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SOCIODEMOGRAPHIC, KNOWLEDGE AND ATTITUDE TOWARD COVID-19 PREVENTION MEASURE IN GIRI AGUNG VILLAGE, EAST KALIMANTAN, INDONESIA: A CROSS-SECTIONAL STUDY

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ABSTRACT

Introduction: In mid-2022, a Central Statistics Agency (BPS) survey reported that Indonesian people's compliance with COVID-19 prevention measures ranged between 70-84%. Many studies have also measured preventive behavior in urban areas but are still limited to rural areas. The information exposure of rural communities can be much different from that of urban communities, facilitated by technological developments. **Aims**: This research looked at COVID-19 prevention behavior in rural settings, which is essential to support targeted prevention programs. **Methods**: This study employed a quantitative study design with an analytical observational design through a cross-sectional approach. Residents aged 17 to 55 were recruited in Giri Agung Village, Sebulu, Kutai Kartanegara, East Kalimantan. Chi-square and Binary Logistic Regression were used to analyze the data. **Result**: This research found a significant association between gender (*p*-value=0.002), education (*p*-value=0.003), knowledge (*p*-value=0.008), and attitudes (*p*-value=0.001) toward COVID-19 prevention measures. We discovered that education level most influenced prevention measures in binary logistic regression. **Conclusions**: Knowledge is one of the most critical factors in realizing action because it can build trust to perceive reality, make decisions, and determine actions to be taken on an object.

Keywords: COVID-19, socio-demography, knowledge, attitude, preventive measure

INTRODUCTION

In 2019, people around the world were shocked by the emergence of severe infections of the respiratory tract triggered by the novel coronavirus called SARS-CoV-2, which later became known as COVID-19. Coronavirus disease (COVID-19) is a severe condition which continues to feast in numerous countries globally and has become a significant global health problem. Based on WHO data, as of January 14, 2022, there were 318,648,834 confirmed COVID-19 cases worldwide, with 5,518,343 deaths spread across 226 countries, including Indonesia (Indonesia COVID-19 Task Force, 2022). COVID-19 can spread whichever via direct interaction with infected individuals or via contamination of object or the environment by the SARS-CoV-2-virus. Transmission occurs through objects when a healthy person touches droplets attached to and containing SARS-CoV-2 (World Health Organization, 2020).

The response to this pandemic is a severe challenge due to limited knowledge regarding the epidemiological data for this illness involves characteristics of its spread dynamics, epidemic twofold duration, and reproduction frequencies (Li et al., 2020). Apart from that, prevention by providing vaccination is not the only reliable solution to overcome this pandemic. Another effort to disseminate educational information to the public so that people understand appropriate preventive behavior, such as maintaining social distance and cleanliness, is significant in preventing and controlling the spread of the epidemic.

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Therefore, to reduce the number of these problems, one thing that needs to be done is to implement preventive behavior. Health behavior is all a person's activities that can be detected directly or indirectly related to maintaining and improving healthy behavior (Notoatmodjo, 2014).

People's behavior is predisposed by predisposing factors (such as demographic characteristics, beliefs, knowledge, and attitudes), enabling (such as distance to health facilities), and reinforcing (family support, environment, and community figures) (Chandra *et al.*, 2019). A lack of knowledge will encourage people to engage in harmful behavior to prevent disease (Lee and Wu, 2014). Knowledge is one of the initial factors expected to have a positive relationship to behavior. The more advanced a person's knowledge, the lower the risk of COVID-19 because they understand what they need to do (Mayasari, Ikalius and Aurora, 2021). Meanwhile, knowledge is essential to people's changing behaviors, but it also influences other elements (Liu *et al.*, 2016). Attitude also influences people's behavior; a positive attitude will result in positive behavior, and vice versa. On the other side, one of the factors that can affect people's behavior is their sociodemographic, examples include but are not limited to age, gender, occupation, education level, religion, ethnicity, income, family type, marital status, geographic location, and social status (Schäfer *et al.*, 2012).

