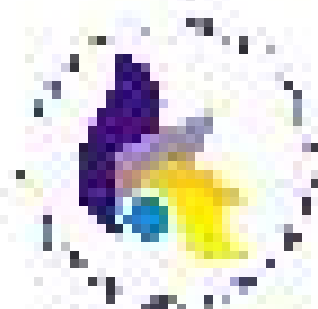


Volume 19 Number 1
March 2019

JURNAL PROMIKES

The Indonesian Journal of Health Promotion and Health Education



Vol. 19
No. 1
March 2019
ISSN 1412-6922

Published by
Indonesian Society of Health Promotion

Factors of Personal Hygiene Habits and Scabies Symptoms at Islamic Boarding School

Shelvi Indah Ayu Puspita¹⁾, Fatma Nur Ardiati¹⁾, Retno Adriyani¹⁾✉, Neil Harris²⁾

¹ Environmental Health Department, Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia

² School of Medicine, Griffith University, Gold Coast Campus, Southport 4222, Australia

Corresponding directed to e-mail: retnoadriyani@fkm.unair.ac.id

ABSTRACT

Background: Scabies is a contagious skin disease caused by mite *Sarcoptes scabiei*. The global incidence of scabies in 2014 was 0.3%-46%, while the incidence of scabies in Indonesia, especially in Banyuwangi Regency was 1871 cases in 2016 and 1730 cases in 2017. **Objective:** The study objective was to determine the relationship between personal hygiene and symptoms of scabies among students. **Methods:** This study was an observational study with a cross-sectional design located at the Salafiyah Syafi'iyah Nurul Amin Islamic Boarding School, Kalipuro, Banyuwangi. The number of students living in Islamic boarding schools was 191 students, the sample size was 63 students by simple random sampling. Data regarding personal hygiene habits were collected in April-May 2020, it used Google Forms sent via WhatsApp application to the students and in-depth interviews with the student caregivers. Data analysis using chi-square test, presented in tables and narrative. **Results:** The results showed that 42.9% of students had symptoms of scabies and there was a significant relationship between personal hygiene and symptoms of scabies, especially in habit of scratching (P value = 0.000) and the habit of using clothes, towels, as well as prayer tools together (P value = 0.012). **Conclusion:** The habit of scratching body parts with nails and using clothes, towels and, prayer tools alternately could be risk factors for the transmission of scabies to students. Students should have good personal hygiene and not share their personal equipment such as clothes, towels, and, prayer tools. The boarding school managers were advised to complete sanitation facilities, to organize a clean and tidy bedroom competition between the students.

Keywords: Infectious diseases, Islamic boarding school, Sanitation, *Sarcoptes scabiei*, Scabies.

INTRODUCTION

The habit of maintaining personal hygiene is one of the efforts to prevent infectious diseases at the individual level to improve their health status (Afienna, 2018). These habits include the habit of washing hands using soap regularly, cleaning the body by bathing, brushing teeth, and wearing clean clothes (Ardiati, 2020). The poor habits of maintaining personal hygiene could induce a risk of developing dangerous and infectious diseases (Atikah, 2012).

Scabies is an infectious disease that attacks the skin tissue, especially in groups of people who have poor personal hygiene habits. This disease is known as scurvy with symptoms of itchy skin due to infection caused by the mite *Sarcoptes scabiei* (Akuta *et al.*, 2021). The itching that occurs due to scabies is caused by

an allergy to mites, mite eggs, and the sticking of dirt on the body (Waru, 2019). The skin of a person suffering from scabies appears reddish patches. Scabies is a disease whose transmission is carried through direct contact with patients, aside from that, the objects that have been contaminated by mites can also transmit scabies disease (Wulandari, 2018; Chandler and Fuller, 2019). Morphologically, *Sarcoptes scabiei* is a small mite, the female is 330-450 x 250-350 μ m and the male is smaller in size 200-240 x 150-200 μ m (Ardianty, 2017).

Scabies is commonly found in tropical countries and is still a health problem that needs to be observed (Pratiwi, 2020; Engelman *et al.*, 2019). According to International Alliance for the Control of Scabies (IACS), the number

of world scabies cases in 2014 was 0.3% to 46% (International Alliance for the Control of Scabies, 2014). The prevalence of scabies in developing countries was considered high, it affected more children and adolescents than adults (Fanissa and Andriyani, 2020). School-age children and adolescents were the highest contributors to scabies disease with an incidence of 6-27% among the total general population (Ihtiarintyas, Mulyaningsih and Umniyati, 2019). According to a study conducted in Kenya, it showed that there was a scabies prevalence of 8.3% in formal schools while the prevalence of scabies in Islamic based schools in Turkey was 61-62% (Baidillah and Khoiriah, 2018; Kouotou *et al.*, 2016).

The prevalence of scabies in East Java Province was at 8.21% in 2012 (Ardiati, 2020). According to data obtained from the Banyuwangi Health Office, the number of scabies cases in Banyuwangi Regency was still high. The Banyuwangi Health Office has found 1871 cases of scabies in 2016, while in 2017 there were 1730 cases of scabies (Dinas Kesehatan Kabupaten Banyuwangi, 2016; Dinas Kesehatan Kabupaten Banyuwangi, 2017). There has been a decrease in the prevalence of scabies every year, however, Banyuwangi Regency was still not completely free from scabies disease.

A high prevalence of scabies is found in places that were occupied by many people, including prisons, orphanages, and Islamic boarding school (Wulandari, 2018). Islamic boarding schools (also known as *pesantren*) are places to live and gather as well as places to get Islamic education (Muafidah, Santoso and Darmiah, 2017).

Study on the incidence of scabies at Al-Baqiyatushshalihat, Tanjung Jabung Barat in 2017 stated that as many as 42.1% students still had poor skin hygiene, as many as 57.9% students of which also still had poor bed and bed linen hygiene, and as many as another 50% students still had poor hand and nail hygiene (Parman *et al.*, 2017). A similar study which was also conducted in 2017 at the Darul Mukhlisin Islamic Boarding School, Kendari City stated that there was a significant relationship between the habit of maintaining personal hygiene

and the incidence of scabies (Ridwan, Sahrudin and Ibrahim, 2017).

Another similar study was also conducted in 2017 at the Darul Ma'arif Islamic Boarding School, Sintang Regency which research results showed that the habit of maintaining personal hygiene had a significant relationship with the incidence of scabies (*P Value* = 0.018; OR = 3.106; 95% CI = 1.296-7.441) (Juliansyah and Juliansyah, 2017). The study conducted in Bandung Regency Islamic Boarding School stated that there was a significant relationship between the incidence of scabies and the habit of maintaining individual hygiene which included the hygiene of clothes, skin, genitalia, toiletries, and beds (Majid, Astuti and Fitriyana, 2020). A more in-depth study to determine the relationship between the incidence of scabies in Islamic Boarding School and the habit of maintaining personal hygiene was needed to be conducted. This study aimed to analyze the relationship between personal hygiene habits and scabies symptoms in students of Islamic Boarding School.

METHOD

This study was an observational study with a cross-sectional approach and was conducted at Salafiyah Syafi'iyah Nurul Amin Islamic Boarding School. This Islamic Boarding School was one of the Islamic Boarding Schools with the biggest contributor to scabies disease in Kalipuro Village, Kalipuro District, Banyuwangi Regency.

Data collection was carried out in April to May 2020, under the conditions of the COVID-19 pandemic. The study population was all students who lived in Salafiyah Syafi'iyah Nurul Amin Islamic Boarding School, Banyuwangi Regency, as many as 191 students. The sample size of the study was 63 samples obtained by using simple random sampling, consisted of 38 female students and 25 male students. The collected data were regarding characteristics, symptoms of scabies, and the habit of maintaining student personal hygiene. Data collection was carried out by using a questionnaire that was distributed through Google form sent via WhatsApp application to the selected students. The questionnaire

used has been tested for content validity. In-depth interviews with the student caregivers were conducted online by telephone and offline through face-to-face contact without violating the applicable COVID-19 protocol rules. The purpose of the interview was to obtain information about the condition of sanitation facilities and the daily habits of students related to personal hygiene.

The dependent and independent variables in this study were the symptoms of scabies and the habit of maintaining personal hygiene of students at Islamic Boarding School. The data were analyzed descriptively and analytically using chi-square test with $\alpha = 0.05$. The study protocol has gained approval from the Health Ethics Commission of Faculty of Public Health, Universitas Airlangga stated on the Ethics Certificate No.52/EA/KEPK/2020.

RESULTS AND DISCUSSION

Banyuwangi Regency has several Islamic Boarding School which is located in several sub-districts. Salafiyah Syafi'iyah Nurul Amin Islamic Boarding School is a boarding school located in Kalipuro Village, Kalipuro District, Banyuwangi Regency. Apart from providing education in the form of Islamic Boarding School, this boarding school also provides formal education from the *Raudhatul Athfal* (RA) level which equivalent to Kindergarten (TK), *Madrasah Ibtidaiyah* (MI) which equivalent to Elementary School (SD), *Madrasah Tsanawiyah* (MTs) which equivalent to Junior High School (SMP) and *Madrasah Aliyah* (MA) which equivalent to Senior High School (SMA) with a total number of 800 students.

The questions given to identify the symptoms of scabies experienced by students including itching in the folds of the hands, feet, elbows, and thighs,

especially at night was presented in Table 1. According to Table 1, it was known that students at Salafiyah Syafi'iyah Nurul Amin Islamic Boarding School in Banyuwangi Regency who had symptoms of scabies were as many as 31 students (49.21%).

Table 1. Frequency Distribution of Scabies Symptoms in Respondents

Scabies Symptoms	N	%
Yes	31	49.21
No	32	50.79
Total	63	100.00

The majority of the students at Salafiyah Syafi'iyah Nurul Amin Islamic Boarding School experienced symptoms of itching in several parts of the body which were the main symptoms of scabies infestation. The main and most commonly found symptoms of scabies was itching at night or nocturnal pruritus (Mutia and Syailindra, 2016).

Table 2 presented descriptive information about the characteristics of the students and the symptoms of scabies. The characteristics of the students studied included gender, age, and the level of education pursued. The relationship between characteristics and symptoms of scabies experienced by students was described descriptively because the result of the analysis which used statistical tests obtained insignificant results. Descriptively, according to gender, female students had a tendency to experience symptoms of scabies (52.63%). According to age, students aged 17-25 years old had the tendency to experience symptoms of scabies (58.33%). While according to education pursued at Salafiyah Syafi'iyah Nurul Amin Islamic Boarding School, students in Madrasah Ibtidaiyah (MA) had the tendency to experience symptoms of scabies (58.33%).

Table 2. Cross Tabulation between Characteristics of Students and Symptoms of Scabies at Salafiyah Syafi'iyah Nurul Amin Islamic Boarding School, Kalipuro, Banyuwangi Regency, in 2020

Student Characteristics	Scabies Symptom				Total	
	Yes		No			
	n	%	n	%	n	%
Gender						
Male	11	44.00	14	56.00	25	100
Female	20	52.63	18	47.37	38	100

Age (years)						
12-16	17	43.59	22	56.41	39	100
17-25	14	58.33	10	41.67	24	100
Level of Education						
Junior High School (MTs)	10	37.04	17	62.96	27	100
Senior High School (MA)	21	58.33	15	41.67	36	100
Total	31	49.21	32	50.79	63	100

The majority of the students at Salafiyah Syafi'iyah Nurul Amin Islamic Boarding School who had the symptoms of scabies were female students. In line with the study conducted in 2016 at Qotrun Nada Islamic Boarding School, Cipayung Depok which stated that as many as 53.6% of the students who suffered from scabies were female students (Ibadurrahmi, Veronica and Nugrohowati, 2016). The results of other similar study stated that most of the students who suffered from scabies were female students (96.2%) (Naftassa and Putri, 2018). It was in contrast to the results of other similar study which stated that most of the students who suffered from scabies were male students (57.81%) (Sutejo, Rosyidi and Zaelany, 2017). Thus, male or female had the same chance to suffer from scabies (Ibadurrahmi, and Nugrohowati, 2016).

The most group of age that experienced the symptoms of scabies was in the age group of 17-25 years. Age group ≤ 25 years was classified as a young age which generally a person at a young age has a limited mindset and lack of experience, thus compared to those at mature age would have more sufficient mindset and experience in preventing the incidence of scabies (Imartha, Wulan and Saftarina, 2017).

In this study, the students who had symptoms of scabies were at Senior High

School (MA) education level. It was in contrast to the results of the study conducted in 2018 which stated that those at senior high school education level would most likely have lower risk to suffer scabies compared to those at junior high school education level (MTs) (Naftassa and Putri, 2018). In general, those with a high education level had a low risk of suffering infectious diseases, thus could minimize the incidence of infectious diseases (Anindya, 2018). The habit of maintaining personal hygiene is the most important thing in achieving one's physical and psychological well-being (Prayogi and Kurniawan, 2016).

The results of the study on the relationship between the habits of maintaining personal hygiene of students with symptoms of scabies experienced by students were presented in Table 3. The habits of maintaining personal hygiene studied were the habit of bathing twice a day, cutting nails, washing hands, scratching the itchy body parts with fingernails, changing clothes every time taking shower, washing clothes with detergent, using shared bedding, wearing clothes, towels, and prayer tools, hanging dirty clothes in the same place as friend's clothes, and drying towels also bedding (bolsters, pillows, mattresses).

Table 3. Cross Tabulation between the Habit of Maintaining Personal Hygiene and the Symptoms of Scabies of the Students at Salafiyah Syafi'iyah Nurul Amin Islamic Boarding School, Kalipuro, Banyuwangi Regency, in 2020

The Habits of Maintaining Personal Hygiene	Scabies Symptoms				Total		P Value
	Yes		No		N	%	
	n	%	n	%			
Bathing							
Yes	29	51.79	27	48.21	56	88.89	0.426
No	2	28.57	5	71.43	7	11.11	
Cutting Nails							
Yes	25	46.29	29	53.71	54	85.71	0.302
No	6	66.67	3	33.33	9	14.29	
Washing Hand							

Yes	31	51.67	29	48.33	60	95.24	0.238
No	0	0.00	3	100.00	3	4.76	
Scratching							
Yes	30	65.22	16	34.78	46	73.02	0.000
No	1	5.88	16	94.12	17	27.08	
Changing Clothes							
Yes	22	45.83	26	54.17	48	76.19	0.338
No	9	60.00	6	40.00	15	23.81	
Washing Clothes							
Yes	29	48.33	31	51.77	60	95.24	0.613
No	2	66.67	1	33.33	3	4.76	
Using Shared Bedding							
Yes	27	47.37	30	52.63	57	90.47	0.426
No	4	66.67	2	33.33	6	9.53	
Wearing Shared Clothes, Towels, and Prayer Tools							
Yes	29	56.86	22	43.14	51	80.95	0.012
No	2	16.67	10	83.33	12	19.05	
Hanging Dirty Clothes							
Yes	12	60.00	8	40.00	20	31.75	0.243
No	19	44.19	24	55.8	43	68.25	
Drying Towels and Bedding							
Yes	18	45.00	22	55.00	40	63.49	0.378
No	13	56.52	10	43.48	23	36.51	
Total	31	49.21	32	50.79	63	100.00	

According to data presented in Table 3, the habits of the students in maintaining personal hygiene that had to be kept including washing hand (95.24%), washing clothes with detergent (95.24%), bathing twice a day (88.89%), and cutting nails (85.71%). Meanwhile, the habits that had to be improved including changing clothes every time taking shower (76.19%), not hanging dirty clothes in the same place as friend's clothes (68.25%), also drying towels, mattresses, pillows, and bolsters (63.49%).

The habits of maintaining personal hygiene including using shared bedding (90.47%), wearing shared clothes, towels, and prayers tools (80.95%), and scratching with fingernails (73.02%) needed to get more attention to prevent in becoming the disease transmission medium, especially scabies. The habits of maintaining the personal hygiene of students that had a significant relationship with scabies symptoms were the habit of scratching with fingernails (P Value = 0.000), and the habit of wearing shared clothes, towels, also prayer tools (P Value = 0.012).

The habit of maintaining personal hygiene in this case including bathing regularly at least twice a day was needed to be maintained by the students at Salafiyah Syafi'iyah Nurul Amin Islamic Boarding School in Banyuwangi Regency. The majority of the students have routinely bathed twice a day. This is a

good habit of maintaining personal hygiene. In this study, the habit of bathing twice a day was not included as a significant risk factor of developing scabies. Bathing is one of the human needs on hygiene to maintain a healthy body. Bathing with soap helps to maintain body hygiene and skin health. The skin is the front line of protection for the body from various dirt, germs, and diseases, including the scabies mite.

Hygiene of hands and nails, namely the habit of cutting nails and washing hands also did not show a significant relationship to scabies symptoms in students at Salafiyah Syafi'iyah Nurul Amin Islamic Boarding School in Banyuwangi Regency. The students have paid close attention to the hygiene of their hands and nails. Hands are the part of the body that most often interacts or form contact with objects around humans.

Unhygienic hands can be a place for various germs and dirt to stick. This was in line with the other similar study which stated that a person who did not maintain good hygiene, especially in terms of hand and nail hygiene, would have a 3.473 times greater chance of suffering scabies compared to those who was able to maintain the hygiene of hands and nails (Parman et al., 2017). Even though in plain sight the hands looked clean, it did not guarantee that the hands were clean from germs and dirt. Germs

and dirt could stick under the nails. Long, dirty, and uncut nails could increase the risk of developing skin diseases (T Carolyne, 2020). Thus, the habit of washing hands and cutting nails must be done regularly to keep the hygiene of the hands and to prevent the risk of developing scabies.

The variable of scratching with nails showed a significant relationship to the onset of scabies symptoms. *Sarcoptes scabiei* mites could easily stick to the parts of the body of those who could not maintain good hygiene of their body and could easily spread to the other parts of the body if the patient had a habit of scratching the lesion or the itchy body parts. This could give easier access to the *Sarcoptes scabiei* mites to move from the nails to other body parts (Affandi, 2019).

