

MSc Public Health and Social Care in Practice

Population Health and Digital Health Promotion

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Task 1: Blogs

Blog 1:

BREATH BETTER, FEEL BETTER

INTRODUCTION

Asthma is a chronic respiratory condition impacting millions of individuals globally, creating a significant public health challenge. Asthma is an important and common cause of disability and mortality particularly in low and middle-income regions, where access to efficient care and essential medicines is restricted (Dharmage *et al.*, 2019). The use of telemedicine influences health care services remotely and it is a valuable tool to address the international concern of asthma to promote health equity and quality of life. Telemedicine as a digital technology in health promotion interventions aimed to mitigate the complexities in asthma management (Khemapech *et al.*, 2019).

ADDRESSING THE ASTHMA EPIDEMIC

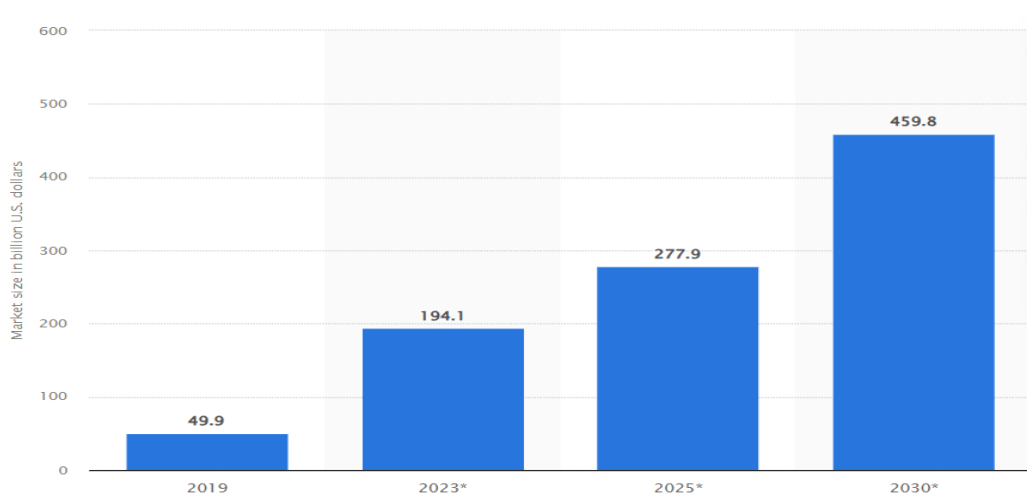
Asthma is a chronic respiratory disease that impacts globally, millions of individuals are suffering from chronic asthma and it is very important to address the mitigation strategy of this chronic condition. Asthma causes the narrowing of the airways, and spreading inflammation leading to multiple symptoms including chest tightness, coughing, wheezing and shortness of breath (Dharmage *et al.*, 2019). Asthma can be very challenging to handle

and it increases its growth by multiple factors involving pollutants, stress, allergens, infections and exercise.

The disease has no cure, but it can be maintained with proper guidance, medications and avoidance of triggers. The asthma epidemic requires an organised and structural framework and coordinated approach that includes patients, policymakers, healthcare providers, and researchers. According to the World Health Organisation (WHO), over 400,000 deaths each year are attributed to asthma, which impacts an estimated 339 million people (World Health Organization, 2023). The impact of asthma is not limited to its immediate medical consequences; it also includes financial expenses and a lower standard of living for sufferers.

TELEMEDICINE IN HEALTH PROMOTION

Telemedicine uses multiple modalities including facilitating virtual visits (FVVs), e-consults, mobile health applications (mHealth), Direct-to-consumer (DTC), and remote patient monitoring (RPM) (Chongmelaxme *et al.*, 2019). These modalities are playing a role of multifacet and important tools in asthma care. The size of the worldwide telemedicine market has been estimated to be 45.5 billion dollars in 2019 and is expected to grow to 175.5 billion dollars by 2030 (Statista, 2019).



Global Telemedicine Market 2019-2030

Source: (Statista, 2019)

DTC visits provide flexibility and comfortability but it has some limitations that exist in physical examination. FVVs enable a facilitator, improving visit efficiency and are advantageous for critical asthma cases (Chongmelaxme *et al*, 2019). RPM allows constant monitoring, initial intervention and patient empowerment, E-consults use streamlined access to provide critical care and mitigate wait times.

Applications for mobile health serve as informative and supportive tools that encourage participation. Telecommunication medicine has advantages, but it also has drawbacks, including privacy issues, unpredictability, and technical difficulties in regulations. It is essential to assess and track the effects of telemedicine, highlighting its function as an additional resource rather than a replacement for personalised, personal health services. Managing technological, legal, and acceptance concerns is necessary to overcome obstacles and guarantee safe, efficient, and patient-focused telemedicine asthma therapy.



(Sarah, 2016)

ADDRESSING THE SHORTFALLS

It is essential to encourage digital inclusion, and programmes are required to provide access to telemedicine for more people, especially for underprivileged groups. A thorough approach to asthma therapy is guaranteed when telemedicine is combined with in-person appointments. Ensuring the protection of patient information requires strong data security protocols. Over 80% of patients are concerned about data privacy, highlighting the significance of improved security measures in the deployment of telemedicine (Statista, 2019).

