

Desimination of Technology Application of Blood Flow Current Technology in Puskesmas

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ABSTRACT

Public health needs to be considered because it can create the ability to live healthy for every population which is the goal of health development which is part of human resource development. Muscle aches, muscle pain or spasms, and shoulder or joint stiffness are diseases that are often experienced by some people. To relieve the disease, people sometimes come to health development sites such as Puskesmas to do therapy. Some Puskesmas already have these therapeutic tools but there are some Puskesmas that do not have them because these tools are difficult to buy. This community service program is carried out by making infrared therapy devices which are then applied at the Kasih 1 Public Health Center. With this program, it is hoped that people can live healthy lives.

KEYWORDS

Infrared Therapy;
Puskesmas Kasihan;
Microcontroller



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1. Introduction

The Kasihan Health Center is one of the health developments which is part of the development of human resources which has the aim of creating the ability to live a healthy life for every resident in order to achieve optimal health status. The degree of public health itself is influenced by several factors, namely heredity, health services, behavior and the environment. Environmental factors are the factors that have the greatest influence on the degree of public health, these factors are more complex including the socio-economic, biological, physical, etc., making it more difficult to intervene. Socio-economic environmental factors such as a person's diet can affect the degree of public health. An unhealthy diet can cause a person to get clogged arteries. To avoid this blockage, infrared therapy is carried out [1].

Infrared therapy is a type of therapy using low energy that uses light to treat health problems [1]. With a low dose of energy there is no risk of burning in the body's cells. The use of infrared therapy is believed to increase skin temperature, improve blood flow and increase core body temperature. Elevated blood temperature stimulates warm neurons from the heat-regulating center in the hypothalamus and inhibits cold neurons. In addition, these warm neurons will project to central sympathetic/parasympathetic neurons in the hypothalamus, which affect the autonomic nervous system. Infrared lamps have been widely studied by previous researchers. A case in which a near-infrared beam catheter (NIRC) was applied effectively in a laparoscopic sigmoidoscopy for a sigmoid vesical fistula was studied by Okamoto [2]. The application of infrared radiation in the drying of food products was investigated by Huang [3]. The nanopillar meta surface was modeled for perfect absorption at certain wavelengths in the infrared spectral regime studied by Tomescu [4]. The sensor fusion system with thermal infrared camera and LiDAR for autonomous vehicles and deep learning-based object detection was investigated by Choi [5].

The development of an infrared laser absorption sensor for non-intrusive gas temperature measurement was investigated by Duan [6]. Quantum Dot Colloidal PbS Ink for Infrared Solar Cells investigated by Zheng [7]. Innovative combination of microwave-assisted infrared lentil germination and drying: effects of physicochemical properties of different varieties on water absorption, germination, and drying kinetics were studied by Najib [8]. Dynamic measurement and temperature correction of infrared radiation for rocket motor exhaust fumes were investigated by Yi [9]. The visible-infrared dual band photodetector absorbent was investigated by Zhang [10]. The effect of freeze-thaw pretreatment combined with variable temperature on infrared drying and convection of lotus roots was investigated by Zhang [11]. An experimental study on the characteristics of infrared precursors from the failure of gas-bearing coal under loading was investigated by Yin [12]. Measurement of the temperature field in the plane of the manufacturing plate during the manufacture of polymer extrusion additives using infrared thermometry was investigated by Prajapati [13]. The effect of forward flight speed on plume flow and infrared radiation from helicopters integrating IRS was investigated by Yang [14]. The middle infrared modulator integrating silicon and photonic black phosphorus was investigated by Huang [15].

Stable isomeric structures of the pyridine cation ($C_5H_5N^{\bullet+}$) and protonated pyridine ($C_5H_5NH^+$) were described by cold ion infrared spectroscopy studied by Rap [16]. The Fourier transform and near infrared dataset of cellulose dialdehyde used to determine the oxidation state by chemometric analysis was investigated by Simon [17]. Genetic analysis of milk minerals predicted infrared for Danish dairy cows was investigated by Zaalberg [18]. Infrared and Raman spectroscopic simulations, complex dielectric functions and C2/m monoclinic $Mg_6Si_4O_{10}(OH)_8$ refractive index dataset as obtained from Density Functional Theory were studied by Ulian [19]. Infrared sauna as sports-mimesis? Physiological response to infrared sauna vs exercise in healthy women: A randomized controlled crossover trial studied by Hussain [1]. IRMPD spectroscopy of PAH cations using FELICE: Infrared spectra and photodissociation of dibenzo[a,l]pyrene were studied by Wiersma [20]. The effect of magnetic nanoparticles combined with microwave or far infrared thawing on the freshness and safety of red sea fish fillet (*Pagrus major*) was investigated by Cai [21]. Invited review: A comprehensive review of near-infrared and visible spectroscopy to predict the chemical composition of cheese was studied by Bittante [22]. The Effect of Infrared Intensity and Air Temperature on Energy Consumption and Physical Quality of Dried Apples Using a Hybrid Dryer was investigated by EL-Mesery [23]. Genetic analysis of orotic acid predicted by the milk spectrum infrared Fourier transform was studied by Zaalberg [24]. Nanosecond SRS Fiber Amplifier for Near Label Infrared Photoacoustic Microscopy of Lipids was investigated by Lee [25].

