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Optimizing Human Resource Management to Promote Sustainable Educational Development: Insights from Bageshwar District

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Abstract:

Human resources play a central role in achieving sustainable development in the education sector, as teacher quality, motivation, and professional growth directly influence institutional effectiveness and student learning outcomes. Effective Human Resource Management (HRM) practices are therefore essential for ensuring teacher performance, retention, and long-term organizational sustainability. This study examines HRM practices in schools across Bageshwar District, India, with the objective of assessing their impact on sustainable educational development. A mixed-methods research approach was adopted, combining quantitative data from structured surveys with qualitative insights from interviews and institutional records. Key HRM dimensions analyzed include recruitment and selection processes, professional development and training opportunities, teacher motivation, performance appraisal mechanisms, and retention strategies. The findings reveal notable gaps between HRM policies and their practical implementation, particularly in areas related to continuous professional development, systematic performance evaluation, and incentive-based motivation. The study highlights the need for context-specific HRM frameworks and policy interventions to strengthen human resource practices in school education. The recommendations offered aim to support teacher effectiveness, improve institutional efficiency, and contribute to the sustainability and quality of education in the region.

Keywords: Human Resource Management (HRM), Educational Sustainability, Teacher Development, Performance Appraisal, Bageshwar District.

1. Introduction

Education is universally acknowledged as a fundamental pillar of sustainable development, functioning as a powerful catalyst for economic progress, social inclusion, and cultural enrichment [1–7]. It extends far beyond the transmission of academic knowledge, playing a transformative role in shaping human potential, cultivating critical and creative thinking, and enabling individuals to participate productively and ethically in societal development [8–13]. In this broader context, education serves as a key mechanism for building informed, skilled, and resilient communities capable of responding to contemporary global challenges. Sustainable educational development, therefore, necessitates a holistic and multidimensional approach that transcends the mere expansion of physical infrastructure or the adoption of uniform curricular frameworks [14–21]. While adequate infrastructure, access to learning resources, and innovative pedagogical strategies remain essential components of the educational ecosystem, they alone are insufficient to ensure quality and sustainability. The true foundation of educational excellence lies in the human capital that animates and sustains educational institutions—namely teachers, academic leaders, administrators, and support staff

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[22–29]. These stakeholders play a decisive role in translating educational policies into effective classroom practices and meaningful learning experiences.

The effectiveness, motivation, and professional competence of human resources within the education sector are therefore critical determinants of long-term educational success. Well-trained, motivated, and supported educators contribute significantly to improved student outcomes, institutional efficiency, and the creation of inclusive, learner centered environments [30–37]. Moreover, strategic investment in human resource development enhances teacher retention, promotes continuous professional growth, and strengthens institutional resilience, all of which are essential for achieving sustainable educational goals. Recognizing and reinforcing the centrality of human resources is thus imperative for advancing educational quality, equity, and sustainability in diverse socio-economic contexts. Human Resource Management (HRM) in the education sector encompasses a range of strategic and operational functions, including recruitment, professional development, performance appraisal, motivation, and retention of staff [38-46]. Effective HRM not only ensures that institutions attract and retain competent personnel but also aligns individual capabilities with organizational objectives, thereby enhancing overall institutional performance [47-54]. By systematically managing talent, fostering professional growth, and promoting job satisfaction, HRM contributes to the sustainability and resilience of educational systems, particularly in contexts facing socioeconomic or geographic challenges [55-64].

This study focuses on HRM practices in the Bageshwar District of Uttarakhand, India, a region characterized by hilly terrain, dispersed populations, and diverse socio-economic conditions [65-73]. These contextual factors pose unique challenges for the delivery of quality education, including limited access to trained personnel, retention difficulties, and logistical constraints in training and professional development [74-83]. At the same time, such contexts offer valuable opportunities to explore innovative HR strategies, adaptive management practices, and locally relevant solutions that can strengthen educational sustainability [84-91]. By examining how HRM policies and practices are implemented in schools across Bageshwar, this research seeks to provide insights into the mechanisms through which human resource strategies can support sustainable educational outcomes in rural and resource-constrained settings [92-99]. Ultimately, understanding the intersection between HRM and educational development in Bageshwar not only informs district-level policy and practice but also contributes to broader discussions on sustainable education in rural and semi-urban regions of developing countries [100-108]. The findings from this study are intended to guide policymakers, school leaders, and educational stakeholders in designing and implementing HR strategies that foster institutional effectiveness, teacher satisfaction, and long-term educational sustainability [109-117].

2. Literature Review

2.1 Conceptualizing Human Resource Management in Education

Human Resource Management (HRM) in the education sector refers to a systematic and strategic approach to managing human capital, encompassing workforce planning, recruitment, selection, training, professional development, motivation, performance evaluation, and retention of both teaching and non-teaching staff [118–127]. Unlike traditional administrative models, contemporary HRM in education emphasizes the alignment of individual competencies with institutional missions and educational objectives. It recognizes educators and support personnel as strategic assets whose skills, commitment, and professional values significantly influence institutional effectiveness. Scholarly literature highlights that effective HRM practices contribute to organizational efficiency by fostering competency development, enhancing employee morale, and promoting a culture of accountability and continuous improvement [128–

136]. In educational institutions, HRM also plays a crucial role in facilitating pedagogical innovation, supporting leadership development, and ensuring compliance with academic and regulatory standards. By integrating human resource strategies with educational goals, HRM enables institutions to respond proactively to evolving societal needs, policy reforms, and technological advancements.

2.2 Sustainable Educational Development

Sustainable educational development refers to the capacity of education systems to deliver equitable, high-quality learning outcomes consistently over time while remaining resilient to social, economic, and technological transformations [137–145]. It encompasses dimensions such as access, inclusivity, quality assurance, institutional adaptability, and long-term resource optimization. Sustainable education systems are designed not only to meet current learning demands but also to prepare future generations for lifelong learning and responsible citizenship. The literature emphasizes that sustainability in education extends beyond infrastructure and curriculum design to include governance structures, policy coherence, and human resource sustainability. A stable and well-supported teaching workforce, continuous professional development, and participatory decision-making processes are identified as critical enablers of sustainable educational outcomes. Consequently, the sustainability of education systems is closely linked to the effectiveness of HRM practices that nurture, retain, and empower educational personnel.

2.3 HRM Practices and Educational Outcomes

Empirical research consistently demonstrates a strong and positive relationship between HRM practices and key educational outcomes, including teacher performance, job satisfaction, organizational commitment, and student achievement [146–149]. Practices such as structured professional development programs, transparent performance appraisal systems, fair compensation, and incentive mechanisms have been shown to enhance teacher motivation and instructional effectiveness. Studies further indicate that supportive HRM environments contribute to reduced teacher turnover, improved workplace morale, and stronger alignment between institutional objectives and classroom practices. Effective appraisal and feedback systems, in particular, facilitate reflective teaching and continuous skill enhancement, while equitable reward structures reinforce professional dedication. Collectively, these findings underscore the pivotal role of HRM as a strategic lever for improving educational quality and ensuring the long-term sustainability of school systems.

3. Objectives of the Study

The main objectives are:

- 1. To analyze current HRM practices in schools of Bageshwar District.
- 2. To evaluate the influence of HRM on teacher performance and educational sustainability.
- 3. To identify challenges in HRM and propose actionable strategies for improvement.