In a study that observed the nails of the respondents, some of them were reported positive for having *Sarcoptes scabiei* mites on their nails (Nurohmah, 2018). A person was expected to have an awareness of the importance of maintaining personal health, one of which was through maintaining body hygiene such as took care of the hygiene of skin, hands, nails, clothes, towels, as well as the hygiene of the used bed linen (Prayogi and Kurniawan, 2016). Therefore, maintaining the hygiene of hands is an important thing to do for every individual to prevent the risk of transmitting skin diseases such as scabies.

The habits of using shared clothes, towels, and prayers tools were also showed a significant relationship to the onset of scabies symptoms in students. One of the factors that caused the habit was the insufficient bathroom facilities at Salafiyah Syafi'iyah Nurul Amin Islamic Boarding School in Banyuwangi. The students could only use one shared bathroom for 2 to 3 students at a time. Ideally, one bathroom is used by one person even if used in turns. This condition also allowed the students to use the towels in turns.

A similar study also stated that toiletries such as towels, soap, and so on could be the place for the microorganisms that caused skin diseases to stick on its surface. The microorganism which stuck on the toiletries could be transferred to another person if used in turns (Andani, 2020). The use of shared towels could increase the risk to be infected by scabies

disease from those who suffered scabies to healthy individuals because towels became the indirect contact means of scabies transmission (Darmiah, Muafidah and Santoso, 2017). The incidence of scabies could occur in those with a low socioeconomic status who tend to have insufficient sanitation facilities and infrastructure (Afriani, 2017).

The density of the bedroom occupancy and the use of the bed also need to be considered. The use of one bedroom space for several students increased the possibility of lending each other personal tools for shared use, for example lending each other prayer tools and clothes. Excessive occupancy density was one of the risk factors for scabies transmission (Kementarian Kesehatan Republik Indonesia, 2015). According to the results of a study conducted in 2016 which stated that students who had a poor habit of maintaining personal hygiene were more commonly found in Islamic boarding schools that did not have complete facilities (87.8%) compared to the Islamic boarding schools that had complete facilities (36.5%) (Zakiudin and Shaluhiah, 2016). Sufficient facilities and infrastructure or boarding school facilities have an important role in supporting the activities to maintain the personal hygiene of the students. Efforts to improve the good habits of maintaining personal hygiene, especially among students at Salafiyah Syafi'iyah Nurul Amin Islamic Boarding School in Banyuwangi needed to be improved.

The habit of using shared bedding did not show a significant relationship to the onset of scabies symptoms in students. In line with the results of the study conducted in 2019 at Guidance Institution Special for Children (also known as LPKA) which stated that there was no significant relationship between the use of shared blankets with the incidence of scabies (Ariningtyas, 2019). However, using the shared bedding such as pillows, bolsters, blankets, mats, carpets, and other bedding could lead to the transmission of scabies in students (Affandi, 2019).

The habits of maintaining personal hygiene related to the habits of changing clothes, washing the clothes with detergent, and hanging the dirty clothes at the same place as friend's clothes also did not show a significant

relationship to the onset of scabies symptoms in students. Apart from the limitations of the Islamic boarding school in providing sufficient hygiene and sanitation facilities for each student, it will be better if the students have the habits of diligently washing the clothes that have been worn, separating dirty clothes from clean clothes to prevent the development of microorganisms that can grow easily in humid places, especially on clothes that have been worn.

The habit of drying towels, mattresses, pillows, and bolsters also did not have a significant relationship to the onset of scabies symptoms in students. The students at Salafiyah Syafi'iyah Nurul Amin Islamic Boarding School in Banyuwangi have gotten used to drying their bedding and towels under the sun. This can inhibit the proliferation of mites. Scabies mites were known to survive better in humid places. The more humid the place was, the longer the scabies mites would be able to survive (Naftassa and Putri, 2018). The sunlight will reduce the humidity of towels, mattresses, pillows, and bolsters, as well as kill the scabies mites. These habits must be maintained. Maintaining personal hygiene is one of the prevention efforts in minimizing the occurrence of skin diseases (Marga, 2020) as well as one of the forms of protection for the body to fight germs that could cause skin infections (Nikmah and Widyasih, 2018).

CONCLUSION

There was a significant relationship between the habits of maintaining personal hygiene with symptoms of scabies, especially in the habits of scratching body parts and wearing shared clothes, towels, and prayer tools. The habit of scratching body parts and wearing shared clothes, towels, and prayer tools simultaneously could increase the risk of transmitting scabies disease among students.

The students should improve better habits of maintaining personal hygiene. Manager of Salafiyah Syafi'iyah Nurul Amin Islamic Boarding School in Banyuwangi Regency could complement the facilities of the boarding school in accordance with applicable guidelines to create qualified human resources, hold hygiene competitions, and provide

information through wall magazine with environmental-based topics on personal hygiene habits and skin diseases.

The next suggestion was to minimize two significantly related risks such as scratching with nails could be minimized by washing hands using soap after scratching itchy body parts knowing that the itchy body parts might contain mites that can cause scabies. As for the use of shared goods, the students should be able to get used to not borrowing or lending personal items to others to break the chain of transmission of scabies disease.

ACKNOWLEDGEMENT

The author would like to thank Mrs. Retno Adriyani ST., M.Kes as the supervisor of this article. Hopefully this scientific article can be a reference material and increase knowledge for readers.

REFERENCES

- Affandi, A. A. N. (2019) 'Analisis Personal Hygiene dan Keberadaan Sarcoptes Scabiei di Debu Alas Tidur Warga Binaan Pemasyarakatan pada Kejadian Skabies di Lapas Kelas IIB Jombang', *Jurnal Kesehatan Lingkungan*, 11(3), p. DOI: 10.20473/jkl.v11i3.2019.165-174.
- Afienna, H. (2018) 'Hubungan Personal Hygiene dan Sanitasi Lingkungan dengan Kejadian Penyakit Scabies di Pondok Pesantren Marifatul Ulum Bringin Kabupaten Ngawi', *Skripsi*, p. Tersedia di <http://repository.stikes-bhm.ac.id/335>.
- Afriani, B. (2017) 'Hubungan Personal Hygiene dan status Sosial Ekonomi dengan Kejadian Skabies di Pondok Pesantren', *Jurnal Ilmu Kesehatan*, 2 (1), 1-1, p. <https://doi.org/10.30604/jika.v2i1.25>.
- Akuta, T. et al. (2021) 'Development of A Rapid Scabies Immunodiagnostic Assay Based on Transcriptomic Analysis of *Sarcoptes Scabiei* Var. *Nyctereutis*', *Scientific Reports*, 11(6455), p. Doi: <https://doi.org/10.1038/s41598-021-85290-7>.
- Andani, M. (2020) 'Hubungan Perilaku dan Kepadatan Hunian dengan Penyakit Skabies pada Warga Binaan Pemasyarakatan di Rutan Kelas II B Menggala Tahun 2020', *Diploma Tesis*,

- p. Tersedia di: <http://repository.poltekkes-tjk.ac.id/>.
- Anindya, S. R. (2018) 'Hubungan Kondisi Lingkungan Fisik dan Perilaku Hidup Bersih dan Sehat dengan Kejadian Scabies di Lembaga Pemasarakatan Kelas IIA Jember', Skripsi, p. Tersedia di: <https://repository.unej.ac.id/bitstream>.
- Ardianty, S. (2017) 'Hubungan Pengetahuan dan Sikap Personal Hygiene dengan Kejadian Skabies di SD Negeri 2 Panggung Harjo Kecamatan Air Sugihan Kabupaten Ogan Komering Ilir Sumatera Selatan.', Medika Cendikia, Vol.4 No.2, p. Tersedia di: <http://www.jurnalskhg.ac.id/index.php/>.
- Ardiati, F. N. (2020) 'Hubungan Higiene Personal dan Karakteristik Santri dengan Gejala Scabies di Pondok Pesantren (Studi di Pondok Pesantren Salafiyah Sayfi'iyah Nurul Amin Kalipuro Banyuwangi)', Skripsi. Program Studi Kesehatan Masyarakat. Universitas Airlangga.
- Ariningtyas, D. N. (2019) 'Analisis Karakteristik dan Higiene Individu dengan Kejadian Skabies di Lembaga Pembinaan Khusus Anak (LPKA) Kelas I Blitar', Jurnal Keperawatan Muhammadiyah, (Edisi Khusus), pp. 225-231.
- Atikah, D. (2012) 'Perilaku Hidup Bersih dan Sehat (PHBS)', Nuha Medika, Yogyakarta.
- Baidillah and Khoiriah, N. (2018) 'Beberapa Faktor Risiko Penyakit Gudikan (Scabies) di Pondok Pesantren Binaul Ummah Desa Bawuran, Pleret, Bantul Tahun 2018', Jurnal Kesehatan dan Pengelolaan Lingkungan, 1(1), p. Tersedia di: <http://journal2.uad.ac.id/index.php/j>.
- Chandler, D. and Fuller, L. (2019) 'A Review of Scabies: An Infestation More Than Skin Deep.', Dermatology, 235(2), pp. 79-90.
- Darmiah, Muafidah, N. and Santoso, I. (2017) 'Hubungan Personal Higiene dengan Kejadian Skabies pada Santri Pondok Pesantren Al Falah Putera Kecamatan Liang Anggang Tahun 2016', Journal of Health Science and Prevention, 1(1), p. Doi: <https://doi.org/10.29080/jhsp.v1i1.5>.
- 'Dinas Kesehatan Kabupaten Banyuwangi' (2016) Data Penyakit Menular dan Penyakit Tidak Menular.
- 'Dinas Kesehatan Kabupaten Banyuwangi' (2017) Data Penyakit Menular dan Penyakit Tidak Menular.
- Engelman, D. et al. (2019) 'The Public Health Control of Scabies: Priorities for Research and Action.', Lancet, 394(10192), pp. 81-92.
- Fanissa and Andriyani, Y. (2020) 'The Correlation of Santri's Personal Hygiene to the Incidences of Scabies in Pesantren Al-Kautsar Simalungun (a boarding school).', Journal of Endocrinology, Tropical Medicine, and Infectious Disease, p. <https://doi.org/10.32734/jetromi.v2i1.3494>. doi: 10.32734/jetromi.v2i1.3494.
- Ibadurrahmi, H., Veronica, S. and Nugrohowati, N. (2016) 'Faktor-Faktor yang Berpengaruh terhadap Kejadian Penyakit Skabies pada Santri di Pondok Pesantren Qotrun Nada Cipayung Depok Februari Tahun 2016', Jurnal Profesi Medika, 10(1), p. DOI: <http://dx.doi.org/10.33533/jpm.v10i1.12>.
- Ihtiariningtyas, S., Mulyaningsih, B. and Umniyati, S. R. (2019) 'Risk Factor of Scabies on Students of An Nawawi Islamic Boarding School in Berjan Gebang Subdistrict Purworejo District of Central Java', BALABA, 15(1), p. DOI: <https://doi.org/10.22435/blb.v15i1.1784>.
- Imartha, A. G., Wulan, A. J. and Saftarina, F. (2017) 'Faktor-Faktor yang Berhubungan dengan Kejadian Scabies di Pondok Pesantren Jabal An-Nur Al-Islami Kecamatan Teluk Betung Barat Kota Bandar Lampung', Medula, 7(5), p. Tersedia di: juke.kedokteran.unila.ac.id.
- International Alliance for the Control of Scabies (2014) Scabies.
- Juliansyah, E. and Juliansyah, L. A. M. E. (2017) 'Jenis Kelamin, Personal hygiene, dan Sanitasi Lingkungan dengan Kejadian Penyakit Scabies Pada Santri di Pondok Pesantren Darul Ma'arif Kabupaten Sintang', JUMANTIK: Jurnal Mahasiswa dan Peneliti Kesehatan, Vol.4 No.1, p. <https://doi.org/http://dx.doi.org/10.29406/jjum.v4>. doi: <http://dx.doi.org/10.29406/jjum.v4i1.844>.

- Kemenkes (2015) 'Panduan Praktik Klinis bagi Dokter di Fasilitas Pelayanan Kesehatan Tingkat Pertama'.
- Kouotou, E. A. K. et al. (2016) 'Prevalence and Drivers of Human Scabies Among Children and Adolescents Living and Studying in Cameroonian Boarding Schools', *BMC: Parasites & Vectors*, 9(1), p. Tersedia di: <http://parasitesandvectors.biomedcentral.com/>.
- Majid, R., Astuti, R. D. I. and Fitriyana, S. (2020) 'Hubungan Personal Hygiene dengan Kejadian Skabies pada Santri di Pesantren Kabupaten Bandung Tahun 2019', *Jurnal Integrasi Kesehatan dan Sains*, 2(2), p. DOI: <https://doi.org/10.29313/jiks.v2i2.5590>.
- Marga, M. P. (2020) 'Pengaruh Personal Hygiene Terhadap Kejadian Penyakit Skabies', *Jurnal Ilmiah Kesehatan Sandi Husada*, 9(2), p. DOI: <https://doi.org/10.35816/jiskh.v1i2.402>.
- Muafidah, N., Santoso, I. and Darmiah (2017) 'The Relation of Personal Hygiene with The Incidence of Scabies at Al Falah Male Boarding School Students Sub-district of Liang Anggang in the Year 2016', *Journal of Health Science and Prevention*, 1(1), p. Tersedia di: <http://jurnalfpk.uinsby.ac.id/index.php>.
- Mutiara, H. and Syailindra, F. (2016) 'Skabies', *Medical Journal of Lampung University*, 5(2), p. Tersedia di: <https://jurnal.kedokteran.unila.ac.id/i>.
- Naftassa, Z. and Putri, T. R. (2018) 'Hubungan Jenis Kelamin, Tingkat Pendidikan dan Pengetahuan Terhadap Kejadian Skabies pada Santri Pondok Pesantren Qotrun Nada Kota Depok', *Biomedika*, 10(2), p. DOI: <https://doi.org/10.23917/biomedika.v10i2.7022>.
- Nikmah, U. S. and Widyasih, H. (2018) 'Personal Hygienen Habits dan Kejadian Flour Albus Patologis pada Santriwati PP AL-Munawwir, Yogyakarta.', *Jurnal Media Kesehatan Masyarakat Indonesia: The Indonesian Journal of Public Health.*, Vol. 14 No, p. DOI: <http://dx.doi.org/10.30597/mkmi.v14i1.3714>.
- Nurohmah, P. I. (2018) 'Kondisi Fisik Lingkungan dan Keberadaan Sarcptes Scabiei pada Kuku Warga Binaan Pemasyarakatan Penderita Skabies di Blok A Lembaga Pemasyarakatan Kelas I Surabaya', *Jurnal Kesehatan Lingkungan*, VOL.10, N, p. Tersedia di: <https://e-journal.unair.ac.id/JKL/art>.
- Parman et al. (2017) 'Faktor Risiko Hygiene Perorangan Santri Terhadap Kejadian Penyakit Kulit Skabies di Pesantren Al- Baqiyatusshalihaat Tanjung Jabung Barat Tahun 2017', *Jurnal Ilmiah Universitas Batanghari Jambi*, 17(3), p. DOI: <http://dx.doi.org/10.33087/jiubj.v17i3.418>.
- Pratiwi, U. (2020) 'Faktor yang Berhubungan dengan Kejadian Scabies pada Santri Perempuan di Pondok Pesantren Abdur Rohman Kabupaten Lahat', *Skripsi*, p. Tersedia di: <https://repository.unsri.ac.id/35098/3>.
- Prayogi, S. and Kurniawan, B. (2016) 'Pengaruh Personal Hygiene dalam Pencegahan Penyakit Skabies.', *Medical Journal of Lampung University*, 5(5), p. Tersedia di: <http://jurnal.kedokteran.unila.ac.id/ind>.
- Ridwan, A. R., Sahrudin, S. and Ibrahim, K. (2017) 'Hubungan Pengetahuan, Personal hygiene, dan Kepadatan Hunian dengan Gejala Penyakit Skabies pada Santri di Pondok Pesantren Darul Muklisin Kota Kendari 2017', *Jurnal Ilm Mhs Kesehat Masyarakat*, 2017;2(6), p. Tersedia di: <http://ojs.uho.ac.id/index.php/JIMKE>.
- Sutejo, I. R., Rosyidi, V. A. and Zaelany, A. I. (2017) 'Prevalensi, Karakteristik dan Faktor-faktor yang Berhubungandengan Penyakit Skabies di Pesantren Nurul Qarnain Kabupaten Jember', *e-Jurnal Pustaka Kesehatan*, 5(1), p. Tersedia di: <http://jurnal.unej.ac.id/index.php/JP>.
- T Carolyn, R. N. (2020) 'Analisis Faktor-Faktor yang Memengaruhi Kejadian Skabies di Lembaga Pembinaan Khusus Anak (LPKA) Kelas II Kota Pekanbaru Tahun 2019', *Tesis*, p. Tersedia di: <http://repository.usu.ac.id/bitstream/>.
- Waru, H. N. (2019) 'Studi Penggunaan Alat Pelindung Diri, Personal Hygiene dan Gejala Penyakit (Scabies) pada

- Pemulung di Tempat Pembuangan Akhir (TPA) Alak', Politeknik Kesehatan Kemenkes Kupas. Kesehatan Lingkungan., p. Tersedia di <http://repository.poltekkeskupang.ac.id>.
- Wulandari, A. (2018) 'Hubungan Personal Hygiene dan Sanitasi Lingkungan dengan Kejadian Skabies pada Santri di Pesantren Ulumul Qur'an Kecamatan Bebesen Kabupaten Aceh Tengah.', *Global Health Science.*, Vol.3 No.4, p. Tersedia di <http://jurnal.csdforum.com/index.php/g>.
- Zakiudin, A. and Shaluhayah, Z. (2016) 'Perilaku Kebersihan Diri (Personal Hygiene) Santri di Pondok Pesantren Wilayah Kabupaten Brebes akan Terwujud Jika Didukung dengan Ketersediaan Sarana Prasarana', *Promosi Kesehatan Indonesia*, Volume 11, p. <https://doi.org/10.14710/jpki.11.2.64-83>.

