

Application of Nurse Calling Device at Sewon 1 Health Center



Iswanto, Adhianty Nurjanah, Ipin Prasoj, Fitri Anindiyahadi, Nia Maharani Raharja

Abstract: Sewon I Health Center is located in Timbulharjo Village, Sewon District, Bantul Regency. The border in the North is Sewon II Health Center, East is Pleret District, South is Bantul and Jetis District, and West is Kasihan District. Sewon I Health Center is one of 27 Health Centers in Bantul Regency. The motto is "My society is healthy, My service is primary". Whereas the vision is "Main society partner towards healthy Sewon". With this motto and vision, the health center always improves health services for the society. It has been treating outpatients and inpatients. When inpatients need help such as the infuse water runs out, a nurse need to come immediately to replace it. Usually, the patient asks for help from relatives who are looking after him/her to call the nurse. The problem arises when there is no caregiver around. Based on the problem, the community service team from the Faculty of Engineering, Department of Electrical Engineering provided solutions to create and install a nurse caller device. By using the tool, everytime the patient needs the help from the nurse, he just simply presses the button to call the nurse to immediately go to his room.

Keywords : Health Center, nurse call, Bantul Regency, Call the nurse.

I. INTRODUCTION

Sewon I Health Center is one of 27 Health Center in Bantul Regency located in Timbulharjo Village, Sewon District, Bantul Regency. The working area covers two villages namely Timbulharjo and Pendowoharjo and is divided into 32 Dusun (sub-village), 216 RT (sub-dusun) and 43 Posyandu (integrated health service), with the working area border in the North is Sewon II Health Center, East is Pleret District, South is Bantul District and Jetis District and West is Kasihan District. The working area of Puskesmas Sewon I is 14.8 km² consisting of Timbulharjo village 7.78 km² and Pendowoharjo village 6.98 km². Climatic condition is tropical with plain landscape and an average temperature of 22°C - 32°C with an average annual rainfall 1000 - 4000 mm/year. It is a rural area directly adjacent to the Jogjakarta City area. Sewon I Health Center covers two villages with total population 44,083 in 2016, based on village monograph data, consisting of Timbulharjo village with a population of 22,473 and Pendowoharjo village with a population of 21,610. The number of families is 14,773,

Timbulharjo village is 7,628 and the number in Pendowoharjo village is 7,145. The total population density per km² of 2,979 people, Timbulharjo village of 3,095 people and Pendowoharjo village of 2,979 people. The motto of the health center is "My society is healthy, My service is primary". Whereas the vision is "Main society partner towards healthy Sewon". To achieve the vision set by the organization, Sewon I health center established the organization's mission to provide equitable and professional health services and to encourage the independence of the society to create a healthy culture and environment. The target set by the Sewon I Health Center is the fulfillment of quality health services that are comprehensive, integrated, sustainable and affordable for the whole society to improve the health status of the society. To achieve the objective, the sewon health center has conducted activities for one's health by serving outpatients and inpatients. Some researchers have conducted research to monitor patients. With patient monitoring tools, nurses can find out whether the patient needs help or not. Biswas et.al. conducted a study to remotely monitor the health of patients in real time (Biswas et al., 2017) (Liu and Mehrotra, 2017). The Kinect studied by Liu & Mehrotra was used to detect patient movements (Liu and Mehrotra, 2017). Patient monitoring was investigated by Marinescu & Nedelcu by using a smartphone to monitor the patient's heart rate (Marinescu and Nedelcu, 2017). Pawara monitored varied health by using the XMPP design (Pawara, 2017). Nachabe carried out diabetes patient monitoring to monitor the patient's eating habits [5]. In Sewon I health center, there was a problem found in monitoring patients. When inpatients need help such as the infuse water runs out, a nurse need to come immediately to replace it. Usually, the patient asks for help from relatives who are looking after him/her to call the nurse. The problem arises when there is no caregiver around. Referring to the problem, it is necessary to create and install a nurse caller device to call the nurse to immediately go to the patient's room.

II. COMMUNITY SERVICE METHOD

The method of implementing community service was to design a nurse calling device including the preparation such as looking for components, buying components, constructing the device and conducting training to use it. The planned activities were making a nurse calling device, conducting health education, and training how to use the device. Making a nurse calling device The nurse calling devices made was simple, safe constructs, and easy to operate [6]–[12]. It was carried out in the electrical engineering department workshop of Universitas Muhammadiyah, Yogyakarta involving several students and technicians.

Manuscript published on 30 September 2019.

*Correspondence Author(s)

Iswanto, Associate professor in the Engineering Department at Universitas Muhammadiyah Yogyakarta.

Adhianty Nurjanah, Lecturer and Researcher in the Communication Department at Universitas Muhammadiyah Yogyakarta.