4. Methodology

4.1 Research Design

The study adopted a mixed-methods research design to obtain a comprehensive understanding of Human Resource Management (HRM) practices and their influence on sustainable educational development in schools of Bageshwar District. This approach integrates quantitative and qualitative methods, allowing for both measurement of trends and in-depth exploration of contextual factors influencing HRM implementation

[150–157]. The quantitative component facilitated the systematic assessment of teachers' and administrators' perceptions of HRM practices, while the qualitative component provided rich, narrative insights into institutional challenges, policy gaps, and practical constraints. The convergence of these methods enhanced the validity and robustness of the research findings.

4.2 Sampling Framework

The target population comprised teachers and school administrators from both government and private schools operating within Bageshwar District. To ensure representativeness across school types, locations, and administrative structures, a stratified random sampling technique was employed. The final sample included 150 teachers and 30 school administrators, selected proportionately from different strata based on school management type and geographical distribution. This sampling strategy minimized selection bias and ensured that diverse perspectives on HRM practices were adequately captured.

4.3 Data Collection Instruments

Multiple data collection instruments were utilized to triangulate findings and strengthen the credibility of the study. Structured questionnaires were administered to teachers and administrators to assess perceptions related to recruitment practices, professional development opportunities, performance appraisal systems, motivation, and retention strategies. In addition, semi-structured interviews were conducted with selected respondents to gain deeper insights into HRM implementation challenges, institutional constraints, and contextual realities influencing policy execution. Furthermore, a document review was undertaken, examining relevant policy manuals, human resource guidelines, and performance appraisal records to assess alignment between formal HRM policies and actual practices within schools.

4.4 Data Analysis

Quantitative data obtained from the questionnaires were analyzed using descriptive statistical techniques, including frequencies, percentages, and mean scores, to summarize key trends in HRM practices. Correlation analysis was employed to examine relationships between HRM variables and indicators of educational sustainability, such as teacher motivation and institutional effectiveness. Qualitative data from interviews and document analysis were subjected to thematic analysis, enabling the identification of recurring patterns, themes, and explanatory insights. The integration of quantitative and qualitative findings facilitated a holistic interpretation of results and strengthened the analytical depth of the study.

5. Results and Discussion

5.1 Recruitment and Selection

The results indicate that recruitment and selection processes in schools across Bageshwar District largely adhere to standardized and policy-driven procedures. These mechanisms are designed to ensure transparency and merit-based appointments, which are widely recognized as essential for maintaining teacher quality and instructional effectiveness. The findings suggest that merit-oriented selection positively influences pedagogical competence and classroom performance, thereby contributing to overall educational quality [158–160]. However, the recruitment process is frequently affected by administrative delays, staffing shortages, and financial constraints, leading to prolonged vacancies and increased workload for existing teachers. Such logistical and systemic challenges undermine the effectiveness of recruitment policies and can adversely impact institutional stability and learning continuity, particularly in geographically remote and resource-constrained areas.

5.2 Professional Development

Professional development emerged as a critical area requiring substantial improvement. Only approximately 40% of the surveyed teachers reported having access to regular training or capacity-building programs. While professional development initiatives exist at the policy level, their implementation remains inconsistent and insufficiently responsive to classroom realities. Many teachers indicated that training content is often generic and lacks alignment with subject-specific requirements, pedagogical challenges, and local learning contexts [161–164]. As a result, the effectiveness of such programs in enhancing instructional skills, adopting innovative teaching methods, and addressing diverse learner needs remains limited. The findings highlight the need for continuous, needs-based, and practice-oriented professional development frameworks that support sustained teacher growth and instructional improvement.

5.3 Performance Appraisal Systems

The study reveals that performance appraisal mechanisms are present in most schools; however, they are predominantly perceived as procedural formalities rather than constructive tools for professional development. Teachers reported limited opportunities for meaningful feedback, reflective dialogue, and post-appraisal support, which diminishes the developmental value of evaluation systems [165–171]. The absence of clear linkages between appraisal outcomes and training, promotion, or mentoring further reduces teacher engagement with the appraisal process. These findings suggest that performance evaluation systems require restructuring to emphasize formative assessment, continuous feedback, and professional learning, thereby fostering a culture of accountability and growth rather than compliance.

5.4 Teacher Motivation and Retention

Teacher motivation and retention were found to be strongly influenced by factors such as professional recognition, opportunities for career advancement, supportive leadership, and participative decision-making processes. The results demonstrate a significant correlation between motivation levels and teachers' sense of professional fulfillment and organizational commitment. Conversely, limited incentive structures, inadequate career progression pathways, and professional stagnation were identified as major contributors to teacher attrition, particularly in remote and rural schools [172–180]. These challenges are exacerbated by geographical isolation and limited access to professional networks, underscoring the need for targeted retention strategies that address both material and non-material motivational factors.

5.5 HRM and Sustainable Educational Outcomes

The analysis indicates that schools with well-structured and effectively implemented HRM practices exhibit higher levels of teacher commitment, improved student performance indicators, and more collaborative institutional cultures. Such schools demonstrate stronger alignment between human resource strategies and educational objectives, enabling them to sustain quality outcomes over time [181–187]. The findings reinforce the argument that HRM functions as a critical driver of educational sustainability by enhancing institutional resilience, supporting continuous improvement, and fostering inclusive learning environments. Collectively, the results underscore the importance of integrating strategic HRM practices into educational governance to achieve long-term academic excellence and sustainable development.

6. Challenges in HRM Implementation

Key challenges identified include:

- Limited budgetary allocations for training.
- Inadequate HR policy frameworks tailored to rural contexts.
- Poor coordination between education departments and school leadership.
- Lack of systematic performance feedback mechanisms.

7. Recommendations

Based on the findings of the study, the following recommendations are proposed to strengthen Human Resource Management (HRM) practices and promote sustainable educational development in schools of Bageshwar District.

7.1 Policy-Level Interventions

At the policy level, there is a need to develop comprehensive and context-sensitive HRM frameworks that systematically address recruitment, deployment, performance appraisal, professional development, and retention of teachers and non-teaching staff. Recruitment policies should prioritize transparency, merit, and subject-specific competencies to ensure the selection of qualified and motivated educators. In addition, governments and educational authorities should allocate dedicated and ring-fenced funding for continuous teacher development programs, including in-service training, pedagogical upskilling, and exposure to innovative teaching practices. Such policy-level investments will enhance workforce stability and long-term institutional sustainability.

7.2 School Leadership Practices

Effective school leadership is central to the successful implementation of HRM policies at the institutional level. School administrators should introduce structured mentorship programs to support newly appointed teachers, facilitating smoother professional integration and early-career skill development. Furthermore, fostering participative and inclusive leadership practices—where teachers are actively involved in decision-making processes—can significantly enhance teacher engagement, ownership, and morale. Empowered leadership models contribute to collaborative school cultures that support continuous improvement and shared accountability.

7.3 Performance Management Systems

The study recommends the introduction of holistic and transparent performance management systems that go beyond traditional top-down evaluation models. Implementing 360-degree appraisal mechanisms—incorporating peer reviews, self-assessments, supervisory evaluations, and student feedback—can provide a more balanced and developmental assessment of teacher performance. Importantly, appraisal outcomes should be constructively linked to individualized professional development plans, ensuring that evaluations serve as tools for growth, skill enhancement, and instructional improvement rather than mere administrative compliance.

