Innovation in Applied Nursing Informatics
G. Strudwick et al. (Eds.)

doi:10.3233/SHTI240236

BEAMER: A Data Informed Model to Improve Adherence Behaviour

Silje Havrevold Henni[a,1] and Anne Moen[a]
[a] *Department of Public Health Science, Institute of Health and Society, Faculty of Medicine, University of Oslo, Oslo, Norway*
ORCiD ID: Silje Havrevold Henni https://orcid.org/0000-0002-9309-8726
ORCiD ID: Anne Moen Anne Moen https://orcid.org/0000-0002-3825-9355

Abstract. *Objective*: In this poster, we will present the BEAMER model, an emerging disease-agnostic model to improve adherence behaviour based on actionable factors and promote optimal health outcomes for all. *Methods*: Data on behavioural and structural factors affecting adherence to treatment have been collected from several sources and are being used to build the BEAMER model, where we aim to apply Machine Learning Modelling to forecast and diversify support towards more adherent behaviour. *Results*: The BEAMER model can assist healthcare providers in eliciting patient needs to adopt targeted actions to support patients in improving their adherence. The collected data indicate that BEAMER must conform to standardised approaches to patient adherence to treatment. *Conclusion*: We anticipate that the BEAMER model will contribute to provide personalised patient support to drive adherence behaviour.

Keywords. Behavioural change, ML, adherence, AI, innovation

1. Introduction

Adherence to treatment is a widespread problem globally, as non-adherence increase use of healthcare services and even premature deaths [1; 2]. Although rates of adherence vary between different conditions and treatments, it is estimated that 50% of medications are not taken as prescribed, and fall even more if treatment required behavioural change [1; 2]. We understand the term adherence as the extent to which peoples' behaviour are in line with agreed prescribed medication/therapy, while non-adherence is when peoples' behaviour does not fully conform with agreed treatment recommendations [1; 2].

Based on literature reviews concerning factors that affect people's adherence [2; 3], it is complex to forecast who implement adherent and non-adherent behaviours, and how to support a person to be adherent. According to the Bloem-Stalpers model of segmentation in healthcare, a person's adherence is related to psychological determinants of subjective health: acceptance of health issues and perceived control over the health situation [4]. These psychological determinants are not associated with a specific disease but are applicable across all. People with high level of acceptance and control are likely to exhibit higher levels of adherence, and the treatment have become a more integral part of their daily life. Consequently, understanding the

[1] Corresponding Author: Silje Havrevold Henni, s.h.henni@medisin.uio.no

underlying behavioral factors affecting adherence can help in a better elicitation of the patient's needs. In this poster, we will present the emerging disease-agnostic model to improve adherence behaviour based on actionable factors and promote optimal health outcomes for all.

2. Methods

Data on factors affecting adherence and associated support needs are collected from existing scientific literature, grey literature, real-world data and consultation activities (questionnaires, interviews and online panel) from patients and healthcare providers from several different therapeutic areas. The data is used to build the BEAMER model, where we aim to apply Machine Learning Modelling to forecast and diversify support towards more adherent behaviour [5]. The model is currently subject to validation.

3. Results

The BEAMER model relevance in clinical practice draws on the elicitation of patient needs based on the behavioral factors affecting adherence to treatment across different disease areas. The BEAMER model will guide the healthcare provider in the adoption of specific support actions to improve adherence. The collected data indicate that BEAMER should be further developed so that it is easy to use and consistent with standardised approaches to patient adherence to treatment. Furthermore, the result should be presented in an easy-to-understand way, so that it is easy for healthcare providers to use the information to diversify support to patients and improve their adherence.

4. Conclusions

Overall, we will validate how the BEAMER model can enable healthcare providers to provide more personalised patient support to improve adherence behaviour. The next step in the project is to test and validate the model within different therapeutic areas.

Acknowledgements This project has received funding from the Innovative Medicines Initiative 2 Joint Undertaking under grant agreement No 101034369. The BEAMER project receives support from the European Union's Horizon 2020 research and innovation programme, EFPIA and LINK2TRIALS BV.

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