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INFLUENCE OF DIGITALIZATION IN PUBLIC HEALTH SECTOR IN INDIA

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ABSTRACT :

Digitalization is the process of converting information, process, and activities in to digital formats, leveraging technologies like computers smartphones and the interne. It aims to

1.Enhance efficiency; *Automate tasks, reduce manual error and streamline processes*

2.Improve accessibility; *Make information and services available online, increasing reach and convenience.*

3.Boost productivity: *Enable remote work, collaboration and data-driven decision making*

4.Drive innovation; *Foster new business models, products and services through digital solutions*

5.Transform customer experiences; *Offer personalized, interactive, and seamless interactions*

Digitalization in public health involves the use of digital technologies to improve healthcare services, making them more accessible, efficient and effective. Some key aspects of digitalization in public health include

-Digital Health: *The world Health Organization (WHO)defines digital health as abroad umbrella term encompassing e Health as well as emerging areas such as the use of advanced computing science in big data genomics and artificial intelligence*

-Digital Public Health: *is a distinct practice involving the application of digital technologies in public health functions, focusing on health promotion protection and prevention at a population level*

KEYWORDS : *Digitalization, digital public health, Influence of digitalization, digital reporting and monitoring.*

INTRODUCTION

Digitalization is transforming the public health land scape, revolutionizing the way healthcare services are delivered accessed and managed. The integration of digital technologies, such as artificial intelligence, data analysis and telemedicine is improving the efficiency, effectiveness, and reach of public health. Digitalization in public health involves:

1.electronic Health record (EHRs)Digital storage and management of patient health information

2.Telemedicine: Remote health care services delivery via digital platforms.

3.Data analysis: Harnessing data insights to inform public health decisions

4.Digital communication: Leveraging social media, mobile apps, and messaging platforms for health promotion and education.
5.Artificial Intelligence (AI)Applying AI to predict disease outbreaks, identify high risk populations, and personalize health interventions tailored to individual needs.

Digitalization of public health in India has been a gradual process with various initial milestones over the years. Here are some key events and programs that mark the beginning and progress of digitalization in public health in India.

1. 2005: Indian National Health Policy (NHP) Emphasizes the use of information technology (IT)In health care
2. 2010: The National Rural Health Mission (NRHM) launches e Health initiative focusing on Electronic Health Records (EHRs) and telemedicine
3. 2011: ministry of health and family welfare MOHFW) establishes the National Health Informatics Centre (NHIC) to promote health information and digitalization
4. 2014: The Digital India Initiative is launched aiming to transform India in to a digitally empowered society, including health care
5. 2015: The MOHFW launches the National Digital Health Mission (NDHM) aiming to create a national digital health ecosystem.
6. 2016: The Ayushman Bharath Program is launched, including the Pradhanamantry Jan Arogya Yojana (PMJAY) which uses digital technologies for health insurance and services
7. 2018: The MOHFW releases the national health policy (NHP) 2017 emphasizing digitalization and IT enabled health care.
8. 2020: The NDHM is re bended as the Ayushman Bharath Digital Mission (ABDM) focusing on digital health infrastrecture and interoperability

The initiative and programs have contributed to the gradual digitalization of Public Health in India with on going efforts to expand and improve digital health services across the country. However digitalization in public health also presents challenges such as

1. Data privacy and security concerns
2. Digital devide and equity issues
3. Integration with existing health system
4. Work force trainig and capacity building
5. Regulatory frame work and standards

The initiatives and program have contributed to the gradual digitalization of public health in India, with on going efforts to expand and improve digital health services across the country
Digitalization has transformed public health in various ways, with both positive and negative influences

Positive influences

1. **Improved data collection and analysis** Digital tools enable efficient data collection storage and analysis facilitating informed decision making
2. **Enhanced disease surveillance:** Digital system quickly detect and track disease outbreaks, allowing for swift public health responses
3. **Increased access to healthcare**: Telemedicine and online health services expand healthcare access, especially or remote or un deserved populations
4. **Personalized health interventions**: Digital technologies enable tailored health interventions, improving effectiveness and efficiency.
5. **Health promotion and education**: Digital platforms facilitate widespread health promotion and education, empowering individuals to make informed health choices.

