

Utilization of hands free wash basin as Covid-19 prevention in public health center

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Abstract

Simalingkar Public Health Service is located in one of one of the 5 districts in Medan with the Red zone status. At the Partner location, it was found that they using hand wash basin with ordinary hand operated tap and it was not optimal to preventing the spread of the Covid-19 virus since some surface of plastic or steel in public health service cannot absorb droplet and preserving the active virus, it could become the transmission vehicle of the virus from one person to the next. Because that area with high touch intensity can pose a risk of transmission of the Covid-19 virus, the solution that will be offered by designing and making an automatic tap hand wash basin by using feet pedals so that there is no need hand to touch the water tap The purpose of this activity is expected that Partners can preventing the spread of Covid-19 by using hands free wash basin on daily health service activities.

Keyword: Covid-19, Hands Free Wash Basin, Public Health Service

Abstrak

Puskesmas simalingkar terletak di salah satu Kecamatan dari 5 Kecamatan di Kota Medan yang berstatus zona merah. Pada lokasi Mitra, ditemukan tempat mencuci tangan dengan keran air biasa yang dibuat seadanya dikhawatirkan belum maksimal dalam pencegahan penyebaran virus Covid-19 dikarenakan permukaan plastik ataupun bahan steel tidak menyerap tetesan kecil dan mempertahankan virus tetap aktif yang membuatnya bisa menjadi sumber penularan virus dari satu orang ke orang lainnya. Dikarenakan keran air termasuk area dengan intensitas sentuhan yang tinggi dapat menimbulkan resiko penularan virus Covid-19, solusi yang akan ditawarkan adalah Tim akan merancang dan membuat alat pencuci tangan keran otomatis airnya keluar dengan menggunakan pedal kaki sehingga tangan tidak perlu menyentuh keran air. Tujuan dari kegiatan pengabdian ini diharapkan Mitra dapat menggunakan wastafel pencuci tangan bebas sentuhan mencegah penyebaran Covid-19 dalam kegiatan pelayanan kesehatan yang dilakukan.

Kata Kunci: Covid-19, Wastafel Pencuci Tangan Bebas Sentuhan, Puskesmas

1. INTRODUCTION

The Covid-19 virus or also known as SARS-CoV-2 is a type of virus which by the World Health Organization (WHO) on March 11, 2020, has increased the status become a global pandemic. One of the roles of the health center is especially in handling patients with mild symptoms or screening people who are suspected of having close contact with a positive Covid-19 patients or the OTG group (people without symptoms of respiratory tract infections who have a history of contact with a positive Covid-19 patients), so that public health service activities are at high risk transmission of this virus.

Kompas.go.id media stated that several areas in the city of Medan and Deli Serdang Regency had not complied with the health protocol of prevention spread Covid-19. Medan city has been recorded as a red zone and is ranked first of the spread of the corona virus in North Sumatera (Leandha, 2020)

From the data of the Medan City Task Force of Covid-19 shown in Fig 1 that Simalingkar Public Health Center (as Partner) which located in Medan Tuntungan District is one of 5 districts in Medan with red zone status. The other sub-districts with red zone status are Medan Johor, Medan Selayang, Medan Baru and Medan Sunggal districts (Febrianti, 2020; Fadhil, 2020).



Figure 1. The spread of Covid-19 in Medan (Data on 18 April 2020)

Covid-19 can be spread through tiny droplets that come out of the nose or mouth of an infected person when coughing or sneezing. These tiny droplets can stick to other people, clothes or other surface around them. The process of washing hands is also recommended following WHO recommendation for a minimum of 20 seconds, especially after using the toilet, when hands are dirty, before eating and after coughing or sneezing. (Velavan, et al., 2020; Dirjen Pencegahan dan Pengendalian Penyakit-Kemenkes RI, 2020).

