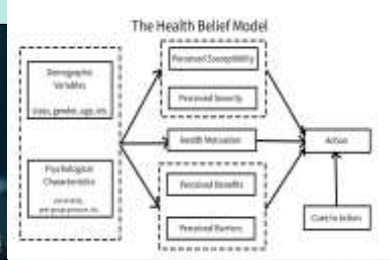


2. HEALTH PROMOTION VALUES AND PRINCIPLES

- **Insomnia affects 10–30% of adults globally**, with approximately one-third of UK adults experiencing sleep difficulties, making it a significant public health concern that requires timely intervention (Anjanappa and Mehta, 2024; NHS, 2024).
- It contributes to mental health issues such as anxiety and depression, reduces productivity, and increases healthcare costs, highlighting the urgent need for effective intervention (Stolicyn et al, 2024).
- **Traditional Treatments:** Common approaches include face-to-face Cognitive Behavioural Therapy for Insomnia (CBTi) and medication, although access to these treatments can often be limited (Scott et al, 2025; Xu et al, 2021).
- **Digital Solutions:** Digital technologies such as apps and online therapy platforms have emerged to improve access and provide scalable treatment options (Luik et al, 2017).
- **Sleepio App:** Sleepio, a UK-based digital CBTi app, delivers structured, evidence-based online therapy, enhancing accessibility and supporting large-scale health promotion efforts (Stokes et al, 2022).

- **Empowerment:** Health promotion focuses on enabling individuals to take control of their health and make informed decisions about their well-being (Marrone et al, 2022).
- **Accessibility:** It ensures equal access to health services and interventions, especially for underserved populations (Saylam et al, 2023).
- **Prevention:** Emphasis is placed on preventing health issues before they become severe or chronic (Marrone et al, 2022).
- **Equity:** It aims to reduce health inequalities by addressing social and environmental determinants of health (Saylam et al, 2023).
- **Application to Sleepio:** Sleepio aligns with these principles by offering accessible, flexible, and preventive digital therapy that promotes independent self-management of insomnia (Stokes et al, 2022).



3. BEHAVIOUR CHANGE THEORY

The Health Belief Model explains health behaviour based on individuals' perceptions of risk, severity, benefits, and barriers to taking action.

- **Perceived Susceptibility:** Sleepio increases awareness of personal risk by helping users recognise their vulnerability to insomnia and its consequences (Ahmed et al, 2023).
- **Perceived Severity:** The app educates users about the serious impact of insomnia on mental health, productivity, and quality of life (Younis et al, 2024).
- **Perceived Benefits:** It highlights the advantages of improving sleep through behavioural changes, such as better well-being and reduced medication use (Harvey, 2022).
- **Perceived Barriers:** Sleepio reduces barriers by providing convenient, low-cost, and easily accessible digital therapy (Ahmed et al, 2023).
- **Cues to Action:** Features like reminders, progress tracking, and feedback act as triggers that encourage users to adopt healthier sleep behaviours (Younis et al, 2024).
- **Self-efficacy:** The app builds confidence by guiding users step-by-step, enabling them to take control of their sleep habits and sustain positive changes (Ahmed et al, 2023).

4. EXPECTED OUTCOMES

- **Improved Sleep:** The use of HBM-based digital interventions like Sleepio is expected to improve sleep quality and reduce insomnia symptoms (Harvey, 2022).
- **Behaviour Change:** Increased awareness and motivation can lead to sustained positive sleep behaviours (Younis et al, 2024).
- **Cost Reduction:** Reduced reliance on medication and healthcare services may lower overall healthcare costs (Harvey, 2022).
- **Limitations:** Outcomes depend on user engagement, meaning effectiveness may vary across individuals (Younis et al, 2024).
- **Long-term Impact:** When aligned with behavioural theory, the intervention is more likely to produce lasting health improvements (Younis et al, 2024).

5. CONCLUSION

- **Policy Impact:** Digital interventions like Sleepio support healthcare policies by offering scalable and cost-effective solutions for managing insomnia (Prather et al, 2025).
- **Educational Value:** They promote awareness of sleep health and encourage individuals to adopt self-management strategies (Miller et al, 2025).
- **Research Opportunities:** These technologies provide valuable insights into the effectiveness of behavioural models like HBM in digital health interventions (Hames and Miller, 2022).
- **Overall Impact:** Integrating such innovations into healthcare systems can improve accessibility, enhance outcomes, and transform insomnia management at both individual and population levels.

