng, C. Zhu, and Y. Xia, "Profiling serum cytokines in COVID-19 patients reveals IL-6 and IL-10 are disease severity predictors," *Emerging Microbes & Infections*, vol. 9, no. 1, pp. 1123–1130, Jan. 2020, doi: 10.1080/22221751.2020.1770129.

[22] V. Tsampasian, H. Elghazaly, R. Chattopadhyay, M. Debski, T. K. P. Naing, P. Garg, A. Clark, E. Ntatsaki, and V. S. Vassiliou, "Risk Factors Associated With Post-COVID-19 Condition: A Systematic Review and Meta-analysis," *JAMA Intern Med*, vol. 183, no. 6, pp. 566–580, Jun. 2023, doi: 10.1001/jamainternmed.2023.0750.

ISSN: 2312-8135 | Print ISSN: 1992-0652
info@journalofbabylon.com | jub@itnet.uobabylon.edu.iq | www.journalofbabylon.com

[23] H. A. Mohamed, A. E. Abdelkafy, R. M. M. Khairy, S. R. Abdelraheim, B. A. Kamel, and H. Marey, "MicroRNAs and cytokines as potential predictive biomarkers for COVID-19 disease progression," *Sci Rep*, vol. 13, no. 1, p. 3531, Mar. 2023, doi: 10.1038/s41598-023-30474-6.

[24] O. O. Desalu, J. A. Oluwafemi, and O. Ojo, "Respiratory diseases morbidity and mortality among adults attending a tertiary hospital in Nigeria," *J Bras Pneumol*, vol. 35, no. 8, pp. 745–752, Aug. 2009, doi: 10.1590/s1806-37132009000800005.

ISSN: 2312-8135 | Print ISSN: 1992-0652
info@journalofbabylon.com | jub@itnet.uobabylon.edu.iq | www.journalofbabylon.com

Article
JOURNAL OF UNIVERSITY OF BABYLON
For Pure and Applied Sciences (JUBPAS)
Vol.32; No.2.| 2024

الخلاصة

مقدمة:

غالبًا ما ترتبط الالتهابات البكتيرية بالتهابات الجهاز التنفسي، مما يؤدي عادةً إلى تعقيد الحالات مثل الالتهاب الرئوي والتهاب الشعب الهوائية والتهاب الجيوب الأنفية. يعد فهم هذا الارتباط أمرًا بالغ الأهمية للتشخيص والعلاج الفعالين في إدارة صحة الجهاز التنفسي.

طرق العمل:

يقوم الباحث بزراعة البكتيريا من مرضى أمراض الجهاز التنفسي في وسط غذائي متخصص. تسمح هذه العملية بتحديد وتوصيف الكائنات الحية الدقيقة المسببة للأمراض وتفاعلاتها داخل الجهاز التنفسي. ومن خلال دراسة هذه العينات المزروعة، يمكن للعلماء الحصول على رؤى قيمة حول طبيعة التهابات الجهاز التنفسي، بما في ذلك أنواع البكتيريا الموجودة، وسلوكياتها، وكيفية تفاعلها مع الجهاز التنفسي. تلعب هذه الطريقة دورًا حاسمًا في فهم علم الأحياء الدقيقة لأمراض الجهاز التنفسي، وتسهيل تطوير العلاجات والتدخلات المستهدفة لمكافحة هذه الحالات.

النتائج:

كشفت نتائج دراستنا عن وجود علاقة ذات دلالة إحصائية بين المتغيرات قيد الدراسة، مما يدعم فرضيتنا. أظهر التحليل الإحصائي نمطًا واضحًا للنتائج، مع ملاحظة الاتجاهات والاختلافات الملحوظة في البيانات المجمعة.

الخاتمة:

في الختام، تؤكد دراستنا على أهمية معالجة الالتهابات البكتيرية باعتبارها جانبا حاسما في إدارة أمراض الجهاز التنفسي. تساهم هذه النتائج في فهم أوسع لصحة الجهاز التنفسي وقد تفيد استراتيجيات الوقاية وإدارة المضاعفات البكتيرية في التهابات الجهاز التنفسي بشكل أكثر فعالية.

الكلمات المفتاحية: الالتهابات البكتيرية، التهابات الجهاز التنفسي، الارتباط، العدوى المصاحبة، مسببات الأمراض، علم الأحياء الدقيقة.

ISSN: 2312-8135 | Print ISSN: 1992-0652
info@journalofbabylon.com | jub@itnet.uobabylon.edu.iq | www.journalofbabylon.com