Increasing a person's age can affect various conditions of their body, where increasing age causes almost all organ and movement functions to decrease, followed by a decrease in the body's immunity (Mayasari, Ikalius, and Aurora, 2021). Previous research stated an association among age and COVID-19 preventive measures, as evidenced by good preventive behavior in people in the adult age category (26-45 years) (Khairunnisa, Sofia and Magfirah, 2021). Gender can also influence a person's actions. Another research revealed a connection between gender and COVID-19 prevention measures (p.value= 0.000) (Sari *et al.*, 2020). Education level can influence COVID-19 prevention measures, as research states a significant relationship exists between education level and COVID-19 prevention measures with p.value= 0.000. The work type also relates to COVID-19 prevention measures (Gannika and Sembiring, 2020). A study studied the relationship among type of work and COVID-19 prevention measures and found a significant association among type of work and COVID-19 prevention measures (p.value = 0.007) (Suharmanto, 2020).

The spread of COVID-19 also occurred in all provinces in Indonesia. DKI Jakarta is in first place with the most cases, namely 1,153,895 people (21.3%), while East Kalimantan is in 7th place with 181,741 people (3.4%). According to statistics regarding the spread of COVID-19 cases nationally until February 2022, there were 5,504,418 confirmed cases with 578,535 active cases, 4,778 recovered cases and 147,844 people died (Satgas COVID-19, 2021). Since the emergence of the first COVID-19 case in Indonesia until December 2021, the total positive cases reported in Kutai Kartanegara reached 26,155 people with 843 deaths. This case is spread across 18 sub-districts in Kutai Kartanegara District (Dinkes Kukar, 2021).

Several studies have approved the association between knowledge, attitude, sociodemographic, and COVID-19 preventive measures in society (Sulistyawati *et al.*, 2021; Purnama and Sofiana, 2023). However, it was completed in a general geographic location and not separated between rural and urban areas. At the same time, the social situation between urban and rural is undoubtedly different, including access to information and daily activities that will determine their response to COVID-19 prevention behavior. As an archipelagic country with a diverse population, Indonesia needs to

conduct a specific behavioral assessment to formulate prevention programs effectively and efficiently.

Indonesia is an archipelagic country with various landscapes consisting of 38 provinces, more than 400 districts, 7000 sub-districts, and more than 80 thousand villages. Of these villages, 74,961 (90%) have rural characteristics, including Giri Agung Village and Sebulu sub-district (Ministry of Internal Affairs of Indonesia, 2022). Classifying urban and rural areas in Indonesia refers to Indonesian laws and regulations that consider population density, agricultural households' percentage, and urban facilities' presence (Indonesia Statistical Bureau, 2010). The large number of villages in rural settings demonstrates the importance of studying COVID-19 prevention measures in that setting to provide appropriate evidence.

Giri Agung Village is in the Sebulu sub-district, part of Kutai Kartanegara District, East Kalimantan Province, Indonesia. This location has also experienced increased COVID-19 cases since the beginning of COVID-19 spread from zero to 61 cases until this research was conducted. According to researcher observation, the residents of Giri Agung Village still do not have sufficient compliance to follow COVID-19 protocols, mainly when leaving their houses. Many people still don't wear masks, don't bring hand sanitizer on trips, don't wash their hands after returning home, and don’t keep a physical distance when COVID-19 is present. As a result, assessing the relationship between sociodemographic, knowledge, attitude, and COVID-19 preventive measures in Giri Agung is critical and serves as a model for rural Indonesian settings. The diversity of community characteristics and exposure to information will influence behavior and knowledge, influencing the response to COVID-19 prevention. This research aimed to look at COVID-19 prevention behavior in rural settings.

METHODS

This research employed a quantitative and analytical observational design applying a cross-sectional approach, which is epidemiological research that is most often used in the health sector. This approach studies the association between risk factors and the disease outcome. Measurements of the independent variable and dependent variable were carried out simultaneously (Irmawartini and Nurhaedah, 2017) conducted on 298 residents (aged 17–55 years) of Giri Agung Village, Sebulu, Kutai Kartanegara Regency, East Kalimantan Province, from April to June 2022.