7.4 Incentive Structures

To improve teacher motivation and reduce turnover, especially in remote and resource-constrained settings, institutions should establish well-defined career progression pathways and merit-based recognition systems. Alongside financial incentives, non-monetary rewards—such as professional recognition,

leadership opportunities, academic autonomy, and access to advanced training—can significantly enhance job satisfaction and organizational commitment. A balanced incentive structure that acknowledges performance, innovation, and dedication is essential for retaining skilled educators and sustaining long-term educational quality.

8. Conclusion

The findings of this study affirm that Human Resource Management (HRM) plays a pivotal and strategic role in fostering sustainable educational development in Bageshwar District. Although existing HRM practices demonstrate the presence of basic structural frameworks for managing human resources in schools, their implementation remains uneven and limited in effectiveness. The study reveals that significant improvements are required in the execution of HRM policies, particularly with regard to systematic professional development, transparent and continuous performance appraisal mechanisms, and robust teacher motivation and incentive systems. Strengthening these dimensions is essential for enhancing teacher competence, job satisfaction, and organizational commitment, which in turn directly influence instructional quality and student learning outcomes. The study underscores the need for context-specific HRM strategies that address local challenges, including resource constraints and workforce retention in geographically remote areas. By prioritizing strategic HRM reforms and sustained investment in human capital, educational institutions in Bageshwar District can move beyond foundational practices toward achieving long-term educational excellence, institutional resilience, and sustainable development in the schooling system.

9. References

- [1] Armstrong, M., & Taylor, S. (2014). Armstrong's handbook of human resource management practice. Kogan Page.
- [2] Day, C., Sammons, P., et al. (2006). Teachers matter: Connecting work, lives and effectiveness. Open University Press.
- [3] Ingersoll, R. (2001). Teacher turnover and teacher shortages. American Educational Research Journal.
- [4] Storey, J. (2007). Human resource management: A critical text. Cengage Learning.
- [5] UNESCO. (2015). Education 2030: Framework for action.
- [6] Chen, M. A. (2012). The informal economy: Definitions, theories and policies (WIEGO Working Paper No. 1). Women in Informal Employment: Globalizing and Organizing.
- [7] Deshingkar, P., & Akter, S. (2009). Migration and human development in India. Human Development Research Paper (HDRP) Series, United Nations Development Programme.
- [8] Dutta, M., & Banerjee, S. (2020). Urban informal labour and women domestic workers in India: Issues of vulnerability and social protection. Journal of Social and Economic Development, 22(2), 267–289. https://doi.org/10.1007/s40847-020-00123-5
- [9] Ghosh, J. (2014). Informalization and women's employment in India. International Labour Review, 153(4), 655–675. https://doi.org/10.1111/j.1564-913X.2014.00225.x
- [10] International Labour Organization. (2011). Domestic workers across the world: Global and regional statistics and the extent of legal protection. ILO.
- [11] International Labour Organization. (2013). Decent work for domestic workers: Convention No. 189 and Recommendation No. 201. ILO.
- [12] International Labour Organization. (2018). Women and men in the informal economy: A statistical picture (3rd ed.). ILO.

- [13] Kabeer, N. (2015). Gender, labour markets, and women's empowerment: A critical review of the literature. IDS Working Papers, 2015(449), 1–48. https://doi.org/10.1111/j.2040-0209.2015.00449.x
- [14] Neetha, N. (2009). Contours of domestic service: Characteristics, work relations, and regulation. Economic and Political Weekly, 44(26–27), 48–56.
- [15] Neetha, N., & Palriwala, R. (2011). The absence of state law: Domestic workers in India. Canadian Journal of Women and the Law, 23(1), 97–119. https://doi.org/10.3138/cjwl.23.1.097
- [16] Raveendran, G., & Kannan, K. P. (2013). Gender differentials in economic well-being: Informal employment in India. Indian Journal of Labour Economics, 56(3), 329–356.
- [17] Sen, A. (1999). Development as freedom. Oxford University Press.
- [18] Sudarshan, R. M., & Sinha, S. (2011). Making domestic work visible: The case for women domestic workers in India. ILO–DWT for South Asia and Country Office for India.
- [19] Unni, J., & Rani, U. (2008). Flexibility of labour in globalising India: The challenge of skills and technology. Indian Journal of Labour Economics, 51(4), 719–732.
- [20] World Bank. (2020). Women, business and the law 2020. World Bank Publications. https://doi.org/10.1596/978-1-4648-1532-4
- [21] Akbar, S., & Shah, S. R. (2020). Mathematical study for the outflow of aqueous humor and function in the eye. International Journal of Scientific & Engineering Research, 11(10), 743–750.
- [22] Akbar, S., & Shah, S. R. (2020). The effects of prostaglandin analogs on intraocular pressure in human eye for open-angle glaucoma. International Journal of Innovative Technology and Exploring Engineering, 10(2), 176–180.
- [23] Akbar, S., & Shah, S. R. (2021). DURYSTA: The first biodegradable sustained release implant for the treatment of open-angle glaucoma. International Journal of Frontiers in Biology and Pharmacy Research, 1(2), 1–7.
- [24] Akbar, S., & Shah, S. R. (2024). Mathematical modeling of blood flow dynamics in the cardiovascular system: Assumptions, considerations, and simulation results. Journal of Current Medical Research and Opinion, 7(4), 2216–2225. https://doi.org/10.52845/CMRO/2024/7-4-2
- [25] Akbar, S., & Shah, S. R. (2025). Mathematical modelling of the therapeutic efficacy of metipranolol in primary open angle glaucoma management. International Journal of Innovative Science, Engineering & Technology, 12(01), 69–86.
- [26] Akbar, S., Alshehri, M., Sharma, S. K., Gupta, P., & Shah, S. R. (2024). A mathematical study for promoting disability inclusion in glaucoma: A comprehensive approach. Journal of Disability Research, 3, 1–12. https://doi.org/10.57197/JDR-2023-0062
- [27] Akbar, S., Jaiswal, K. M., Sadique, M., & Shah, S. R. (2024). Exploring capillary-tissue fluid exchange: Insights into red cell deformation in narrow vessels and its clinical implications. International Journal of Fauna and Biological Studies, 11(3), 4–14. https://doi.org/10.22271/23940522.2024.v11.i3a.1021
- [28] Akbar, S., Sharma, R. K., Sadique, M., Jaiswal, K. M., Chaturvedi, P., Kumar, V., & Shah, S. R. (2024). Computational analysis of clot formation risk in diabetes: A mathematical modeling approach. BIBECHANA, 21(3), 233–240.
- [29] Alshehri, M., Sharma, S. K., Gupta, P., & Shah, S. R. (2024). Empowering the visually impaired: Translating handwritten digits into spoken language with HRNN-GOA and Haralick features. Journal of Disability Research, 3, 1–21. https://doi.org/10.57197/JDR-2023-0051
- [30] Alshehri, M., Sharma, S., Gupta, P., & Shah, S. R. (2023). Detection and diagnosis of learning disabilities in children of Saudi Arabia with artificial intelligence. Research Square, 1–22. https://doi.org/10.21203/rs.3.rs-3301949/v1