Since the beginning of the corona virus outbreak, washing hands with soap and water is one of the most effective ways of infection control. WHO recommends to avoid touch eyes, nose or mouth with unwashed hands. This virus is said to be able to survive around 2-3 days on plastic and stainless steel media, unless disinfected. (Van Doremalen, et al., 2020). To prevent the spread from other people, washing hands frequently and wearing masks should be taken because it is possible to get infected by touching contaminated surfaces or object where the virus is present and then germs will enter our bodies when contaminated hands touch nose, mouth or eyes (Fiorillo,et. Al. 2020).

The objective of this community service is by providing facilities of a portable hand washing with a water tap system that does not need hands to used directly to run the water to prevent the spread of the corona virus through contaminated hands.

2. METHODS

This community service activity methods are the academic team visit Simalingkar's Public Health Center then discussing and make a design for a hand washing equipment with a tap system where the water automatically comes out without hand touching it. The design according to the request of the partner, water will flows by using a foot pedal or foot operated valve. Partner do not want a hand washing equipment that have to use electric current, the reasons because it will placed outside the health center, it will not be damaged by rain and can have freely position because it does not have to set near to an electric current resource. Academic team also installing instructions on how to wash hands properly on the hand wash basin to acknowledge patients who visit to the Public Health Center.



Figure 2. (Left) The academic team having a visit to the Simalingkar Public Health Center, (Right) The design of the hands free wash basin were discussed with Partner.

3. RESULT AND DISCUSSION

Automatic taps in common it need electrical power, in this activities, the academic team modifying the tap design to controlling the tap water flow by using feet pedals instead of hands. The design and dimension of the hands free wash basin in this community service activity are shown in Figure 3.

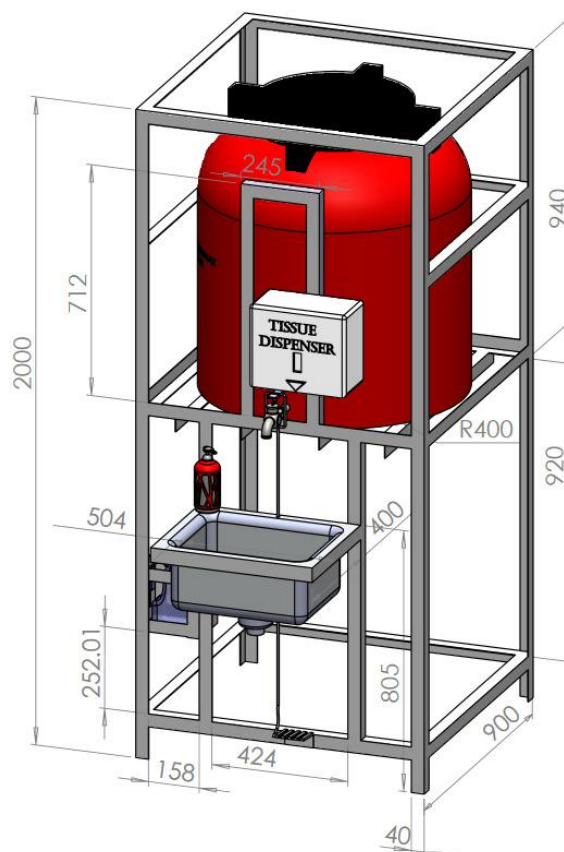


Figure 3. The design of hand wash basin.

Usually while washing dirty hands with hand operated wash basin types, users does not shut off water or due to the tap handle type it cannot easy to shut it off. Water will remains to flow to

sink without use, leave taps opened, water continues running and wasted. Or in the other way, user opens the tap and it make tap have remaining soap, after finished rinse hands well under clean water, sometimes needs to wash the tap handle and then have to re-wash hands. (Zaied, 2018).



Figure 4. Front view of the hand wash basin handed over to the Simalingkar's Public Health Center.