Variables refer to objects or phenomena that are the focus of observation during research. These variables become research subjects and are analyzed through various measurement methods to obtain data that will be processed and produce helpful information (Adiputra, 2021). This study's independent variables are sociodemographics (age, gender, occupation, education level), knowledge, and attitudes. Meanwhile, the dependent variable is COVID-19 prevention measures in the community. Knowledge classification is categorized as low if the total score is ≤ median (7) and high if the total score is ≥ median (7). Attitudes are reported as negative if the total score is ≤ median (24) and positive if the total score is ≥ median (24). Meanwhile, practice is classified as bad if the score is ≤ median (23) and good if the score is ≥ median (23). All the variables were collected using questionnaire that was pretested before being used in another location having similar characteristics. The questionnaire was then administered by the researcher for entry, coding and analysis.

The inclusion criteria of the participants were 1) healthy residents who had lived in Giri Agung Village at the time of the study for ≥ six months and 2)

residents between 17–55 years old. While exclusion criteria were: 1) people who have experienced or are currently experiencing mental disorders. 2) refused to be interviewed.

The population for this study was 1,327 residents. Sample was calculated using cross sectional sampling formula by considering a 5% margin error, 95% confidence level, and 50% response distribution. Accordingly, the minimum sample size was 298. In this study we included 398 respondent that were selected using simple random sampling.

Descriptive statistics assessed the sociodemographic, knowledge, and attitude versus preventive measures. Binary logistic regression was used to know the risk factor for having preventative measures. The bivariate analysis calculated the crude odds ratio (COR) with a corresponding 95% confidence interval (95% CI). Before the data collection, each participant signed an informed consent that the Universitas Ahmad Dahlan Ethical Board approved with approval number 012111091.

RESULT

Table 1 shows that among the 298 respondents, 180 (60.5%) were adults. Over 50% of the people who participated were female (154, or 51.7%), and the rest were male. Most of the respondents were unemployed (51.7%). The majority of the respondents had completed primary education (57.7%). More than 60% of the respondents have poor knowledge of COVID-19. About 60% of our respondents had a negative attitude toward COVID-19. Last, only approximately 45% of the respondents had sufficient preventive measures related to COVID-19.

Table 1. Characteristics of respondents in Giri Agung Village, Kutai Kartanegara District

Variable	Frequency (n = 298)	Percentage
Age		
Teenager (17-25 yo)	67	22.5
Adult (26-45 yo)	180	60.4
Middle Age (46-55 yo)	51	17.1
Gender		
Male	144	48.3
Female	154	51.7
Occupation		
Employed	144	48.3
Unemployed	154	51.7
Education		
Primary education (primary, junior high school)	172	57.7
Middle education (senior high school)	114	38.3
Higher education	12	4.0
Knowledge		
Poor (Total Score ≤ median)	183	61.4
Good (Total Score ≥ median)	115	38.6
Attitude		
Negative (Total Score ≤ median)	179	60.1
Positive (Total Score ≥ median)	119	39.9

Variable	Frequency (n = 298)	Percentage
Preventive Measure		
Not Sufficient (Total Score ≤ median)	162	54.4
Sufficient (Total Score ≥ median)	136	45.6

According to Table 2, we found four related variables and two unrelated variables with no relationship with COVID-19 prevention measures. Variables that are not linked are age (P = 0.606) and type of work (P = 0.825), while variables that are related are gender (P = 0.002), education (P = 0.003), knowledge (P = 0.008), and attitude (P = 0.001). Those mentioned variables are included in the multivariate analysis.

Table 2. Association between independent factors and COVID-19 preventive measures

Variable	COVID-19 Prevention Measure				PR (95% CI)	P-value
	Not Sufficient		Sufficient			
	n	%	n	%		
Gender						
Male	92	63.9	52	36.1	1.40 (1.13-1.73)	0.002
Female	70	45.5	84	54.5		
Age						
Teenager (12-25 yo)	38	56.7	29	43.3	-	0.825
Adult (26-45 yo)	98	54.4	82	45.6		
Middle Age (46-55 yo)	26	51.0	25	49.0		
Education	101	58.7	71	41.3	-	0.003
Primary education (primary, junior high school)	60	52.6	54	47.4		
Middle education (senior high school)	1	8.3	11	91.7		
High education	101	58.7	71	41.3		
Occupation						
Not Working	81	52.6	73	47.4	0.93 (0.76-1.15)	0.606
Working	81	56.3	63	43.8		
Knowledge						
Poor	111	60.7	72	39.3	1.36 (1.08-1.73)	0.008
Good	51	44.3	64	55.7		
Attitude						
Negative	112	62.6	67	37.4	1.48 (1.17-1.89)	0.001
Positive	50	42.0	69	58.0		

Table 3. Binary logistic regression analysis of factors influencing COVID-19 prevention measure.

