

# Advancing Self-Management in Chronic Myeloid Leukemia Care: Continuous eHealth Evaluation of the CMyLife-App

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## Introduction

- The aging population and chronic disease rates amplify healthcare demands, presenting challenges for healthcare quality, including a shortage of professionals and sustainability. Digital health strategies highlight the role of technology in reaching quality goals. [1, 2]
- The CMyLife-App, part of a digital-care platform for chronic myeloid leukemia (CML) patients, aims to improve healthcare quality, self-management, adherence, and monitoring. Input from patients and healthcare professionals contributed to its continuous optimization.
- Since eHealth development has no fixed endpoint, an ongoing assessment process is essential. Hence, this research assesses the transforming CMyLife-App through continuous evaluation. [3, 4]

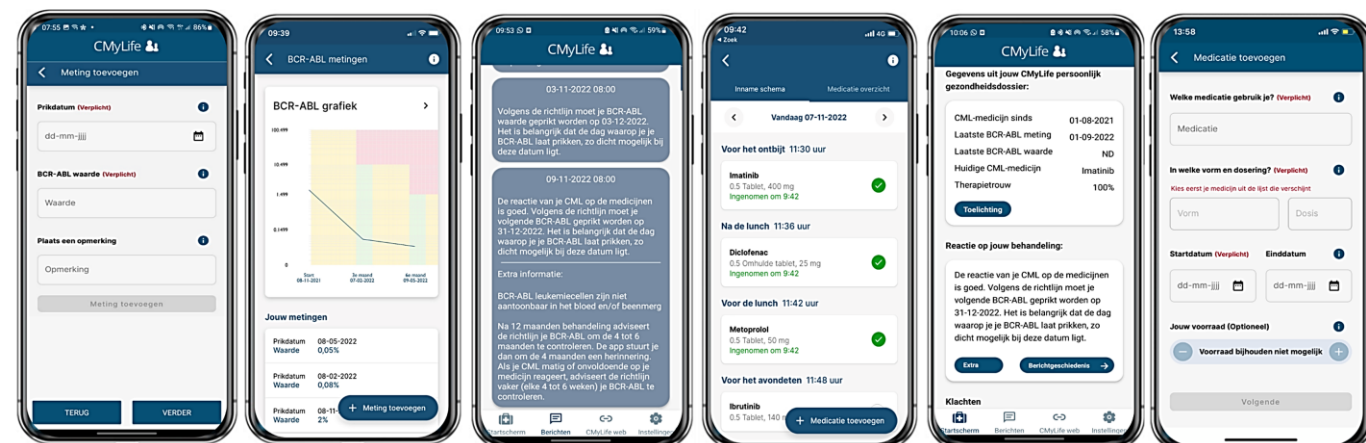


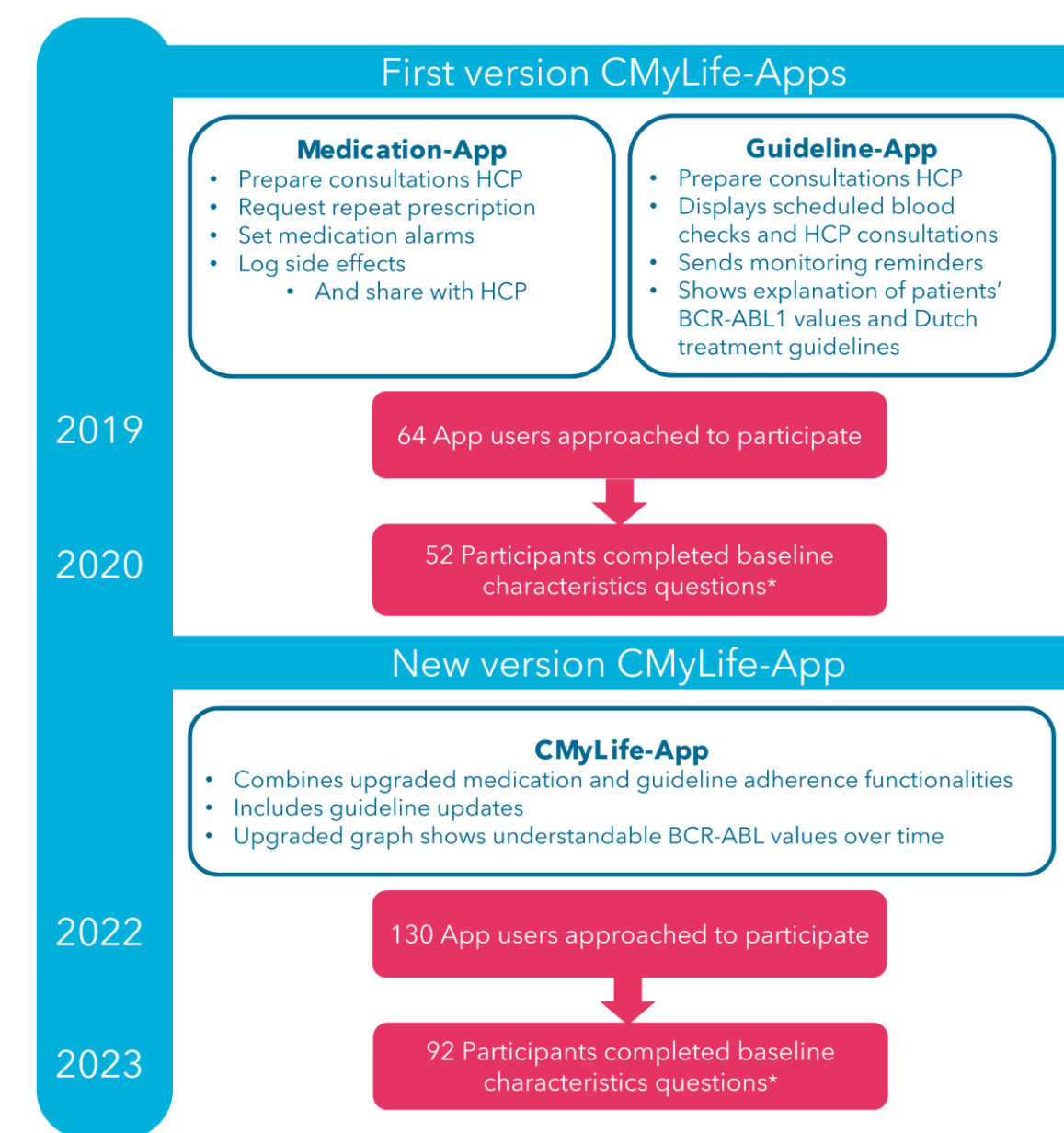
Figure 1 Medication adherence and guideline adherence supporting functionalities.

