Community Research and Application Journal
Vol. 2 No. 1 (2025) 30 – 33
Available online at https://journal.innoscientia.org/index.php/craj

Al-Yusru-Based Community Service: Implementation of Vital Signs Monitoring System (AL-YUSVID) at PPTQ Daarul Quran As-Syafaah, Kedung Ringin, East Lampung

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ABSTRACT

Routine monitoring of vital signs is an important aspect in disease prevention and early detection efforts. Conventional methods are often time-consuming and inefficient, especially in community health services. This community service activity was conducted by the Physics Department Team of Universitas Islam Negeri Walisongo Semarang in collaboration with PPTQ Daarul Quran As-Syafaah to test the implementation of the AL-YUSVID (Al-Yusru Integrated Vital Signs Detection) prototype in monitoring vital signs in the Kedung Ringin community, East Lampung. The AL-YUSVID prototype, developed based on the principle of al-Yusru (ease and sustainability), was tested to measure oxygen saturation (SpO2), heart rate, and body temperature in 25 participants. This activity increased community awareness about the importance of routine health monitoring and demonstrated the potential of non-invasive website-based technology in community health services.

Keywords:
AL-YUSVID; Vital signs; Al-Yusru; Health monitoring; Community service

Introduction

Monitoring vital signs such as body temperature, heart rate, and oxygen saturation is a fundamental component in health assessment. Vital signs monitoring is believed to reduce hospitalization, especially through early detection of abnormal conditions requiring immediate medical intervention (Dr. Kariadi, 2022). However, conventional monitoring methods often require considerable time and are inefficient in community health service applications.

To improve screening capacity and linkage with care, the Indonesian government launched Posbindu, a community-based intervention that focuses on screening and prevention of Non-Communicable Diseases (NCDs) and their risk factors (Yunita et al., 2024). This initiative aligns with efforts to improve accessibility of health services at the community level.

Internet of Things (IoT) technology has opened great opportunities in developing remote health monitoring systems. Remote vital signs monitoring based on Internet of Things (IoT) is an application that can improve healthcare accessibility (Nurdiansyah et al., 2024). The use of sensors in vital signs measurement allows data to be sent automatically through IoT systems to be processed and monitored in real-time.

Based on the principle of al-Yusru in Islam which emphasizes ease and sustainability, the Physics Department Team of Universitas Islam Negeri Walisongo Semarang developed the AL-YUSVID (Al-Yusru Integrated Vital Signs Detection) prototype (Sumarti et al., 2022). This system is designed to facilitate integrated vital signs monitoring through a website platform, thus supporting more efficient and sustainable health services.

This community service activity aims to: (1) test the implementation of the AL-YUSVID prototype in community settings, (2) evaluate the accuracy and effectiveness of the system in measuring vital signs, (3) increase community awareness about the importance of routine health monitoring, and (4) provide a foundation for the development of sustainable community-based health technology.

Methods

This community service activity was carried out in three main stages: preparation, implementation, and evaluation.

Stage I: Preparation
A team consisting of lecturers, students, and administrators of PPTQ Daarul Quran As-Syafaah conducted a preliminary survey in Kedung Ringin Village, East Lampung to determine the most suitable location and time for implementation. Coordination was conducted with boarding school administrators and local community leaders.

The equipment prepared included the AL-YUSVID prototype consisting of a MAX30100 sensor to measure heart rate and oxygen saturation, an MLX90614-DCC sensor for body temperature, an Arduino Uno microcontroller, a NodeMCU ESP8266 for WiFi connection, and a website platform for data visualization (Sutarya et al., 2021). As a comparison, standard tools were used in the form of a Sinocare AET-R1D1 thermometer and a Microlife OXY 200 pulse oximeter.

Stage II: Implementation
The activity was conducted at PPTQ Daarul Quran As-Syafaah, Kedung Ringin, East Lampung, involving 25 participants from students and surrounding community members. The team conducted vital signs examinations using both methods simultaneously to ensure data validity.

Lecturers as resource persons explained the working principles of the AL-YUSVID system, the importance of vital signs monitoring, and interpretation of measurement results (Rahmita et al., 2020). Participants were also educated about normal vital signs values and actions to be taken if abnormal values were found.

Stage III: Evaluation
The collected data were analyzed using three approaches: (1) comparison test to calculate the error rate between the prototype and standard tools, (2) diagnostic test to assess accuracy, sensitivity, and specificity, and (3) evaluation of conformity with al-Yusru principles through interviews with participants regarding ease of use and satisfaction with the system.