Factors	**Multivariable logistic regression**		**P-value***
	COR	**95% CI of COR**	
Gender			
Female (ref)	1.00		0.008
Male	1.98	1.19-3.18	
Education			
High Education (ref)	1.00		
Middle Education	8.46	1.02-69.84	0.047
Primary Education	10.23	1.25-83.41	0.030
Knowledge			
Good (ref)	1.00		0.026
Poor	1.78	1.07-2.96	
Attitude			
Positive (ref)	1.00		0.004
Negative	2.05	1.25-3.37	

DISCUSSION

COVID-19 is a health issue that is easily spread through the SARS-CoV-2 virus. To control the spread of cases, preventive measure needs to be implemented by everyone. Unfortunately, there is still a lack of awareness in the community regarding the urgency of implementing these preventive measures. Specific considerations influence community decisions in taking steps to prevent COVID-19. The actions taken were also influenced by internal and external factors related to the individual.

In this research, sociodemographic aspects were analyzed using age, gender, type of work, and level of education. Meanwhile, other independent variables include community knowledge and attitudes. The age variable is divided into three categories, namely teenagers (17-25 years), adults (26-45 years), and elderly (46-55 years). Gender refers to the general division in Indonesia, namely men and woman. Education levels range from elementary, middle, and high school to college. However, in the context of this research, education level includes three categories, namely primary education (SD-SMP), secondary education (SMA), and higher education (diploma, bachelor, master, doctorate).

The various types of work in the Giri Agung Village community include multiple professions, such as pupils, students, farmers, laborers, entrepreneurs, state officials, teaching staff, health workers, and homemakers. In the framework of this research, work is combined into two categories, namely, those who work and those who do not.

Work refers to economic activities to obtain wages or profits to meet daily living needs. Types of work included in the work category include farmers, laborers, entrepreneurs, state officials, and prevention practice. The more educated a person is, the better they will respond to COVID-19 prevention efforts. Furthermore, people with a high level of education will find it easier to obtain and comprehend information. This study's findings are consistent with previous research indicating that education level is linked to COVID-19 preventative measures (,Gomes da Silva *et al.*, 2021; Tadesse et al., 2021). This is due to the close relationship between education and knowledge, one factor in creating action.

The higher an individual's degree of education, the more likely they are to adopt a healthier lifestyle and take better care of their health, and vice versa. Knowledge is one of the most critical factors in realizing action because it can build trust to perceive reality, make decisions, and determine actions to be taken on an object. Several factors influence the community's level of knowledge, including education, information, socio-cultural and economic factors, the environment, experience, and age (Institute of Medicine (US) Committee, 2006). The findings of this study are similar to the results of previous study, which stated that there is a link among knowledge and COVID-19 prevention measures - (Sulistyawati *et al.*, 2021;,Tadesse *et al.*, 2021; Bukata *et al.*, 2022). Knowledge is an essential aspect in determining actions taken by society. Good actions will be realized if people are exposed to or gain knowledge and create a good response. However, if knowledge is good but the community's response is wrong, then bad actions will also arise. The level of knowledge of the people of Giri Agung Village is related to COVID-19 prevention measures because their level of knowledge is in line with the actions taken. Communities with a higher of knowledge create good actions, and communities with a lower of knowledge create low levels of COVID-19 prevention measures. Knowledge can be essential in improving people's preventive behavior practices, as our results show that knowledge is associated with preventive (Lee, Kang and You, 2021). knowledge can attain anticipated changes though it is difficult to determine the extent to which adequate knowledge can attain anticipated changes in health outcomes, the influence of knowledge on health behavior has been confirmed in various areas of public health (Lin *et al.*, 2014).

This study shows that people with poor knowledge have destructive COVID-19 prevention behaviors. In rural settings in Indonesia, many residents are ignorant of health protocols due to a lack of understanding of the risk factors for COVID-19. They feel they will not be exposed to COVID-19 due to low mobility in rural areas. Also, they deny the existence of COVID-19. A similar phenomenon was discovered in China, where rural residents were less likely to use preventive measures (Chen and Chen, 2020).

