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Case Report

Treatment Strategy Discussion with a Physician Using a Tracing Report Based on Personal Health Record Monitoring: A Case Report

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Managing chronic hypertension requires continuous out-of-clinic blood pressure monitoring. While personal health record (PHR) applications enable longitudinal vital data tracking, their practical application in sharing clinical data with prescribing physicians remains limited. This case report describes a novel pharmacist-led remote monitoring intervention using a PHR application (SaluDi) in an asymptomatic older female in her 60s with hypertension, diabetes mellitus, and dyslipidemia. Despite excellent medication adherence, longitudinal home blood pressure data revealed persistent elevation (systolic blood pressure 130s–140s mmHg), exceeding the updated 2025 guideline target (<125/75 mmHg). The pharmacist submitted a tracing report to the prescribing physician suggesting an amlodipine dose increase (2.5 mg to 5 mg/day). Although the physician considered the adjustment, shared decision making with the patient led to maintaining the current regimen according to her preference and perceived blood pressure stabilization. Pharmacist-led PHR evaluation and data sharing via tracing reports provide an effective framework for interprofessional communication and individualized chronic disease management in primary care settings.

Key words hypertension, community pharmacy practice, out-of-clinic data, prescription suggestion, shared decision making

INTRODUCTION

In 2025, the Japanese Society of Hypertension revised its guidelines for the first time in six years. The updated guidelines recommend target blood pressure levels for treatment of <130/80 mmHg for office blood pressure and <125/75 mmHg for home blood pressure, regardless of age.[1)] Nevertheless, more than two-thirds of the Japanese population with hypertension are estimated to have uncontrolled hypertension, highlighting the need for improved hypertension management in clinical practice.[2)] The clinical utilization of personal health records (PHRs) to support lifestyle modifications is gradually expanding. PHRs are digital applications that enable individuals to electronically store, track, and manage their health data, such as vital signs and daily lifestyle habits. In Japan, certain PHR applications for hypertension have been approved as medical devices and covered under the public health insurance system when used under medical supervision. However, the use of PHR applications has only recently become widespread. In a survey conducted in 2017 at a Japanese pharmacy, 174 of 2,307 patients (7.54%) reported prior experience with PHRs.[3)] One such PHR application in Japan is SaluDi, developed by Sawai Pharmaceutical, which enables pharmacies and clinics to remotely review patients' vital data, including blood pressure, through collaboration with registered medical institutions. Hypertension is generally detected during health checkups and requires follow-up blood pressure monitoring. However, continuous real-time monitoring in pharmacies is difficult without a PHR. In addition, interprofessional communication between pharmacists and physicians is important for translating real-time PHR data into clinical care. A recent nationwide survey in Japan found that community pharmacists most commonly provided physicians with information regarding medication adherence (63%), alleviation or disappearance of symptoms (59%), and suspected side effects (34%), predominantly using tracing reports (94%).[4)] In contrast, tracing reports focused on sharing PHR data to optimize pharmacotherapy remain less common. In this case report, we describe the process of sharing home blood pressure data recorded in a PHR with the physician via a tracing report. This case involved a patient with coexisting cardiovascular risk factors, including diabetes and dyslipidemia, underscoring the importance of continuous monitoring to prevent future heart failure.[5)] This case report was prepared according to the CARE guidelines.

Patient Information A 67-year-old female with a med-

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ical history of hypertension, diabetes mellitus, and dyslipidemia presented to our pharmacy to receive her regularly prescribed medications. Her medications included amlodipine (2.5 mg/day), azilsartan (20 mg/day), vildagliptin/metformin combination tablets (100/1000 mg/day), and rosuvastatin (2.5 mg/day). Medication adherence was routinely confirmed to be excellent, with no reported missed doses or remaining medications. The patient exhibited high health literacy and motivation for non-pharmacological management. She had previously been advised to undergo educational hospitalization because her HbA1c level was in the 11% range, but she declined, as she wished to improve her condition through lifestyle modification on her own. On Day 0, her HbA1c level was 6.8% and LDL-C was 87 mg/dL; however, she expressed concern that a potential rise in HbA1c levels might necessitate additional pharmacotherapy, which she strongly wished to avoid. She actively engaged in regular physical activity, including weekly ballet lessons and daily walks. At the pharmacy visit, she was asymptomatic, reporting no subjective symptoms (e.g., dizziness, headache, or malaise) associated with blood pressure fluctuations, and showed no physical signs of drug-induced adverse events.