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Blog 2

THE PANCREAS STRIKE - DIABETES

There were 537 million diabetics in the globe in 2021. It is anticipated the figure will increase till at least 2045. By then, there are predicted to be 783 million people worldwide who have diabetes. By 2045, the prevalence of diabetes is expected to rise to almost 12 per cent due to an increase in the number of people with the disease (Elflein, 2023). This alarming rate of growth is fatal and is accountable for 1.5 million deaths each year as per WHO requires efforts to mitigate this issue (World Health Organisation, 2019). To address this, diabetes patients use insulin to reduce and glucose meters to measure and manage the disease.

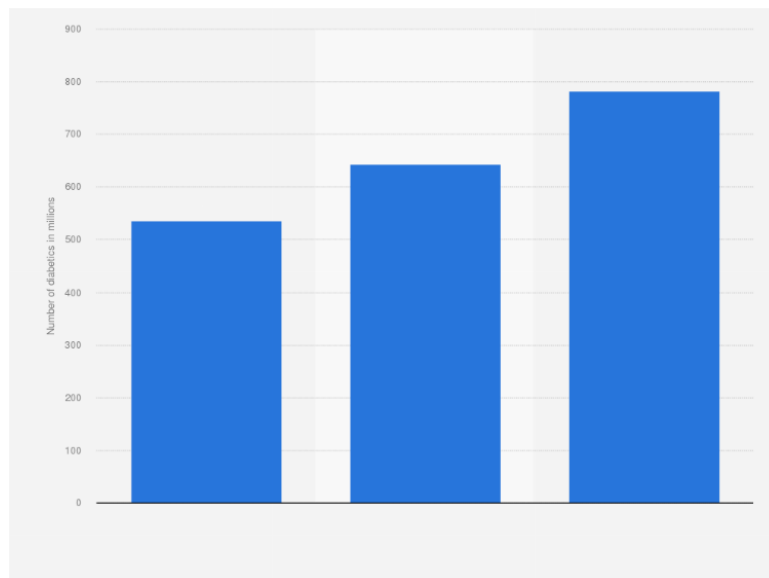


Figure: Global estimates for the number of diabetes in 2021, 2030, and 2045

Source: (Elflein, 2023)

DESCRIBING NEW DESIGNED TECHNOLOGY

Combining AI analytics and neurofeedback sensors, the NeuroSyncro HealthPatch is a modern smart adhesive patch. In addition to monitoring blood sugar levels, it records brainwave patterns in real-time to predict and preemptively manage stress. Personalised stress reduction treatments and proactive suggestions are provided by the AI system, which has been taught to comprehend individual stress reactions. Users are led through brain training activities by a virtual AI health coach, and customised concepts for stress reduction addresses are offered by dynamic notifications. The software makes stress management entertaining with gamified features and shows glucose and brain statistics. Cortisol levels and other biochemical responses allow for a more detailed understanding of how stress impacts glucose metabolism (Terlouw *et al.* 2021).



Figure: AI analytics

Source: (Neuromation, 2018)

AI-DRIVEN SMART GLUCOSE PATCH

Proactively controlling stress in the setting of treatment for diabetes lowers the costs of medical care related to complications (American Diabetes Association, 2019). By allowing people to make informed lifestyle decisions, real-time data insights and AI-driven treatments may be able to lessen the societal impact of diabetes. It is an enjoyable and user-friendly application which motivates adherence to health practices and improves health outcomes on a large scale. Its potential integration with telemedicine systems additionally addresses disparities in health care through offering accessible healthcare, especially to underserved populations. The NeuroSyncro HealthPatch supports a proactive and comprehensive plan to enhance public health.



Figure: Continuous Glucose Monitor

Source: (Sharma, 2022)

IMPACT OF AI-DRIVEN SMART GLUCOSE PATCH IN HEALTH PROMOTION

The NeuroSyncro HealthPatch offers real-time data and customised stress management, offering a paradigm change in the management of diabetes. Its benefits include better adherence, fewer problems, and proactive health therapies. However, there are disadvantages such as potential user dependence, concerns about confidentiality of information, and difficulties with accessibility. Ethical, security, and inclusiveness concerns must be carefully taken into account while boosting people's well-being to ensure that the technology will improve public health without exacerbating already-existing disparities or diminishing user liberty (Murphy *et al.* 2021).



Figure: Real-Time Analytics

Source: (ubtiinc, 2021)

ADDRESSING THE SHORT FALLS

Ensuring inclusiveness in technological advances a voice, transparent user instruction on security methods, and strict data protection protections are required to solve any flaws (Rodrigues, 2020). Frequent updates should improve user autonomy by eliminating

excessive reliance issues. By collaborating, medical professionals can reduce discrepancies by ensuring a balanced integration of the NeuroSyncro HealthPatch into current treatment frameworks. A multifaceted approach is used to reduce adverse consequences and maximise beneficial effects on both the public and individuals by encouraging an open discussion on ethical issues and continually enhancing the technology.

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