ESP-JETA
ESP Journal of Engineering & Technology Advancements
ISSN: 2583-2646 / Volume 3 Issue 3 September 2023 / Page No: 108-112
Paper Id: JETA-V3I7P113 / Doi: 10.56472/25832646/JETA-V3I7P113

Original Article

Using Service Now to Analyze Health Data in Rural Health Authority

Sravanthi Mallireddy
Software Developer, USA.

Received Date: 30 July 2023 Revised Date: 28 August 2023 Accepted Date: 25 September 2023

Abstract: *The study highlights the importance of ServiceNow in improving health data analysis in Rural Health Authorities (RHAs) dealing with unique issues like health disparities, staff shortages, and limited access to healthcare services. ServiceNow provides tools to automate processes, simplify data administration, and deliver real-time analytics. The study examines successful case studies and literature to investigate current practices and obstacles in rural health data analysis. Future developments in ServiceNow, including AI and machine learning, are explored. The study advocates for more funding for health IT infrastructure and training to achieve long-lasting improvements in patient care.*

Keywords: *Rural Health Authorities (RHAs), AI and Machine Learning.*

I. INTRODUCTION

Rural areas sometimes struggle with restricted access to medical facilities. Reduced accessibility is caused by a number of factors, including extensive distances, transportation problems, and a lack of medical experts. It's possible that rural areas lack sufficient medical facilities, such as clinics, hospitals, and emergency services. This shortcoming makes it more difficult to provide medical services on schedule. Aging populations and dispersed settlements are two examples of the distinctive demographic traits that rural places frequently have [1]. It is essential to comprehend these demographics in order to customize healthcare services to meet the unique requirements of the populace. This entails analyzing spatial data using Geographic Information Systems (GIS) to gain a better comprehension of geographical trends. Spatial analytics can provide important information about illness prevalence, population density, and healthcare resource distribution in rural areas.[2][3]

Remote sensing technologies, such as satellite images and aerial surveys, give useful information about environmental elements that affect health, such as air and water quality and the spread of vector-borne diseases. Integrating remote sensing data with spatial analytics increases the breadth of healthcare analyses. The purpose of this article is to investigate the potential of spatial analytics and remote sensing for tackling the issues that rural healthcare systems face. The study aims to give practical insights for improving rural healthcare delivery by investigating the spatial distribution of healthcare services, assessing accessibility, and adding environmental elements through remote sensing.

A. Rural Health Issues:

In health care access patients in rural areas frequently have to drive farther because there are fewer healthcare facilities there. For instance, many people living in rural areas might have to travel more than thirty miles to go to the closest hospital, which may discourage them from getting care when they need it.
Thew workforce shortages are the high patient-to-provider ratio is often the result of rural health authorities' inability to recruit and retain medical professionals. Burnout among current employees and a decline in care quality. In health inequalities lifestyle variables, limited access to preventive care, and socioeconomic constraints, chronic diseases are frequently more common among rural areas. For example, compared to their urban counterparts, rural populations may have greater incidences of cardiovascular disease, diabetes, and obesity.[4]

B. Importance of Data Analysis in Healthcare:

By using data analysis, medical professionals can spot patterns in patient demographics, disease prevalence, and treatment results, allowing for more focused treatments.

Figure 1: Technology Challenges in health care

Resource Allocation: Rural health authorities can more efficiently distribute resources by evaluating health data, guaranteeing that interventions are focused where they are most needed. The program evaluation in data analysis aids in assessing the efficacy of health policies and programs, enabling modifications based on results supported by evidence.

C. Tools for Health Data Management:

ServiceNow is a cloud-based platform that offers a number of services for business process automation and IT service management. It can increase operational efficiency and simplify data administration in the healthcare industry. The essential elements of healthcare is rural health data management can be improved with ServiceNow's features, which include real-time data tracking, automatic reporting, and customisable dashboards.[8]

II. LITERATURE REVIEW:

A. Current State of Health Data Analysis in Rural Areas:

Technology Underutilization: Many rural health authorities lack the technical know-how and facilities required for efficient data analysis. Less than 30% of rural hospitals use advanced data analytics, according to a Health Resources and Services Administration (HRSA) research. Obstacles to Gathering Data: Talk about the issues that prevent efficient data collecting and analysis in rural areas, such as a lack of funds, a shortage of skilled workers, and antiquated technology.