6. References

- Anjanappa, J. and MEHTA, K., (2024). Management of insomnia in India: expert consensus insights with a focus on zolpidem. *INTERNATIONAL JOURNAL OF RESEARCH IN MEDICAL SCIENCES*, 13(1), pp.484-497.
- Ahmed, M.M., Naji, A.B. and Younis, N.M., 2023. Efficacy of an educational program based on health belief model to enhancing weight control behaviors among employees in the University of Mosul: a randomized controlled trial. *Revis Bionauta*, 8(3), p.28.
- Harvey, A.G., 2022. Treating sleep and circadian problems to promote mental health: perspectives on comorbidity, implementation science and behavior change. *Sleep*, 45(4), p.zsac026.
- Hames, P. and Miller, C.B., 2022. Digital therapeutics for sleep and mental health. In *Digital Therapeutics* (pp. 261-280). Chapman and Hall/CRC.
- Luik, A.I., Bostock, S., Chisnal, N., Kyle, S.D., Lidbetter, N., Baldwin, N., Espie, C.A., 2017. Treating depression and anxiety with digital cognitive behavioural therapy for insomnia: a real world NHS evaluation using standardized outcome measures. *Behavioural and Cognitive Psychotherapy*, 45(1), pp.91-96.
- Marrone, N.L., Neman, C.L. and Coco, L., 2022. Community-based participatory research and human-centered design principles to advance hearing health equity. *Ear and hearing*, 43(Supplement 1), pp.33S-44S.
- Miller, C.B., Bradley, D., Hall, S., Hayes, H., Chowdhury, S. and Sampson, C., 2025. Cost Savings Associated With Fully Automated Digital Cognitive Behavioral Therapy for Insomnia Disorder (SleepioRx): A Matched Control Study of US Patients. *Journal of Health Economics and Outcomes Research*, 12(2), p.193.
- NHS (2024). <https://www.nhsinform.scot/illnesses-and-conditions/mental-health/insomnia/>
- Prather, A.A., Krystal, A.D., Emmsley, R., Carl, J., Ball, T., Tarnai, K., Aguilera, A., Espie, C.A. and Henry, A.L., 2025. The Effectiveness of Digital Cognitive Behavioral Therapy to Treat Insomnia Disorder in US Adults: Nationwide Decentralized Randomized Controlled Trial. *JMIR Mental Health*, 12, p.e84323.
- Stolicyn, A., Lyall, L.M., Lyall, D.M., Høier, N.K., Adams, M.J., Shen, X., Cole, J.H., McIntosh, A.M., Whalley, H.C. and Smith, D.J., 2024. Comprehensive assessment of sleep duration, insomnia, and brain structure within the UK Biobank cohort. *Sleep*, 47(2), p.zsad274.
- Scott, A.M., Peiris, R., Atkins, T., Cardona, M., Greenwood, H., Clark, J. and Glasziou, P., 2025. Telehealth versus face-to-face delivery of cognitive behavioural therapy for insomnia: A systematic review and meta-analysis of randomised controlled trials. *Journal of Telemedicine and Telecare*, 31(5), pp.603-614.
- Stokes, E.A., Stott, R., Henry, A.L., Espie, C.A. and Miller, C.B., 2022. Quality-adjusted life years for digital cognitive behavioural therapy for insomnia (Sleepio): a secondary analysis. *BJGP open*, 6(4).
- Saylam, S., Duman, N., Yildirim, Y. and Satsveich, K., 2023. Empowering education with AI: Addressing ethical concerns. *London Journal of Social Sciences*, (6), pp.39-48.
- Xu, D., Cardell, E., Broadley, S.A. and Sun, J., 2021. Efficacy of face-to-face delivered cognitive behavioral therapy in improving health status of patients with insomnia: A meta-analysis. *Frontiers in psychiatry*, 12, p.798453.
- Younis, N.M., Ahmed, M.M. and Ibrahim, R.M., 2024. Health Beliefs Model in Enhancing the Beliefs Concerning Healthy Weight. *Current Clinical and Medical Education*, 2(8), pp.227-235.