Hambatan Implementasi Kebijakan Minuman Keras di Kota Jayapura

Barriers to the Implementation of Alcohol Policies in Jayapura City

Rahel Violin Kamisorei^{1)✉}, Mochammad Bagus Qomaruddin²⁾,
Shrimarti Rukmini Devy²⁾, Amer Siddiq Amer Nordin^{3,4)}

¹ Master of Public Health Study Program, Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia

² Department of Epidemiology, Demography Biostatistics, and Health Promotion and Behaviour Science, Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia

³ Department of Psychological Medicine, Faculty of Medicine, Universiti Malaya, Kuala Lumpur, Malaysia

⁴ University of Malaya Centre for Addiction Science Studies, Universiti Malaya, Kuala Lumpur, Malaysia

Corresponding directed to e-mail: rahelviolinkamisorei@gmail.com

ABSTRACT

Background: Basic Health Research (RISKESDAS) in 2018 found as many as 15 provinces out of 35 provinces had a prevalence of alcohol consumption above the national prevalence, and Papua was reportedly in the top 15 of the prevalence of high alcohol consumption (alcohol) as much as 4.6%. **Objective:** To describe the obstacles to the implementation of local government policies in curbing the circulation of alcohol in Jayapura City. **Method:** This is a descriptive study using a qualitative single instrumental case study design in Jayapura City from May to September 2020. Purposive sampling technique was employed to determine participants who consisted of an integrated team of alcohol control and supervision (n =6). Data collection was using in-depth interviews and non-participant observation. **Result:** Communication between the integrated team was not optimal. National Food and Drug Agency (BPOM) had not routinely conducted sample tests as the majority of traditional alcoholic beverages sold in shops such as local liquors were illegal. The division of duties and responsibilities by the integrated team was good, but the execution in the field was not as agreed upon. There were alcohol traders who have not applied for licenses to sell alcohol because the process to get license permits was too complicated. The content of Perda No.8 of 2014 weakened the police because they could not give punishment like Satpol PP, however, Satpol PP did not have an investigating team. **Conclusion:** The lack of commitment from the control and supervision team of alcohol circulation in carrying out their duties. The resources involved were lacking. Coordination among the integrated teams was not going well thus the division of tasks and authorities with implementation actions in the field did not work according to the policy enforce in Jayapura City. Evaluation of work programs by policy implementers could be carried out to increase the success of implementation.

Keywords: Alcohol, Barriers, Local Regulation, Policy

ABSTRAK

Latar Belakang: Riset Kesehatan Dasar (RISKESDAS) tahun 2018 menyebutkan sebanyak 15 provinsi dari 35 provinsi mempunyai prevalensi konsumsi miras diatas prevalensi nasional, dan Papua termasuk dalam posisi 15 besar prevalensi konsumsi minuman keras (miras) tinggi sebanyak 4,6%. **Tujuan:** Mendeskripsikan hambatan implementasi kebijakan pemerintah daerah dalam menertibkan peredaran miras di Kota Jayapura. **Metode:** Penelitian ini merupakan penelitian deskriptif kualitatif dengan single instrumental case study di Kota Jayapura pada bulan Mei-September 2020. Teknik purposive sampling dilakukan untuk menentukan partisipan yang terdiri dari tim terpadu pengendalian dan pengawasan miras (n=6). Pengumpulan data dilakukan dengan wawancara mendalam dan observasi non partisipan. **Hasil:** Komunikasi antara tim terpadu belum maksimal. BPOM hingga saat ini belum secara rutin melakukan uji sampel karena mayoritas miras

tradisional tidak dijual di toko secara legal seperti miras lokal. Pembagian tugas dan wewenang oleh tim terpadu sudah baik, namun eksekusi di lapangan tidak sesuai dengan yang telah disepakati. Terdapat pedagang miras yang belum mengurus izin penjualan miras karena alur pengurusan izin yang terlalu rumit. Isi Perda No.8 Tahun 2014 melemahkan pihak kepolisian karena tidak dapat memberikan penindakan hukuman kecuali Satpol PP sedangkan pihak Satpol PP tidak memiliki tim penyidik
Kesimpulan: Komitmen tim pengendalian dan pengawasan peredaran miras dalam menjalankan tugas dan jumlah sumber daya yang terlibat masih kurang. Koordinasi antara sesama tim terpadu belum berjalan dengan baik sehingga pembagian tugas dan wewenang dengan tindakan implementasi di lapangan tidak berjalan sesuai kebijakan yang berlaku di Kota Jayapura. Evaluasi program kerja oleh implementator kebijakan dapat dilakukan untuk meningkatkan keberhasilan implementasi.

Kata Kunci: Minuman Keras, Hambatan, Peraturan Pemerintah Daerah, Kebijakan

INTRODUCTION

Liquor or commonly known as the alcohol is a drink that contains ethanol. Ethanol is a psychoactive substance and its consumption causes loss of consciousness. Alcohol has a negative impact on health because of its uncontrolled circulation. In line with the research in India, it was known that the increase in alcohol consumption was so high that it had an impact leading to an increase in crime, namely high traffic accidents, and it had an impact on health problems (Luca, Owens and Sharma, 2019). The implementation of policies of the Indonesian government regarding the distribution and sale of alcohol has been regulated in Presidential Regulation of the Republic of Indonesia Number 74 of 2013 about Supervision and Control of Liquor, Regulation of the Minister of Trade of the Republic of Indonesia Number 04/M-DAG/PER/1/2015, as well as Regional Regulation of Jayapura City Number 8 of 2014 about the control and supervision of liquor (*Peraturan Presiden Republik Indonesia Nomor 74 Tahun 2013 tentang Pengendalian dan Pengawasan Minuman Beralkohol, 2013; Peraturan Daerah Kota Jayapura No.8 Tahun 2014, 2014; Peraturan Menteri Perdagangan Republik Indonesia Nomor 06/M-DAG/PER/1/2015 Tentang Perubahan Kedua atas Peraturan Menteri Perdagangan Nomor 20/M-DAG/PER/4/2014 tentang Pengendalian dan Pengawasan Terhadap Pengadaan, Peredaran dan Penjualan Minum, 2015*). The Ministry of Trade (KEMENDAG) has implemented the Regulation of Directorate General of Domestic Trade (Dirjen Dagri) Number

04/PDN/PER/4/2014 about Technical Guidelines for the Implementation of Class-A Alcohol's Control of Circulation and Sales (*Peraturan Daerah Kota Jayapura No.8 Tahun 2014, 2014*).

The level of consumption of liquor (alcohol) in Indonesia has been increasing every year. The result of the 2018 Basic Health Research (Riskesdas) of 35 provinces in Indonesia showed that the national prevalence of alcohol consumers (respondents aged ≥ 10 years) during the last 12 months was 4.6%. A total of 15 provinces had a prevalence above the national prevalence. Papua was included in the top 15 provinces with the highest prevalence of alcohol consumption. Meanwhile, the national prevalence of alcohol drinkers in the past month was 3.0% with 13 provinces having scores above the national prevalence (Kementerian Kesehatan Republik Indonesia, 2019).

Papua Province was one of the 10 provinces with the highest proportion of alcohol consumption in Indonesia (Riskesdas, 2018). Meanwhile, Jayapura City was an alcohol supplier region in Papua Province. The culture of consuming alcohol was one of the problem among many problems in Papua, especially in Jayapura City, such as traffic accidents, murder, rape, and domestic violence. In line with the research conducted in 2018 which stated that liquor has become one of the cultures in Russia. Based on data from the Office of Women Empowerment, Child Protection, and Family Planning (DPPPA-KB) of Jayapura City in 2018 regarding physical and sexual violence, there were 16 cases of sexual violence against children, 1 case of physical

violence, and 61 cases of domestic violence (Data Kekerasan Fisik dan Seksual, 2018). At least there were around 78 million people killed because of alcohol consumption (Neufeld and Rehm, 2018). Alcohol has killed the people of Jayapura City like any other health problem that resulted in death. According to data from the Jayapura City Resort Police in February 2020, alcohol was the cause of rape cases in Junior High School students (*Kasus pelecehan seksual di Kota Jayapura*, 2020).



08/02/2020

Dicekoki Miras, Seorang Oknum Guru SMP Setubuhi Muridnya Sendiri

▲ Diposkan Oleh: jayapura / ● 0 komentar

Source: Jayapura City Resort Police
Figure 1. Rape caused by alcohol influence

Excessive alcohol consumption would make people unconscious. Side effects for perceived health include disorders of the liver, kidney, and lungs, brain and nervous disorders, depression, and alcohol poisoning. In line with the research conducted in 2019, it was found that consuming alcohol could increase the risk of developing cancer (Christensen *et al.*, 2019). The practice of consuming alcohol to excess had an impact on the high number of traffic accidents in Jayapura City. This was in line with the Jayapura City Police Resort data which stated that from 2014 to 2017 the number of traffic accidents due to alcohol consumption occurred in Jayapura City has increased. In 2014 the number of traffic accident reached 91 cases with 51 deaths. This number was increasing, wherein 2015 the number of accidents totalled 202 of which 60 of them died. The said number kept increasing until 2016 which reached 524 traffic accidents in Jayapura City. Unlike the previous few years, in 2017 the number of traffic accidents due to alcohol decreased to 455 traffic accidents, as well as the number of deaths that occurred from 2017 and 2018 due to alcohol (Polrestabes Kota Jayapura, 2019). This was supported by

the data from the Jayapura City Health Office which stated that alcohol poisoning was among the top 10 diseases from 2012 to 2017 (4.226%).

The regulation of the Jayapura City government to curb the circulation of alcohol by controlling and supervising the circulation of alcohol has been regulated in Jayapura City Regional Regulation Number 8 of 2014. The Jayapura City Regional Regulation referred to the Presidential Decree Number 74 of 2013 and Regulation of the Minister of Trade of the Republic of Indonesia Number 04/M/-DAG/PER/1/2014 and supported by Law Number 2 of 2002 regarding public order. The implementation of this policy involved several agencies formed in an integrated team consisting of National Food and Drug Agency (BPOM), Health Office, Police, Civic Service Police Unit (Satpol PP), Investment and One-Stop Integrated Service Office (PTSP), the Office of Industry, Trade, Cooperatives & Small and Medium Enterprise (Disperindakop), Custom and Excise, as well as community leaders.

An effort to prevent the circulation of alcohol by the Jayapura City government through an integrated team had been carried out, although until now the circulation of illegal alcohol can still be found, often due to several implementation barriers. Data on illegal alcohol sales violations in Jayapura City in 2019 during the month of Ramadan, namely 302 bottles of various types of alcohol, 533 cans of various types of alcohol, and 25 liters of *ballo*-type local drinks. The types of alcohol that were secured by the police including Robinson whiskey, red wine vodka, Red Label *Putih Jumbo* beer, *Bintang* beer, jenever, *Cap Orang Tua* wine, Angker Putih beer, and traditional alcohol (*Ballo*) also *sager* (a drink made from palm trees, has a sweet and sour taste and contains alcohol) (Polrestabes Kota Jayapura, 2019).

The highest peak of crime cases due to alcohol in Jayapura City occurred in 2018 with a total of 189 cases. This study therefore was aimed to examine the obstacles for implementation of alcohol policy in Jayapura City and to obtain a complete and in-depth understanding of the situation.

METHOD

The type of study used was a descriptive study because it only conducted observations without providing intervention on the variables studied. The study was a single instrumental case study that was discussed in a qualitative descriptive manner. The single instrumental case study was a case study research conducted using a case to describe an issue or concern (Matthew B. Miles, A. Michael Huberman, 2014). The study was conducted in Jayapura City which included in the top five cities in Papua Province with a high crime rate in 2018. The time of the research started from May to September 2020. The informants in this study were stakeholders in Jayapura City who were involved in the implementation of the policy of local government to curb the circulation of alcohol. The determination of informants in this study used purposive sampling technique.

The data used in this study were primary data obtained through in-depth interviews and non-participant observation as well as secondary data

from similar studies and several other references, namely scientific articles and books. The data analysis technique used in this study was content analysis technique. The content analysis technique was an in-depth study of the content of information; in this study related to the factors that cause obstacles to the implementation of local government policies in curbing the circulation of alcohol in Jayapura City (Matthew B. Miles, A. Michael Huberman, 1983). The analysis process was carried out through four stages including the stage of data collection, data reduction, data presentation, and drawing conclusion. The study protocol has gained approval from the Health Ethics Commission of Faculty of Dental Medicine, Universitas Airlangga stated on the Ethics Certificate No.145/HRECC.FODM/III/2020.

RESULTS AND DISCUSSION

The characteristics of the informants in this study can be seen in Table 1. The majority of the informants were male as many as 4 people and 5 people own their bachelor's degrees.

Table 1. Characteristics of Informants

Research Subject	Gender	Initial	Education	Agency/Position
1	Female	IM	S1	National Food and Drug Agency (Head of Complaints and Information)
2	Male	SS	S1	Customs and Excise (Head of Enforcement and Investigation Section)
3	Female	DS	S2	Industry, Trade, Cooperatives & Small and Medium Enterprise Office (Head of Trade)
4	Male	YM	S2	Investment and One-Stop Integrated Service Office (Head of Office)
5	Male	EN	S1	Jayapura City Resort Police (Head of Drug Unit)
6	Male	SF	S1	Civic Service Police Unit (Head of Regional Regulation Enforcement)

Obstacles to the implementation of local government policies in curbing the circulation of alcohol in Jayapura City if seen according to the theory of policy implementation could have caused by some inhibiting factors. These factors were coordination, policy content, implementation support, and potential sharing (Peters, 2018).

Coordination

Lack of coordination between the Regional Apparatus Work Unit (SKPD) could easily result in an inaccurate

description, both to the object of the policy and to the implementers of the content of the policy that would be implemented and the result of the policy. The implementation of local government policies in curbing the circulation of alcohol in Jayapura City was not supported by information that had an impact on communication between integrated teams. It was found that in its implementation, there was no communication among fellow control and supervision teams in Jayapura City as the following interview excerpt:

“Ya paling tidak mungkin ada kesepakatan bahwa sebelum mereka entah memperpanjang atau membuka usaha baru harusnya ada rekomendasi dari kita sehingga dasar itulah dipake Dinas Perizinan Terpadu Satu Pintu untuk mengeluarkan izin usaha tetapi saya gak terlalu tau persis tugas pokok mereka tetapi yang saya tau secara garis besar tugas pokok mereka yaitu mengeluarkan izin tetapi mereka juga ada fungsi pengawasan tetapi fungsi pengawasannya lebih ke izin tapi mungkin yah sekali izin include tupoksi kami yang mereka cover semua sehingga kadang-kadang yang terjadi di lapangan seperti kami mendapat complain dari pelaku usaha.” (DS) (Yes, at least there is an agreement before they either extend or open a new business that there should be a recommendation from us so it can be used by the One-Stop Integrated Licensing Office to issue the business permission but I don't really know their main duties, all I know in general, their main duty is to issue permission but they also have a supervisory function but the supervisory function is more about permission but maybe the permission includes our main duties and functions which they cover, so that sometimes what happens in the field such as we get complaints from the business actors).

Lack of coordination between Regional Apparatus Work Unit (SKPD) prevented the Head of Trade of Industry and Trade Office in Jayapura City from taking the initiative to order the team to conduct alcohol supervision. It can be seen from the statement of the informant from Industry, Trade, Cooperatives & Small and Medium Enterprise Office of Jayapura City as the following interview excerpt:

“Kalau anggota kami itu mereka antusias banget itu mereka rebutan karena kadang kalau turun itu adalah maksudnya kita juga sudah tau kalau masalah miras ini semua mau. Jadi kadang kalau anggota saya ikut turun saya bilang jangan minta tapi kalau mereka kasi yah salah mereka asalkan jangan saya dengar kalian minta.

Kalau sampai kalian minta berarti tidak boleh ikut turun lagi tapi itu kita sudah turun tapi tetap ada juga pelaku usaha yang melanggar itu nanti kami beri surat peringatan” (DS) (Our members are very enthusiastic, they scramble because sometimes when we are in the field, we already know that everyone wants it when it comes to alcohol. Sometimes if my members participate in the field I tell them not to ask for it but if they give it, that is their fault as long as I do not hear them asking for it. If they do ask, it means they are not allowed to participate in the field activities again, but then we have already gone to the field and there are still business actors who violate the regulation thus we will give a warning letter).

The Industry, Trade, Cooperatives & Small and Medium Enterprise Office of Jayapura City stated that its party as the Head of the Alcohol Circulation Control and Supervision Team was unable to carry out its duties and functions. This condition occurred because the Industry, Trade, Cooperatives & Small and Medium Enterprise Office of Jayapura City supervised and controlled other cross-sectoral teams such as the Civic Service Police Unit, the Investment Office and police, had previously carried out supervision without any communication to other integrated team members. It became an obstacle for the Industry and Trade Office of Jayapura City to carry out its authority to supervise the alcohol trade.

The Industry and Trade Office of Jayapura City stated that it currently no longer has the authority to issue permits or provide recommendations related to the alcohol trade because as of now, all licensing arrangements are carried out by the Investment and One-Stop Integrated Service Office of Jayapura City. This caused the Industry and Trade Office of Jayapura City to also encounter obstacles in obtaining data of alcohol store names. The Office of Industry, Trade, Cooperatives & Small and Medium Enterprise (Disperindakop) had to request the list of alcohol stores from the Investment Office first before they could supervise the alcohol stores listed. The lack of communication between fellow alcohol control and supervision teams

caused implementation in the field to be hampered.

The Policy implementation theory according to Grindle explained that several factors supporting policy implementation, one of which was communication. There were three important things discussed in the policy communication process, namely transmission, consistency, and clarity (Grindle, 2017).

The first factor that supported policy implementation was transmission. An official implementing a decision should be aware that a decision has been made and that an order for its implementation has been issued. Meanwhile, according to the findings in the field, it was known that there has been an instruction from the mayor stating that alcohol should not be sold before religious holidays but there were still illegal alcohol trades. This implied that policy implementers should be more assertive in implementing the regulation which have been enacted. The need for cross-sectional cooperation to build public awareness to be able to obey the regulation issued by the Mayor of Jayapura City.

The second factor that supported policy implementation was clarity, namely that some policy implementation guidelines should not only be accepted by policy implementers, but the communication should also be clear. Based on the findings in the field, the clarity of the main tasks and functions between Regional Apparatus Work Unit was clear, however, the implementation often overlapped in the division of tasks in the field.