### Objective

Developing and assessing eHealth requires a comprehensive and iterative approach, consistently adjusting to the evolving needs of patients and healthcare professionals. Hence, this study aims to perform a continuous evaluation of the CMyLife-App for CML patients.

## Methods

- 64 and 130 CMyLife-App users were asked to participate in multiple survey rounds in October 2020 and March 2023. In 2020, participants used the Guideline-App and Medication-App, later improved and integrated into the CMyLife-App by 2023.
- Figure 2 shows functionalities of app versions and study participants. Questionnaires used to compare the CMyLife-App versions are System Usability Scale (SUS), Patient Activation Measure 13 (PAM-13) and a self-assessed effectiveness questionnaire.



\* Response rates are calculated per questionnaire component.

Figure 2 Overview of app functionalities, app users and participants over the total study period.

## Results (1)

- Baseline characteristics were comparable with corresponding response rates of 81% in 2020 and 71% in 2023.
- Mean 2020 SUS scores are 65.3 (min-max: 30.0-100.0, Medication-App) and 60.0 (min-max: 37.5-97.5, Guideline-App). In 2023, the CMyLife-App mean SUS score was 62.4 (min-max 10.0-97.5).
- Self-assessed effectiveness showed the CMyLife-App improved disease monitoring but did not further increase medication adherence. The Medication-App scored 7.6 (SD ± 1.3) out of 10, the Guideline-App scored a 7.0 (SD ± 1.2), and the CMyLife-App a 7.1 (SD ± 1.6).

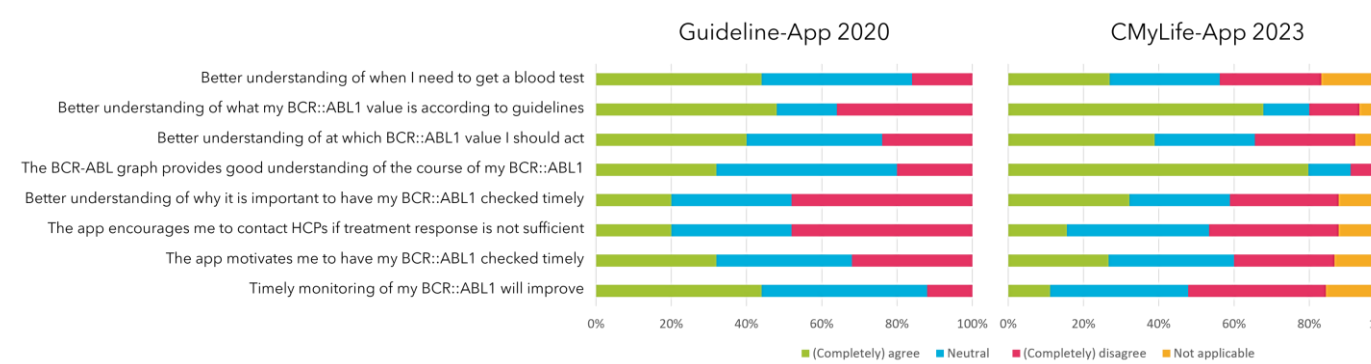


Figure 3 Self-assessed effectiveness of the guideline adherence functionalities of the apps in 2020 and 2023.

