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FASILITAS AIR, SABUN, SANITASI DAN CUCI TANGAN BERHUBUNGAN DENGAN PENULARAN COVID-19 PADA 44 NEGARA

The Water, Soap, Sanitation and Handwashing facilities are Associated with COVID-19 Transmission in 44 Countries

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ABSTRAK

Coronavirus 2019 (COVID-19) saat ini merupakan pandemi global. Kesadaran publik tentang mencuci tangan penting dalam mencegah penyebaran COVID-19. Tujuan penelitian ini untuk mengetahui hubungan peningkatan sumber air, layanan air dasar, peningkatan fasilitas sanitasi, fasilitas mencuci tangan dasar, sabun dan ketersediaan air dengan penularan COVID-19 di 44 negara. Menggunakan Data Survei Demografi dan Kesehatan pada 44 negara meliputi data populasi yang tinggal di rumah tangga menggunakan sumber air *improve*, layanan air dasar, peningkatan fasilitas sanitasi, praktik mencuci tangan, fasilitas mencuci tangan dasar dengan sabun dan ketersediaan air, kepemilikan listrik, televisi, ponsel, dan rumah tangga yang terdiri dari hanya lansia berusia >65 Tahun. Data diunduh dalam bentuk Excel. Kasus COVID-19 yang dilaporkan oleh Pusat Sains dan Sistem Rekayasa (CSSE) Universitas Johns Hopkins pada tanggal 28 April 2020 pada 44 negara. Data program DHS dari 44 negara yang relevan dengan data CSSE Johns Hopkins University dilakukan uji regresi linear dan alternatifnya (uji spearman) menggunakan SPSS 22. Hubungan antar variabel dengan melihat koefisien korelasi dan nilai p untuk setiap variabel. Hasil penelitian disajikan dalam bentuk tabel. Hasil: Peningkatan sumber air, layanan air dasar, peningkatan fasilitas sanitasi, fasilitas mencuci tangan dasar, sabun dan air yang tersedia terkait dengan penularan COVID-19, dengan masing-masing koefisien korelasi sebesar 0,421, 0,506, 0,374, 0,243 dan 0,399.
Kata kunci : Air, Sabun, Cuci Tangan, Covid-19

ABSTRACT

Coronavirus 2019 (COVID-19) is currently a global pandemic. Public awareness about washing hands is important in preventing the spread of COVID-19. The purpose of this study was to determine the relationship between increased water sources, basic water services, improved sanitation facilities, basic hand washing facilities, soap and water availability with COVID-19 transmission in 44 countries. Using Demographic and Health Survey Data in 44 countries including data on populations living in households using improved water sources, basic water services, improved sanitation facilities, hand washing practices, basic hand washing facilities with soap and water availability, ownership of electricity, television, cellphones , and households consisting of only those aged> 65 years. Data is downloaded in the form of Excel. The COVID-19 case was reported by the Johns Hopkins University Center for Science and Systems Engineering (CSSE) on April 28, 2020 in 44 countries. DHS program data from 44 countries that are relevant to the CSSE Johns Hopkins University data are carried out linear regression tests and alternatives (spearman test) using SPSS 22. Relationships between variables by looking at the correlation coefficient and p value for each variable. The results of the study are presented in tabular form. Results: Increased water sources, basic water services, improved sanitation facilities, basic hand washing facilities, soap and water available in relation to COVID-19 transmission, with each correlation coefficient of 0.421, 0.506, 0.374, 0.243 and 0.399.
Keywords : Water, Soap, Hand-Washing, Covid-19

BACKGROUND

A novel coronavirus (CoV), the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2), results in the coronavirus disease 2019 (COVID-19)[1] is currently a global pandemic[2,3]. 2.954.222 Confirmed cases 202.597 Confirmed deaths including 213 Countries[2] This pandemic can lead to nearly half a billion deaths, i.e. 6% of the world's population-and potentially more. Infection cant occur when the contact is not present. The only way to mitigate these numbers is to apply social distancing and take the standard precautions that Public Health so frequently reiterates: washing hands, avoiding touching the face and so on. These measures are crucial, as human costs will be unthinkable even in the best-case scenarios epidemiologists are modelling[3] Human-to - human transmission has been identified through droplets, contaminated hands or surfaces, with incubation times of 2-14 days[4].