The third factor that supported policy implementation was consistency, namely if policy implementation aimed to run effectively, the orders should be consistent and clear. The consistency of implementing policies in Jayapura City has not gone well because the alcohol supervision that was carried out by the integrated team has only been conducted once in 2019 following the instructions of the mayor. From 2020 to 2021, the mayor was no longer issuing the instructions to limit the sale of alcohol during religious holidays which made the Regional Apparatus Work Unit conduct the supervision independently. As a result, alcohol control was not conducted optimally. According to research in 2018,

it was found that the failure of the implementation of Minahasa local government policies was due to the lack of good cooperation between related agencies which caused there were still many illegal alcohol traders (Bataren, Rumapea and Kiyai, 2018).

Information barriers were also experienced by the Civic Service Police Unit team, stating that the obstacle that was often experienced during alcohol supervising and controlling process including there were still many alcohol business actors who received protection from the police. This caused the moment Civic Service Police Unit team almost conducted an alcohol raid, many business actors have already known the information beforehand even before the raid was carried out so as the team arrived at the location, there were no alcohol traders around or closing the alcohol stores.

Research in 2018 stated that there were several parties of policy implementers who took advantage. The advantage was obtained from security money deposited by alcohol traders in Cilegon City. It was known that the money deposited by the alcohol traders was used to secure the alcohol trader's business from raids. This cultivated the courage of both the alcohol traders and the consumers because they felt safe from any alcohol control activities (Aqrom, 2018).

The majority of fellow control and supervision teams did not have clear communication. Each agency carried out its duties according to its main tasks and functions, but during the implementation of alcohol control in the field, it was like a scramble for each agency. The result of the interview with the Industry and Trade Office stated that the members of its agency often wanted to participate in the field to get the confiscated alcohol.

Members of the control and supervision team such as National Food and Drug Agency (BPOM), Customs and Excise, Health Office, and community leaders were involved in outreach to the community but not all teams were involved in the field activities. The police and BPOM supervise alcohol in terms of inspecting the alcohol samples. Routine inspection of alcohol was carried out in conjunction with inspections of other processed foods such as food ingredients

and cosmetics. Good information among the alcohol control and supervision teams could help to achieve the common goal, which was controlled alcohol supervision and circulation in Jayapura City.

Policy Content

Policy implementation failed due to unclear statements related to human and non-human resources, as well as less assertive policy enforcement as stated on the following interview excerpt:

"Kami tidak pernah melakukan tindak pidana kepada pelanggar kebijakan karena kami dibatasi dengan Perda No.8 tahun 2014 bahwa yang berhak melakukan penindakan hanya tim PPNS dari satpol PP sedangkan mereka sendiri tidak memiliki tim PPNS jadi yah kami hanya bisa memberikan pembinaan saja kepada pelanggar kebijakan." (EN) (We have never committed a crime against policy violators because we are limited by Regional Regulation Number 8 of 2014 that only the Civil Servant Investigator (PPNS) team of the Civic Service Police Unit has the right to take action while they themselves do not have a PPNS team so, well, we can only provide guidance to policy violators).

"Untuk minuman tradisional kami belum melakukan pengawasan yah karena kami di sini melakukan pengawasan jika mereka sebagai pelaku usaha mendaftarkan produknya di kami barulah kami melakukan pemeriksaan." (IM) (For traditional drinks, we have not done any monitoring yet because we are here to supervise if they as the business actors register their products to us, then we can carry out inspections).

"Kalau bilang yang sudah kita lakukan yah itu maksudnya sampai sejauh ini yah yang saya ada di bidang ini yah paling kami ikut terlibat di dalam tim pengendalian kalau itu dilakukan terus memang kalau pengawasan saya bilang terus terang jumlah pelaku usaha itu sekarang kami sudah tidak tau karena itu tadi ada yang bilang izin yang sudah tidak lewat kami tetapi langsung kesana

memang sih kadang-kadang kita mau marah PTSP juga itu perintah atasan yah mungkin mereka menitipkan laporan kadang-kadang saya bilang kalian tidak nyurat eh seharusnya kalian tau bahwa itukan tembusannya ke kita jadi ya itu mau dibilang kendala yah itu kendala jadi untuk saat sekarang untuk pengawasan kami kebanyakan jalan sendiri." (DS) (If talking about what we have done, well, that means so far, what I mentioned in this field, at least we are involved in the control team which is carried out continuously, when it comes to supervising, frankly speaking, we do not know the current number of the business actors because as mentioned earlier, there was a party who said that the permit is not through us anymore but straight through there, indeed sometimes we want to be mad at PTSP but it is also the order from the leader, well, maybe they board out the report and sometimes I say they did not send us any letter beforehand and they should know that the copy should be directed to us, so I want to say that it is indeed an obstacle, for the time being we mostly do the supervision independently).

The result of interview obtained with the police mentioned that the control and supervision of alcohol in Jayapura City based on Regional Regulation Number 8 of 2014 stated that there were several contents of the Regional Regulation that weakened the task of the police to supervise and control the circulation of alcohol (Peraturan Daerah Kota Jayapura No.8 Tahun 2014, 2014). The contents of the regulation stated that investigations of violators of Regional Regulations were only carried out by the Civil Servant Investigators (PPNS) and accompanied by the National Police. This caused the police to only act as a companion and unable to punish the crime. In line with the 2018 research in Cilegon City, the failure of implementation was due to the unavailability of PPNS in Cilegon City (Wollanda, 2018). The results of this study were in line with the research conducted in 2019 which showed that the policies implemented had unintended consequences such as weakening the capacity of the community to act

selectively in managing alcohol (D'Abbs, Burlayn and Jamijin, 2019).

The interview conducted with the police showed that there were obstacles in taking action against policy violators caused by Regional Regulation Number 8 of 2014 Chapter XI Article 22 Paragraph 1 and 2 (Peraturan Daerah Kota Jayapura No.8 Tahun 2014, 2014). As a result, the police only carried out their duties to do the community security patrols according to their main duties and functions which led them to arrest and provide guidance to the violators if they found illegal alcohol traders (Undang-Undang Republik Indonesia Nomor 2 Tahun 2002 tentang Kepolisian Negara Republik Indonesia, 2002). The violators would also be monitored for the next two weeks. The police could only provide a deterrent effect to the violators by confiscating evidence in the form of alcohol, but could not provide punishments for crimes because this has violated Regional Regulation Number 8 of 2014.

Criminal law sanctions were defined as actions given to the violators of the enacted provisions. The legal process listed in Regional Regulation Number 13 of 2002 did not run as it should which made the prosecution for violators remained to be just a threat (Aqrom, 2018). However, in practice the punishment given was a minor crime (also called as *tipiring*) in the form of maximum imprisonment of 3 months or a fine of IDR 25,000,000. Violators were also only given a direction and guidance that did not give a deterrent effect. The application of the law that was less assertive to violators was caused by the involvement of certain parties in the violation of the Regional Regulation mentioned.

The BPOM of Jayapura City was also experiencing obstacles to policy implementation because the majority of the community did not only consume local drinks, but also traditional home-made alcohol. Traditional alcohol has been regulated in the Regulation of the Head of BPOM RI Number 14 of 2016 about safety and quality standards of alcoholic beverages made from the fermentation process (Badan Pengawas Obat dan Makanan, 2016). Until today, the National Food and Drug Agency of Jayapura City has not routinely conducted sample testing because the majority of

traditional alcohol has not been legally sold in stores such as local alcohol. The majority of traditional liquor in Jayapura City was sold at home or in a place far from the crowds, so it was difficult to know the sale of traditional drinks as stated on the following interview excerpt:

"Mengenai minuman tradisional kami disini tidak melakukan untuk itu karena tidak ada datanya dan tidak ada juga pedagang miras tradisional yang melapor untuk izin penjualan karena yang jual miras tradisional kan tersembunyi lokasinya kami tidak tau jadi kalau mau dilakukan kami harus lakukan kerjasama dengan polisi." (IM) (Regarding traditional drinks, we do not do that here because there are no data and no traditional alcohol traders report for a sales permit because the location of those who sell traditional alcoholic drinks are hidden somewhere we do not know, so if we want to do it, we have to cooperate with the police).

This condition caused the majority of traditional alcohol traders to choose not to register for food safety at BPOM to obtain a distribution permit number. Another obstacle, to get to know the sale of traditional alcohol, the police team and the Civic Service Police Unit had to cooperate to find out the location of the sale in order to make the sale of traditional alcohol able to be overseen. Considering that the majority of alcohol consumers in Jayapura City were traditional alcohol consumers because the price was cheap. In line with the research conducted in 2017 which showed that the price of alcohol affected the amount of consumption among low-income community (Subramanian and Kumar, 2017). This was supported by data from the Jayapura City Resort Police in June 2019, before Eid, the police managed to secure 230 liters of *Ballo* or fermented drinks and 5 liters of *saguer* (a drink derived from palm trees). In line with the research conducted in 2018 which stated that the physical environment was one of the obstacles to policy implementation (Langi, Sambiran and Kimbal, 2018). According to the results of the study, there were obstacle in managing the licensing flow.

According to the Regulation of the Minister of Industry of Republic Indonesia Number 63/M-IND/PER/7/2015, it was stated that every alcohol industry company was required to have an industrial business license. The sales permit would be issued by the Investment Coordinating Board after obtaining a recommendation from the general director who carried out the duties and function of fostering the alcohol industry. Traditional alcohol manufacturing businesses were required to report their traded goods to the City/Regency Industry Office for data collection. The result of the data collection would be reported to the general director who carries out the duties and functions of fostering the alcohol industry with a copy to the Head of the Industry Office as the material for the guidance and supervision of the alcohol manufacturing business (Peraturan Menteri Perdagangan Republik Indonesia Nomor 06/M-DAG/PER/1/2015 Tentang Perubahan Kedua atas Peraturan Menteri Perdagangan Nomor 20/M-DAG/PER/4/2014 tentang Pengendalian dan Pengawasan Terhadap Pengadaan, Peredaran dan Penjualan Minum, 2015).

Since the existence of the One-Stop Integrated Service and Investment Office (DPMPTSP) in Jayapura City, the entire permit-making process could only be carried out through the agency mentioned, including the license to sell alcohol. This caused the Industry and Trade Office unable to optimally monitor the alcohol trade. The results obtained showed that since 2018 the Office of Industry, Trade, Cooperatives & Small and Medium Enterprise has not issued any permits or letters of recommendation regarding the sale of alcohol in Jayapura City. The police had also experienced a similar situation whereby they could not give punishments to policy violators because they were limited by the contents of the policy of Regional Regulation Number 8 of 2014 Chapter XI Article 22 Paragraphs 1 and 2. Criminal acts could only be given by Civil Servant Investigators (PPNS) while there were no members of PPNS yet (Anon 2014). This proved that there was discontinuity between the content and the implementation of the policy. This was also seen in another study in Thailand where it was found that the performance of policy makers was lacking in controlling

the availability and access of alcohol (Kaewpramkusol et al. 2018), similar to the situation in Jayapura City.

The content of the Jayapura City Government's policy was more focused on the ownership of permits thus there were no restrictions on the sales of alcohol for retailers. As a result, the licensing to open an alcohol sales business continued to increase, because the restrictions on alcohol sales = only applied to sub-distributors, not to the retailers and the on-the-spot sales. This condition resulted in the Jayapura City Government's need to review the contents of the policies that had been enacted. A similar statement was made by research conducted in 2018 which stated that in order to implement Presidential Regulation Number 74 of 2013 on liquors, the Jakarta City Government determined that only a few locations were allowed to be used to sell alcohol so that the supervision and control of alcohol could be easier to carry out (Andriyani, 2017).

Research conducted in 2018 stated that the Russian Government implemented a policy of closing home alcohol distributors who did not have legal certification. The policy of increasing alcohol tax was also implemented with the hope of reducing sales and demand for alcohol in the community. The Russian Government also implemented a unique policy which was increasing the price of alcohol at certain hours. One of these was considered to be quite effective in reducing the level of legal and illegal consumption of alcoholic beverages (Neufeld and Rehm, 2018). This research was also supported by the research conducted in Australia which stated that raising the alcohol tax had the potential to reduce consumption and increase government revenues, but it was underutilized for public health and public finance purposes in Australia (Vandenberg, Jiang and Livingston, 2019).

Implementation Support

Public policy would be difficult to implement without support. One of the obstacles to implementing policies to curb the circulation of alcohol was the lack of implementation support as stated on the following interview excerpt:

"Pelaksanaan di lapangan yaa itu memang kita melakukan evaluasi

setelah itu kita lapor lagi ke pimpinan. Tetap evaluasi setiap turun itu kita lakukan, evaluasi apa hal-hal yang positif dan negatif itu yang kita evaluasi. Misalnya ada pelanggaran perizinan itu nanti kita sebut item-item toko mana yang melakukan pelanggaran nanti itu kita lapor ke pak wali dan wakil wali kota. Jadi “pak setelah kita melakukan penertiban sidak di lapangan kejadiannya seperti ini” jadi itu dibuatkan berita acara.” (EN) (The implementation in the field, we indeed did an evaluation and after that we report it again to the leader. We continue to evaluate every time we are in the field, evaluate the positive and negative things those are what we did. For example, if there is a licensing violation, we will mention which store items committed the violation and later we will report it to the mayor and deputy mayor such as “Sir, after we carried out inspections in the field, it happened like this,” so that a report is made).

“Secara gabungan kalau 6 bulan ini kayaknya seingat saya yah saya tidak bicara data. Seingat saya belum pernah untuk 6 bulan ini yah. Cuma kalau kami sendiri itu hampir tiap hari karena kalau kita monitor tiap malam selalu tempat-tempat penjualan miras itu, kita patroli, kita dekatan dan ibarat kita duduk di situ nungguin mereka sampai mereka bubar sendiri. Tapi itu sudah kemampuan kita karena personil yang kurang eh jadi sedangkan Kota Jayapura juga terlalu banyak pengaduan sehingga kita kadang tinggalkan lagi.” (EN) (If combining the past 6 months, I think as far as I remember, I have not talked about the data. As far as I remember it has not been done for these 6 months. But for us, it is almost every day because if we monitor every night always those places of alcohol selling, we patrol, we approach them and it is like we are sitting there waiting for them until they disperse by themselves. But that is our ability because of the lack of personnel, meanwhile the City of Jayapura also has too many complaints which causes us to sometimes ignore it again).

According to the results of the interview conducted with the Office of Industry, Trade, Cooperatives & Small and Medium Enterprise also the police, if there were violations in the field, an evaluation would be carried out to follow up on cases that occur in the field. The result of this evaluation would then be reported to the mayor. However, the obstacle that was often faced was the absence of a response in the form of an evaluation from the mayor of Jayapura City. This meant that the police proposed to the mayor so that the permission could be revoked but the request was often not followed up by the mayor of Jayapura City as the leader. In line with the other study which stated that there was no significant change in limiting the hours of alcohol sales to reduce alcohol consumption behavior (Taylor *et al.*, 2018).

The absence of implementation support from policy implementers resulted in no deterrent effect for alcohol traders who violate the regulation. It was in line with research conducted in 2018 which stated that the lack of human resources in implementing policies in Southeast Minahasa Regency caused the control and supervision of alcohol not to be implemented properly (Bataren, Rumapea and Kiyai, 2018). Therefore, policy support from policy makers, implementers, and policy recipients to achieve successful implementation of alcohol policy in Jayapura City was needed.

The implementation of local government policies in curbing the circulation of alcohol has not been carried out in accordance with applicable regulations. Criminality was a form of actions and deeds that harmed others parties both economically and psychologically that violating the laws of social and religious norms in Indonesia. The integrated team support for the successful implementation of alcohol policy was still not fully committed to curb the alcohol. Based on the data from the Jayapura City Resort Police from 2014 to 2018, criminal cases in Jayapura City were still in the range of 100 cases. According to the data on alcohol raids during the month of Ramadan, there were still 835 sales of alcohol without permits in various locations in Jayapura City. It was also supported by research conducted in 2018 which found a significance in the

implementation process. The Civic Service Police Unit of Cilegon City along other security forces as implementers of the policy have not stroven hard enough regarding this policy as there were still violations committed by the implementer such as taking security money rations to avoid being the subject of raids (Aqrom, 2018).

Potential Sharing

The results of the study found that the division of tasks and authority in the control and supervision team in Jayapura City was good, however, the execution in the field was not in accordance with what has been agreed upon. This induced obstacles in its implementation as stated on the following interview excerpt:

"Secara garis besar tugas pokok mereka yaitu mengeluarkan izin ah tetapi mereka juga ada fungsi pengawasan tetapi fungsi pengawasannya lebih ke izin tapi mungkin yah sekali izin include tupoksi kami sehingga saat kita turun kadang pelaku usaha mereka complain kenapa kemarin mereka sudah diperiksa sekarang kami datang lagi." (DS) (Broadly speaking, their main task is to issue permits but they also have a supervisory function which is more like permission, maybe it already includes our main functions thus when we are in the field, sometimes the business actors complain as to why the day before they have been checked, but we are coming again to do the same thing).

Based on the result of interview with the Head of the Industrial Division of Jayapura City, the supervision of alcohol in the field was not carried out according to the main duties and functions. The Licensing Office should supervise the sales permit, however, in fact, the supervision carried out by the Licensing Office included the duties of the Industry Office to conduct supervising of alcohol trades. The cause of the failure of the policy implementation was the aspect of potential sharing to policy implementers related to the duties and authorities of implementing agencies. The arrangement of organizational structure of implementing the policy would cause problems if the division of authority and

responsibility was not adjusted to the division of tasks or there were restrictions such as time adjustments for policies that the majority of the public reject. There were four factors that caused the public to disobey the policy, including:

a) There was a concept of disobedience to the law. There were several laws and regulations or public policies that were less binding for individuals. Alcohol traders in Jayapura City felt that the local government's policy to curb the circulation of alcohol was not binding yet. It indicated that there was no deterrent effect given to violators. Based on the result of interview with the police, it was found that the majority of policy violators who were arrested by the police officers were only given the guidance as stated on the following interview excerpt:

"Kalau dulu bisa kena sanksi tipiring tindak pidana ringan kalau sekarang yah hanya pembinaan saja." (EN) (In the past could be penalized for minor crime, but now there is only guidance).