- [31] Anamika, & Shah, S. R. (2017). A mathematical model of blood flow through diseased blood vessel. International Journal of Emerging Trends and Technology in Computer Science, 6(3), 282–286.
- [32] Anamika, & Shah, S. R. (2017). Mathematical and computational study of blood flow through diseased artery. International Journal of Computer Science, 5(6), 1–6.
- [33] Anamika, & Shah, S. R. (2017). Mathematical and computational study of blood flow through diseased artery. International Journal of Computer Sciences, 5(6).
- [34] Anuradha, Anamika, & Shah, S. R. (2017). Bio-computational analysis of blood flow through two-phase artery. International Journal of Engineering Science and Computing, 7(6), 13397–13401.
- [35] Arvind, & Shah, S. R. (2024). Investigating heat flow from skeletal muscles to skin surface: A theoretical model of thermal dynamics in the hypodermis layer. International Journal of Engineering Sciences & Research Technology, 13(10).
- [36] Arya, D., & Shah, S. R. (2024). Addressing educational challenges in Nainital through strategic human resource management: Recruitment, training, and retention solutions. International Journal of Research in Human Resource Management, 6(2), 320–324.
- [37] Arya, D., & Shah, S. R. (2024). Enhancing educational outcomes: The impact of human resource management practices on educator satisfaction in Dehradun. International Journal of Management (IJM), 15(5), 172–186. https://doi.org/10.5281/zenodo.14043040
- [38] Arya, D., & Shah, S. R. (2024). Human resource management strategies for improving educational outcomes in Bihar. International Journal of Humanities Social Science and Management, 4(4), 955–963.
- [39] Arya, D., & Shah, S. R. (2024). Optimizing educational outcomes: The role of human resource management in Jharkhand's education system. International Journal of Novel Research and Development, 9(8), b51–b57.
- [40] Arya, D., & Shah, S. R. (2024). Strategic human resource management in Almora's education system: Enhancing recruitment, training, and retention. International Journal of Scientific and Research Publications, 14(12). https://doi.org/10.29322/IJSRP.14.11.2024.p15525
- [41] Arya, S., Majhi, L., & Shah, S. R. (2024). Exploring Shilajatu's therapeutic potential in diabetes management: A comprehensive study integrating Ayurvedic wisdom and modern science. International Journal of Science and Research, 13(5), 1374–1380. https://dx.doi.org/10.21275/SR24522110012
- [42] Chaturvedi, P., & Shah, S. R. (2023). Mathematical analysis for the flow of sickle red blood cells in micro-vessels for biomedical application. Yale Journal of Biology and Medicine, 96(1), 13–21. https://doi.org/10.59249/ATVG1290
- [43] Chaturvedi, P., & Shah, S. R. (2023). Role of crizanlizumab for sickle red cells disease. International Journal of Biology, Pharmacy and Allied Sciences, 12(3), 1147–1157. https://doi.org/10.31032/IJBPAS/2023/12.3.6946
- [44] Chaturvedi, P., & Shah, S. R. (2024). Assessing the clinical outcomes of voxelotor treatment in patients with sickle cell disease. International Journal of Applied Sciences and Biotechnology, 12(01), 46–53. https://doi.org/10.3126/ijasbt.v12i1.64057
- [45] Chaturvedi, P., Akbar, S., Kumar, R., & Shah, S. R. (2021). Prospective of hydroxychloroquine and zinc with azithromycin for nanoparticles blood flow in COVID-19 patients. International Journal of Nanotechnology in Medicine & Engineering, 6(1), 1–7.
- [46] Chaturvedi, P., Kumar, R., & Shah, S. R. (2021). Bio-mechanical and bio-rheological aspects of sickle red cells in microcirculation: A mathematical modelling approach. Fluids, 6, 322, 1–15.

- [47] Choudhary, M., Kumar, V., Caplash, S., Yadav, B. K., Kaur, S., Shah, S. R., & Arora, K. (2024). Fabrication of nanomolecular platform-based immunosensor for non-invasive electrochemical detection of oral cancer: An in vitro study. Talanta Open, 10, 100352.
- [48] Geeta, Siddiqui, S. U., & Shah, S. R. (2014). Effect of body acceleration and slip velocity on the pulsatile flow of Casson fluid through stenosed artery. Advance in Applied Science Research, 5(3), 213–225.
- [49] Geeta, Siddiqui, S. U., & Shah, S. R. (2015). A biomechanical approach to the effect of body acceleration through stenotic artery. Applied Mathematics and Computation, 109(1), 27–41.
- [50] Geeta, Siddiqui, S. U., & Shah, S. R. (2015). A computational analysis of a two-fluid non-linear mathematical model of pulsatile blood flow through constricted artery. E-Journal of Science and Technology, 10(4), 65–78.
- [51] Geeta, Siddiqui, S. U., & Shah, S. R. (2015). A mathematical model for two-layered pulsatile blood flow through stenosed arteries. E-Journal of Science and Technology, 1(10), 27–41.
- [52] Geeta, Siddiqui, S., & Shah, S. R. (2013). Mathematical modelling of blood flow through catheterized artery under the influence of body acceleration with slip velocity. Application and Applied Mathematics: An International Journal, 8(2), 481–494.
- [53] Gurjar, P. S., & Shah, S. R. (2025). Mathematical modelling of atmospheric pollutant dispersion under steady state conditions with constant eddy diffusivity. Research Review International Journal of Multidisciplinary, 10(5), 240–247.
- [54] Guru Datt, M., Arya, S., & Shah, S. R. (2024). Ayurvedic approaches to maintaining healthy and narrowed arteries. International Journal for Research & Development in Technology, 21(6), 21–30.
- [55] Jaishwal, K. M., & Shah, S. R. (2025). Effect of cartilage thickness and viscosity on synovial fluid flow: Insights from a computational model. International Research Journal of Modernization in Engineering Technology and Science, 7(4), 10914–10925.
- [56] Jaiswal, K. M., & Shah, S. R. (2024). The role of synovial fluid dynamics in osteoarthritis: A mathematical modeling perspective. Research Review International Journal of Multidisciplinary, 9(12), 155–164.
- [57] Jaiswal, K. M., Sadique, M., Akbar, S., & Shah, S. R. (2024). Unveiling capillary-tissue fluid exchange: Understanding red blood cell deformation in constricted vessels and its clinical significance. Materials Plus, 3(1), 1–9. https://doi.org/10.37256/3120244770
- [58] Jeya Suriya Lenin, S., & Shah, S. R. (2024). Mathematical analysis of stem cell dynamics in acute myeloid leukemia: Towards precision medicine strategies. International Journal of Science and Research, 13(05), 528–535.
- [59] Kasturia, P., Sharma, R. K., Chaturvedi, P., Dohre, R., & Shah, S. R. (2024). Efficacy of venetoclax and azacitidine for targeting leukemic stem cell in acute myeloid leukemia. International Journal of Biology, Pharmacy and Allied Sciences, 13(6), 3072–3090. https://doi.org/10.31032/IJBPAS/2024/13.6.8960
- [60] Kaur, A., & Shah, S. R. (2025). A mathematical modeling approach to air pollution dispersion for enhancing community health and environmental safety. International Journal of Innovative Research in Technology, 11(12), 3929–3933.
- [61] Kaur, A., & Shah, S. R. (2025). A mathematical modeling approach to air pollution dispersion for predicting pollutant distribution from point sources. International Journal of Advanced Research, 13(4), 1349–1353.