WHO has advised to shield hands from contamination, protect yourself, wash your hands regularly. Wash your hands with soap and water, and thoroughly dry. If you do not have immediate access to water and soap, use alcohol-free handrub[5]. The only way to reduce these figures is to apply social distancing and take the same steps that are so frequently repeated by Public Health: washing hands, avoiding touching the nose, etc. Public knowledge about hand washing is critical in preventing COVID-19 disease from spreading. Hand washing and the conservation of social distances are key measures recommended by the World Health Organization[1,3,5–11]. Study Lin et al (2020) showed increased google searches for "wash hands" associated with lower COVID-19 spread among 21 countries (Pearson's coefficient of correlation-0.70, $p<0.001$) the importance of public knowledge of hand washing in preventing the spread of COVID-19 disease;[7]. While the focus on hand-washing and mask-wearing behaviors was reiterated during pandemic (COVID-19), not everyone paid adequate attention to that. In Wuhan 42.05 percent of elementary school students had good hand-washing behaviour[6]. Study Modi et al (2020) to assess COVID-19 disease awareness and related infection control practices among healthcare professionals and students in the Metropolitan Region of Mumbai showed that only 52.5% of respondents were aware of the preferred method of hand hygiene for visibly soiled hands[12]. Since the virus is highly infectious via the respiratory route (droplets from infected individuals, widely distributed through coughing or sneezing) and through contact with contaminated surfaces, community transmission and distributed can be minimized through frequent and careful hand hygiene[13]. This study aims to determine the benefits of improved water source, basic water service, improved sanitation facility, basic handwashing facility, soap and water available in preventing covid-19 transmission.

METHOD

Use Demographic and Health Surveys Program[14] which contains numbers of Population living in households using an improved water source, Population living in households with basic water service, Population living in households with an improved sanitation facility, Population with a place for handwashing was observed, Population living in households with a basic handwashing facility with soap and water available, Population with electricity, Households possessing a television, Households possessing a mobile telephone, Households with only members age 65+, Mean number of household members in 44 countries. The data was downloaded on April 18, 2020 in the form of Excel. Confirmed case COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins Univesity April 28 2020 in 44 countries [15,16].

DHS program data from 44 countries that have complete data with the Data Center for Systems Science and Engineering (CSSE) at Johns Hopkins University and then processed using IBM Statistics SPSS 22. Confirmed 19 data is converted in the form of square roots to obtain data which has a normal distribution. while the DHS program data as a percentage of each country is considered as one variable data. The test used is the Spearman to see the Correlation Coefficient and the value of p-value for each variable. Information on research results is presented in tabular form.

The data used is data that can be accessed by everyone and is not confidential. for ethical completeness the research only requires an ethical review exclusion because it uses secondary data.

RESULT

Tabel 1. Confirmed Cases COVID-19 and Population living in households using an improved water source, with basic water service, improved sanitation facility, with a basic handwashing facility with soap and water available available by 44 Country