"Jadi dari perda itu sendiri yang membatasi pergerakan kita. Jadi kita hanya bisa menangkap mengamankan kalau mau dimusnahkan kita bisa melakukan pemusnahan bersama satpol PP tapi kalau proses hukumnya sendiri kita harus menyerahkan kepada penyidik PPNS dan kita hanya mendampingi mereka jadi buakan kita yang memproses kita hanya mendampingi." (EN) (It is the local regulation itself that limits our movement. We can only arrest and secure, if we want to destroy we can do that together with the Satpol PP but for the legal process itself, we have to hand it over to the PPNS investigators and we only accompany them so it is not us who process it, we only accompany them).

According to Regional Regulation Number 8 of 2014, the party who had the right to decide whether one committed a crime was the PPNS of Civic Service Police Unit. The result of the interview with the Civic Service Police Unit showed that the PPNS team has not been formed, which

caused the public compliance towards the policy of supervising and controlling the circulation of alcohol in Jayapura City to become low.

- b) There were community members in a certain group having ideas that were contrary to legal regulations and the wishes of the government. The majority of the business actors assumed that the purpose of enforcing the Regional Regulation on alcohol was to earn benefit in the form of money. This caused business actors to resist the alcohol sales control.
- c) The existence of desire to seek profit quickly by members of the community which caused the public to act by deceiving or violating the law.
- d) The existence of legal uncertainty or unclear policies that might conflict with one another which could be the source of public's non-compliance with laws or public policies. The results of interview conducted with the community showed that the reason they did not comply with the alcohol control policy was because many Jayapura City officials were seen consuming alcohol. This was in line with a research conducted in 2016 which stated that the policy of selling alcoholic beverages has become ineffective because law enforcers were not assertive in implementing policies therefore the government took a more modern approach to increase the effectiveness of alcohol policies (Holder, 2016). It was also in accordance with a research conducted in 2016 which showed a relationship between the policy campaign approach to the community and community's attitude towards alcohol policy (Lund, Halkjelsvik and Storrø, 2016).

If the implementers in Jayapura City gave sufficient support, they would be more likely to be successful in implementing the policies as intended by the policy makers. The policies that were enacted needed to have thoughtful planning. The seriousness in addressing the problem that hinder the implementation of alcohol policy in Jayapura City is needed. The public perspective might differ from those of policy makers and implementers. The implications that might occur in the

implementation of alcohol control and supervision policies in the future if this matter was left unchecked, it would become a bad tradition of the implementation apparatus and cause public distrust towards the policy implementers.

CONCLUSION

The obstacles to implementing local government policies in curbing the circulation of alcohol in Jayapura City did not only lie on the policy implementers, but also the alcohol traders. The commitment of the alcohol circulation control and supervision team in carrying out their duties was still lacking. In addition to that, the implementers considered the content of the policy to be still less precise, because the involvement of resources was still not optimal. The coordination among the control and supervision teams has not gone well which caused a difference between the division of tasks and authorities that have been determined by the central and regional government, with the actions in the field. Assertive and strict sanctions for law enforcers who accepted bribes or did not support the implementation of this policy in the field. During actions in the field, BPOM should be involved to see alcoholic products that did not pass the BPOM certification thus the sample testing could be carried out. Evaluation by the entire integrated team had to be conducted before and after carrying out an alcohol control. A review of the content of the policy could be conducted to clarify the authority of the integrated team in carrying out its duties.

ACKNOWLEDGEMENT

The author expresses his gratitude to Mr. Dr. Mochammad Bagus Qomaruddin Drs., M.Sc., Mrs. Dr. Shrimarti Rukmini Devy, Dra., M.Kes., and Dr. Amer Siddiq Amer Nordin who have provided suggestions and input in the process of writing the article. Thanks are also conveyed to the Jayapura City integrated alcohol control and supervision team who have been willing to provide information to support the writing of the article. The author apologizes for the imperfection of this article. Hopefully this article can be

useful for readers and other scientific article writers.

REFERENCES

- Andriyani, L. (2017) 'Kebijakan Politik Pengendalian Dan Pengawasan Minuman Beralkohol Di Jakarta Berdasarkan Peraturan Presiden No. 74 Tahun 2013', *Swatantra*, 15(74), p. 145.
- Aqrom, M. (2018) *Implementasi Perda Kota Cilegon Nomor 5 Tahun 2001 tentang Pelanggaran Kesusilaan, Minuman Keras, Penyalahgunaan Narkotika, Psikotropika dan Dzat Adiktif Lainnya*. Sultan Ageng Tirtayasa Serang, Banten.
- Badan Pengawas Obat dan Makanan (2016) *Peraturan Kepala Badan Pengawas Obat dan Makanan RI Nomor 14 Tahun 2016 tentang Standar keamanan dan mutu minuman beralkohol*. Indonesia.
- Bataren, S., Rumapea, P. and Kiyai, B. (2018) *Implementasi Kebijakan Pengendalian dan Pengawasan Minuman Beralkohol di Kabupaten Minahasa Tenggara*, *Jurnal Administrasi Publik*.
- Christensen, A. S. P. et al. (2019) 'Can a mass media campaign raise awareness of alcohol as a risk factor for cancer and public support for alcohol related policies?', *Preventive Medicine*, 126(May), p. 105722. doi: 10.1016/j.ypmed.2019.05.010.
- D'Abbs, P., Burlayn and Jamijin (2019) 'Aboriginal alcohol policy and practice in Australia: A case study of unintended consequences', *International Journal of Drug Policy*, 66, pp. 9-14. doi: 10.1016/j.drugpo.2019.01.004.
- Data Kekerasan Fisik dan Seksual* (2018). Jayapura, Indonesia: Dinas Pemberdayaan Perempuan Perlindungan Anak dan Keluarga Berencana (DPPPA-KB).
- Grindle, M. S. (2017) *Politics and Policy Implementation in the Third World*. Edited by M. S. Grindle. Princeton University Press.
- Holder, H. D. (2016) *Effective Alcohol Policy*. Second Edi, *International Encyclopedia of Public Health*. Second Edi. Elsevier. doi: 10.1016/B978-0-12-803678-5.00125-9.
- Kasus pelecehan seksual di Kota Jayapura* (2020). Indonesia. Kementerian Kesehatan Republik Indonesia (2019) *Laporan Nasional Riskesdas Tahun 2018*. Jakarta.
- Langi, A. A., Sambiran, S. and Kimbal, M. (2018) 'Implementasi Kebijakan Pengawasan Perdagangan Minuman Beralkohol Di Kecamatan Sario Kota Manado', *Jurnal Ilmu pemerintahan*, Volume.1 N(2337-5736), pp. 1-9.
- Luca, D. L., Owens, E. and Sharma, G. (2019) 'The effectiveness and effects of alcohol regulation: evidence from India', *IZA Journal of Development and Migration*, 9(1), p. 4. doi: 10.1186/s40176-018-0139-1.
- Lund, I. O., Halkjelsvik, T. and Storvoll, E. E. (2016) 'Overlap in attitudes to policy measures on alcohol, tobacco and illegal drugs', *International Journal of Drug Policy*, 28, pp. 60-66. doi: 10.1016/j.drugpo.2015.09.002.
- Matthew B. Miles, A. Michael Huberman, P. M. H. (1983) *Qualitative Data Analysis*. london: SAGE Publications.
- Matthew B. Miles, A. Michael Huberman, P. M. H. (2014) *Qualitative Data Analysis*. london: SAGE Publications.
- Neufeld, M. and Rehm, J. (2018) 'International Journal of Drug Policy Effectiveness of policy changes to reduce harm from unrecorded alcohol in Russia between 2005 and now', *International Journal of Drug Policy*, 51, pp. 1-9. doi: 10.1016/j.drugpo.2017.09.006.
- Peraturan Daerah Kota Jayapura No.8 Tahun 2014* (2014). Jayapura, Indonesia: Walikota.
- Peraturan Menteri Perdagangan Republik Indonesia Nomor 06/M-DAG/PER/1/2015 Tentang Perubahan Kedua atas Peraturan Menteri Perdagangan Nomor 20/M-DAG/PER/4/2014 tentang Pengendalian dan Pengawasan Terhadap Pengadaan, Peredaran dan Penjualan Minum* (2015) *Pelayanan Jakarta.go.id*. Jakarta, Indonesia.
- Peraturan Presiden Republik Indonesia Nomor 74 Tahun 2013 tentang Pengendalian dan Pengawasan Minuman Beralkohol* (2013). Indonesia.
- Peters, B. G. (2018) *American Public Policy: Promise and Performance*. 11th edn. University of Pittsburgh: CQ Press, 2018.
- Polrestabes Kota Jayapura (2019) *Data Pelanggaran Penjualan Miras Di Kota Jayapura*. Jayapura.
- Subramanian, A. and Kumar, P. (2017) 'The impact of price policy on demand for alcohol in rural India', *Social Science and Medicine*, 191, pp. 176-185. doi: 10.1016/j.socscimed.2017.08.024.
- Taylor, N. et al. (2018) 'A mapping review of evaluations of alcohol policy

restrictions targeting alcohol-related harm in night-time entertainment precincts', *International Journal of Drug Policy*, 62(September), pp. 1-13. doi: 10.1016/j.drugpo.2018.09.012.
Undang-Undang Republik Indonesia Nomor 2 Tahun 2002 tentang Kepolisian Negara Republik Indonesia (2002). Indonesia.
Vandenberg, B., Jiang, H. and Livingston, M. (2019) 'Effects of changes to the taxation of beer on alcohol consumption and government revenue in Australia',

International Journal of Drug Policy, 70, pp. 1-7. doi: 10.1016/j.drugpo.2019.04.012.
Wollanda, D. (2018) *Implementasi Peraturan Daerah Nomor 7 Tahun 2009 tentang Penjualan dan Pengawasan Minuman Beralkohol di Kabupaten Empat Lawang (Studi Kasus: Peredaran Minuman Keras di Kecamatan Tebing Tinggi)*. Islam Negeri Raden Fatah, Palembang.

Apakah Penerapan Kebijakan Mempengaruhi Penularan dan Kematian akibat COVID-19? Pembelajaran dari Kabupaten Nganjuk

Does the Implementation of Regulation Affect COVID-19 Transmissibility and Mortality? Lessons Learned from Nganjuk Regency

Danik Iga Prasiska^{1)✉}, Sangchul Yoon²⁾

¹ Health Promotion Section, Public Health Department of Nganjuk District Health Office, Dr Soetomo Street No 77 Nganjuk, 64411, Indonesia

² Graduate School of Public Health, Yonsei University, 50-1 Yonsei-ro, Seodaemun-gu, Seoul 03722, Korea

Corresponding directed to e-mail: digaprasiska@gmail.com

ABSTRACT

Background: Coronavirus disease 2019 (COVID-19) as a global pandemic is ineluctable, transmission that originated from a foreign country became the local transmission in Indonesia. As several regional authorities implemented a large-scale social restriction policy to reduce the transmission of COVID-19, the Nganjuk Regency government chose to implement a different strategy with the implementation of Regent Regulation number 28 of 2020 about novel practice in the COVID-19 pandemic situation. **Objective:** This study aimed to analyze the impact of the implementation of the regulation on COVID-19 transmissibility and mortality at the Nganjuk Regency. **Methods:** Data were collected from the daily confirmed cases and death of COVID-19 made accessible for the public by the Nganjuk Regency Task Force for COVID-19 and Nganjuk Regency Health Office starting from March 30th to September 20th. Interrupted time series analysis was performed to estimate the impact of the implementation of regent regulation on COVID-19 transmission and mortality parameters. **Result:** The trend of new confirmed cases and deaths of COVID-19 in the Nganjuk Regency continued to fluctuate before and even after the implementation of regent regulation. It was found that there were reductions in case of fatality rates by -0.002 ± 0.003 (p 0.002) on CFR and -0.008 ± 0.008 (p 0.007) on eCFR after the regent regulation was implemented but there was no significant reduction on COVID-19 transmissibility parameter. **Conclusion:** Implementation of regent regulation in Nganjuk Regency significantly affected the reduction of case fatality rate but failed to slow down the COVID-19 transmissibility. Intensive community engagement to comply with the health preventive measures should be considered as an effective preventive strategy to reduce the transmission of COVID-19.

Keywords: coronavirus, impact, mortality, regulation, transmission

ABSTRAK

Latar Belakang: Coronavirus disease 2019 (COVID-19) sebagai pandemi global tidak dapat dihindari, penularan yang berasal dari luar negeri menjadi penularan lokal di Indonesia. Seiring beberapa pemerintah daerah menerapkan kebijakan pembatasan sosial berskala besar untuk menekan penularan COVID-19, Pemerintah Kabupaten Nganjuk memilih menerapkan strategi berbeda dengan pemberlakuan Peraturan Bupati nomor 28 Tahun 2020 tentang pedoman persiapan tatanan kebiasaan baru pada kondisi pandemi corona virus disease 2019 (COVID-19). **Tujuan:** Penelitian ini bertujuan untuk menganalisis dampak penerapan peraturan tersebut terhadap penularan dan kematian akibat COVID-19 di Kabupaten Nganjuk. **Metode:** Data dikumpulkan dari kasus harian terkonfirmasi dan kasus kematian akibat COVID-19 yang dapat diakses publik oleh Gugus Tugas Percepatan Penanganan Covid-19 Kabupaten Nganjuk dan Dinas Kesehatan Kabupaten Nganjuk mulai tanggal 30 Maret hingga 20 September. Analisis dilakukan dengan interrupted time series untuk memperkirakan dampak pemberlakuan peraturan bupati terhadap parameter penularan dan kematian akibat COVID-19. **Hasil:** Tren kasus baru terkonfirmasi dan kasus

kematian akibat COVID-19 di Kabupaten Nganjuk terus mengalami fluktuasi sebelum dan bahkan setelah pemberlakuan peraturan bupati. Ditemukan penurunan tingkat kasus kasus kematian sebesar $-0,002 \pm 0,003$ (p 0,002) pada CFR dan $-0,008 \pm 0,008$ (p 0,007) pada eCFR setelah peraturan bupati diterapkan, tetapi tidak ada penurunan signifikan pada parameter penularan COVID-19. **Kesimpulan:** Implementasi peraturan bupati di Kabupaten Nganjuk berpengaruh signifikan terhadap penurunan angka kematian namun tidak dapat mengurangi angka penularan COVID-19. Keterlibatan masyarakat secara intensif untuk mematuhi langkah-langkah pencegahan kesehatan harus dipertimbangkan sebagai strategi pencegahan yang efektif untuk mengurangi penularan COVID-19.

Kata Kunci: coronavirus, dampak, kematian, regulasi, transmisi

INTRODUCTION

Public Health Emergency of International Concern (PHEIC) of Corona Virus Disease (COVID-19) has been announced by The World Health Organization (WHO) on January 30th, 2020 followed by an announcement of the situation as a pandemic (VERTIC, 2020). COVID-19 that initially occurred in Wuhan, China, is currently outspread to other countries including Indonesia (World Health Organization, 2020a). The Indonesian government confirmed the initial case of COVID-19 on March 2nd, 2021, the Indonesian citizen with a contact history with the Japanese, who has been confirmed positive with COVID-19 (Ratcliffe, 2020). As of March 3rd, 2021, confirmed cases of COVID-19 hit 1.353.834 people with 36.271 deaths. The highest confirmed cases were in DKI Jakarta province and East Java Province including Nganjuk Regency with 3100 confirmed cases and 271 deaths, making it one of the highest regencies with confirmed cases and deaths in East Java Province (Kementerian Kesehatan Republik Indonesia, 2021).

Transmission of COVID-19 that was originally from foreign citizens has now become the local transmission (World Health Organization Indonesia, 2020). Health Ministry of Indonesia, working collaboratively with WHO, has provided recommendations to regional authorities to help controlling measures for further transmission of COVID-19 such as; training and education to the asymptomatic patient, collaborating with animal laboratories to expand test capacity, cross-collaboration and community empowerment, and social gathering activity restriction regulation (World Health Organization Indonesia, 2020).

Yet, the government's decisions to restrict the citizen movements to reduce virus transmission have been divergent. Ranging from closing down the educational institutions, offices, to restricting public gathering activities (Suraya *et al.*, 2020).

As the COVID-19 cases were rapidly increasing, on March 31st, 2020, the Indonesian government declared the situation as a national public health emergency but was declined to implement total lockdown due to economic considerations (Pasley, 2020). Later on, the Indonesian government chose to enforce large-scale social restriction as one of the main policies directed to restrict citizen movement and reduces the potential transmission of COVID-19 (Kementerian Kesehatan Republik Indonesia, 2020). On May 11th, 2020, four provinces and twenty-two cities were reported to be enforcing large-scale social restrictions (*Pembatasan Sosial Berskala Besar* (PSBB)). However, it was reported that the policy failed to reduce the incidence of COVID-19 in Indonesia. The average number of confirmed cases in East Java and West Java continued to spike before and during the large-scale social restrictions. In Banten, confirmed cases before and during the first period of the large-scale social restrictions decreased but escalated in the second period. In Jakarta, the average number of cases during the first period of the large-scale social restrictions experienced an escalation from the average but later experienced a reduction in the second period. The result of the study has confirmed if the large-social scale restrictions were ineffective to contain

the transmission of COVID-19 in Indonesia (Suraya *et al.*, 2020).

Nganjuk Regency as one of the highest COVID-19 confirmed cases in East Java province chose a different strategy from the central government recommendations with the issuance of a Regent Regulation number 28 of 2020 about the guidelines for the preparation of novel practice in the condition of coronavirus disease (COVID-19) pandemic in Nganjuk Regency (*Peraturan Bupati Nomor 28 Tahun 2020 Tentang Pedoman Persiapan Tata-tatan Kebiasaan Baru Pada Kondisi Pandemi Corona Virus Disease (COVID-19) di Kabupaten Nganjuk*) on July 15th, 2020. The implementation of the regulation was intended to avoid the heavy socio-economic cost burden due to the COVID-19 pandemic. However, in an article, nine of the regulations stated that several activities, public gatherings, religious activities, schools, and social-cultural activities could be done as long as there was permission from Nganjuk Regency Taskforce, it was following health protocol, and was held in the village or sub-regency among the green zone (Pemerintah Daerah Kabupaten Nganjuk, 2020). This article was in contrast with the scope of the large-scale social restrictions recommended by the central government which indicated ease in restrictions during the pandemic situation in Nganjuk Regency.