Ipin Prasoj, Lecturer and Researcher in the Electrical Engineering Department at ITS PKU Muhammadiyah

Fitri Anindiyahadi, Lecturer and Researcher in the Electrical Engineering Department at ITS PKU Muhammadiyah

Nia Maharani Raharja, Lecturer and Researcher in the Electrical Engineering Department at Universitas Islam Negeri since 2019.

© The Authors. Published by Blue Eyes Intelligence Engineering and Sciences Publication (BEIESP). This is an open access article under the CC-BY-NC-ND license <http://creativecommons.org/licenses/by-nc-nd/4.0/>

The steps were making a work framework, arranging a work schedule, preparing materials, making the parts of the nurse's calling device, assembling the parts, testing and finishing, and measuring the performance of the device in terms of ease, safety and speed of the production process according to its function.

Conduct health education

Health education given to partners aims to provide additional knowledge in order to improve health to the society. Health education is intended in accordance with what is needed by the partner, namely the importance of using a nurse calling device. The steps in the implementation of this training are formulating relevant counseling materials, making an extension schedule, preparing tools and counseling materials, dividing instructor's tasks, conducting counseling and evaluation.

Training how to use the device

Training how to use the device aims to provide instruction and direction for the use the device. The intended training is in accordance with what is needed by the partner namely the staff of Sewon I health center. The steps in implementing this training are formulating relevant training materials, creating training schedules, preparing training tools and materials, dividing the instructor's tasks, conducting training and evaluation.

III. DISCUSSION

The team of lecturers at the University of Muhammadiyah Yogyakarta (UMY) concerned about improving the services of health workers, especially nurses, by conducting community service activities at the Sewon I Public Health Center in Bantul Regency. The lecturers involved were Iswanto, Adhianty Nurjanah and assisted by Stikes Medical Team of PKU Muhammadiyah Surakarta namely Abdul Latif, Ipin Prasajo, Nia Maharani, and Fitri Anindiyahadi providing assistance in applying the nurse calling device as well as providing excellent customer service workshops on Tuesday (19/3/2019) in Sewon 1 health center shown in Figure 1.



Fig. 1.Installation of a nurse calling device

Head of Sewon 1 health center Anastasia Endar Widyaningsih welcomed the collaboration between the Sewon 1 health center and UMY and she appreciated it. UMY does not only provide physical equipment, but also provides soft skill that supports the nurses to provide excellent services to the patients and their families as shown in Figure 2.



Fig. 2.Soft skills training to the nurses of Sewon health center 1

Iswanto stated that besides giving lectures and conducting research, a lecture must also provide community service. He demonstrates the application of the device as illustrated in figure 3. The function of the device is to call the nurse when patient needs help and it is expected that the nurse come immediately. In addition, according to Adhianty, increasing the nurse's capability is necessary to provide excellent services. This was given in a customer service workshop. It is expected that all nurses in the Sewon I Health Center can provide excellent service to patients and their families.

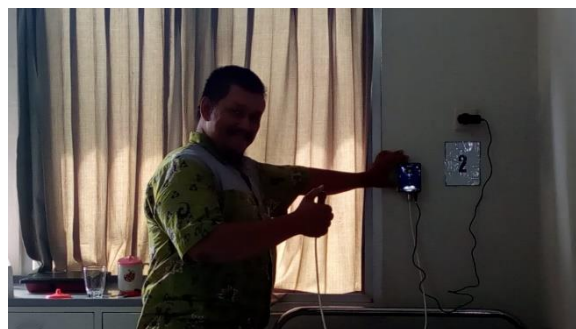


Fig. 3.Nurse Call device trial.

IV. CONCLUSION

Head of Sewon 1 health center Anastasia Endar Widyaningsih welcomed the collaboration between the Sewon 1 health center and UMY and she appreciated it. The Head of Pusksemas said that UMY's dedication activities were able to improve the excellent service of nurses, especially when serving the Sewon Bantul society. In the end of this community service, the management of the sewon 1 health center became better. The device proves that when patients need help, the nurse on duty immediately responds them.

ACKNOWLEDGMENT

It is optional. The preferred spelling of the word "acknowledgment" in American English is without an "e" after the "g." Use the singular heading even if you have many acknowledgments. Avoid expressions such as "One of us (S.B.A.) would like to thank" Instead, write "F. A. Author thanks " *Sponsor and financial support acknowledgments are placed in the unnumbered footnote on the first page.*