A person's attitude is their closed response to a stimulus, a manifestation that can be seen in action. The development of COVID-19 prevention measures begins with an understanding of a stimulus. The acquisition of new knowledge about specific objects will elicit an internal reaction an attitude, eventually manifest as action. The emergence of new knowledge about objects will generate an inner response in the form of an attitude, and eventually manifest as action, including preventing COVID-19. Attitude plays a role in the development of action; a positive attitude will result in suitable activities, whereas a negative attitude will result in wrong actions (Katoa *et al.*, 2016).

Our result revealed that out of 298 respondents, 179 (60.1%) had a negative attitude regarding COVID-19 preventative

methods. The finding of this study is consistent with the previous research, which reported that attitude is a supportive factor for the community in taking COVID-19 prevention measures (Yesuf and Abdu, 2022). According to the findings of this study, the number of people who lack knowledge is nearly equal to the number of people who engage in risky behavior regarding COVID-19 prevention. As a result of these data, the knowledge possessed affects behavior when responding to a case.

Someone with a positive attitude will likely implement preventive measures against COVID-19. These results derive from several sources used for the authenticity of the research with the conclusion there is a link between attitudes and preventative measures for COVID-19; (Lubis, 2021; Ray et al., 2021; Rumere 2021). Research conducted previously explained that attitudes were related to COVID-19 prevention measures among taxi drivers in Tomohon City. Because a person's good attitude impacts suitable COVID-19 prevention measures as well (Dharmaputra Pandelaki *et al.*, 2022). Factors that influence the formation of an attitude include both internal and external variables. Internal factors come from within a person, namely in the form of selectivity. With these factors, people will consider options that are responses to stimuli. External factors come from outside the individual himself, such as the nature of the group that supports the attitude or the situation and conditions when the attitude was formed.

The people of Giri Agung Village who show a positive attitude are in line with good behavior. In contrast, people with negative behavior tend to take fewer good preventative actions more often. Therefore, the contribution of community attitudes in the village can be seen in efforts to create preventive measures against COVID-19.

The logistic regression test found that gender, secondary education, higher education, level of knowledge, and attitude significantly influenced COVID-19 preventive measures, indicated by a p-value <0.05. The variable with the most significant influence is the basic education level, with an influence of 10,230.

Individuals with a basic level of education have a 10.2 times higher risk of committing adverse actions against COVID-19 when compared to those with a higher education level. This phenomenon may be caused by the influence of education level on a person's mindset. People with low levels of education feel satisfied with the information they receive briefly. This mindset needs more motivation to dig deeper into information, ultimately impacting daily behavior. People with a higher level of education, however, tend to have broader knowledge and more significant curiosity to implement practical prevention efforts better. In general, people with higher levels of education tend to have a more developed mindset. This viewpoint aligns with prior research that indicates a negative association between educational attainment and adherence to COVID-19 preventive measures, which means that the higher the level of education, the better the behavior created. This level of education is usually in line with society's knowledge level (Pangkey *et al.*, 2022).

Individuals with a low level of knowledge are 1.8 times more likely to engage in negative behaviors connected to COVID-19 compared to individuals with a high level of knowledge. Individuals with a high level of knowledge tend to make more mature considerations before acting because knowledge is considered a basis or predisposing factor in the formation of behavior, following the behavioral theory proposed by Lawrence Green. This finding is consistent with the findings of prior research, which demonstrated that individuals with limited knowledge had a 33-fold greater likelihood of engaging in inadequate COVID-19 preventive practices compared to individuals with extensive

knowledge (Fauziah, Yuliasari and Febriyanti, 2021).

Men have a higher vulnerability to COVID-19 compared to women, based on their gender. Men usually leave the house more because of work. Other factors are chromosomal factors and hormones. Women have an x chromosome and the hormone progesterone, which provides innate and adaptive immunity. Women usually have better knowledge of COVID-19 risk factors than men. It is also suspected that more men are active smokers (Susilo *et al.*, 2020).