The measurement of transmissibility and mortality during an epidemic are crucial parameters in epidemiological modeling (Binny *et al.*, 2020). As both parameters are commonly used to evaluate the effectiveness of the control measure implemented during the epidemic. Appraisal of the effective reproduction number $R(t)$ is the most common method used to measure disease transmissibility. Effective reproduction number $R(t)$ is defined as the average number of people that will be infected by a single infectious person in a certain population after an intervention over time (Shim *et al.*, 2020). Another important characteristic of infectious disease is mortality. The disease mortality rate is measured by case fatality rate (CFR), defined as the proportion of deaths to the number of confirmed cases (Sipahutar and Eryando, 2020; World Health Organization, 2020b). Reliable CFRs are capable to assess the fatality of an

outbreak and evaluate the effectiveness of implemented control measures. CFR is generally obtained at the end of an outbreak and may not be held in an ongoing epidemic. Therefore to mitigate the bias due to delays to case resolution during an ongoing outbreak, restriction on the analysis to resolved confirmed cases is a proper measurement of the CFR during the epidemic (World Health Organization, 2020b).

The strategy to closely monitor COVID-19 transmissibility and mortality has been implemented in several respective countries such as Hongkong, Japan, South Korea, England, Germany, and Norway (Han *et al.*, 2020). The transmissibility and mortality that are closely monitored are used to adjusting the COVID-19 alert system and public health response. The respective countries have set the same goals to reduce the growth of $R(t)$ and CFR as a strategy to contain the transmission of COVID-19 (Han *et al.*, 2020). As the response to intervention is initiated, the pathogen transmissibility changes (Thompson *et al.*, 2019). It is necessary to understand the transmission and mortality of COVID-19 on the initial control measure to evaluate the effectiveness of the implemented control measure. This study aimed to evaluate the effectiveness of the implementation of Nganjuk Regency Regent Regulation number 28 of 2020 in reducing the transmissibility and mortality of COVID-19.

METHOD

Data were collected from the daily confirmed cases report of COVID-19, made available for the public on <https://covid19.nganjukkab.go.id> by Nganjuk Regency Taskforce for COVID-19 (*Satuan Tugas Penanganan COVID-19*) and requesting onset data series from Nganjuk Regency Health Office. For this analysis, data were obtained from March 30th to September 20th, 2020, with 420 total confirmed cases and 49 deaths. The transmissibility of COVID-19 was measured through the estimation of the effective reproduction number ($R(t)$) using the Microsoft Excel Spreadsheet EpiEstim program, available for the public at <http://tools.epidemiology.net/EpiEstim.xls>.

COVID-19 Serial Interval (SI) and Coefficient of Variation (CV) are needed to produce Effective Reproduction Number ($R(t)$). The serial interval was defined as the time period between the onset symptoms of the primary case and the onset of the secondary case, obtained from the literature that used Singaporean COVID-19 serial interval 4.56 days (Tindale *et al.*, 2020) and 5.20 days (Ganyani *et al.*, 2020). Singaporean was chosen under the assumption that it was similar to Indonesian as the serial interval for Indonesian was not available. The Coefficient of Variation (CV) was set by default into 0.3 as recommended by the EpiEstim program. Confidence interval (CI), the range of true value for $R(t)$ analysis was set into 95% and the time step of $R(t)$ production was set into 14 days with the estimation of $R(t)$ performed every 7 days (Taljaard and Hemming, 2020). Effective reproduction number was reported periodically every 14 days and the next period of $R(t)$ estimation was started 7 days after the start date of the previous period. The estimation of $R(t)$ was produced from April 7th to September 14th. The respective analysis result of $R(t)$ was defined as the average number of people that could be infected by a single contagious person in the Nganjuk Regency for 14 days. $R(t) > 1$ indicated a sustained COVID-19 transmission while $R(t) < 1$ indicated otherwise, and the number of new cases was expected to follow the declining trend (Shim *et al.*, 2020).

The mortality of COVID-19 was measured with the Estimation of Case Fatality Rate (CFR). This study used two approaches to calculate CFRs. Naïve case fatality rate (nCFR) was calculated as the number of cumulative deaths among COVID-19 patients from the number of cumulative confirmed cases of COVID-19 at times, while ongoing epidemic case fatality rate (eCFR) was calculated as the number of cumulative deaths among COVID-19 patients from the cumulative deaths of COVID-19 combined with the number of recovered cases of COVID-19 (World Health Organization, 2020b). The

analysis was done every seven days starting from the first death case on May 24th until September 20th. The results of CFRs were used to determine the fatality of COVID-19 that caused deaths (mortality) among confirmed cases in the population of Nganjuk Regency.

Statistical software was used to evaluate the effectiveness of the implementation of regent regulation on reducing transmissibility and mortality of COVID-19. Interrupted time series analysis was performed to estimate the effect of the implementation of regent regulation on several parameters of transmissibility and mortality, newly confirmed cases, the number of deaths, effective reproduction number ($R(t)$), and case fatality rate (CFR).

RESULTS AND DISCUSSION

COVID-19 Mortality in Nganjuk Regency

Mortality parameters of COVID-19 are presented by the number of the death, naïve case fatality rate (nCFR), and ongoing epidemic case fatality rate (eCFR). New confirmed cases of COVID-19 and the number of death are presented periodically in figure 1, starting from the first discovered case of COVID-19 in Nganjuk Regency on March 30th, 2020 to September 20th, 2020. It is shown that new confirmed cases of COVID-19 were really fluctuating with an increasing tendency. The first death of a COVID-19 patient was reported on May 18th, 2020.

Since then, the number of death continues to increase but the number was fluctuating following the trend of new confirmed cases. The case fatality rate of the Nganjuk Regency was reported to be much higher than the national case fatality rate. The trend of national nCFR was decreasing with the highest number of death in the early epidemic then slowed down to 4.0% on September 20th, 2020. However, the trend of Nganjuk Regency nCFR gradually increased from 9.1% on May 18th, 2020 to 15.1% on September 20th, 2020.

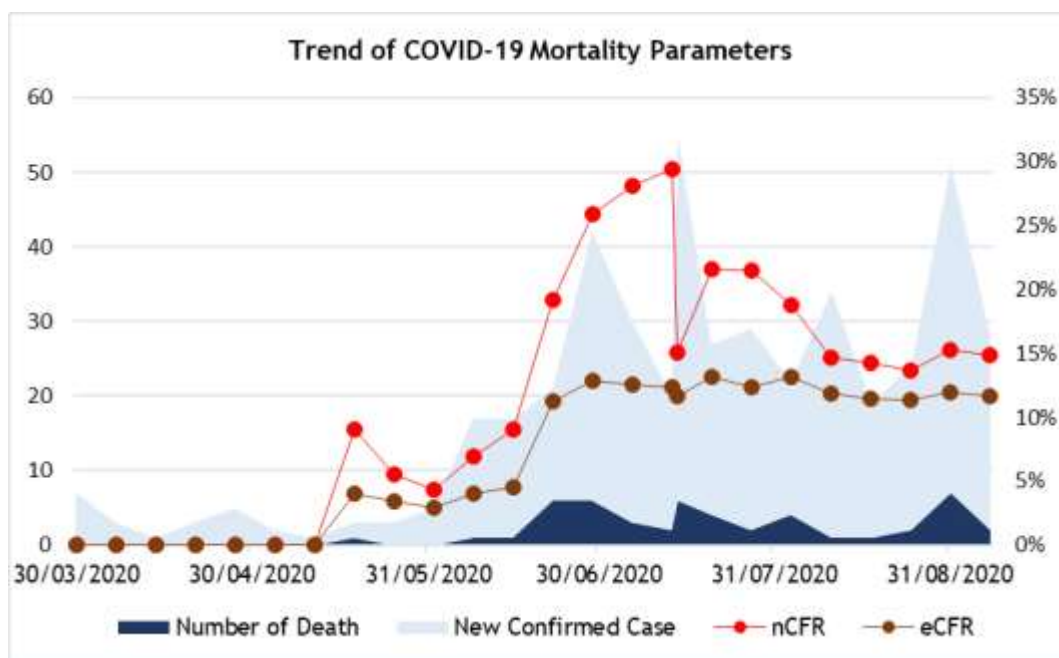


Figure 1. Trend of COVID-19 Mortality Parameters in Nganjuk Regency

COVID-19 Transmissibility in Nganjuk Regency

Table 1 showed the estimation result of the effective reproduction number ($R(t)$) using the Microsoft Excel Spreadsheet EpiEstim package. The estimation was started to be produced from April 7th and ended on September 14th. Using a serial interval of 4.56 days, the peak of reproduction number was in the first time series, starting from April 7th and ending on April 20th (14 days) with the corresponding $R(t)$ of 2.50 (95% CI 0.52 - 6.02). Estimation using a serial interval of 5.20, the peak was also in the first time series with the corresponding mean $R(t)$ (95% CI 0.52 - 6.05). However, it should be noted that the range on the first time series was really wide between the lower level and upper level, indicating that the reported $R(t)$ has a low power that was relatively less precise. The second strike was noticed on the eighth time series between 26th May and 8th June, 2020 with the corresponding effective reproduction number ($R(t)$) of 2.04 using 4.56 days serial interval and 2.06 using 5.20 days serial interval, indicating that a single contagious COVID-

19 case could transmit the disease to two until three other people in the population. The production of effective reproduction numbers was found to be volatile with a tendency to decrease in each time series.

Impacts of Implementation of Regent Regulation

Table 2 presented the result analysis of transmissibility and mortality parameter estimation before and after the implementation of regent regulation. Before the implementation, it was estimated that nCFR increased periodically by 0.013 ± 0.001 (P-value <0.001) and eCFR was estimated to increase periodically by 0.028 ± 0.012 (P-value 0.001). Nevertheless, after the regent regulation was implemented, it was noticed that there was a significant reduction of nCFR and eCFR estimation by -0.002 ± 0.003 (P-value 0.002) on nCFR and by -0.008 ± 0.008 (P-value 0.007) on eCFR. However, the implementation of regent regulation did not show any significant effect on the transmissibility parameters.

Table 1. Result Analysis of Effective Reproduction Number (R(t)) Over Time

Period	Time series		SI 4.56 days			SI 5. 20 days		
	Start Date	End date	R(t)	95% CI		R(t)	95% CI	
				Lower	Upper		Lower	Upper
Before implementation of regent regulation	07-04-2020	20-04-2020	2.50	0.52	6.02	2.51	0.52	6.05
	14-04-2020	27-04-2020	1.90	0.70	3.69	2.09	0.77	4.06
	21-04-2020	04-05-2020	1.73	0.92	2.79	1.87*	1.00	3.02
	28-04-2020	11-05-2020	0.98	0.49	1.64	0.98	0.49	1.64
	05-05-2020	18-05-2020	0.59	0.22	1.15	0.59	0.22	1.16
	12-05-2020	25-05-2020	0.87	0.28	1.79	0.85	0.28	1.74
	19-05-2020	01-06-2020	1.82	0.79	3.28	1.76	0.76	3.18
	26-05-2020	08-06-2020	2.04*	1.14	3.20	2.06*	1.15	3.23
	02-06-2020	15-06-2020	1.48	0.99	2.06	1.60*	1.07	2.23
	09-06-2020	22-06-2020	1.11	0.81	1.47	1.19	0.86	1.57
	16-06-2020	29-06-2020	0.95	0.67	1.27	0.93	0.66	1.25
	23-06-2020	06-07-2020	1.26	0.94	1.64	1.27	0.95	1.65
	30-06-2020	13-07-2020	1.19	0.91	1.51	1.21	0.93	1.53
	07-07-2020	20-07-2020	0.94	0.70	1.21	0.94	0.71	1.21
After implementation of regent regulation	14-07-2020	27-07-2020	1.03	0.78	1.31	1.04	0.79	1.33
	21-07-2020	03-08-2020	0.90	0.66	1.16	0.88	0.65	1.14
	28-07-2020	10-08-2020	1.03	0.78	1.32	1.05	0.79	1.35
	04-08-2020	17-08-2020	1.07	0.81	1.38	1.06	0.80	1.36
	11-08-2020	24-08-2020	1.09	0.81	1.42	1.04	0.77	1.36
	18-08-2020	31-08-2020	1.13	0.86	1.42	1.17	0.90	1.48
	25-08-2020	07-09-2020	0.88	0.66	1.12	0.89	0.67	1.13
	01-09-2020	14-09-2020	1.17	0.91	1.47	1.18	0.91	1.47

Note: *statistically significant

Table 2. The Estimation of COVID-19 Parameters Before and After Implementation of Regent Regulation

Parameter	Before Implementation		After Implementation	
	Estimation	P-value	Estimation	P-value
New Confirmed Cases	3.263 ± 0.424	<0.001*	2.311 ± 1.130	0.349
Number of Deaths	0.551 ± 0.203	0.500	0.833 ± 0.484	0.432
R(t) with SI 4.56 Days	-0.073 ± 0.028	0.070	1.816 ± 1.458	0.336
R(t) with SI 5.20 Days	-0.077 ± 0.030	0.067	1.999 ± 1.500	0.305
nCFR	0.013 ± 0.001	<0.001*	-0.002 ± 0.003	0.002*
eCFR	0.028 ± 0.012	0.001*	-0.008 ± 0.008	0.007*

Note: *statistically significant

The Nganjuk Regency government implemented Regent Regulation Number 28 of 2020 on 15th July, 2020 that regulated the activities that were allowed during the COVID-19 pandemic and the criteria that should be met by event organizers. The regulation was aiming to reduce the transmission rate and mortality rate due to the COVID-19 pandemic in the Nganjuk Regency. The rule-governed regarding public gatherings, religious activities, schools, and social-cultural activities which were permitted in Nganjuk Regency. The permit would be granted if the event organizer complied with the health protocols and the activity was held in the village and sub-regency within the green zone. The issuance of regent regulation has a few points that contradicted with the large-scale social restriction (PSBB) that was promoted by

the central government, indicating that Nganjuk Regency authorities enforced an easing restriction strategy.

Easing restriction strategies due to economic burdens was not a novel measure to contain COVID-19. Several respective countries such as Singapore, Norway, and Spain have implemented easing restriction strategies albeit the easing restriction criteria remain to be unclear, while other respective countries such as Japan, Germany, and South Korea put clear criteria based on epidemiological thresholds when easing restrictions and giving permission to held activities (Han *et al.*, 2020). Based on the result analysis, it is shown that the implementation of regent regulation in Nganjuk Regency was a non-significant control measure to reduce the transmissibility of COVID-19 as shown in

table 2. There was no significant reduction both in the effective reproduction number ($R(t)$) with SI 4.56 days and 5.20 days before and after the regulation was implemented (p -value > 0.05). However, there was a noticeable reduction in both naive case fatality rate (nCFR) and epidemic case fatality rate (eCFR) estimation after the implementation of regent regulation on July 15th, 2020. The result indicated that the implementation of the regulation gave a vital impact in reducing mortality of COVID-19 by -0.002 ± 0.003 (P -value 0.002) on nCFR and -0.008 ± 0.008 (P -value 0.007) on eCFR.

The trend of new confirmed cases showed an increasing tendency even after the regent regulation was implemented. It indicated that the COVID-19 transmission was still ongoing. The results showed the same pattern with Hongkong as the ease of restrictions was put in place, several areas had spikes of new confirmed cases (Information Services Department and Region., 2020). Based on the results of the effective reproduction number ($R(t)$) that were mostly above 1 (one), indicating that the outbreak of COVID-19 cases was sustained in Nganjuk Regency. More stringent control measures and public health responses should be enforced to slow down the transmission of COVID-19.

A study in four provinces of Indonesia reported that the large scale-social restriction policy (PSBB) was ineffective in reducing the number of new confirmed cases because of the lack of compliance of the people to follow health protocols during activities such as not wearing masks and gloves. On the other hand, the number of human traffic from outside the PSBB region was still high (Suraya *et al.*, 2020). In contrast, a study reported that quarantining Hubei Province and the headquarters of Wuhan City, China was effective in reducing the growth of COVID-19 new confirmed cases as the human traffic is held (Yuan *et al.*, 2020). The finding of the previous studies indicated that the lack of compliance of the people in following health protocols during activities might be identified as the main reason for the ongoing transmission. Another vital factor that might contribute to the ongoing transmission in Nganjuk Regency was the attendance of event participants from

outside the green zone area as it was really challenging to manage.

Health promotion intervention may paradoxically be more important in this time of COVID-19 crisis than ever before. The health promotion profession plays a vital role in pandemics, and this has been abundantly evident in the responses to COVID-19. Messaging about health and hygiene is one of the roles that health promotion has played ultimately, drawing on our expertise in delivering health education, and implementing health-related mass media and social marketing campaigns (Smith and Judd, 2020). Nevertheless, changing people's transmission-related behaviors is a vital strategy to flatten the peak of the COVID-19 pandemic situation (van den Broucke, 2021). Several health promotion strategies suggested to reduce COVID-19 transmission in population included motivating people to adopt preventive behaviors, creating social norms that encourage preventive behaviors, creating the right level and type of emotion by coupling health warnings with concrete advice for preventive action, giving advice on how risk behaviors can be replaced by more effective ones, and making the behaviors easy (Michie *et al.*, 2020).

Health promoters can suggest authorities follow the behavioral change recommendations as the authorities have the obligation to decide accurate strategies and enforce sufficient control measures to elicit behavioral changes of the community to comply with the health protocols aimed to fight the COVID-19 pandemic (Guzek, Skolmowska and Głabska, 2020). Authorities also need to acknowledge that taking up health information is an active cognitive process. However, with the rapid availability of information sources that some may be contradictory and some false information may be taken as truth, coordination of key messaging between the health sector and other sectors is a necessity (Smith and Judd, 2020).