B. Existing Research on ServiceNow in Healthcare:

a) Case Studies:

Examine previous research that demonstrates effective ServiceNow deployments in healthcare environments, emphasizing enhancements in data accuracy, operational effectiveness, and patient management. Analyze the results of ServiceNow deployments in urban and rural areas, highlighting the variations in the problems encountered and the solutions put in place.

b) Gaps in Current Knowledge:

Need for Focused study: Since the majority of previous studies concentrate on metropolitan or larger healthcare systems, it is imperative that additional study be done on the particular uses of ServiceNow in rural health authorities. Possibility of Innovation: Emphasize how ServiceNow's capabilities may be used to create novel solutions tailored to rural health environments.

C. Features Relevant to Health Data Analysis:

By effectively tracking and resolving patient-related incidents, incident management enables healthcare practitioners to enhance patient safety and care quality. Visual representations of health data are provided viaServiceNow's configurable dashboards, which facilitate trend identification and decision making for stakeholders.

ServiceNow can be integrated with other healthcare IT systems and current electronic health records (EHR), guaranteeing smooth data flow and improving the thoroughness of health data analysis.[10]

Figure 2: ServiceNow for healthcare diligence

D. Benefits of Using ServiceNow in Healthcare Settings: Operational Efficiency:

By automating repetitive procedures, healthcare personnel can concentrate more on patient care by reducing administrative burdens. Improved data visualization and accessibility enable healthcare executives to make data- driven choices that may improve patient outcomes.

III. METHODOLOGY USED

Various methods used to describe a study strategy that incorporates quantitative examination of health data both before and after ServiceNow deployment with qualitative interviews with medical practitioners.

In Case Study Selection the rural health authorities were chosen for case studies based on a variety of criteria, including their size, geography, and current health IT infrastructure.

A. Data Collection Methods:

From the interviews and surveys by conducting in-depth interviews with stakeholders engaged in the ServiceNow deployment as well as creating and distributing surveys to healthcare personnel. They describe the procedure for obtaining pertinent health information from current systems, such as electronic health records and other health IT platforms. [11]

B. Analysis Techniques Using ServiceNow:

In the descriptive statistics how they are used to show trends and patterns in health data by summarizing and visualizing it. In inferential statistics are used to find connections and associations between ServiceNow deployment and health data.

a) Case Studies Successful Implementations of ServiceNow in Rural Health Authorities:

- Case Study 1: Rural Hospital: Give an example of a rural hospital that used ServiceNow, emphasizing the particular difficulties encountered, the steps taken to execute it, and the results obtained.
- Case Study 2: Community Health Center: Give an example of a community health center that used ServiceNow and highlight the advantages that were attained, such better patient tracking and more powerful data analysis tools.

b) Analysis of Outcomes and Improvements in Health Data Management:

- *Quantitative Outcomes:* Provide numerical evidence of the gains made, like shorter wait times for patients, higher patient satisfaction ratings, and improved data accuracy.
- *Qualitative Insights:* Talk about the qualitative comments made by medical personnel regarding ServiceNow's usefulness and efficiency in their day-to day operations.

C. Tools within ServiceNow for Data Analysis :

How healthcare providers may monitor key performance indicators (KPIs) and health data with ServiceNow's customizable reporting dashboards.In the real-time analytics features enable medical practitioners to react quickly to new problems and trends.

D. Real-time Data Tracking and Reporting:

The Patient Flow Management emphasize how real-time data tracking may help with patient flow management, wait time reduction, and patient satisfaction.

The Infection Control talk about how real-time data tracking is crucial for infection control since it makes it possible to quickly identify and contain outbreaks.

E. Predictive Analytics for Rural Health Trends:

In Machine Learning Algorithms are used to identify high-risk patient groups and forecast health trends. The decisions about how to allocate resources can be influenced by predictive analytics, guaranteeing that interventions are directed where they are most needed [12].