Controlling water through the aforementioned is mostly by the use of the hand to operated water tap. Because the manual control tap mostly involves touching of the tap handle to allow and stop water flow, it has the problem of the hand after using them. The issue of contamination of Virus Covid 19 is very serious and it means that the intention of hand wash being used as a means of protecting public health will not be realized. With foot operated valve in this wash basin makes it better compared to the hand operated valve. Because it also can self- return so that water is not wasted because of forgetfulness to close tap. (Adzimah and Agbovi 2015)



Figure 5. Foot pedal position in the hand wash basin

To use this wash basin the user must step on the pedal as in Fig.5 In that position required force is applied to the pedal to cause it to swing because the tap control wire is attached to the

pedal and it is correspondingly pulled by the applied force. As the tap control wire is being pulled which in turn the tap to open allowing the flow of water. After the user of the device has finished, then removes the foot to release the compressive force on the wire allowing the tap to return to close the valve stop flow of water.



Figure 6. (Left) the condition of the previous wash basin (Right) A patient who is using hands free wash basin from community service activity.

The success of this activity is patient who visit to Simalingkar's public health center feel more secure with the health protocol of prevention spread Covid-19 as seen in Fig 6 and medical staff remain enthusiastic to providing daily health services during the corona pandemic.



Figure 7. The academic team taking group photo with Partners when handing over hand washing equipment.

4. CONCLUSION

From the results of field observations, this community service activity is useful for Partners. By using a hands free wash basin with an automatic tap using a foot pedal can help implement the

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health protocol of preventing the spread of Covid-19 and give positive impact to the surrounding community.

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REFERENCES

- Zaied, R. (2018). Usingfoot Operated Tap Mechanism to Save Water and Prevent Infection. Proceedings of 115th The IRES International Conference, Medina, Saudi Arabia, 15th-16thMay
- Adzimah, S.K. and H. E. Agbovi. (2015). Foot-Operated Device for Controlling the Flow of Water into Plumbing Fixtures. Innovative System Design and Engineering. Vol 6, no. 5, p 18 – 36.
- Van Doremalen, N; Bushmaker, T.; Morris, D. H; Holbrook, M.G; Gamble, A. ; Williamson, B.n.; Tamin, A. Harcourt, J.L.; Thornburg, N.J. & Gerber, S.I. (2020). Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1. N.Engl.J.Med.
- Fiorillo, L, Gabriele C., Marco M., Cesare D., Giovanni S., Valeria P., Maria T.F., Antonio M., Alessia L. B.,Giovanni L. R., Riccardo L., Sergio B. & C. Marco (2020). Covid-19 Surface Persistence: A recent Data Summary and Its Importance for Medical and Dental Settings. Int. J.Environ. Res.Public Health.17.3132. p 2-10.
- Dirjen. Pencegahan dan Pengendalian Penyakit-Kemenkes RI, (2020), *Pedoman Pencegahan Dan Pengendalian COVID-19*. Kementerian Kesehatan RI. Diterbitkan 27 Maret 2020.
- Velavan, Thirumalaisamy P. Meyer & G. Christian (2020). "The COVID-19 epidemic". Tropical Medicine & International Health (n/a): 278–280. doi:10.1111/tmi.13383. ISSN 1365-3156. PMID 32052514.
- Leandha M.(2020). Jubir Gugus Tugas : Penyebaran Covid-19 Tertinggi di Medan, Tapi Warganya Belum Juga Sadar. <https://regional.kompas.com/read/2020/04/16/07200991/jubir-gugus-tugas-penyebaran-covid-19-tertinggi-di-medan-tapi-warganya-belum> (diakses 19 April 2020)
- Febrianti Y. (2020). Hati-hati! 8 Kecamatan di Medan Ini Masuk Zona Merah Corona Virus. IDNTimes Sumut <https://sumut.idntimes.com/news/sumut/yurika-febrianti/hati-hati-8-kecamatan-di-medan-ini-masuk-zona-merah-virus-corona> (diakses 19 April 2020)
- Fadhil, H. (2020). Peta Sebaran 103 Kasus Positif Corona Sumut, Medan-Deli Serdang Zona Merah. DetikNews <https://news.detik.com/berita/d-4982499/peta-sebaran-103-kasus-positif-corona-sumut-medan-deli-serdang-zona-merah> (diakses 20 april 2020)