- [62] Kaur, A., & Shah, S. R. (2025). Spatiotemporal modelling of atmospheric pollution: A computational approach with advection-diffusion equation. International Journal of Research and Innovation in Applied Science, 10(5), 469–473.
- [63] Kausar, S., Naqvi, N., Akbar, S., Shah, S. R., Abbas, K., Alam, M., & Usmani, N. (2025). Socioeconomic indicators and their impact on mental health: A data-driven approach using Python and R. International Journal of Epidemiology and Health Sciences, 6, e92, 1–22. https://doi.org/10.51757/IJEHS.6.2025.720978
- [64] Kausar, S., Naqvi, N., Akbar, S., Shah, S. R., Abbas, K., Alam, M., & Usmani, N. (2025). "Decoding mental health: A logistic regression analysis of socio-economic indicators and mental health quotient (MHQ) across nations". Current Social Science.
- [65] Kumar, A., & Shah, S. R. (2024). Hemodynamic simulation approach to understanding blood flow dynamics in stenotic arteries. International Journal of Scientific Research in Science and Technology, 11(6), 630–636. https://doi.org/10.32628/IJSRST241161116
- [66] Kumar, J. P., Sadique, M., & Shah, S. R. (2022). Mathematical study of blood flow through blood vessels under diseased condition. International Journal of Multidisciplinary Research and Development, 9(6), 31–44.
- [67] Kumar, K., Sharma, M. K., Shah, S. R., & Dohare, R. (2023). Vector-borne transmission dynamics model based Caputo fractional-order derivative. Indian Journal of Theoretical Physics, 71(3&4), 61–76.
- [68] Kumar, P., & Shah, S. R. (2021). A hydromechanical perspective to study the effect of body acceleration through stenosed artery. International Journal of Mathematical Engineering and Management Sciences, 6(5), 1381–1390.
- [69] Kumar, R., & Shah, S. R. (2017). A mathematical approach to study the blood flow through tapered stenosed artery with the suspension of nanoparticles. Destech Transactions on Engineering and Technology Research, 1, 1–6.
- [70] Kumar, R., & Shah, S. R. (2017). Study of blood flow with suspension of nanoparticles through tapered stenosed artery. Global Journal of Pure and Applied Mathematics, 13(10), 7387–7399.
- [71] Kumar, R., & Shah, S. R. (2018). Performance of blood flow with suspension of nanoparticles through tapered stenosed artery for Jeffrey fluid model. International Journal of Nanoscience, 17(6), 1850004, 1–7.
- [72] Kumar, R., & Shah, S. R. (2020). Mathematical modeling of blood flow with the suspension of nanoparticles through a tapered artery with a blood clot. Frontiers in Nanotechnology, 2, Article 596475, 1–5.
- [73] Kumar, R., Anamika, & Shah, S. R. (2017). Mathematical modelling of blood flow through tapered stenosed artery with the suspension of nanoparticles using Jeffrey fluid model. International Journal of Development Research, 7(6), 13494–13500.
- [74] Kumar, R., Shah, S. R., & Stiehl, T. (2024). Understanding the impact of feedback regulations on blood cell production and leukemia dynamics using model analysis and simulation of clinically relevant scenarios. Applied Mathematical Modelling, 129, 340–389. https://doi.org/10.1016/j.apm.2024.01.048
- [75] Kumar, V., & Shah, S. R. (2021). Mathematical model to study the heat transfer between core and skin. SRMS Journal of Mathematical Sciences, 7, 7–22.
- [76] Kumar, V., & Shah, S. R. (2022). A mathematical approach to investigate the temperature distribution on skin surface with sinusoidal heat flux condition. International Journal of Multidisciplinary Research and Development, 9(5), 141–146.

- [77] Kumar, V., & Shah, S. R. (2022). A mathematical study for heat transfer phenomenological processes in human skin. International Journal of Mechanical Engineering, 7(6), 683–692.
- [78] Kumar, V., & Shah, S. R. (2022). Thermobiological mathematical model for the study of temperature response after cooling effects. SSRG International Journal of Applied Physics, 9(2), 7– 11.
- [79] Kumar, V., & Shah, S. R. (2024). Dispersion of pharmaceutical agents in constricted and bent arteries: Insights from numerical and computational simulations. International Journal of Advanced Research in Social Sciences and Humanities, 8(2), 17–31.
- [80] Kumar, V., & Shah, S. R. (2024). Mathematical modeling of mechanical forces and chemical reaction dynamics for restoring shape memory in sickle-cell red blood cells. Research Review International Journal, 9(12), 31–44.
- [81] Kumar, V., & Shah, S. R. (2025). A meta-analytical and quantitative study of biosensor technologies in cancer diagnostics. International Journal of Advanced Research and Interdisciplinary Scientific Endeavours, 2(6), 722–727.
- [82] Kumar, V., & Shah, S. R. (2025). Assessing the clinical outcomes of hydroxyurea treatment in patients with sickle cell disease. International Journal of Progressive Research in Engineering Management and Science, 5(3), 1089–1097.
- [83] Kumari, N., & Shah, S. R. (2024). Examining women's representation in disaster risk reduction strategies across South Asia. International Journal of Disaster Management, 2(1), 1–3.
- [84] Mahesh, & Arya, S., & Shah, S. R. (2024). Optimizing cardiovascular health: Ayurvedic insights into blood flow through normal and stenosed arteries. International Journal of AYUSH, 13(5), 18–35.
- [85] Mahesh, Arya, S., & Shah, S. R. (2024). Optimizing cardiovascular health: Ayurvedic insights into blood flow through normal and stenosed arteries. International Journal of AYUSH, 13(5), 18–35.
- [86] Majhi, L., & Shah, S. R. (2024). The bioinspired significance of black cohosh in Ayurvedic women's health: Balancing hormones naturally. International Journal of Research and Analytical Reviews, 11(4), 749–759.
- [87] Malik, M. Z., Kumar, R., & Shah, S. R. (2020). Effects of (un)lockdown on COVID-19 transmission:

 A mathematical study of different phases in India. medRxiv, 1–13.

 https://doi.org/10.1101/2020.08.19.20177840
- [88] Maurya, K., & Shah, S. R. (2024). Mathematical modeling of blood flow dynamics in catheterized narrow arteries: Impact of non-Newtonian blood behavior and catheter dimensions. International Research Journal of Modernization in Engineering Technology and Science, 6(12), 3368–3378.
- [89] Mishra, S. R., & Shah, S. R. (2025). Analytical study of atmospheric pollution dispersion with distance-dependent wind and constant removal dynamics. International Journal of Scientific Research in Science and Technology, 12(3), 64–68.
- [90] Naveen, & Shah, S. R. (2025). Modeling urban air quality: Impact of spatial wind variation and constant removal on pollution dispersion in Delhi. International Journal of Scientific Research in Science, Engineering and Technology, 12(3), 17–24.
- [91] Parambath, A. B., Arora, K., & Shah, S. R. (2024). Quantitative analysis of hematopoietic and leukemic stem cell dynamics in acute myeloid leukemia: A mathematical approach. International Journal of Mathematics and Computer Research, 12(09), 4422–4435. https://doi.org/10.47191/ijmcr/v12i9.02
- [92] Parambath, A. B., Kandankel, P., & Shah, S. R. (2024). Dynamic modeling of cytokine-dependent proliferation rates over time in cancer: Insights from scientific analysis. Journal of Mathematical Techniques and Computational Mathematics, 3(7), 1–9.