WHO promoted a key preparedness and response plan to reduce COVID-19 transmission, which included proper hand hygiene, personal protective equipment such as gloves, face masks, and face shields (World Health Organization, 2020c), isolation and quarantine for people who are ill, suspected, and/or

exposed, and physical distancing with people (Guzek, Skolmowska and Głabska, 2020). High transmission rates and threatening mortality rates have caused many countries and jurisdictions to introduce measures to block the transmission of COVID-19, and strongly encourage hand hygiene features (Alzyood *et al.*, 2020). Practicing hand hygiene effectively will assist in slowing down the transmission of COVID-19 and reduce the effect on people's health status (Aziz, 2021). Therefore, enhancing health promotion and education on changing personal behavior of the people to follow preventive action recommended by health experts should be prioritized as a vital strategy to slow down the transmission of COVID-19.

The implementation of the Regent Regulation showed that there was a significant reduction in Nganjuk Regency CFR, indicating that the fatality of COVID-19 was slowing down as the regulation was put in place. A study in Europe reported that enhancement testing and tracing capacity had a significant effect on reducing the COVID-19 case fatality rate (Pachetti *et al.*, 2020). This finding was in line with the reduction of CFR in Nganjuk Regency after the regent regulation was implemented as stated in the regulation article eleven, second section, that every Nganjuk citizen must follow the rapid test and PCR examination for Corona Virus Disease 2019 in epidemiological investigations (contact tracing) if has been determined by the health officer. This article emphasized the need to increase the number of testing and tracing done in the community thus confirmed cases of COVID-19 can be detected on early-stage before developing severe complications. For this reason, the vital factor that contributed to reducing the case fatality rate was the improvement of viral testing and tracing capability.

Nevertheless, Nganjuk Regency CFR was gradually growing higher than the national level naïve CFR (Kementerian Kesehatan Republik Indonesia, 2020). Local authorities should investigate the cause of the high CFR and adjust an appropriate public health response to lower and maintain low mortality. The lower rate of the CFR could be attributed to the limitation of laboratory confirmation or the lack of surveillance

reports related to the cause of deaths, leading to the underreporting of early epidemics. The high rate of CFR could be associated with the ongoing nature of the COVID-19 outbreak, the different age distribution of the population, and different control measures that are implemented. Other than that, the daily CFR can change according to the number of cumulative confirmed cases based on the laboratory case confirmation using real-time polymerase chain reaction (PCR). Several factors certainly affected the CFR such as the limitation of health worker availability, (Baud *et al.*, 2020) the number of personal protective equipment availability, (Kim and Goel, 2020) and PCR availability. Delayed test result information in the early epidemics led to the biased result of CFR calculation. With the situation of laboratory availability and capability of PCR test, CFR could be reported over-estimated and under-estimated. When the confirmation of the case slowed down, the denominator of CFR would be small which made the CFR over-estimated. However, if later when patients under surveillance died but the results of PCR were confirmed to be positive, then the previous reported CFR was under-estimated as it was not included in the numerator while calculating CFR (Kim and Goel, 2020; World Health Organization, 2020b).

Reliable CFR can be used to assess the severity and fatality of an outbreak and evaluate the impact of presented control measures. However, the calculation of naïve CFR may not be held in the epidemic situation as it is based on two assumptions which are the likelihood of detecting cases when death is consistent and all of the cases have been resolved (World Health Organization, 2020b). Estimating severity with eCFR could mitigate bias due to delays of case resolution but reports may delay (World Health Organization, 2020b). Despite a need to further clarify the reliability of CFR during an ongoing pandemic, the calculation of CFR is useful for informing the stakeholders, policymakers, and the general public about the potential severity of COVID-19. A particular strength of this study is the use of real-time data and provides novel analysis about the effectiveness related to the implementation of COVID-19 regulation

aside from large-scale social restrictions. Nevertheless, some limitations of this study should be addressed. First, estimation of the effective reproduction number ($R(t)$) was done using Singaporean series interval with the assumption that it is similar to Indonesia because there was no report related to the Indonesian series interval available. Second, for asymptomatic confirmed cases, the date of onset was reported using the same date of the first PCR test. Therefore, the results of the calculation might not be able to describe the actual conditions perfectly. Further study with a longer period should be done to ensure the long-term effectiveness of the implementation of regent regulation in reducing transmission and mortality of COVID-19.

CONCLUSION

This study reported that the implementation of regent regulation in the Nganjuk Regency significantly affected the reduction of case fatality rate but failed to slow down the COVID-19 transmissibility. Special attention needed to be paid to the growth of CFR as it would be beneficial to understand the appropriate measures to reduce and maintain CFR to the low mortality.

Controlling human traffic of the citizen in the specific zone and compliance in following health protocols during the activities remained to be challenging. Therefore, enhancing health education on changing personal behavior to follow health recommendations should be considered as a vital strategy to slow down the transmission of COVID-19.

ACKNOWLEDGEMENT

We thank Nganjuk Regency Health Office for providing the COVID-19 onset data series for the analysis. The data presented and the views expressed are solely the responsible of the author.

REFERENCES

- Alzyood, M. et al. (2020) 'COVID-19 reinforces the importance of handwashing', *Journal of Clinical Nursing*, 29(15-16), pp. 2760-2761. doi: 10.1111/jocn.15313.
- Aziz, A.-M. (2021) 'Hand hygiene and stopping the spread of COVID-19',

- Journal of Paramedic Practice*, pp. 1-7.
- Baud, D. et al. (2020) 'Real estimates of mortality following COVID-19 infection', *The Lancet*, 20(July), pp. 776-777. doi: [https://doi.org/10.1016/S1473-3099\(20\)30195-X](https://doi.org/10.1016/S1473-3099(20)30195-X).
- Binny, R. N. et al. (2020) 'Effect of alert level 4 on Reff: review of international COVID-19', *medRxiv*, (April), pp. 1-17.
- van den Broucke, S. (2021) 'Why health promotion matters to the COVID-19 pandemic, and vice versa', *Health Promotion International*, 35(2), pp. 181-186. doi: 10.1093/HEAPRO/DAAA042.
- Ganyani, T. et al. (2020) 'Estimating the generation interval for COVID-19 based on symptom onset data', *MedRxiv Preprint*. doi: 10.1101/2020.03.05.20031815.
- Guzek, D., Skolmowska, D. and Głabska, D. (2020) 'Analysis of gender-dependent personal protective behaviors in a national sample: Polish adolescents' covid-19 experience (place-19) study', *International Journal of Environmental Research and Public Health*, 17(16), pp. 1-22. doi: 10.3390/ijerph17165770.
- Han, E. et al. (2020) 'Lessons learnt from easing COVID-19 restrictions: an analysis of countries and regions in Asia Pacific and Europe', *The Lancet*, 396(10261), pp. 1525-1534. doi: 10.1016/S0140-6736(20)32007-9.
- Information Services Department, the G. of H. K. and Region., S. A. (2020) Some anti-epidemic measures eased, Some anti-epidemic measures eased.
- Kementerian Kesehatan Republik Indonesia (2020) Situasi Terkini Perkembangan Coronavirus Disease, Infeksi Emerging.
- Kementerian Kesehatan Republik Indonesia (2021) Situasi Terkini Perkembangan Coronavirus Disease (COVID-19) 04 Maret 2021, Infeksi Emerging.
- Kementrian Kesehatan Republik Indonesia (2020) 'Peraturan Menteri Kesehatan Republik Indonesia Nomor 9 Tahun 2020 Tentang Pedoman Pembatasan Sosial Berskala Besar Dalam Rangka Percepatan Penanganan Corona Virus Disease 2019 (COVID-19)', Kementerian Kesehatan Republik Indonesia. Jakarta,

- Indonesia: Kementrian Kesehatan Republik Indonesia. doi: 10.4324/9781003060918-2.
- Kim, D. D. and Goel, A. (2020) 'Real Estimates of Mortality Following COVID-19 Infection', *The Lancet*, 20(July), pp. 773-774. doi: 10.1001/jama.2020.1585.WHO.
- Michie, S. et al. (2020) Slowing down the covid-19 outbreak: changing behaviour by understanding it, *The BMJ Opinion*.
- Pachetti, M. et al. (2020) 'Impact of lockdown on Covid-19 case fatality rate and viral mutations spread in 7 countries in Europe and North America', *Journal of Translational Medicine*, 18(1), pp. 1-7. doi: 10.1186/s12967-020-02501-x.
- Pasley, J. (2020) Here's how Indonesia – where 'ghosts' representing trapped souls are scaring people into maintaining lockdown – went from no cases in early March to having the second highest death rate in Asia, *INSIDER*.
- Pemerintah Daerah Kabupaten Nganjuk (2020) 'Peraturan Bupati Nomor 28 Tahun 2020 Tentang Pedoman Persiapan Tatatan Kebiasaan Baru Pada Kondisi Pandemi Corona Virus Disease (COVID-19) di Kabupaten Nganjuk'. Indonesia: Pemerintah Daerah Kabupaten Nganjuk.
- Ratcliffe, R. (2020) First coronavirus cases confirmed in Indonesia amid fears nation is ill-prepared for outbreak, *The Guardian*.
- Shim, E. et al. (2020) 'Transmission potential and severity of COVID-19 in South Korea', *International Journal of Infectious Diseases*, 93, pp. 339-344. doi: 10.1016/j.ijid.2020.03.031.
- Sipahutar, T. and Eryando, T. (2020) 'COVID-19 case fatality rate and detection ability in Indonesia', *Kesmas*, 15(2), pp. 14-17. doi: 10.21109/KESMAS.V15I2.3936.
- Smith, J. A. and Judd, J. (2020) 'COVID-19: Vulnerability and the power of privilege in a pandemic', *Health Promotion Journal of Australia*, 31(2), pp. 158-160. doi: 10.1002/hpja.333.
- Suraya, I. et al. (2020) 'The impact of large-scale social restrictions on the incidence of covid-19: A case study of four provinces in Indonesia', *Kesmas*, 15(2), pp. 49-53. doi: 10.21109/KESMAS.V15I2.3990.
- Taljaard, M. and Hemming, K. (2020) 'Why proper understanding of confidence intervals and statistical significance is important: Covid-19 randomised trials as a case in point', *The Medical Journal of Australia*, (July), pp. 1-11.
- Thompson, R. N. et al. (2019) 'Improved inference of time-varying reproduction numbers during infectious disease outbreaks', *Epidemics*, 29. doi: 10.1016/j.epidem.2019.100356.
- Tindale, L. et al. (2020) 'Transmission interval estimates suggest pre-symptomatic spread of COVID-19', *MedRx Preprint*. doi: 10.1101/2020.03.03.20029983.
- VERTIC (2020) Addendum to Fact Sheet 15 on National Implementation Measures for the International Health Regulations 2005 (IHR) COVID-19 as a Public Health Emergency of International Concern (PHEIC) under the IHR protect against , control an. London.
- World Health Organization (2020a) Covid-19 Situation Report, World Health Organization. Geneva.
- World Health Organization (2020b) Estimating mortality from COVID-19: Scientific brief.
- World Health Organization (2020c) Recommendation to Member States to improve hand hygiene practices widely to help prevent the transmission of the COVID-19, WHO Interim Report.
- World Health Organization Indonesia (2020) Coronavirus disease 2019 (COVID-19) Situation Report-66, WHO Situation Report. Geneva. doi: 10.1056/nejmc2004973.
- Yuan, J. et al. (2020) 'Monitoring transmissibility and mortality of COVID-19 in Europe', *International Journal of Infectious Diseases*, 95, pp. 311-315. doi: 10.1016/j.ijid.2020.03.050.

Perilaku Pencegahan COVID-19 pada Pengemudi Transportasi Online, Samarinda, Indonesia

COVID-19 Prevention Behavior on Online Transportation Drivers in Samarinda, Indonesia

Muhammad Sultan¹⁾ ✉

¹ Occupational Health and Safety, Faculty of Public Health, Universitas Mulawarman, Samarinda, Indonesia

Corresponding directed to e-mail: sultan_kajang81@yahoo.co.id

ABSTRACT

Background: The numbers of COVID-19 sufferers in various countries are continuing to increase, including in Indonesia. COVID-19 has a wide impact, including on the online transportation service sector. Since 2015 in Samarinda City, there has been an online transportation service, namely Gojek Indonesia, which provides services to customers in the form of shuttle passengers, food delivery, and other necessities, including goods delivery services. The online transportation driver group is one of the groups at high risk of transmitting COVID-19. **Objective:** This study aimed to obtain information about COVID-19 prevention behavior including driver's knowledge of COVID-19, perceptions, and customer service on online transportation drivers in Samarinda. **Methods:** This study used a qualitative design with a phenomenological approach. The informants in this study were selected as many as 5 people. The Gojek at Cendana Street was chosen because it is the main entrance and exit route of tourists in Samarinda. The data technique was an interview and used qualitative data analysis. **Results:** COVID-19 is a respiratory disease. Drivers considered that COVID-19 is a dangerous disease, frightening, and causes excessive panic in the community because of its rapid spread and risks to all groups of people, including online transportation drivers. Serving customers remains a priority even though they understand the risk of contracting COVID-19. Efforts to prevent the transmission of COVID-19 carried out by Gojek drivers including using masks, washing hands with flowing water and soap, or hand sanitizer, also cleaning helmets or replacing them with spare helmets. **Conclusion:** The transmission of COVID-19 can be prevented by behaving cleanly and healthy also prioritize the prevention of transmission of COVID-19, such as wearing masks while doing activities, keeping passenger helmets clean, and washing hands after serving customers.

Keywords: Behavior, COVID-19, Driver, Online, Public Transportation

ABSTRAK

Latar Belakang: Jumlah penderita COVID-19 di berbagai negara terus mengalami peningkatan, tak terkecuali di Indonesia. COVID-19 berdampak luas, termasuk di sektor jasa transportasi online. Sejak tahun 2015, di Kota Samarinda telah tersedia jasa transportasi online yakni Gojek Indonesia yang menyediakan pelayanan jasa kepada pelanggan berupa antar jemput penumpang, antar makanan, dan kebutuhan lainnya, termasuk jasa pengiriman barang. Kelompok pengemudi transportasi online merupakan salah satu kelompok berisiko tinggi penularan COVID-19. **Tujuan:** Penelitian ini bertujuan untuk memperoleh informasi tentang perilaku pencegahan COVID-19 termasuk pengetahuan pengemudi tentang COVID-19, persepsi, dan pelayanan terhadap pelanggan pada pengemudi transportasi online di Samarinda. **Metode:** Penelitian ini menggunakan desain kualitatif pendekatan fenomenologi. Informan dalam penelitian ini dipilih 5 orang. Pemilihan pengemudi Gojek di kawasan Jalan Cendana karena merupakan jalur utama untuk masuk dan keluarnya wisatawan di Samarinda. Teknik pengumpulan data adalah wawancara dan menggunakan analisis data kualitatif. **Hasil:** COVID-19 adalah penyakit menular melalui pernapasan. Driver menganggap bahwa COVID-19 merupakan salah satu penyakit yang berbahaya, menakutkan, dan menimbulkan kepanikan yang berlebihan di

lingkungan masyarakat karena penyebarannya yang begitu cepat dan berisiko pada semua kalangan masyarakat, termasuk para pengemudi transportasi online. Pelayanan kepada pelanggan tetap menjadi prioritas meskipun mereka paham akan risiko penularan COVID-19. Upaya pencegahan penularan COVID-19 yang dilakukan driver Gojek antara lain menggunakan masker, mencuci tangan dengan air mengalir dan sabun, atau cairan pembersih tangan, dan membersihkan helm atau menggantinya dengan helm cadangan. **Kesimpulan:** Penularan COVID-19 dapat dicegah dengan berperilaku hidup bersih dan sehat serta mengedepankan tindakan pencegahan penularan COVID-19 seperti memakai masker saat beraktivitas, menjaga kebersihan helm penumpang, dan mencuci tangan setelah melayani pelanggan.

Kata Kunci: Perilaku, COVID-19, Pengemudi, Online, Transportasi umum

INTRODUCTION

The World Health Organization (WHO) has officially declared the new corona virus or Coronavirus Disease (COVID-19) caused by SARS-CoV-2 as a pandemic (WHO, 2020). This statement was delivered directly by the General Director of WHO, Tedros Adhanom Ghebreyesus through the newspaper (Pratnyawan, 2020). Globally, as reported on February 28, 2021, there were 113,472,187 confirmed cases, 2,520,653 deaths that occurred with a Case Fatality Rate (CFR) of 2.2% and was spread to 223 countries (World Health Organization, 2021).

Since the first COVID-19 case was found in Indonesia until March 6, 2021, there were 1,368,069 confirmed cases, 37,062 deaths with a CFR of 2.7% spread over 35 provinces (Kementerian Kesehatan Republik Indonesia, 2021). The Indonesian government has declared that COVID-19 is a national disaster. Various cities in Indonesia in collaboration with the central government made policies in an effort to prevent the spread of COVID-19 in the community (Zahrotunnimah, 2020) such as movement restrictions, closing schools or workplaces, and many other efforts (World Health Organization, 2020).

As of May 10, 2021, in Samarinda City, 13,047 confirmed cases have been recorded, 107 discarded cases and 47 probable cases. A total of 12,418 cases have been declared cured, 343 people have died, and 286 cases are still being treated (COVID-19 Samarinda, 2021).

A confirmed case is someone who has tested positive for COVID-19 as proven by laboratory tests. Meanwhile, the discarded case is a person with a

suspect case status and the results of the examination are negative twice and has completed a 14-day quarantine period. A probable case is a suspected case with Severe Acute Respiratory Infection (ARI; also known as ISPA) or has died with a convincing clinical picture of COVID-19 but there are no results of the RT-PCR yet (Reverse Transcriptase-polymerase chain reaction) laboratory examination (Kementerian Kesehatan Republik Indonesia, 2020).

Since 2015 until now, Gojek Indonesia online transportation services have been available in Indonesia, including in the city of Samarinda. The services provided by the online transportation company include passenger shuttle, food and other necessities, delivery of goods, and other types of services (Kristo, 2020). The number of Gojek drivers in Indonesia has reached two million people who are spread throughout Gojek's operational areas (PT. Aplikasi Karya Anak Bangsa, 2020). According to information obtained from the Gojek Samarinda driver community, namely Bubuhan Gojek Samarinda Driver (Budgos), the number of drivers in Samarinda City is around 5,000 drivers which is dominated by motorbike drivers.