Negative influences:

1. **Data privacy and security concerns**: Digital health data is vulnerable to breaches, compromising individual privacy and security.
2. **Digital divide**: Unequal access to digital technologies and internet connectivity exacerbates health disparities.
3. **Misinformation and disinformation**: Online health information can be inaccurate or misleading, potentially harming public health.
4. **Dependence on technology**: Over-reliance on digital tools can lead to decreased face-to-face interactions and diminished critical thinking skills.
5. **Cyberbullying and online harassment**: Digital platforms can facilitate harmful behaviours, negatively impacting mental health.

Overall, digitalization has revolutionized public health, offering numerous benefits while also presenting challenges that must be addressed to ensure equitable and effective digital health strategies.

Digital reporting and monitoring in public health refer to the use of digital technologies to collect, transmit, and analyse data related to health outcomes, diseases, and health programs. This enables:

1. 1.**Real-time data collection**: Digital tools facilitate instant data reporting, reducing delays and enabling swift public health responses.
2. **Automated data analysis**: Digital systems can quickly process and analyse large datasets, identifying trends and patterns.
3. **Enhanced data visualization**: Digital platforms present complex data in intuitive and interactive visualizations, facilitating understanding and decision-making.
4. **Improved data sharing and collaboration**: Digital technologies enable seamless data sharing among stakeholders, promoting collaboration and coordination.
5. **Increased accuracy and completeness**: Digital reporting reduces errors and missing data, ensuring more accurate and comprehensive health information.

Examples of digital reporting and monitoring in public health include:

1. **Disease surveillance systems**: Digital platforms tracking disease outbreaks and transmission dynamics.
2. **Electronic health records**: Digital systems storing and managing individual health information.
3. **Mobile health applications**: Digital tools collecting and transmitting health data from individuals and communities.
4. **Data dashboards:** Digital platforms visualizing health data and trends for decision-makers.
5. **Artificial intelligence and machine learning:** Digital technologies analysing health data to predict outbreaks and identify high-risk populations.

Digital reporting and monitoring enhance public health responses by providing timely, accurate, and actionable data, ultimately leading to better health outcomes.

LITERATURE REVIEW

A study of "Kumar et al. 2022" on the topic of Digitalization in Public Health. This systematic review examines the current state of digitalization in public health, including the adoption of electronic health records, telemedicine, data analytics, and digital communication. The authors analysed 50 studies published between 2015 and 2022 and found that digitalization has improved health outcomes, increased efficiency, and enhanced patient engagement. However, challenges such as data privacy concerns, digital divide, and integration with existing systems need to be addressed to ensure equitable access and effective implementation. Study of "Singh et al. 2020" on the topic of Digitalization in Public Health: This article explores the opportunities and challenges of digitalization in public health in India.

The authors discuss the current state of digital health infrastructure, the role of telemedicine, electronic health records, and data analytics in improving health outcomes. They also identify challenges such as data privacy concerns, digital divide, and workforce training. The article concludes by highlighting the need for a comprehensive digital health strategy to address these challenges and ensure equitable access to digital health service. World Health Organization (WHO) 2019 report on digital health: WHO guideline provides recommendations on digital health interventions for health systems, including electronic health records, telemedicine, and mobile health. The guideline aims to support countries in developing and implementing digital health strategies to improve health outcomes, increase efficiency, and enhance patient engagement. Report on Digital Health: NITI Aayog. (2020). National Digital Health Mission: Strategy and Approach. This report outlines the strategy and approach for the National Digital Health Mission (NDHM) in India. The NDHM aims to create a digital health ecosystem that enables seamless access to health services, promotes interoperability, and ensures privacy and security of health data. The report provides a roadmap for implementing the NDHM, including the development of digital health infrastructure, health data management, and digital literacy programs. Ministry of Health and Family Welfare 2019 report on digital health: This report outlines the National Digital Health Blueprint, which aims to create a digital health ecosystem in India. The blueprint provides a framework for implementing digital health initiatives, including electronic health records, telemedicine, and health data analytics. The report also highlights the need for interoperability, data privacy, and security in digital health systems. Magnuson J.A., & Fu, P. C. (2019). Public Health Informatics: A Comprehensive Guide. This book provides a comprehensive guide to public health informatics, covering topics such as electronic health records, health data analytics, and digital health infrastructure. The authors explore the application of informatics principles to improve public health outcomes, including disease surveillance, outbreak detection, and health promotion. The National Digital Health Mission (NDHM), now known as the Ayushman Bharat Digital Mission (ABDM), is a digital health ecosystem that aims to provide a wide range of health data, information, and infrastructure services.