- [93] Prachi, Arya, S., & Shah, S. R. (2024). Exploring the diagnostic and therapeutic implications of tridosha imbalances on dream phenomena in working women: An Ayurvedic perspective. International Journal of AYUSH, 13(9), 55–75.
- [94] Prachi, Arya, S., & Shah, S. R. (2024). Investigating dream phenomena in Ayurveda for women: Diagnostic and therapeutic insights into tridosha imbalances. International Journal of Ayurveda and Pharma Research, 12(8), 73–81.
- [95] Sadique, M., & Shah, S. R. (2022). Mathematical model to study the effect of PRG4, hyaluronic acid and lubricin on squeeze film characteristics of diseased synovial joint. International Journal of Mechanical Engineering, 7(6), 832–848.
- [96] Sadique, M., & Shah, S. R. (2022). Mathematical study for the synovial fluid flow in osteoarthritic knee joint. Journal of Engineering and Applied Sciences, 17(2), 15–21.
- [97] Sadique, M., & Shah, S. R. (2023). Mathematical model to study the squeeze film characteristics of synovial joints in diseased human knee joint. World Scientific Annual Review of Biomechanics, 1(2330004), 1–21. World Scientific Publishing Company.
- [98] Sadique, M., & Shah, S. R. (2024). The role of mathematics in the development of biomedical robotics and devices for healthcare. International Journal of Research in Computer Applications and Robotics, 12(12), 1–15.
- [99] Sadique, M., Jaishwal, K. M., & Shah, S. R. (2024). Assessing the influence of glucosamine supplementation on synovial fluid dynamics in osteoarthritic knee joints. International Journal of Applied Sciences and Biotechnology, 12(2), 84–91. https://doi.org/10.3126/ijasbt.v12i2.65009
- [100] Sadique, M., Jaiswal, K. M., & Shah, S. R. (2023). Mathematical modelling and analysis of squeeze film lubrication in hip joint: A comprehensive sphere–plate model
- [101] Sadique, M., Sharma, S. K., Islam, S. M. N., & Shah, S. R. (2023). Effect of significant parameters on squeeze film characteristics in pathological synovial joints. Mathematics (MDPI), 11(1468), 1–23. https://doi.org/10.3390/math11061468
- [102] Schurz, J. (1991). Rheology of synovial fluids and substitute polymers. Biorheology, 28(1–2), 171–188. https://doi.org/10.3233/BIR-1991-281-219
- [103] Sengar, N., & Shah, S. R. (2024). Analysing the socio-economic conditions and challenges faced by domestic women helpers in India's informal labour market. International Journal of Advance Research, 12(11), 898–910.
- [104] Sengar, N., & Shah, S. R. (2024). Examining the domestic adversities imposed by patriarchy on working women: A sociological perspective. International Journal of Social Sciences and Management, 11(4), 95–105.
- [105] Sengar, N., & Shah, S. R. (2024). Women in the informal labor sector: The situation of domestic helpers in Indian households. International Journal of Social Science and Economic Research, 9(11), 5581–5596.
- [106] Shah, R. R., & Shah, S. R. (2024). Assessment of road user costs for arterial streets in Ghaziabad city: An analysis of vehicle operation, accident impacts, and travel time efficiency. International Journal of Architecture, 10(2), 1–10.
- [107] Shah, S. R. (2009). Analysis of non-Newtonian fluid flow in a stenosed artery. International Journal of Physical Sciences, 4(11), 663–671.
- [108] Shah, S. R. (2010). A study of effects of magnetic field on modified Power-law fluid in modeled stenosed artery. Journal of Bioscience and Technology, 1(4), 187–196.
- [109] Shah, S. R. (2011). Capillary-tissue diffusion phenomena for blood flow through a stenosed artery using Herschel-Bulkley fluid. International Journal of Research in Biochemistry and Biophysics, 1(1), 1–8.

- [110] Shah, S. R. (2011). Effects of acetylsalicylic acid on blood flow through an artery under atherosclerotic condition. International Journal of Molecular Medicine and Advances Sciences, 7(6), 19–24.
- [111] Shah, S. R. (2011). Impact of radially non-symmetric multiple stenoses on blood flow through an artery. International Journal of Physical and Social Sciences, 1(3), 1–16.
- [112] Shah, S. R. (2011). Mathematical analysis of blood flow through atherosclerotic arterial segment having non-symmetric mild stenosis. International Journal of Research in Pure and Applied Physics, 1, 1–5.
- [113] Shah, S. R. (2011). Non-Newtonian flow of blood through an atherosclerotic artery. Research Journal of Applied Sciences, 6(1), 76–80.
- [114] Shah, S. R. (2011). Response of blood flow through an atherosclerotic artery in the presence of magnetic field using Bingham plastic fluid. International Journal of Pharmaceutical and Biomedical Research, 2(3), 96–106.
- [115] Shah, S. R. (2011). Role of non-Newtonian behavior in blood flow through normal and stenosed artery. Research Journal of Biological Sciences, 6(9), 453–458.
- [116] Shah, S. R. (2011). Study of modified Casson's fluid model in modeled normal and stenotic capillary-tissue diffusion phenomena. International Journal of Computational Engineering & Management, 11, 51–57.
- [117] Shah, S. R. (2012). A biomechanical approach for the study of deformation of red cells in narrow capillaries. IJE: Transaction A: Basics, 25(4), 303–313.
- [118] Shah, S. R. (2012). A biomechanical approach for the study of two-phase blood flow through stenosed artery. Journal of Engineering and Applied Sciences, 7(2), 159–164.
- [119] Shah, S. R. (2012). A case study of non-Newtonian viscosity of blood through atherosclerotic artery. Asian Journal of Engineering and Applied Technology, 1(1), 47–52.
- [120] Shah, S. R. (2012). Performance study on capillary-tissue diffusion phenomena for blood flow through stenosed blood vessels. American Journal of Pharmtech Research, 2(2), 695–705.
- [121] Shah, S. R. (2013). A mathematical model for the analysis of blood flow through diseased blood vessels under the influence of porous parameter. Journal of Biosciences and Technology, 4(6), 534–541.
- [122] Shah, S. R. (2013). An innovative solution for the problem of blood flow through stenosed artery using generalized Bingham plastic fluid model. International Journal of Research in Applied and Natural Social Sciences, 1(3), 97–140.
- [123] Shah, S. R. (2013). An innovative study for non-Newtonian behavior of blood flow in stenosed artery using Herschel-Bulkley fluid model. International Journal of Biosciences and Biotechnology, 5(5), 233–240.
- [124] Shah, S. R. (2013). Effects of antiplatelet drugs on blood flow through stenosed blood vessels. Journal of Biomimetics, Biomaterials and Tissue Engineering, 18, 21–27.
- [125] Shah, S. R. (2014). Effect of clopidogrel on blood flow through stenosed artery under diseased condition. International Online Medical Council (International Journal of Pharmacy Teaching and Practices), 5(1), 887–893.
- [126] Shah, S. R. (2014). Performance modeling and analysis of magnetic field on nutritional transport capillary tissue system using modified Herschel-Bulkley fluid. International Journal of Advanced Research in Physical Sciences, 1(1), 33–41.
- [127] Shah, S. R. (2015). A mathematical study of blood flow through radially non-symmetric multiple stenosed arteries under the influence of magnetic field. International Journal of Advanced Research in Biological Sciences, 2(12), 379–386.