Clinical Course To support the patient's lifestyle modifications and address her multiple cardiovascular risk factors, continuous monitoring of home blood pressure was considered beneficial. Given her strong motivation for self-management, SaluDi was introduced using a patient leaflet during a routine pharmacy visit (Fig. 1). The application was installed, and initial registration was completed during the visit. The patient began recording her home blood pressure, pulse rate, body weight, and dietary intake the following day. Follow-up messages were periodically sent to assess medication adherence, lifestyle habits, and sleep patterns. Throughout the 40-day monitoring period, home blood pressure was recorded 26 times across 20 days, consistently measured upon waking each morning. Overall, the mean systolic blood pressure was 134 ± 7.6 mmHg (range: 118–144 mmHg), with 20 measurements (77%; 16 days) exceeding the target level (≥125 mmHg). Similarly, the mean diastolic blood pressure was 75 ± 5.2 mmHg (range: 65–85 mmHg), with 12 measurements (46%; 10 days) exceeding 75 mmHg. Pulse rate was recorded 25 times during the same period, with a mean value of 67 bpm (range: 59–82 bpm), remaining within the normal range without marked fluctuations (Fig. 2). Body weight (logged four times; mean: 51.5 kg) showed a stable trend without rapid fluctuations. After confirming excellent medication adherence and obtaining the patient's consent via the application, a tracing report was prepared based on the out-of-clinic data in the PHR and faxed to the physician. The clinical timeline is summarized in Table 1. The report highlighted that current home blood pressure exceeded the 2025 guideline target (<125/75 mmHg) and suggested optimizing therapy (increasing amlodipine from 2.5 mg to 5 mg). At the follow-up visit on Day 44, it was confirmed through patient interview that the physician had reviewed the transmitted tracing report and discussed the target blood pressure level (<125/75 mmHg). Although the physician considered increasing the amlodipine dose, the current regimen was maintained according to the patient's preference, as she perceived her blood pressure readings to be stabilizing compared to her past trends.

DISCUSSION

This case demonstrates the clinical implementation of a pharmacist-led intervention, wherein patient-recorded PHR data were longitudinally analyzed, integrated with medica-

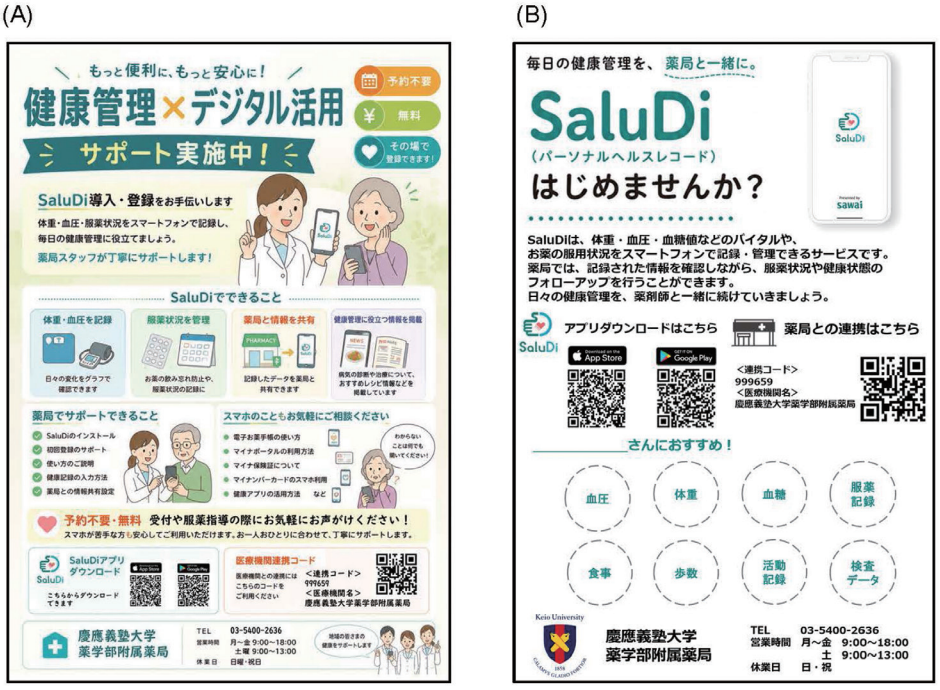


Fig. 1. Introductory and Educational Materials for the Personal Health Record (PHR) Application.

(A) Educational leaflet detailing digital health support services provided at the community pharmacy. (B) Introductory brochure explaining the features, functionalities, and healthcare institution linkages of the SaluDi application.

Table 1. Timeline of the Clinical Course.

Date	Event
Day 0	SaluDi introduced; installation and initial registration completed
Day 1	Home blood pressure, pulse rate, body weight, and dietary intake recording started Follow-up message sent: Acknowledged initial setup and logs; offered continuous support for health management
Day 2	Message received: Expressed motivation for self-management using the application
Day 8	Follow-up message sent: Inquired about general condition given slightly elevated blood pressure trends Message received: Reported no subjective symptoms despite elevated blood pressure; noted effort in dietary sodium reduction
Day 9	Follow-up message sent: Confirmed medication adherence; inquired about sleep habits due to early-morning recording timestamps
Day 22	Follow-up message sent: Encouraged continued monitoring and adequate hydration Message received: Reported recent workplace change and reduced work-related stress; attributed past elevated blood pressure partly to sleep deprivation
Day 23	Follow-up message sent: Acknowledged environmental changes and advised against overexertion
Day 40	Follow-up message sent: Inquired about upcoming clinic visit and requested consent for data sharing Message received: Granted consent for sharing PHR data with the physician Tracing report faxed to physician
Day 44	Follow-up visit: confirmed through patient interview that the physician reviewed the tracing report and maintained the current regimen according to patient preference.