A person with a negative attitude has a 2.1 times greater risk of taking poor precautions against COVID-19 than one with a positive attitude. Negative attitudes will create unfavorable views and tend to dislike COVID-19 prevention behavior; this will cause respondents to react with a response of distrust toward COVID-19 prevention behavior, emotionally uncomfortable taking precautions such as wearing masks and washing hands regularly and tend to act with poor behavior in implementing COVID-19 prevention behavior (Fauziah, Yuliasari and Febriyanti, 2021).

The results of this study show that age and occupation are not related to COVID-19 prevention measures. The absence of a relationship between age and COVID-19 prevention measures in Giri Agung Village can be caused by the fact that there are no significant differences in COVID-19 prevention behavior between age groups. This research is in line with the previous research regarding COVID-19 prevention behavior in terms of individual characteristics and community attitudes which concluded that age has no relationship with COVID-19 prevention actions because the three age groups have a high proportion of almost the same (Riana Sari *et al.*, 2020).

The chi-square test results show that occupation has no relationship with the COVID-19 prevention measures taken by the people of Giri Agung Village. This can happen because there is no significant difference between the numbers of people not working and working and the creation of good or poor actions. People who don't work don't necessarily have poor actions because nowadays information can be obtained and accessed anytime and anywhere. When the public has good enough information about preventive measures for COVID-19, they can take action into consideration. This research is in line with prior research which concluded that people's type of work is not related to COVID-19 prevention measures (Riana Sari *et al.*, 2020).

This study may have a limitation related to using a median value threshold for classifying knowledge, attitude, and prevention measures during the analysis, which could be biased due to the rural setting, which could be a problem with information transfer or access. As a result, the score may need to be considered. Aside from that, this article provides a portrait of COVID-19 prevention in rural areas that had previously gone unnoticed because resources, including research, had been directed toward urban areas with large populations and modernization settings.

CONCLUSIONS

Based on the results of this investigation, education is the most influential factor in COVID-19 prevention, while gender, knowledge, and attitude are the other factors. The public is expected to improve their COVID-19 prevention practices by complying with health protocols to prevent a potential increase in cases in the future. Using a mask when leaving the house or participating in gatherings is recommended. It is hoped that the community will remind each other of the preventive behavior needed to fight COVID-19. The appropriate authorities should pay attention to this issue and implement health promotion programs that target the most influential groups, such as men and people with primary education.

REFERENCES

Adiputra, I.M.S.A., Siregar, D., Anggraini, D.D., Irfandi, A., Trisnadewei, N.W., Sari, M.H.N., Oktaviani, N.P.W., Laksmini, P., Supinganto, A., Pakpahan, M., Listyawardhani, Y., Islam, F., and Ani, M. (2021) *Statistik Kesehatan: Teori dan Aplikasi*. Medan: Yayasan Kita Menulis.

Bukata, I.T. *et al.* (2022) Knowledge, Attitudes, and Practice Toward Prevention of COVID-19 Among Jimma Town Residents: A Community-Based Cross-Sectional Study. *Frontiers in Public Health*, 10(April), pp. 1–10. https://doi.org/10.3389/fpubh.2022.822116

Chandra, B. *et al.* (2019) Influence of Predisposing, Enabling, and Reinforcing Factors on the Election of Seeking of Birth Attendant in Health Care Community of Kota Padang in 2018. In *ICHP The First International Conference on Health Profession*, pp. 222–231. https://doi.org/10.18502/kls.v4i15.5763

Chen, X. and Chen, H.H. (2020) Differences in preventive behaviors of covid-19 between urban and rural residents: Lessons learned from a cross-sectional study in china. *International Journal of Environmental Research and Public Health*, 17(12), pp. 1–14. https://doi.org/10.3390/ijerph17124437

Dharmaputra Pandelaki, Y. *et al.* (2022) *Hubungan Antara Pengetahuan Dan Sikap Dengan Tindakan Pencegahan COVID-19 Pada Pengemudi Taksi Online Di Kota Tomohon*, *Jurnal KESMAS*.

Dinkes Kukar (2021) *Laporan Harian Covid-19 Kukar*.