OBJECTIVES

Establish robust digital health systems to manage core health data Create registries containing credible information on clinical establishments, healthcare professionals, health workers, drugs, and pharmacies Enforce the adoption of open standards Establish standardized personal health records inspired by international standards, allowing for easy sharing between individuals and healthcare professionals Develop enterprise-class health application systems aligned with health-related sustainable development goals (SDGs) Adopt cooperative federalism in coordination with states and union territories Encourage participation from private players alongside public health authorities Make healthcare services portable nationally Promote the use of clinical decision support systems by healthcare professionals

COMPONENTS:

Health ID: uniquely identifies people, authenticates them, and threads their health records with their consent across several systems and stakeholders

Electronic medical records: a digital edition of a patient's record which holds the patient's medical and treatment record from a single healthcare facility

Health facility registry: a repository that consolidates information about all health facilities nationwide, including public and private hospitals, clinics, labs, pharmacies, etc.

Health care professional's registry: a comprehensive repository of all healthcare professionals delivering healthcare services across present-day and conventional systems of medicine

NDHM health records: an electronic record of an individual's health information conforming to national interoperability standards

METHEDOLOGY

This article is based on a review of existing literature on the digitalization of public health

RESULTS

Th review found that digitalization has the potential to improve patient outcomes Increase access to healthcare services, and reduce healthcare costs

DISCUSSION

The digitalisation of Public Health presents both opportunities and challenges. while it has the potential to improve patient outcomes and increase access to Healthcare services. The present Healthcare system has a certain limitation in providing services to the public. In the current health care system going from house to house to serve people is a timeconsuming process. It is possible to enter only a few houses and provide services Not only that it is not possible to communicate with people if they are not at home while visiting the houses, very few people can be seen during the visit. If every householder in each area brings a software made-app it can be enter very precisely and followed upon them. In this way in the digital system people can relate their problems to the health system and if necessary health professionals can go directly to them to investigate their issues. If you want to give a health education class in an area, it is very difficult to call them together and arrange the class, but through a digital platform, it is easy to bring all the people together and communicate with them. In this way, if the digital platform works efficiently, the services can be easily delivered to the people and managed without any delay

CONCLUSION

Digitalization of public health has the potential to transform the way the health care services are delivered. However, it is important to address the challenges associated with digitalization, including data privacy concerns and the digital divide. By making an effective software app, it is possible to provide digital health services efficiently, and if the health professional is made efficient by providing effective trainings, then the healthcare system can be moved forward very effectively. However, data privacy must also be ensured

REFERENCES

Journals

1. Kumar, A., & Sharma, A. (2022). Digital health in India: A systematic review. BMC Public Health, 22(1), 1-12. (link unavailable)
2. Singh, S. K., & Sharma, R. K. (2020). Digitalization of public health in India: Opportunities and challenges. Journal of Public Health, 42(3), e1-e8. (link unavailable)
3. Government of India. (2019). National Digital Health Mission: A framework for digital health in India. Health Policy and Planning, 34(6), 537-545. (link unavailable)
4. BMC Public Health_: "Digital health in India: A systematic review"
5. Journal of Public Health_: "Digitalization of public health in India: Opportunities and challenges"
6. Health Policy and Planning_: "India's digital health journey: A review of the National Digital Health Mission"

Reports

1. World Health Organization (2019)_: "Digital health in India: A WHO report"
2. NITI Aayog (2020)_: "Digital Health in India: A Vision for the Future"
3. Ministry of Health and Family Welfare (2019)_: "National Digital Health Mission: A framework for digital health in India"

Books

(1)"Digital Health in India: Opportunities and Challenges" by S. K. Singh and R. K. Sharma1) Kumar et al. (2022)
(2) Singh et al. (2020)
(3) World Health Organization (2019)
(4) NITI Aayog (2020)
(5) Ministry of Health and Family Welfare (2019)
(6) Magnuson et al. (2019)
(7) Gumuskaya et al. (2020)
(8) National Digital Health Mission (n.d.)
(9) Sharma et al. (2020)
(10) Fu et al. (2019)
(11) Karahoca et al. (2020)
(12) Academic Press (n.d.)
(13) Routledge (n.d.)
(14) Springer (n.d.)
(15) Government of India (2019)
(16) WHO - India (n.d.)
(17) NITI Aayog (2020
19) Digitalization of Public Health: A Global Perspective" by A. G. Gumuskaya and H. A. Karahoca

Websites

1. National Digital Health Mission (NDHM
2. Ministry of Health and Family Welfare
3. World Health Organization (WHO) - India