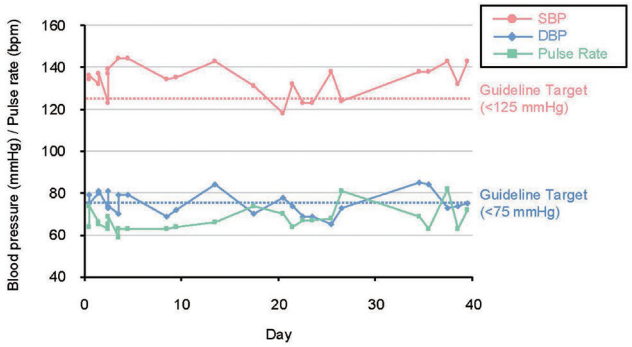


Fig. 2. Trends in Home Blood Pressure and Pulse Rate Recorded via the PHR Application.

Daily measurements recorded by the patient from Day 1 (start of home recording) to Day 40 (prior to tracing report submission). The red, blue, and green lines represent systolic blood pressure (mmHg), diastolic blood pressure (mmHg), and pulse rate (bpm), respectively. The red and blue dotted lines indicate the 2025 JSH guideline target blood pressure levels for home measurements (<125 mmHg for systolic and <75 mmHg for diastolic blood pressure, respectively).

tion adherence evaluation, and communicated to the physician via a tracing report to facilitate multidisciplinary clinical discussion regarding pharmacotherapy. In the management of hypertension with coexisting cardiovascular risk factors, relying solely on office blood pressure measurements may not fully capture patients' blood pressure profiles because of masked hypertension or white-coat effects. Longitudinal recording and interpretation of out-of-clinic blood pressure data can provide complementary insights into blood pressure control and temporal patterns, potentially supporting more informed clinical decision-making.[6] Although out-of-clinic self-monitoring is important, meta-analyses have indicated that self-monitoring of blood pressure alone without professional co-interventions does not yield clinically significant blood pressure lowering.[7] Although patients can share their home blood pressure records with physicians through paper logbooks or smartphone applications, these records may contain valuable information that is difficult to interpret at a glance. Pharmacists can contribute by systematically organizing and evaluating blood pressure trends, dietary records, and medication adherence, and communicating these findings to physicians through concise tracing reports. Furthermore, pharmacist-led remote follow-up has been reported to improve blood pressure control in patients with hypertension.[8] Unlike conventional paper logbooks or medication notebooks, the PHR allowed comprehensive, real-time collection of multiple vital parameters—including blood pressure, pulse rate, body weight, and dietary records—enabling the pharmacist to evaluate overall lifestyle modifications alongside pharmacotherapy. Furthermore, because the PHR application automatically records measurement timestamps, it provides objective insights into diurnal variations and their relationships with medication timing, daily routines, and individual patient contexts. In this case, in-app messaging allowed the pharmacist to assess qualitative contextual factors, such as work-related stress and sleep disturbances, which contributed to a more holistic clinical assessment. Although a medication adjustment was deferred, sharing objective longitudinal vital data facilitated shared decision-making between the physician and the patient, ultimately achieving patient agreement and alignment on therapeutic goals. As healthcare digital transformation (DX) advances, expanded utilization of PHRs may offer opportunities beyond blood pressure tracking. Integrating dietary log records allows community pharmacists to detect discrepancies between patient recall during in-person consultations and actual daily habits, providing opportunities for tailored lifestyle guidance. Based on the report that 36.97% of respondents expressed willingness to use PHRs,[3] pharmacist-led activities involving review and treatment recommendations are expected to become more widespread in the future.

Limitations This report is based on a single case, and further studies in broader populations are needed to generalize the benefits of pharmacist-led PHR monitoring. Additionally, the monitoring period was relatively short, and long-term clinical outcomes—such as sustained blood pressure reduction or prevention of cardiovascular events—were not evaluated. Furthermore, as the current medication regimen was maintained based on patient preference during shared decision-making, the direct impact of the pharmacist's recommendation on clinical outcomes could not be assessed in this case.

Conclusion Pharmacists can support treatment optimization and patient-centered care by clinically interpreting out-of-clinic data recorded in PHRs and sharing these findings with physicians through tracing reports.

Patient Perspective The patient expressed high satisfaction with the PHR application, stating that remote support provided reassurance and helped her engage constructively with her condition.

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Conflict of interest The authors declare no conflicts of interest.

Ethics Approval This case report was conducted in accordance with the principles of the Declaration of Helsinki. Institutional ethics approval was not applicable for this single anonymized case report.

Informed Consent Verbal informed consent was obtained from the patient for the publication of this case report and the accompanying clinical data.

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