The increase in infrared light on trimethoprim degradation was investigated by Chen [26]. Thermal infrared imaging from drones can detect individual and nocturnal behavior of the world's rarest primate studied by H. Zhang [27]. The use of smartphone-integrated infrared thermography to monitor sympathetic dysfunction as a surgical complication was investigated by Germi [28]. Mid-infrared photonics and optoelectronics in 2D materials were studied by Liang [29]. An efficient mid-infrared waveguide with a plasmon waveguide based on graphene-coated nanowires was investigated by Teng [30]. Infrared therapy devices are only available in hospitals. Therefore, the technology dissemination program aims to improve blood flow using infrared therapy devices at the Kasihan I Health Center. Kasihan I Health Center is one of 27 health centers in Bantul Regency, located in Kasihan District, Bantul Regency. The location of the Kasihan I Public Health Center is approximately 5 km from the sub-district capital, Bangunjiwo Village is 300 meters away and Tamantirto Village is 3 km away. Kasihan I Public Health Center is located in Bangunjiwo Village and 1 supporting Health Center is located in Tamantirto Village. The working area boundaries of the Kasihan I Health Center are as follows: in the north it borders the Gamping sub-district, Sleman district and Yogyakarta municipality, in the south it borders with the Sewon and Pajangan sub-districts, in the east it borders the Yogyakarta municipality and Sewon sub-district, and in the west it borders the Pajangan, Sedayu and District districts. Gamping District, Sleman.

2. Method

The team that proposes service as part of the community who happens to be involved in the world of health education, electrical engineering science and electromedical science, feels compelled to help provide solutions to problems faced by the community around the Kasihan Health Center. Through this PKM activity proposal program and based on the needs analysis that has been carried out.

The service team tries to offer solutions to these problems with a touch of science and technology, namely through the main activities 1) Conducting counseling to the community about healthy living, 2) Providing guidance on the use of infrared therapy tools, 3) Conducting therapy to the community at the Puskesmas.

The benefits obtained by partners from the implementation of the 4 main activities, including:

- Community groups around the Puskesmas become healthy.
- Community groups around the Puskesmas can increase the quantity of their production.
- Reducing dependence on painkillers.
- Community groups around the Puskesmas become aware of cholesterol.

3. Results and Discussion

This community service activity program involving partners who are at the Kasihan II Health Center is shown in Fig. 1 (a). Fig. 1 (a) illustrates the first step in this program is an initial site survey whose aim is to find out the problems and potentials that exist in Kasihan Village. The initial site survey was carried out on January 2, 2019 and was attended by the entire service team, and the UMY Community Service Team. After the problem is known, the next step is to coordinate with partners about the socialization of blood circulation smoothing devices at the Kasihan II Health Center.



Fig. 1. (a) Coordination with Puskesmas and (b) Trial of Infrared therapy tools

This coordination has reached a mutual agreement to carry out community service activities according to the process and time of implementation. This agreement is an important commitment for the success of community service activities with a superior product "making blood circulation devices" at the Kasihan II Public Health Center, Bantul Regency. The socialization of the tool which was held at the Kasihan II Health Center in Bantul Regency was attended by health center medical personnel on January 23, 2019 and was attended by all service teams, partners, the UMY Community Service Team and employees of the Kasihan II Health Center as shown in Fig. 1 (b). From the Fig. 1 (b), it can be seen that after

Socialization activities were continued with the provision and testing of tools at the Kasihan II Public Health Center.

4. Conclusion

The conclusions that can be drawn from PKM activities for community empowerment in dealing with Stoke disease at the Kasihan II Health Center are as follows: (1) The initial site survey was carried out on January 2, 2019 and was attended by the entire service team, and the UMY Community Service Team. (2) Coordination with partners regarding the socialization of the dangers of stroke at the Kasihan II Health Center, Kasihan District, Bantul Regency. (3) After the Socialization activity, it was continued with the provision of a blood flow device on January 23, 2019 and was attended by the entire service team, partners, KKN UMY team and employees of the Kasihan II Health Center. The output of the activity is in the form of a blood flow device. Suggestions for the next activity are monitoring and evaluating the sustainability of the use of blood flow smoothing devices.

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Author Contribution

All authors contributed equally to the main contributor to this paper. All authors have read and agreed to the published version of the manuscript.

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Conflict of Interest

The authors declare no conflict of interest.

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