Results and Discussions

Implementation of Community Service Activities

Figure 1. The speaker explains about AL YUSVID, a device used to measure vital signs

The community service activities at PPTQ Daarul Quran As-Syafaah went well and received high enthusiasm from participants. Figure 1 show the speaker explains about AL YUSVID, a device used to

measure vital signs. Students and surrounding community members showed great interest in the health monitoring technology offered, especially because of its non-invasive nature and ease of use.

Figure 2 show the measurement of vital signs on male students and female students.The team successfully conducted vital signs examinations on 25 participants with an age range of 18-65 years. Each participant underwent examination using both systems simultaneously to ensure the validity of data comparison.

(a) (b)

Figure 2. Measurement of vital signs on (a) male students and (b) female students.

Implications for Community Health Services

The device is expected to help users monitor their health and can provide early health warnings in the form of vital signs health status and stress levels (Sharma & Singh, 2022). The results of this community service activity demonstrate the great potential of AL-YUSVID technology in supporting community health programs.

This system can be integrated into existing Posbindu programs, providing added value in the form of more comprehensive and sustainable monitoring. With its implementation now being carried out in all health services in Indonesia, it is expected that infant mortality rates due to CCHD can be reduced, showing the importance of vital signs monitoring technology in Indonesia's health system (World Health Organization, 2017).

The high levels of uric acid in serum have been associated with increased cardiovascular mortality risk, emphasizing the importance of routine health monitoring (Bhavendra & Wardana, 2021). This makes the AL-YUSVID system particularly relevant for community-based preventive healthcare initiatives.

Conclusion

The community service activities at PPTQ Daarul Quran As-Syafaah, Kedung Ringin, East Lampung successfully demonstrated the potential of the AL-YUSVID prototype as an alternative vital signs monitoring technology that is easy, efficient, and in accordance with al-Yusru principles. Participants provided positive responses to the ease and comfort of using the system, which aligns with al-Yusru principles in health services. This activity provides an important foundation for the development of sustainable community-based health technology that can be replicated in various Indonesian community settings. Collaboration between educational institutions, community organizations, and government has proven effective in supporting the implementation of health technology innovation at the grassroots level.

Acknowledgments

The authors would like to thank PPTQ Daarul Quran As-Syafaah, Kedung Ringin, East Lampung for their support and participation in this community service activity. Thanks also to all participants and student team members who have contributed to the success of this activity.

References

Bhavendra, A. A. G. B., & Wardana, I. N. G. (2021). High serum uric acid and cardiovascular mortality risk: A systematic review of cohort studies. Intisari Sains Medis, 12(1), 41–46. https://doi.org/10.15562/ism.v12i1.945

Dr. Kariadi, T. P. R. (2022). Benefits of routine health check-ups. RSUP Dr. Kariadi. https://rskariadi.co.id

Nurdiansyah, R., Faisal, M., & Darmawan, E. (2024). Remote vital signs monitoring based on Internet of Things system: Literature review. International Journal of Public Health Science, 13(1), 123–132.

Rahmita, M., Trisna, C., & Febriani, W. D. (2020). Community awareness improvement efforts in diabetes mellitus disease prevention in Pisangan Jaya Village, Tangerang Regency. Jurnal Pengabdian Masyarakat Multidisiplin, 4(1), 76–81.

Sharma, A., & Singh, P. K. (2022). IoT-Based Healthcare-Monitoring System towards Improving Quality of Life: A Review. *Healthcare Informatics Research, 28*(1), 1-18. https://doi.org/10.4258/hir.2022.28.1.1

Sumarti, H., Nurmar'atin, T., Kusuma, H. H., & Prastyo, I. S. (2022). Development of Chobmons prototype: Cholesterol and blood sugar level monitoring system based on Internet of Things (IoT) using Blynk application. *Jurnal Fisika dan Aplikasinya, 18(3), 53. https://doi.org/10.12962/j24604682.v18i3.12532

Sutarya, D., Studi, P., Elektro, T., & Selatan, J. (2021). Non-invasive blood sugar, cholesterol and uric acid monitoring system using sensors. Jurnal Joule: Jurnal Ilmiah Teknologi Energi, Teknologi Media Komunikasi dan Instrumentasi Kendali, 1(1), 25–34.

World Health Organization. (2017). The Republic of Indonesia health system review. WHO Regional Office for the Western Pacific.

Yunita, S., Rahman, A., & Kusuma, I. (2024). Opportunities for improvement of community-based non-communicable disease screening practices in Indonesia: A participant satisfaction survey. BMC Health Services Research, 24, 158. https://doi.org/10.1186/s12913-024-10123-6