Country	Confirmed cases Covid-19*	Confirmed cases SQUARE	Population living in households using an improved water source**	Population living in households with basic water service**	Population living in households with an improved sanitation facility**	Population with a place for handwashing was observed**	Population living in households with a basic handwashing facility with soap and water available**
Afghanistan	1.828	42.76	72.2	66.2	33.6	74.4	29.9
Angola	27	5.20	68.9	58.5	66.6	39.4	27.4
Armenia	1.867	43.21	99.9	99	77.1	96.6	95.8
Bangladesh	6.462	80.39	97.8	96.3	69.5	95.4	28.1
Benin	64	8.00	68.3	60.3	30.2	56.1	9.8
Burkina Faso	635	25.20	76.5	65.3	29.6	74.5	11.9
Burundi	11	3.32	82.9	63	52.5	98.7	5.9
Cambodia	122	11.05	83.3	83.3	56.6	85	68.6
Chad	46	6.78	56.7	40.8	14.8	23	6.9
Congo Democratic Rep	471	21.70	50.4	37.6	41.1	14.5	4.1
Cote d'Ivoire	1.164	34.12	78.5	72	47.1	53.5	16.3
Egypt	4.782	69.15	99.6	98.8	99.7	96.8	88.4
Ethiopia	126	11.22	62.1	46.4	12.8	57.9	7.1
Gambia	10	3.16	89.6	83.9	58.7	8.1	4.5
Ghana	1.550	39.37	88	80.2	70	52	22.1
Guatemala	530	23.02	85.5	85.2	55	94.6	77.4
Guinea	73	8.54	79.9	59.9	52.2	70.8	20.6
Haiti	76	8.72	74.9	64.2	54.8	82.3	21.3
Honduras	702	26.50	89	88.8	75.8	90.9	86.5
India	29.451	171.61	94.4	92.5	56.7	96.8	59.5
Indonesia	9.511	97.52	91	90	81.9	94.6	89
Kenya	374	19.34	68.4	59.8	47.9	31.5	23.2
Liberia	133	11.53	75.7	64.3	42.1	2.5	4.3
Malawi	36	6.00	87.1	62.1	83.6	84	9.5
Maldives	245	15.65	99.7	99.5	99.1	97.5	96.2
Mali	408	20.20	69.6	66.1	55.9	69.4	14.3
Mozambique	76	8.72	52.7	42.2	27.8	44.3	11.8
Namibia	16	4.00	84.7	77.5	45.1	86.3	44.9
Nepal	54	7.35	96	94.9	82.5	99.8	45.9
Nigeria	1.337	36.57	72.6	68.9	53.4	81.1	31.4
Pakistan	14.079	118.65	95.6	91	81.2	93	65.9
Papua New Guinea	8	2.83	46.9	44.2	30.1	56.9	33.2
Philippines	7.958	89.21	96.2	94.8	92.5	92.7	86.5
Rwanda	207	14.39	72.4	52.1	72.1	11.9	5.8
Senegal	823	28.69	82.5	79.8	71	45.8	24.9
Sierra Leone	104	10.20	59.8	51.2	49.1	22.1	7.8
South Africa	4.793	69.23	93.4	90.1	96	86.1	46
Tanzania	299	17.29	61.7	49.2	72.7	82.8	50.1
Timor-Leste	24	4.90	81.7	77.2	64	90.6	28.5
Togo	99	9.95	63.8	56.8	37.4	15.6	10.7
Uganda	79	8.89	78.4	52.7	35.6	59.4	28.8
Yemen	1	1.00	74.8	69.3	50.6	72.4	49.3
Zambia	95	9.75	70.7	63.8	54	53.8	23.5
Zimbabwe	32	5.66	76.4	64.7	64.6	97.8	36.7

* Covid-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU) April 28 2020[15]

** The DHS Program STATcompiler http://www.statcompiler.com. April 28 2020[3]

Tabel 2. Confirmed Cases COVID-19 and Population with electricity, Households Possessing a Television, Only Members Age 65+ and Mean Number Of Household Members by 44 Country

