Development of “Maji-Kami AI”: Service for care staff training and care support

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Purpose Dementia care, particularly the management of behavioral and psychological symptoms of dementia (BPSD), affects the care burden experienced by facility staff (Kameoka et al., 2020). This has become a major issue, as it affects the retention of care staff. In contrast, expert care staff understand the current difficulties of care recipients and help them move closer to their ideal situation. Based on the experience of our expert care staff in handling BPSD, who are certified as "Maji-Kami" (meaning real god / Oh my god!) in our company, we have developed services to improve the skills of care staff and the quality of life of care recipients using artificial intelligence (AI). **Method** The expertise of Maji-Kami was obtained through interviews. The Maji-Kami diagnosis was combined with care recording data and provided as learning data for machine learning. Thereafter, the developed Maji-Kami AI was integrated into our care record system "Service Navigation System (sNs)" (Fukuda & Iwaida, 2018). The Maji-Kami AI dashboard was designed following the data analysis and diagnosis method of Maji-Kami. Because Maji-Kami first examines when and how the mental and physical health of an individual has been disturbed by reviewing the changes in data, the “summary” screen that was displayed initially provides the data related to comfort and discomfort, along with other quantitative data such as the vital value in calendar format. To identify the factors causing such disturbances and changes, hints regarding the current conditions and problems are available. Links to relevant data and AI-derived care recommendations are provided to consider addressing the problem. Other data screens provide several types of relevant data in timeline bar charts, allowing the care staff to compare and understand changes in the data, including their relationships. For instance, the “physical condition” screen shows charts of defecation amount, stool form, urination amount, food and fluid intake amount, body weight, and sleep condition. Timeline bar charts of the related data are displayed on the same screen for comparison. The Maji-Kami AI Dashboard was implemented in 263 nursing homes in our company (as of March 1, 2024). Among them, in 31 nursing homes where the Maji-Kami AI has been in operation for more than one year, its effect was verified. The impact on the care staff was assessed through eye-tracking while collecting information about a selected care recipient, followed by an interview. The effect on care recipients was verified based on care records and data. **Results and Discussion** Eye-tracking data revealed that care staff using Maji-Kami AI received more diverse data over a longer period. The timeline bar charts of various types of data helped care staff identify when the condition of an individual had changed compared to the conventional sNs screen. In addition, it is highly efficient for information acquisition and several relevant types of data are available on a single screen. Some care staff stated that they required less time to acquire information than before, as the conventional sNs provides different types of data on different screens, not as timeline bar charts, but as raw data. Care staff who identified the key period for the target care recipient from the data could understand their difficulties by reviewing textual information, such as daily reports, during that period. In this way, Maji-Kami AI facilitates care staff in finding and understanding the difficulties of the care recipient more effectively than by reviewing the text of the daily report without checking the data. Various aspects of the impact on care recipients have also been observed. Focusing on the number of incidents, after the implementation of the Maji-Kami AI, the number of falls and wrong room entries decreased in six nursing homes where care staff used the Maji-Kami AI more frequently, whereas in other nursing homes, the number of falls and wrong room entries increased. The results demonstrated that Maji-Kami AI enables care staff to focus on essential information, more accurate assessments, and the provision of appropriate care. It was revealed that Maji-Kami AI has potential as a useful tool for care staff training and care support.

References

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Figure 1. User interface of Maji-Kami AI dashboard