- [128] Shah, S. R. (2015). A mathematical study of blood flow through stenosed artery. International Journal of Universal Science and Engineering, 1(1), 26–37.
- [129] Shah, S. R. (2015). A study of blood flow through multiple atherosclerotic arteries. International Journal for Mathematics, 1(12), 1–6.
- [130] Shah, S. R. (2015). Mathematical study of blood flow through atherosclerotic artery in the presence of porous effect. International Journal of Modern Sciences and Engineering Technology, 2(12), 12–20.
- [131] Shah, S. R. (2017). Significance of aspirin on blood flow to prevent blood clotting through inclined multi-stenosed artery. Letters in Health and Biological Sciences, 2(2), 97–100.
- [132] Shah, S. R. (2021). Clinical influence of hydroxychloroquine with azithromycin on blood flow through blood vessels for the prevention and treatment of COVID-19. International Journal of Biology, Pharmacy and Allied Sciences, 10(7), 2195–2204.
- [133] Shah, S. R. (2022). Study of dispersion of drug in blood flow with the impact of chemical reaction through stenosed artery. International Journal of Biosciences, 21(3), 21–29.
- [134] Shah, S. R. (2025). Optimization of luspatercept treatment for beta-thalassemia transmission control using pure fraction mathematical modeling. Advances in Biomedical and Health Sciences, 4(1), 11–18.
- [135] Sharma, R. K., Akbar, S., Kumar, V., Jaiswal, K. M., Kumar, V., Upadhyay, A. K., Sadique, M., Chaturvedi, P., Singh, A., & Shah, S. R. (2024). Optimizing cardiovascular performance following myocardial infarction: The significance of nitroglycerin in regulating blood flow. Janaki Medical College Journal of Medical Sciences, 12(2), 32–45. https://doi.org/10.3126/jmcjms.v12i2.62479
- [136] Siddiqui, S. U., & Shah, S. R. (2004). Study of blood flow through a stenosed capillary using Casson's fluid model. Ultra Science: International Journal of Physical Sciences, 16(2), 133–142.
- [137] Siddiqui, S. U., & Shah, S. R. (2006). Effect of shape of stenosis on the resistance to flow through an artery. Reflection Des ERA, 1(3), 257–272.
- [138] Siddiqui, S. U., & Shah, S. R. (2006). Herschel-Bulkley fluid model for stenosis shape aspects of blood flow through an artery. Ultra Science: International Journal of Physical Sciences, 18(3), 407–416.
- [139] Siddiqui, S. U., & Shah, S. R. (2011). A comparative study for the non-Newtonian behaviour of blood flow through atherosclerotic arterial segment. International Journal of Pharmaceutical Sciences Review and Research, 9(2), 120–125.
- [140] Siddiqui, S. U., & Shah, S. R. (2011). Two-phase model for the study of blood flow through stenosed artery. International Journal of Pharmacy and Biological Sciences, 1(3), 246–254.
- [141] Siddiqui, S. U., & Shah, S. R. (2012). Achievement of Pentoxifylline for blood flow through stenosed artery. Journal of Biomimetics, Biomaterials and Tissue Engineering, 13, 81–89.
- [142] Siddiqui, S. U., & Shah, S. R. (2016). A physiologic model for the problem of blood flow through diseased blood vessels. International Journal of Advances in Applied Sciences, 5(2), 58–64.
- [143] Siddiqui, S. U., & Shah, S. R. (2016). A physiologic model for the problem of blood flow through diseased blood vessels. International Journal of Advances in Applied Sciences, 5(2), 58–64.
- [144] Siddiqui, S. U., Singh, A., & Shah, S. R. (2015). Effects of inclined multi-stenoses arteries on blood flow characteristics using Bingham plastic fluid. International Journal for Mathematics, 1(12), 7–14.
- [145] Siddiqui, S. U., Singh, A., & Shah, S. R. (2015). Mathematical modelling and analysis of blood flow through diseased blood vessels. International Journal of Engineering and Management Research, 5(6), 366–372.

- [146] Siddiqui, S. U., Singh, A., & Shah, S. R. (2016). Mathematical modeling and numerical simulation of blood flow through tapered artery. International Journal of Innovative Science, Engineering & Technology, 3(2), 710–717.
- [147] Siddiqui, S. U., Singh, A., & Shah, S. R. (2016). Mathematical modeling of peristaltic blood flow through a vertical blood vessel using Prandtl fluid model. International Journal of Mathematics and Computer Research, 4(9), 710–717.
- [148] Siddiqui, S. U., Singh, A., & Shah, S. R. (2016). Performance of blood flow through two-phase stenosed artery using Herschel-Bulkley model. International Journal of Applied and Pure Science and Agriculture, 2(2), 228–240.
- [149] Siddiqui, S. U., Singh, A., & Shah, S. R. (2017). A mathematical model to study the similarities of blood fluid models through inclined multi-stenosed artery. International Journal of Engineering Research and Modern Education, 2(1), 108–115.
- [150] Singh, A., & Shah, S. R. (2024). Influence of transverse magnetic field on steady blood flow in a stenosed artery: Numerical and analytical insights. International Journal of Mathematical Archive, 15(8), 1–10.
- [151] Singh, A., & Shah, S. R. (2025). Enhanced pumping of blood flow in peristaltic transport of non-Newtonian fluids. Research Review International Journal of Multidisciplinary, 10(1), 216–225. https://doi.org/10.31305/rrijm.2025.v10.n1.026
- [152] Singh, A., Anamika, & Shah, S. R. (2017). Mathematical modelling of blood flow through three-layered stenosed artery. International Journal for Research in Applied Science and Engineering Technology, 5(6), 1–6.
- [153] Singh, A., Babu P, A., Arora, K., & Shah, S. R. (2024). Examining the risk of clot formation in diabetes through computational analysis: An approach using mathematical modeling. International Journal of Applied Sciences and Biotechnology, 12(2), 92–99. https://doi.org/10.3126/ijasbt.v12i2.65863
- [154] Singh, N., & Shah, S. R. (2024). Comparative analysis of blood viscosity and flow dynamics in normal and diabetic patients. International Journal of Recent Scientific Research, 15(9), 4982–4988.
- [155] Singh, N., & Shah, S. R. (2024). Exploring acute lymphoblastic leukaemia dynamics through mathematical modeling of hematopoietic disruption. International Research Journal of Modernization in Engineering Technology and Science, 6(7), 3971–3981.
- [156] Singh, P., Solanki, R., Tasneem, A., Suri, S., Kaur, H., Shah, S. R., & Dohare, R. (2024). Screening of miRNAs as prognostic biomarkers and their associated hub targets across hepatocellular carcinoma using survival-based bioinformatics approach. Journal of Genetic Engineering and Biotechnology, 22(1), 1–10.
- [157] Singh, S. (2010). A mathematical model for modified Herschel-Bulkley fluid in modeled stenosed artery under the effect of magnetic field. International Journal of Bioengineering and Technology, 1(1), 37–42.
- [158] Singh, S. (2010). Influence of magnetic field on blood flow through stenosed artery using Casson's fluid model. International Journal of Bioengineering, Cardio Pulmonary Sciences and Technology, 1, 1–7.
- [159] Singh, S. (2010). Numerical modelling for the modified Power-law fluid in stenotic capillary-tissue diffusion phenomena. Archives of Applied Science Research, 2(1), 104–112.
- [160] Singh, S. (2011). A two-layered model for the analysis of arterial rheology. International Journal of Computer Science and Information Technology, 4, 37–42.
- [161] Singh, S. (2011). Clinical significance of aspirin on blood flow through stenotic blood vessels. Journal of Biomimetics, Biomaterials and Tissue Engineering, 10, 17–24.