Country	Confirm Covid*	Confirm Covid SQUARE	Population with electricity**	Households possessing a television**	Households possessing a mobile telephone**	Households with only members age 65+**	Mean number of household members**
Afghanistan	1,828	42,76	71,3	50,7	87,3	0,2	8,0
Angola	27	5,20	45,5	51,2	62,7	2,7	4,8
Armenia	1,867	43,21	100,0	99,5	96,3	12,5	3,5
Bangladesh	6,462	80,39	62,1	43,5	88,5	0,9	4,5
Benin	64	8,00	34,5	28,7	83,9	2,3	5,2
Burkina Faso	635	25,20	12,0	16,2	59,2	1,3	5,7
Burundi	11	3,32	9,3	4,8	46,9	2,4	4,8
Cambodia	122	11,05	57,4	65,7	87,2	2,1	4,6
Chad	46	6,78	9,0	7,7	58,8	1,7	5,8
Congo Democratic Rep	471	21,70	14,9	15,0	39,1	2,0	5,3
Cote d'Ivoire	1,164	34,12	56,6	43,2	80,8	1,5	5,1
Egypt	4,782	69,15	99,8	97,5	90,3	4,4	4,1
Ethiopia	126	11,22	20,8	13,8	55,5	1,9	4,6
Gambia	10	3,16	39,8	48,5	90,6	0,8	8,2
Ghana	1,550	39,37	74,6	61,7	85,1	4,1	3,5
Guatemala	530	23,02	87,0	73,0	87,5	3,4	4,8
Guinea	73	8,54	45,0	31,3	89,2	0,7	6,2
Haiti	76	8,72	40,4	30,7	75,9	3,4	4,3
Honduras	702	26,50	40,4	72,2	85,7	2,7	4,4
India	29,451	171,61	88,0	65,2	90,4	2,7	4,6
Indonesia	9,511	97,52	97,3	88,7	89,0	3,8	3,9
Kenya	374	19,34	28,8	34,5	86,0	2,8	3,9
Liberia	133	11,53	10,1	14,1	64,6	1,3	5,0
Malawi	36	6,00	10,7	11,7	53,7	2,5	4,5
Maldives	245	15,65	99,8	93,8	98,7	2,4	5,4
Mali	408	20,20	50,9	42,6	88,8	0,8	5,8
Mozambique	76	8,72	22,9	18,6	34,1	2,8	4,4
Namibia	16	4,00	43,6	43,6	88,5	2,2	4,2
Nepal	54	7,35	90,7	51,6	92,8	2,9	4,2
Nigeria	1,337	36,57	56,5	49,1	87,9	2,9	4,7
Pakistan	14,079	118,65	92,2	62,8	93,9	0,8	6,6
Papua New Guinea	8	2,83	16,6	12,6	56,3	1,5	5,0
Philippines	7,958	89,21	93,0	76,9	88,8	4,1	4,2
Rwanda	207	14,39	23,2	9,6	59,8	1,9	4,3
Senegal	823	28,69	61,7	56,7	96,0	0,8	8,7
Sierra Leone	104	10,20	13,5	13,6	54,9	0,7	5,9
South Africa	4,793	69,23	90,8	76,8	95,7	4,3	3,4
Tanzania	299	17,29	19,9	20,2	7,08	2,6	4,9
Timor-Leste	24	4,90	76,5	40,2	84,3	4,4	5,3
Togo	99	9,95	40,8	36,6	73,6	2,3	4,5
Uganda	79	8,89	26,7	16,9	74,3	2,4	4,5
Yemen	1	1,00	78,3	66,8	80,0	1,9	6,7
Zambia	95	9,75	32,8	36,6	73,7	2,1	5,0
Zimbabwe	32	5,66	30,3	37,4	86,9	2,6	4,1

* Covid-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU) April 28 2020[15]