REFERENCES

1. A. Biswas, A. Sen, A. Sarkar, and T. K. Rana, "Real time health monitoring of patients from a remote place," in 2017 1st International Conference on Electronics, Materials Engineering and Nano-Technology (IEMENTech), 2017, pp. 1–4.
2. L. Liu and S. Mehrotra, "Patient Associated Motion Detection with Optical Flow Using Microsoft Kinect V2," in 2017 IEEE/ACM International Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE), 2017, vol. 79, no. 1, pp. 274–275.
3. R. Marinescu and A. Nedelcu, "Smartphone application for heart rate monitoring," in 2017 E-Health and Bioengineering Conference (EHB), 2017, pp. 141–144.
4. S. R. Pawara, "Heterogeneous Health Monitoring System Using XMPP-Design and Implementation," in 2017 Second International Conference on Electrical, Computer and Communication Technologies (ICECCT), 2017, pp. 1–5.
5. L. Nachabe, B. Elhassan, D. Almouhammad, and M. G. Genet, "Intelligent system for diabetes patients monitoring and assistance," Int. Conf. Adv. Biomed. Eng. ICABME, vol. 2017-October, 5093.
6. A. N. N. Chamim, M. E. Fawzi, R. O. Wiyagi, I. Iswanto, and R. Syahputra, "Control of Wheeled Robots with Bluetooth-Based Smartphones," Int. J. Recent Technol. Eng., vol. 8, no. 2, pp. 6244–6247, Jul. 2019.
7. B. Smartphones, A. Nur, N. Chamim, M. E. Fawzi, and R. O. Wiyagi, "Control of Wheeled Robots with Bluetooth-Based Smartphones," Int. J. Recent Technol. Eng., vol. 8, no. 2, pp. 6244–6247, Jul. 2019.
8. K. Purwanto, I. Iswanto, T. Khristanto, and M. Yusvin, "Microcontroller-based RFID, GSM and GPS for Motorcycle Security System," Int. J. Adv. Comput. Sci. Appl., vol. 10, no. 3, pp. 447–451, 2019.
9. A. N. N. Chamim, M. Heru Gustaman, N. M. Raharja, and I. Iswanto, "Uninterruptable Power Supply based on Switching Regulator and Modified Sine Wave," Int. J. Electr. Comput. Eng., vol. 7, no. 3, p. 1161, Jun. 2017.
10. A. N. N. Chamim, D. Ahmadi, and Iswanto, "Atmega16 implementation as indicators of maximum speed," Int. J. Appl. Eng. Res., vol. 11, no. 15, pp. 8432–8435, 2016.
11. I. Iswanto, W. S. Agustiningsih, F. Mujaahid, R. Rohmansyah, and A. Budiman, "Accumulator Charging Control with Piezoelectric Based on Fuzzy Algorithm Scheduling," TELKOMNIKA (Telecommunication Comput. Electron. Control., vol. 16, no. 2, p. 635, Apr. 2018.
12. Iswanto, S. Suripto, F. Mujahid, K. T. Putra, N. P. Apriyanto, and Y. Apriani, "Energy Harvesting on Footsteps Using Piezoelectric based on Circuit LCT3588 and Boost up Converter," Int. J. Electr. Comput. Eng., vol. 8, no. 6, pp. 4104–4110, 2018.

ITS PKU Muhammadiyah Surakarta since 2018.



Nia Maharani Raharja received the Bachelor degree and Master Degree of Engineering from Universitas Muhammadiyah Surakarta and Universitas Gadjah Mada, Surakarta and Yogyakarta, Indonesia in 2010 and 2013 respectively. She has been a Lecturer and Researcher in the Electrical Engineering Department at Universitas Islam Negeri since 2019. His current research is focused on instrumentation and control.

AUTHORS PROFILE



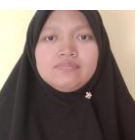
Iswanto received the Bachelor degree, Master Degree and Doctoral degree of Engineering from Universitas Gadjah Mada, Yogyakarta, Indonesia in 2007, 2009 and 2018 respectively. He has been a Lecturer and Researcher in the Electrical Engineering Department at Universitas Muhammadiyah Yogyakarta since 2010. He has been an Associate professor in the Engineering Department at Universitas Muhammadiyah Yogyakarta. His current research is focused on formation control, path planning and Control UAV.



Adhianty Nurjanah received the Bachelor degree, Master Degree and Doctor Degree of Engineering from Universitas Negeri Surakarta, Surakarta, Indonesia. She has been a Lecturer and Researcher in the Communication Department at Universitas Muhammadiyah Yogyakarta.



Ipin Prasajo received the Bachelor degree and Master Degree of Engineering from Universitas Negeri Yogyakarta and Universitas Islam Indonesia, Yogyakarta, Indonesia in 2005 and 2015 respectively. He has been a Lecturer and Researcher in the Electrical Engineering Department at ITS PKU Muhammadiyah Surakarta since 2018. His current research is focused on electro medicine.



Fitri Anindiyahadi received the Bachelor degree and Master Degree of Engineering from Universitas Muhammadiyah Surakarta and Universitas Islam Sultan Agung Semarang, Jawa Tengah, Indonesia in 2014 and 2018 respectively. She has been a Lecturer and Researcher in the Electrical Engineering Department at