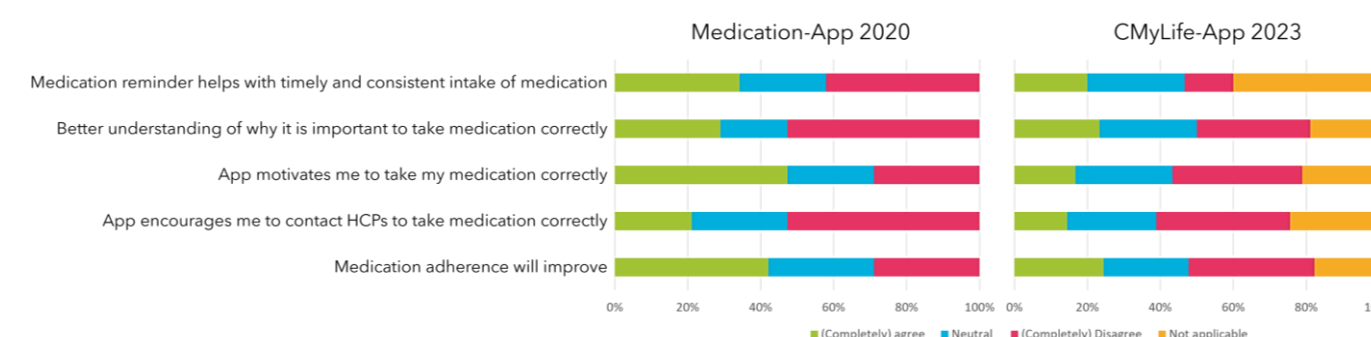


Figure 4 Self-assessed effectiveness of the medication adherence functionalities of the apps in 2020 and 2023.

## Results (2)

- Before using CMyLife, 16.4% had a level 4 PAM-13 score. Using the Medication-App and Guideline-App, this increased to 23.8%, and after adopting the latest CMyLife-App, it rose to 36.7%.

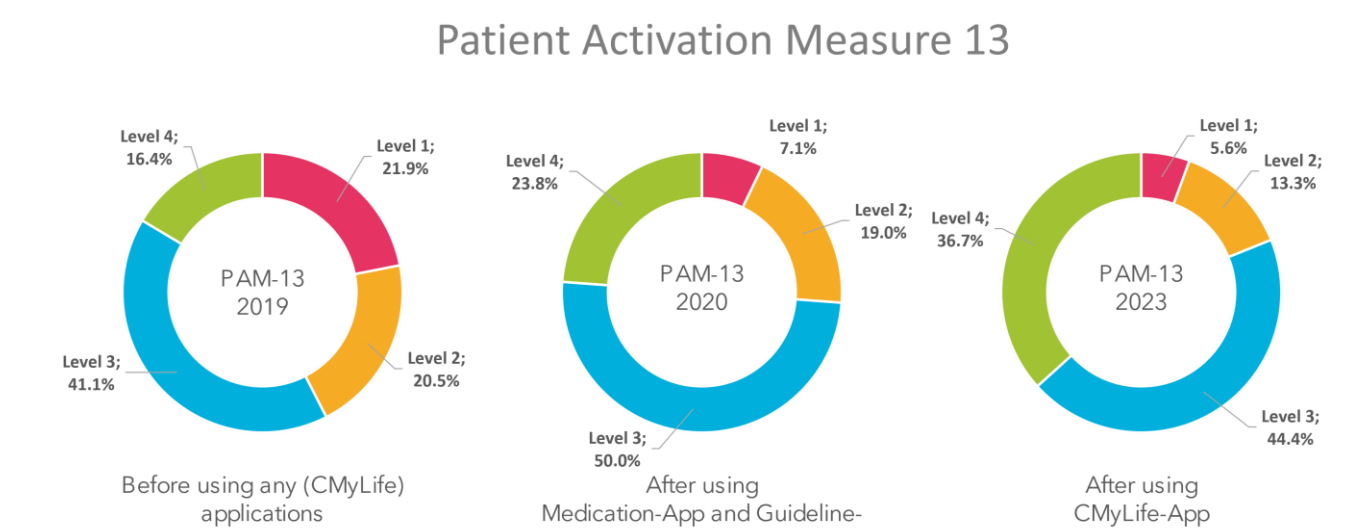


Figure 5 Patient activation measure 13 (PAM-13) over the total study period.

## Discussion

- Ensuring eHealth quality and sustainability requires the implementation of continuous development and evaluation processes, with a specific emphasis on increasing patient self-management. [5]
- CMyLife is an example of how future-proof healthcare for chronic patients treated with oral therapy could be organized.

### Conclusion

Continuous evaluation shows that CML patients using the updated CMyLife-App experience increased self-management and monitoring, aiding participants in guideline-adherence.



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### References:

- World Health Organization; World report on ageing and health; 2015.
- Sachs, J.D. et al. Sustainable development report 2022: Cambridge University Press; 2022.
- Kip, H. et al. (2018). Holistic development of eHealth technology. Routledge.
- Verweij, L. et al. (2023). Improvement, Implementation, and Evaluation of the CMyLife Digital Care Platform: Participatory Action Research Approach. Journal of Medical Internet Research, 25, e45259.
- Sherman et al. (2020). The green print: advancement of environmental sustainability in healthcare. Resources, Conservation and Recycling, 161, 104882.