IV. LIMITATIONS OF DATA ANALYSIS IN RURAL SETTINGS

We talk about the data quality shortcomings of data quality in rural health settings, such as problems with data consistency, correctness, and completeness. The data availability difficulties in obtaining and gathering health data in rural regions, such as the lack of adequate infrastructure and data availability.

The barriers to Implementing ServiceNow in Rural Health Authorities occur in financial difficulties rural health authorities have had using ServiceNow, including the expenses of infrastructure, maintenance, and training. Technical Know-How to eemphasize that rural health authorities with limited IT resources may find it difficult to deploy and operate ServiceNow without technical know-how.

V. CONCLUSION

The study concludes by highlighting the revolutionary potential of ServiceNow in rural health authorities and highlighting important advantages like better patient outcomes, more operational efficiency, and better health data analysis. These institutions may use ServiceNow's capabilities to expedite administrative procedures and enable thorough data analysis, which will help healthcare providers see trends and efficiently address regional health issues. In addition to allocating resources as efficiently as possible, this gives experts the ability to provide specialized treatments that greatly enhance patient care.

There are significant policy and practical ramifications. Investments in health IT infrastructure and training should be given top priority by policymakers in order to provide rural health authorities with the resources they need to successfully use ServiceNow. In practice, healthcare providers are urged to set up thorough training courses and guidelines for using data, which promote.

VI. REFERENCES

[1] Albert, D. P., Gesler, W. M., & Levergood, B. (Eds.). (2000). Spatial analysis, GIS and remote sensing: Applications in the health sciences. CRC Press.

[2] Lawal, O., & Anyiam, F. E. (2019). Modelling geographic accessibility to primary health care facilities: Combining open data and geospatial analysis. Geo-Spatial Information Science, 22(3), 174-184.

[3] Johnson, D. P., Wilson, J. S., & Luber, G. C. (2009). Socioeconomic indicators of heat- related health risk supplemented with remotely sensed data. International Journal of Health Geographics, 8(1), 1-13.

[4] Riaz, M. S., & Atreja, A. (2016). Personalized technologies in chronic gastrointestinal disorders: self-monitoring and remote sensor technologies. Clinical Gastroenterology and Hepatology, 14(12), 1697-1705.

[5] Australian Institute of Health and Welfare. (2020). Rural and remote health.https://www.aihw.gov.au/reports/australias- health/rural-and-remote-health.

[6] "The Role of Health Informatics in Managing Obesity" [PubMed]

[7] "ServiceNow Implementation in Healthcare: A Case Study" – Journal of HealthcareInformatics

[8] Healthc Manag 2021 Jan 15;14(1):280-289. 4. Frank SR. Digital health care--the convergence of health care and the internet. J Ambul Care Manag 2000 Apr;23(2):8-17. [FREE Full text] [CrossRef] [Medline]

[9] Eysenbach G. What is e-health? J Med Internet Res 2001 Jun;3(2)

[10] Vijayalakshmi K, Uma S, Bhuvanya R, Suresh A. A demand for wearable devices in health care. Int J Eng Technol 2018 Feb 05;7(1.7):1.

[11] Digital health world health organization.URL: https://www.who.int/health-topics/digital health#tab=tab_1.

[12] Hibbard JH. Patient activation and the use of information to support informed health decisions. Patient Educ Couns 2017 Jan;100(1):5-7. [CrossRef] [Medline].

[13] National Institutes of Health: Obesity Statistics and Management Guidelines: NIH Obesity.

[14] Centers for Disease Control and Prevention (CDC): Obesity and Data Tracking: CDC ObesityBooks:"Obesity: Pathophysiology, Psychology, and Treatment" by David J. Goldstein

[15] "Healthcare Service Management: A Guide for ITProfessionals" by Ajay Bhatia and Michael D. O'Brien

[16] "Big Data in Healthcare: A Practical Guide to the Use of Big Data in Healthcare" by Dr. A. M. M. A.Rahman.
[17] "Healthcare Analytics: From Data to Knowledge to Healthcare Improvement" by Vince Kellen and others