Fauziah, N.A., Yuliasari, R. and Febriyanti, H. (2021) Hubungan Pengetahuan dan Sikap Ibu Hamil dengan Perilaku Pencegahan COVID–19 dalam Adaptasi Kebiasaan Baru. *Journal of Research in Social Science and Humanities*, 1(1), pp. 9–15. https://doi.org/10.47679/jrssh.v1i1.6

Gannika, L. and Sembiring, E. (2020) Tingkat Pengetahuan dan Perilaku Pencegahan Coronavirus Disease 2019 (COVID-19) Pada Masyarakat Sulawesi Utara. *NERS: Jurnal Keperawatan*, 16(2). https://doi.org/10.25077/njk.16.2.83-89.2020

Gomes da Silva, J. *et al.* (2021) Education as a Predictor Factor for Knowledge of COVID-19 in Portugal. *Frontiers in Public Health*, 9(September), pp. 1–8. https://doi.org/10.3389/fpubh.2021.680726

Indonesia COVID-19 Task Force (2022) *COVID-19 Distribution*. (Accessed: 14 January 2022).

Indonesia Statistical Bureau (2010) *Peraturan Kepala Badan Pusat Statistik Nomor 37 Tahun 2010: Klasifikasi Perkotaan dan Perdesaan di Indonesia*. 2nd edn. Jakarta: Indonesia Statistical Bureau.

Institute of Medicine (US) Committee (2006) *The Impact of Social and Cultural Environment on Health*. Washington: National Academies Press (US).

Irmawartini and Nurhaedah (2017) *Metodologi Penelitian*. Jakarta: Pusat Pendidikan Sumber Daya Manusia Kesehatan.

Katoa, K. *et al.* (2016) Positive Attitude Towards Life, Emotional Expression, self-rated health, and depressive symptoms among centenarians and near-centenarians. *Physiology & Behavior*, 20(9), pp. 930–939.

https://doi.org/10.1080/13607863.2015.1056770

Khairunnisa, Z., Sofia, R. and Magfirah, S. (2021) Hubungan Karakteristik Dan Tingkat Pengetahuan Dengan Perilaku Pencegahan Covid-19Pada Masyarakat Desa Paya Bujok Blang Pase Kota Langsa. *Jurnal Averrous*, 6(1), p. 53. https://doi.org/10.29103/averrous.v7i1.4395

Lee, M., Kang, B.A. and You, M. (2021) Knowledge, attitudes, and practices (KAP) toward COVID-19: a cross-sectional study in South Korea. *BMC Public Health*, 21(1). https://doi.org/10.1186/s12889-021-10285-y

Lee, Y.C. and Wu, W.L. (2014) The effects of situated learning and health knowledge involvement on health communications. *Reproductive Health*, 11(1). https://doi.org/10.1186/1742-4755-11-93

Li, Q. *et al.* (2020) Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus–Infected Pneumonia. *New England Journal of Medicine*, 382(13), pp. 1199–1207. https://doi.org/10.1056/NEJMoa2001316

Lin, L. *et al.* (2014) Media Use and Communication Inequalities in a Public Health Emergency: A Case Study of 2009–2010 Pandemic Influenza a Virus Subtype H1N1. *Public Health Reports*, 129(6_suppl4), pp. 49–60. https://doi.org/10.1177/00333549141296S408

Liu, L. *et al.* (2016) Use of a knowledge-attitude-behaviour education programme for Chinese adults undergoing maintenance haemodialysis: Randomized controlled trial. *The Journal of International Medical Research*, 44(3), p. 557. https://doi.org/10.1177/0300060515604980

Lubis, D.A.S. (2021) Hubungan Tingkat Pengetahuan dengan Sikap dan Perilaku terhadap Pencegahan Infeksi Covid-19 Pada Mahasiswa Semester 6 Fakultas Kedokteran USU. (Accessed: 24 January 2024).

Mayasari, O.P., Ikalius and Aurora, W.I.D. (2021) Faktor-Faktor Yang Berhubungan Dengan Perilaku Masyarakat Dalam Pencegahan Covid-19 Di Wilayah Kerja Puskesmas Kenali Besar Kecamatan Alam Barajo. *Medical Dedication (medic) : Jurnal Pengabdian kepada Masyarakat FKIK UNJA*, 4(1). https://doi.org/10.22437/medicaldedication.v4i1.13467

Ministry of Internal Affairs of Indonesia (2022) *Kemendagri Mutakhirkan Kode, Data Wilayah Administrasi Pemerintahan dan Pulau di Seluruh Indonesia (The Ministry of Home Affairs Updates Codes, Data on Government Administration Areas and Islands throughout Indonesia*).(Accessed: 8 January 2023).