** The DHS Program STATcompiler http://www,statcompiler,com, April 28 2020[3]

Tabel 3, Confirmed Cases COVID-19 and Characteristic Variable from 44 Country

Characteristic	Descriptives	
	Mean±SD	CI 95%
Confirmed cases Covid-19 from 44 country	28,6486 ±35,65799	17,8076-39,4897
Population living in households using an improved water source in %	78,4±14,0	74,1-82,6
Population living in households with basic water service in %	70,5±17,8	65,1-75,9
Population living in households with an improved sanitation facility	57,8±21,5	51,2-64,3
Population with a place for handwashing was observed	66,6±29,5	57,6-75,6
Population living in households with a basic handwashing facility, with soap and water available	35,4±28,7	26,7-44,1
Population living in households with a limited handwashing facility, lacking soap and/or water	35,5±23,7	28,3-42,7
Population with electricity	49,7±30,7	40,4-59,1
Households possessing a television	43,9±26,3	35,8-51,9
Households possessing a mobile telephone	77,7±16,5	72,7-82,7
Households with only members age 65+	2,5±1,8	1,9-3,0
Mean number of household members	5,0±1,1	4,6-5,3

Tabel 4, Linear regression showing determining Confirm Case Covid-19

Variable	Confirmed cases Covid-19	
	Correlation Coefficient	p-value
Population living in households using an improved water source	0,421**	0,004
Population living in households with basic water service	0,506**	0,000
Population living in households with an improved sanitation facility	0,374*	0,012
Population with a place for handwashing was observed	0,243	0,112
Population living in households with a basic handwashing facility, with soap and water available	0,399**	0,007
Population living in households with a limited handwashing facility, lacking soap and/or water	-0,199	0,196
Households with only members age 65+	0,163	0,291
Mean number of household members	-0,225	0,142

**Correlation is significant at the 0,01 level (2-tailed),
* Correlation is significant at the 0,05 level (2-tailed),

Table 4 shows that with spearman test results show that population living in households using an improved water source, Population living in households with basic water service, Population living in households with an improved sanitation facility, Population living in households with a basic handwashing facility, with soap and water available in relation to COVID-19 transmission, with each correlation coefficient of 0.421, 0.506, 0.374, 0.243 and 0.399 respectively, Table 5 showed; communication channels relevant to the prevention of Covid-19 are the availability of electricity 0,489, Households possessing a television 0,513 and Households possessing a mobile telephone 0,464.

Tabel 5. Linear regression showing determining Confirm Case Covid-19

Ownership of electricity, television and telephone	Confirmed cases Covid-19	
	Correlation Coefficient	p-value
Population with electricity	0,489**	0,001
Households possessing a television	0,513**	0,000
Households possessing a mobile telephone	0,464**	0,002

**Correlation is significant at the 0,01 level (2-tailed),
* Correlation is significant at the 0,05 level (2-tailed),

DISCUSSION

Human-to-human transmission of extreme acute coronavirus 2 (SARS-CoV-2) respiratory syndromes occurs most frequently when a person is in a disease or carrier's incubation process and has no symptoms[17] Hand washing and maintaining social distance are the main measures recommended by the World Health Organization (WHO) to avoid contracting COVID-19[10]. Early on in the outbreak, general recommendations were made for regular washing of hands to reduce the spread of infection. With COVID-19's new, unabated global scope, international compliance with handwashing frequency and technique is more critical than ever before.

This Study showed population living in households using an improved water source, Population living in households with basic water service, Population living in households with an improved sanitation facility, Population living in households with a basic handwashing facility, with soap and water available in relation to COVID-19 transmission, with each correlation coefficient of 0.421, 0.506, 0.374, 0.243 and 0.399.

Learn from Wuhan, China 42,05% of the primary school students showed a good behavior of hand-washing, Gender, grade, out-going history, father's occupation, mother's educational background, and the time filling out the survey were significantly associated with hand hygiene[6] Residents have a high awareness rate of the main symptoms, transmission routes, using of masks, hand washing and treatment information of Novel coronavirus pneumonia[18].

