

Improving User Engagement in Sleep Monitoring through Community Involvement

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Abstract. The Slaap Lekker sleep monitoring device by Bobo Technology is an advanced non-intrusive system designed to monitor and improve sleep quality. This paper outlines a new initiative to enhance user engagement through community involvement. By deploying these devices in community health service centers across China, we aim to improve community health management, elevate health awareness among the elderly, and assist in their social reintegration. The project focuses on building relationships, enhancing health awareness, improving healthcare management, promoting social engagement, and increasing service utilization. This initiative leverages advanced technology to address critical social and health challenges faced by the elderly population. Ultimately, our goal is to reduce healthcare costs and enhance the overall well-being and quality of life for elderly individuals through better sleep health management.

Keywords: Sleep Monitoring · Community Involvement · Elderly Care · Health Awareness · User Engagement · Healthcare Management.

1 Introduction

The sleep monitoring device developed by Bobo Technology, under the brand name Slaap Lekker, is an advanced non-intrusive system designed to monitor and improve sleep quality. This device focuses on remote and continuous monitoring of patients' sleep patterns and physiological data. Key features include heart rate monitoring, respiratory rate tracking, and movement detection during sleep. Utilizing piezoelectric and capacitive sensors embedded in the mattress, the device collects detailed biometric data without disturbing the patient. Our latest initiative aims to enhance user engagement through community involvement by deploying these devices in community health service centers across China.

The Slaap Lekker sleep monitoring device is currently utilized in various hospitals and home care settings. It has garnered positive feedback for its accuracy, non-intrusiveness, and ability to provide valuable health insights. The device's design allows it to be placed under the mattress, where it monitors heart rate,

respiratory rate, and movement without disturbing the patient. Next to the initial success in introducing the product to the market, several aspects need further improvements:

- *Low Health Awareness* Many elderly individuals have limited understanding of the importance of sleep health.
- *High Healthcare Costs* Community health management faces challenges due to the high costs associated with healthcare and insufficient service utilization.
- *Social Isolation* Elderly individuals often suffer from social isolation, which negatively impacts their mental and physical well-being.

Our primary objective is to enhance user engagement in sleep monitoring through community involvement. This involves the strategic deployment of Slaap Lekker devices in community health service centers, aiming to improve community health management, elevate health awareness among the elderly, and assist in their social reintegration.

2 Objectives and Approaches

We summarize the objectives and the approaches as follows.

Strengthening Community Involvement

Building Relationships Use the sleep monitoring device to foster stronger connections between the elderly, their families, community health workers, and each other. This approach aims to build a supportive network that encourages active participation in health management.

Community Health Workshops Organize regular workshops and events where community members, including the elderly and their families, can learn about the importance of sleep health and how to use monitoring devices effectively.

Enhancing Health Awareness

Educational Programs Implement educational workshops and seminars to inform the elderly about sleep health and the benefits of using the sleep monitoring device. These programs can also include family members to ensure a supportive environment.

User Training Provide hands-on training sessions to ensure that users are comfortable and proficient in operating the devices. These sessions can be conducted by trained community health workers and volunteers.

Improving Healthcare Management

Integration with Community Centers Equip community health service centers with sleep monitoring devices to offer continuous health monitoring. This integration will enable health workers to track and analyze sleep data, providing timely interventions when necessary.

Data Utilization Utilize the data collected to provide personalized health recommendations and early intervention for sleep-related health issues. Health workers can use this data to create customized care plans for each individual.

Promoting Social Engagement

Community Activities Organize community events and social programs based on data insights to encourage the elderly to participate, thereby reducing social isolation. Activities could include group exercise sessions, social gatherings, and health education classes.

Support Groups Establish support groups where users can share their experiences and support each other in improving their sleep health. These groups can meet regularly and provide a platform for social interaction and mutual support.

Increasing Accessibility and Reducing cost

Accessibility Ensure that the devices and related services are easily accessible to the elderly population. This could involve setting up dedicated support lines and service points within the community centers.

Cost Reduction Implement strategies to reduce healthcare costs through preventive measures and efficient health management facilitated by monitoring devices. This can include subsidizing the cost of devices for low-income families and providing financial incentives for regular health check-ups.

3 Expected Outcomes

The expected outcomes of this project are:

Improved Sleep Health Awareness Educate a larger segment of the elderly population about the significance of sleep health.

Enhanced Healthcare Efficiency Reduce healthcare costs and improve service utilization through proactive health management.

Strengthened Community Ties Foster a sense of community and social support among the elderly, improving their quality of life.

Increased User Engagement Achieve higher levels of engagement and compliance with sleep monitoring practices among users.

4 Conclusion

The Slaap Lekker sleep monitoring device by Bobo Technology is an advanced non-intrusive system designed to monitor and improve sleep quality. This paper outlines a new initiative to enhance user engagement through community involvement. By deploying these devices in community health service centers across China, we aim to improve health management, elevate health awareness among the elderly, and assist in their social reintegration. The project focuses on building relationships, enhancing health awareness, improving healthcare management, promoting social engagement, and increasing service utilization. This initiative leverages advanced technology to address critical social and health challenges faced by the elderly population, ultimately aiming to reduce healthcare costs and improve overall well-being.

About Qingyuan Lin Qingyuan Lin is an EngD trainee specializing in Human-System Interaction at the Department of Industrial Design, Eindhoven University of Technology (TU/e). She holds a Master of Fine Arts (MFA) focused on User Interface and User Experience, and a Bachelor of Finance. Qingyuan has extensive experience as a User Interface Designer, notably contributing to the redesign of a popular weather app. Her skills extend to product management, where she has led efforts in product prototyping and iterative design, enhancing user experiences across digital platforms.

Her academic pursuits include an internship at Zhejiang University’s College of Computer Science and Technology, where she contributed to research, resulting in publications in a respected journal and presentations at international conferences. Qingyuan has worked on significant projects, such as the design of sensor systems and the development of emotionally engaging vehicle product designs. She has also led initiatives promoting design exchange and innovation among students. Her achievements have been recognized with awards at Milan Design Week 2022 and the BIEAF2021 Busan International Environmental Art Festival. She also received a First-class scholarship for her academic excellence.



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