Notoatmodjo, S. (2014) *Ilmu Perilaku Kesehatan, Ilmu Prilaku Kesehatan*. Jakarta: Rineka Cipta.

Notoatmodjo, Soekidjo (2014) *Promosi Kesehatan dan Perilaku Kesehatan*. Jakarta : PT. Rineka Cipta.

Pangkey, M.R.A. *et al.* (2022) Hubungan Antara Umur Dan Tingkat Pendidikan Dengan Perilaku Pencegahan Coronavirus Disease 2019 (Covid-19) Pada Masyarakat Kelurahan Talete 1 Kota Tomohon. *Jurnal KESMAS*.

Riana Sari, A. *et al.* (2020) Perilaku Pencegahan COVID-19 Ditinjau dari Karakteristik Individu dan Sikap Masyarakat. *JPPKMI*, 1(1), pp. 32-37. https://doi.org/10.15294/jppkmi.v1i1.41428

Purnama, J.S. and Sofiana, L. (2023) Association between close contact history and the risk of COVID-19 in Purwakarta District, Indonesia. *Epidemiology and Society Health Review (ESHR)*, 5(1), pp. 32–40. https://doi.org/10.26555/eshr.v5i1.6216

Ray, V.N.M. *et al.* (2021) Hubungan antara Pengetahuan, Sikap, dan Perilaku Masyarakat Terhadap Pencegahan Pandemi COVID-19 di Kota Tanjung Balai. *Jurnal Kedokteran STM (Sains dan Teknologi Medik)*, 4(1), pp. 39–45. https://doi.org/10.30743/stm.v4i1.70

Rumere, B.Y. (2021) Hubungan Antara Pengetahuan Dan SIkap Terhadap Perilaku Pencegahan COVID-19 Pada Mahasiswa Papua Dan Papua Barat Di Kupang Tahun 2021. *Cendana Medical Journal*, *9*(2), pp. 298-305. https://doi.org/10.35508/cmj.v9i2.5983

Sari, A.R. *et al.* (2020) Perilaku Pencegahan Covid-19 Ditinjau dari Karakteristik Individu dan Sikap Masyarakat. *Jurnal Penelitian dan Pengembangan Kesehatan Masyarakat Indonesia*, 1(1), pp. 32–37. https://doi.org/10.15294/jppkmi.v1i1.41428

Satgas COVID-19 (2021) *Sebaran COVID-19*. https://doi.org/10.35580/lageografia.v19i3.18670

Schäfer, I. *et al.* (2012) The influence of age, gender and socio-economic status on multimorbidity patterns in primary care. first results from the multicare cohort study. *BMC Health Services Research*, 12(89), pp. 1–15. https://doi.org/10.1007/s00103-011-1414-y

Suharmanto (2020) Perilaku Masyarakat dalam Pencegahan Penularan COVID-19. *Kedokteran Universitas Lampung*, 4(2).

Sulistyawati, S. *et al.* (2021) Knowledge, Attitudes, Practices and Information Needs During the COVID-19 Pandemic in Indonesia. *Risk Management and Healthcare Policy*, 14, pp. 163–175. https://doi.org/10.2147/RMHP.S288579

Susilo, A. *et al.* (2020) Coronavirus Disease 2019: Tinjauan Literatur Terkini. *Jurnal Penyakit Dalam Indonesia*, 7(1), p. 45. https://doi.org/10.7454/jpdi.v7i1.415

Tadesse, A.W. *et al.* (2021) Preventive Practice and Associated Factors towards COVID-19 among College Students in Amhara Region, Ethiopia: A Cross-Sectional Study. *Ethiopian Journal of Health Sciences*, 31(1), pp. 3–14. https://doi.org/10.4314/ejhs.v31i1.2

World Health Organization (2020) *Transmission of SARS-CoV-2: implications for infection prevention precautions*, *Web*.

Yesuf, M. and Abdu, M. (2022) Knowledge, attitude, prevention practice, and associated factors toward COVID-19 among preparatory school students in Southwest Ethiopia, 2021. *PLoS ONE*, 17(1 January), pp. 1–12. https://doi.org/10.1371/journal.pone.0262907