Early on in the outbreak, general recommendations were made for regular washing of hands to reduce the spread of infection. With COVID-19 's new, unabated global scope, international compliance with handwashing frequency and technique is more critical than ever before. A popular method developed by the World Health Organization (WHO) to enhance hand hygiene involves an efficient six-stage hand-washing procedure that has been widely used with the use of a multi-modal approach; however, consistent implementation can be difficult. Besides recalling all six steps of the technique and having to wash hands for the necessary length of time, there may be a lack of knowledge about the value of handwashing technique in reducing the microbial burden on hands. This lack of knowledge should not be shocking, since most hand hygiene promotion campaigns concentrate on action signals ('when to clean hands') rather than technique ('how to clean hands'). Consequently, continuing to promote the appropriate handwashing technique is currently of paramount importance to the world population, especially given the disproportionate burden of COVID-19 on older adults and emerging evidence of asymptomatic shedding[19].

Results of studies on SARS-CoV-2 stability at different levels show that this virus's resistance to smooth surfaces is higher than others. Increased temperature and sunlight will promote SARS-COV-2 degradation, as well as surface stability. The number of total cases decreases by 0.86 per cent when the minimum air temperature rises by 1°C[17].

However the behavior of washing hands using soap also has a negative effect. As hygiene recommendations develop during the COVID-19 pandemic and community members adopt changing practices, dermatologists are likely to see an increase in adverse skin reactions due to prolonged exposure to irritants and widespread use of antimicrobials[20]. Frequent hand washing requires prolonged exposure to water and other chemical or physical agents, which can cause many pathophysiological changes, such as degradation of the epidermal barrier, keratinocyte damage, subsequent release of proinflammatory cytokines, activation of the skin immune system, which delayed-type hypersensitivity reactions. Adverse dermatological effects, such as excessive dryness of the skin or even contact dermatitis (particularly the irritant subtype and, to a lesser degree, the allergic subtype), may occur, especially in people with a history of atopic dermatitis. Such skin conditions are completely manageable and applying a moisturizer directly after washing hands or using a handheld hand sanitizer is the key in avoiding eczematous hand changes. The possible incidence of such dermatological adverse effects in the current global environment will in no way cause people to deviate from strict guidelines on hand

hygiene[13]. COVID-19 was found to be the most common cutaneous manifestation of maculopapular exanthem (morbilliform) in 36.1 percent. The other cutaneous manifestations included: a papulovesicular rash (34.7%), hives (9.7%), painful acral red purple papules (15.3%). Most of the lesions were located on the trunk (66.7%), but 19.4% of patients had skin manifestations in their hands. Development of skin lesions occurred in 12.5 percent (9/72) of patients prior to the onset of respiratory symptoms or COVID-19 diagnosis, and lesions spontaneously cured in all patients within 10 days. Most of the studies reported no correlation between severity of COVID-19 and skin lesions[21].

In this study also shows that ownership of electricity, television and telephone ownership are also related to how people can obtain information related to COVID-19. people can get information related to COVID-19 through telephone or smartphone or through the internet. The internet is a fantastic source of knowledge about wellbeing and has the potential to influence its users. The knowledge contained on the internet, however, is often lacking in scientific rigour, because anyone can upload material. This factor is a cause of great concern to scientific societies, governments, and users. Study to analyze online details on coronavirus prevention 2019 (COVID-19). In total, it reviewed 80 weblinks. Most of them were generated by digital media outlets and official public health organizations in the United States and Spain (n=58, 73%) (n=60, 75%). The most frequently mentioned WHO preventive measure was "frequently washing your hands" (n=65, 81%). Analysis by author type (official public health organizations versus digital media) revealed significant differences in the recommendation to wear a mask when you are healthy only when caring for a suspected COVID-19 OR 4.39). Significant variations were observed with respect to guidelines such as "frequently washing your hands" with OR 9.82[22].

CONCLUSIONS

Population living in households using an improved water source, households with basic water service, households with an improved sanitation facility, households with a basic handwashing facility, with soap and water available in relation to COVID-19 transmission, with each correlation coefficient of 0.421, 0.506, 0.374, 0.243 and 0.399.

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