- [162] Singh, S. (2011). Effects of shape of stenosis on arterial rheology under the influence of applied magnetic field. International Journal of Biomedical Engineering and Technology, 6(3), 286–294.
- [163] Singh, S. (2011). Numerical modeling of two-layered micropolar fluid through a normal and stenosed artery. International Journal Engineering, 24(2), 177–187.
- [164] Singh, S. (2011). The effect of saline water on viscosity of blood through stenosed blood vessels using Casson's fluid model. Journal of Biomimetics, Biomaterials and Tissue Engineering, 9, 37–45.
- [165] Singh, S., & Shah, R. R. (2010). A numerical model for the effect of stenosis shape on blood flow through an artery using power-law fluid. Advance in Applied Science Research, 1, 66–73.
- [166] Singh, S., & Shah, S. R. (2025). Understanding blood flow in stenosed arteries: Newtonian and non-Newtonian fluid comparisons. Research Review International Journal of Multidisciplinary, 10(1), 203–215.
- [167] Singh, V., & Shah, S. R. (2024). Enhancing cardiovascular health: The positive impact of yoga on blood flow and circulation. Indian Journal of Yoga Exercise & Sport Science and Physical Education, 9(2). https://doi.org/10.58914/ijyesspe.2024-9.2.4
- [168] Singh, V., & Shah, S. R. (2024). The multifaceted health benefits of yoga: A comprehensive review of physical, mental, and quality of life improvements. International Journal of AYUSH Case Reports, 8(3), 436–447.
- [169] Singh, V., & Shah, S. R. (2025). Holistic benefits of yoga: A dual approach to cardiovascular health and obesity control. International Journal of Yoga and Allied Sciences, 14(1), 118–130.
- [170] Singh, V., & Shah, S. R. (2025). Integrating evidence-based teaching in yoga and Ayurveda: Bridging tradition with modern pedagogy. International Journal of Yogic, Human Movement and Sports Sciences, 10(1), 141–145.
- [171] Somveer, & Shah, S. R. (2024). Bioinspired mathematical modeling of chemical dispersion in narrow and curved arteries: A computational approach. International Journal of Mathematical Archive, 15(11), 1–9.
- [172] Upadhyay, A. K., & Shah, S. R. (2025). Modeling and analysis of atmospheric pollution dispersion under distance-dependent wind and constant removal. International Research Journal of Modernization in Engineering Technology and Science, 7(5), 547–552.
- [173] Upadhyay, A. K., Vashisth, M., Kaur, A., & Shah, S. R. (2025). "Mathematical modeling of atmospheric pollutant dispersion under periodic emissions: Implications for respiratory and cardiovascular health". International Journal of Science, Engineering and Technology, 13(5).
- [174] Yadav, P., & Shah, S. R. (2024). Female domestic laborers in the urban informal economy: A case analysis of Delhi. International Research Journal of Modernization in Engineering Technology and Science, 6(8), 216–225.
- [175] Yadav, P., Sengar, N., & Shah, S. R. (2024). Economic conditions and age profile of women domestic workers in Delhi's urban informal sector. International Journal of Research Publication and Reviews, 15(8), 494–500.
- [176] Yadav, P., Sengar, N., & Shah, S. R. (2025). An analysis of occupational health risks and outcomes among female agricultural laborers in India. International Journal of Progressive Research in Engineering Management and Science, 5(2), 1202–1211.
- [177] Yadav, P., Sengar, N., & Shah, S. R. (2025). Analysing occupational health issues among female farm laborers in India. International Journal of Science and Management Studies, 8(2), 105–114.
- [178] Quddus, R., & Shah, S. R. (2025). Natural compounds as potential breast cancer therapeutics: Insights from meta-analysis and computational approaches. Research Review: International Journal of Multidisciplinary, 10(10), 218–225. https://doi.org/10.31305/rrijm.2025.v10.n10.024.

- [179] Naveen, & Shah, S. R. (2025). Air pollution level prediction and comparative analysis of machine learning models: A case study of Delhi AQI. Research Review: International Journal of Multidisciplinary, 10(11), 266–272. https://doi.org/10.31305/rrijm.2025.v10.n11.027.
- [180] Upadhyay, A. K., & Shah, S. R. (2025). Machine learning-based prediction of air quality index (AQI) in Mumbai: Comparative analysis of linear regression, random forest, and XGBoost models. Research Review: International Journal of Multidisciplinary, 10(11), 299–307. https://doi.org/10.31305/rrijm.2025.v10.n11.030.
- [181] Singh, A., & Shah, S. R. (2025). Mathematical modelling of blood flow: Analysing the impact of arterial stenosis and nanoparticle suspensions. Research Review: International Journal of Multidisciplinary, 10(11), 308–320. https://doi.org/10.31305/rrijm.2025.v10.n11.031.
- [182] Singh, V., Yadav, K., Khute, U. K., & Shah, S. R. (2025). Harmonizing tradition and science: An evidence-based educational approach to yoga and ayurveda. Research Review: International Journal of Multidisciplinary, 10(11), 288–298. https://doi.org/10.31305/rrijm.2025.v10.n11.029.
- [183] Quddus, R., & Shah, S. R. (2025). Natural compounds as potential breast cancer therapeutics: Insights from meta-analysis and computational approaches. International Journal of Multidisciplinary Research Review, 11(10), 218–225.
- [184] Singh, A., & Shah, S. R. (2025). Mathematical modelling of blood flow: Analysing the impact of arterial stenosis and nanoparticle suspensions. International Journal of Multidisciplinary Research Review, 11(10), 308–320.
- [185] Upadhyay, A. K., & Shah, S. R. (2025). Machine learning-based prediction of air quality index (AQI) in Mumbai: Comparative analysis of linear regression, random forest, and XGBoost models. International Journal of Multidisciplinary Research Review, 11(10), 299–307.
- [186] Singh, V. S. R., Yadav, K., & Khute, U. K. (2025). Harmonizing tradition and science: An evidence-based educational approach to yoga and Ayurveda. International Journal of Multidisciplinary Research Review, 11(10), 288–298.
- [187] Naveen, & Shah, S. R. (2025). Air pollution level prediction and comparative analysis of machine learning models: A case study of Delhi AQI. International Journal of Multidisciplinary Research Review, 11(10), 266–274.

10.Conflict of Interest

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