The outbreak of COVID-19 in various cities in Indonesia has certainly become a serious concern for various parties, including Gojek Indonesia. Gojek realizes that its driver partners in the field are one of the groups at risk of transmitting the COVID-19 disease (Kartika, 2020). The spread of COVID-19 transmission to Gojek drivers can be done through direct contact with passengers. In

addition, transmission can be through transmission media such as money used for transactions, helmets used by customers, and other things.

These media or items can transmit the virus if they have been contaminated with bodily fluids such as droplets from sneezing, coughing, or talking that contain the COVID-19 virus. Based on this, the Gojek management has issued a number of appeals to its driver partners through the Gojek application to always be aware of the spread of COVID-19 (GOJEK, 2020) without compromising the quality of services provided to Gojek customers.

The knowledge and perception of Gojek drivers regarding COVID-19 are very important in preventing its transmission. The risk of transmitting COVID-19 to Gojek drivers is very high because of the demand of their work which is to serve customers at all times through the types of services that have been provided by Gojek management. The high risk of being infected or contracting COVID-19 from and to customers will affect the services that will be provided to Gojek customers. According to this, a study was conducted to obtain information regarding COVID-19 prevention behavior including driver knowledge about COVID-19, perceptions, and customer service to online transportation drivers.

METHOD

This study was a qualitative study without conducting statistical analysis (Bilgin, 2016). This study used a phenomenological design (Tuksel and Yildirim, 2015) to understand and describe a phenomenon (Helaluddin, 2018) namely the behavior of online transportation drivers in preventing COVID-19 based on their experiences during the COVID-19 pandemic. Research informants were online transportation drivers (Gojek drivers) on Jalan Cendana Samarinda with total 45 members. The selection of Gojek drivers in Cendana was carried out using purposive sampling, this was because the area had a great opportunity to obtain service orders in the form of shuttle customers or tourists from and to Samarinda City. This study was conducted for about two weeks started from March 6 to 19, 2020 and have obtained research ethics number No.

855/UN17.11/DT/2020 from the committee of ethics. The data collection technique was open interviews with informants at the online transportation drivers' base and used qualitative data analysis (B., A.M.H and Saldaña, 2014). The informants in this study were chosen 5 people in total because they have explained varied and complete information also have obtained information overload (Hariyanti, 2015).

RESULTS AND DISCUSSION

The face-to-face data collection process was carried out during the COVID-19 pandemic so that in its implementation it followed health protocols, including keeping the safe distance, washing hands with soap or hand sanitizer, and wearing masks. Despite the COVID-19 pandemic situation, in the process of gathering information in the field, there were quite a number of informants who were willing to be interviewed.

Information collection was carried out on five informants. The characteristics of the informants are shown in table 1 below:

Table 1. Characteristics of Informants according to Age, Gender, and Education

Age	Gender	Education
50	Male	Junior High
29	Female	Senior High
47	Male	Senior High
43	Male	Junior High
23	Male	Senior High

COVID-19 is one of the infectious diseases whose emergence is relatively new in the community so that various perceptions will arise, especially for online drivers regarding the definition of COVID-19. The following is an excerpt from an interview with an informant regarding the definition of COVID-19.

"...sama saja dengan penyakit menular pernapasan lain," (SK, 50 years old, AW, 43 years old). (it is just the same with the other infectious respiratory disease).

"...corona itu penyakit baru ditemukan dan lewat pernapasan," (SM, 29 years old, BI, 23 years old).

(Corona is a newly found disease and through respiratory).

"...Corona penyakit berbahaya masuk lewat hidung kayak TBC," (AA, 47 years old). (Corona is a dangerous disease which transmits through the nose just like Tuberculosis).

The Gojek driver said that COVID-19 is a disease which transmitted through respiratory, the same as other diseases such as tuberculosis (TB) caused by infection with *Mycobacterium tuberculosis* (Nurjana *et al.*, 2015). TB transmission can occur through the air (Afiat, Mursyaf and Ibrahim, 2018) from droplets or splashes of phlegm that come out when a TB patient coughs, sneezes, or when talking (Feny Widiyarsih, Rochmawati, 2013).

The sources of information regarding COVID-19 among drivers can be seen based on the results of interview excerpts as follows:

"...dari whatsapp, aplikasi driver Gojek," (SM, 29 years old, AA, 47 years old, AW, 43 years old, dan BI, 23 years old). (It is from WhatsApp, Gojek driver application).

"...dari teman driver juga infonya, ada juga banyak di FB," (SK, 50 years old). (The information obtained from the fellow driver, also there are a lot of information in Facebook).

Information regarding COVID-19 was obtained from various sources, including information from online communication media such as WhatsApp, Facebook, and the Gojek application, fellow drivers, also television media. However, the information obtained from social media could contain hoax information (Sampurno, Kusumandyoko and Islam, 2020), thus, analytical skills are needed to filter the information so that it would not be easy to become a victim of hoax information (Rahayu and Sensusiyati, 2020).

COVID-19 can be transmitted through various transmission media as conveyed by the informant through the interview excerpt below.

"...menular langsung dari penumpang. Juga uang yang dipakai

membayar," (SK, 50 years old, SM, 29 years old, AA, 47 years old, dan BI, 23 years old). (It is transmitted directly from the passengers and also through the money that is used to pay).

"...saat berhadapan langsung penumpang. mungkin helm yang dipakai juga," (AW, 43 years old). (While having a direct contact with the passengers, maybe through helmet that is also used).

Transmission of COVID-19 can be through direct contact with sufferers or transmission media (Nugroho *et al.*, 2020) such as money used during cash payment transactions and the use of passenger helmets (Elisanti *et al.*, 2020). These items can be a transmission medium if they are contaminated with viruses (Indrawati, 2020) and enter the host's body through mucous membranes (eyes, nose, mouth) (Windhiyana, 2020).

COVID-19 can cause various negative impacts as conveyed by informants through interview excerpt obtained when this study was carried out as follow.

"...sangat berbahaya karena sampai orang banyak yang meninggal," (SK, 50 years old, AW, 43 years old, SM, 29 years old, AA, 47 years old, BI, 23 years old). (It is very dangerous because it causes many people to die).

"...bikin takut dan panik orang-orang," (BI, 23 years old). (It makes people scared and panic).

Online transportation drivers thought that COVID-19 has a dangerous impact because many cases caused people to die, this COVID-19 disease is scary and causes excessive panic in the community because of its rapid spread and risks to all circles of society including online transportation drivers. They feel threatened by contracting COVID-19 (Lembaga Demografi Fakultas Ekonomi Bisnis Universitas Indonesia, 2020).

Gojek's management is committed to providing maximum service to its customers. Gojek's driver partners in the field implement the company's commitment as the results of the following interview excerpts:

"...sudah menjadi tugas mas bahwa mitra driver Gojek harus memberikan pelayanan yang baik agar pelanggan puas," SK, 50 years old, AW, 43 years old, SM, 29 years old, AA, 47 years old, BI, 23 years old). (It has become our duty that Gojek's driver partners have to provide excellent services so that the customers can be satisfied).

Gojek drivers responded that the service provided to customers remains a priority in working as drivers even though they understand the risk of COVID-19 transmission, which at any time drivers can contract the disease. Gojek drivers made efforts to prevent COVID-19 transmission by wearing masks at work, using hand sanitizer (for those who have), washing hands with soap and flowing water after completing orders and washing passenger's helmets also replacing them with spare helmets. Drivers are having difficulty getting masks and hand sanitizer in the field.

According to the results of interviews with informants, information was obtained that they carried out their activities as online drivers by pay attention to and implement the COVID-19 health protocol.

"Memakai masker," (SK, 50 years old, AW, 43 years old). (By wearing mask).

"...pakai masker, cuci tangan," (AA, 47 years old). (By wearing mask, washing hands).

"Cuci helm dan ganti yang lain," (SM, 29 years old, BI, 23 years old). (By washing the helmet and replace it with the spare helmet).

"...masker sama pembersih tangan agak susah didapatnya sekarang," (AW, 43 years old, SM, 29 years old, BI, 23 years old). (Mask and hands cleaner are quite hard to get now).

"...semua berisiko tertular atau menularkan COVID-19, sehingga harus tetap waspada dan memakainya, ..., COVID-19 ini musuh tidak nyata, jadi kita sebagai driver mesti menjaga kesehatan agar pelanggan juga aman dari COVID-19," (AW, 43 years old, AA, 47 years old, SM, 29 years old).

(Everyone is at risk of contracting or transmitting COVID-19, thus, has to be alert and use it..., COVID-19 is an unreal enemy, so we as the drivers have to maintain our health in order to make the passengers safe from the transmission of COVID-19).

The results of the observations of the study towards the drivers interviewed while the study was conducted, it was proven that the drivers wore masks, they also provided hand sanitizers in bottles with an average size of 60 milliliters, and additional helmets for their customers.

Drivers in carrying out their activities use hand sanitizer which is considered effective in reducing the number of germs on hands that can cause the transmission of COVID-19 disease. Hand hygiene will prevent the transmission of diseases caused by organisms. The use of hand sanitizers is effective in reducing bacterial growth on the palms (Khaira, 2019). In addition, hand sanitizers can improve hand hygiene (Cure and Van Enk, 2015). Maintaining hand hygiene during outbreak conditions can help to control the epidemics (Pittet, Boyce and Allegranzi, 2017).

Aside from using hand sanitizer (if there is any), Gojek drivers choose the alternative of washing their hands with soap after completing orders. This action is in line with the recommendation from the Ministry of Health of the Republic of Indonesia which states that the act of washing hands with soap is one of the sanitation activities so that hands are clean and can break the chain of transmission of disease agents. This is done because hands can be a medium for disease transmission, either directly or indirectly (Kementerian Kesehatan RI, 2014). Washing hands with soap is one indicator of clean and healthy living behavior. Washing hands with soap can prevent various diseases (Lestari, 2019).

A person's knowledge is based on his belief in something (Bratianu, 2018). The knowledge of Gojek drivers about COVID-19 is obtained through a trust process that can be justified in a certain way. Gojek drivers' knowledge of COVID-19 can be expressed based on their belief that COVID-19 is a respiratory infectious disease. The belief in the driver partner's opinion is based on information from a number of sources such as exposure to

information from currently available online media.

Online media has a strategic role in disseminating information to the public and should be educative also fact-based (Kementerian Komunikasi dan Informatika, 2020). Aside from online media, the presence of peer groups is also important as a source of information in the group (D.R, 2014). Fellow Gojek drivers are a source of information about the COVID-19 disease. In the Gojek driver application, there is also an automatic message delivered by the Gojek management to all driver partners (PT. Aplikasi Karya Anak Bangsa, 2020). Whenever the driver activates the Gojek application to wait for orders from customers, at that time an automatic message from the Gojek management regarding COVID-19 will appear on the application screen.

Gojek drivers are one of the groups of workers who are at high risk of COVID-19 transmission, considering that their activities mostly serve passengers whose contact and travel history is unknown before interacting with drivers. Contact that occurs between passengers and drivers is one of the ways of COVID-19 transmission. Most payment transactions from customers to Gojek drivers use cash in the form of cash money and coins.

WHO stated that the SARS-CoV-2 virus as the cause of COVID-19 was able to survive on the surface of money for days after exposure (Rafie, 2020). In addition, the transmission of COVID-19 can also occur through helmets provided by drivers for passengers, and while using them the passengers cough, catch a cold, or sneeze which makes the virus stick to the helmet glass. After being used by passengers, helmets are usually handed over to the driver so that there is space for virus transmission.

COVID-19 is considered a dangerous disease because it causes death for those who are infected, becomes a scary thing, and creates excessive panic in the community. This perception is based on the knowledge and information obtained by the driver about COVID-19. Perception is a person's process of knowing several things through their five senses (Kementerian Pendidikan dan Kebudayaan, 2016). The number of sources of information obtained by drivers, both from fellow drivers, online

media, and other sources of information, has given rise to various perceptions about COVID-19.

The death rate for COVID-19 cases in Indonesia until the third week of March 2020 reached 8.4% of the number of positive COVID-19 cases, which was far above the global death rate which was only around 4.01% (Putri, 2020). This was one of the factors that triggered the perception which considered COVID-19 as a dangerous and frightening disease. Not a few people are panicking about COVID-19, so it takes the role of all parties in providing information about COVID-19 as a whole so as not to cause unnecessary unrest in the community.

In addition, this perception is not without reason, given that the Indonesian government has issued a policy to prevent the transmission of COVID-19. These policies include limiting direct interaction in the community, avoiding gatherings that involve many people, limiting a person's travel to and from abroad or trips outside the region that are less important and can still be postponed, limiting activities at work that allow direct contact to occur, and other preventive efforts. This policy is called social distancing.

A person maintains a physical distance from someone to reduce the transmission of the virus from one to another. This is done as an effort to prevent or inhibit the spread of the virus. Besides that, social distancing is also carried out by staying away from infected people, limiting themselves to interact with the social environment, so that people will be far from people who have been infected (Allcott *et al.*, 2020). This policy is considered effective in preventing the transmission of COVID-19 in the community.

Although the cases of the spread of COVID-19 are increasing every day, Gojek drivers remain consistent in providing the best service to customers. Gojek driver partners have prepared and used Personal Protective Equipment (PPE) while working such as wearing masks. The use of respiratory protection in the form of a mask used by a person will function to protect the respiratory organs from various sources of disease that are transmitted through chemical contamination, micro-organisms and others by filtering clean and healthy air

(Kementerian Tenaga Kerja dan Transmigrasi Republik Indonesia, 2010). Therefore, the use of PPE in the form of masks every day for drivers is highly recommended to prevent the transmission of COVID-19 and the masks are should only be used once.

One of the risk factors that have the potential to transmit COVID-19 among drivers is through the use of passenger helmets. Usually drivers provide helmets for passengers which are used interchangeably by passengers who use the services of drivers. The helmet can be a medium of transmission if it is used by passengers who cough, runny nose, or sneeze because the virus will stick to the helmet glass. Drivers take preventive efforts by cleaning passenger helmets or replacing them with other helmets. This was conveyed by the Director of the Infection Hospital, Prof. Dr. Sulianti Saroso who said that the Corona virus could easily spread through helmets. Therefore, it is recommended to use a hand sanitizer after touching the helmet or washing the helmet (Nurhuda, 2020).

The COVID-19 prevention behavior that has been carried out by driver partners (Reporter and *tirto.id*, 2020), particularly Gojek partners (GOJEK, 2020) in Samarinda City can be used as an example of positive action in preventing the spread of COVID-19 transmission for other online transportation drivers. The availability of masks and hand sanitizer at the beginning of COVID-19 is difficult to find in drug stores and pharmacies. This scarcity occurs because the number of users is not proportional to the amount of supply in the field. This is a challenge for drivers in maintaining their attitudes and actions consistently in preventing the transmission of COVID-19.

Currently, several parties in Samarinda who concern about anticipating the scarcity of hand sanitizer in the market, such as the Faculty of Pharmacy, Mulawarman University, Samarinda, are in the process of mass production which will later be distributed to the public through pharmacies, drug stores and government and private agencies in need (Jalil, 2020). This effort will certainly minimize the scarcity of supplies, especially hand sanitizer in Samarinda City, so that the difficulty for Gojek drivers to get it will no longer be felt.

The participation of all parties is very important in preventing the transmission of COVID-19 in Samarinda City and other cities in Indonesia. Currently, a number of government agencies, educational institutions, and several private parties have adopted a policy of limiting the activities of their employees and employees outside the home through the work from home program.

CONCLUSION

Gojek drivers understand that COVID-19 is a respiratory infectious disease. COVID-19 transmission can occur due to direct contact with customers and transmission media such as through money and helmets. They obtained this information from fellow drivers, online media, and television media. The spread of COVID-19 transmission among Gojek drivers can be prevented by implementing clean and healthy living behaviors. In addition, Gojek drivers take preventive measures against COVID-19 while working, such as wearing masks, keeping passenger helmets clean, and washing hands after serving customers. Therefore, the participation of all parties is needed, including the local government to cooperate with the Gojek operational management in the area to immediately issue joint policies, especially in preventing the spread of COVID-19 for driver partners. Likewise for customers to continue to behave safely when using online transportation services, for example wearing their own helmets, cleaning their hands frequently, and wearing masks. Aside from that, participation of the general public to disseminate complete information about COVID-19 to reduce excessive fear and panic in the community is important.

ACKNOWLEDGEMENT

Thank you to the Leaders of the Faculty of Public Health, University of Mulawarman Samarinda, who always support the activities of the Tri Dharma College of the academic community, especially in the field of research. Thanks to Budgos colleagues (Bubuhan Driver Gojek Samarinda) Korwil Cendana who have helped in this research.

REFERENCES

- Afiat, N., Mursyaf, S. and Ibrahim, H. (2018) 'Keberhasilan Pengobatan Tuberkulosis (TB) Paru di Wilayah Kerja Puskesmas Panambungan Kota Makassar', *Higiene*.
- Allcott, H. et al. (2020) 'Polarization and Public Health: Partisan Differences in Social Distancing during COVID-19', *SSRN Electronic Journal*. doi: 10.2139/ssrn.3570274.
- B., M., A.M.H, M. and Saldaña, J. (2014) *Qualitative Data Analysis A Methods Sourcebook*. 3rd edn. Los Angeles: SAGE Publication.
- Bilgin, M. H. (2016) 'Entrepreneurship, Business and Economics Volume 2', in *Proceedings of the 15th Eurasia Business and Economics Society Conference*. Switzerland: Springer International Publishing.
- Bratianu (2018) *The Elusive Definition of Knowledge*. Springer International Publishing.
- COVID-19 Samarinda (2021) *Kasus Terpapar Covid-19*, <https://corona.samarindakota.go.id/>.
- Cure, L. and Van Enk, R. (2015) 'Effect of hand sanitizer location on hand hygiene compliance.', *American journal of infection control*, 43(9), pp. 917-921. doi: 10.1016/j.ajic.2015.05.013.
- D.R, F. (2014) *Group Dynamics*. California: Wadsworth Cengage Learning.
- Elisanti, A. D. et al. (2020) 'Efektifitas Paparan Sinar UV Dan Alkohol 70% Terhadap Total Bakteri Pada Uang Kertas Yang Beredar Di Masa Pandemi COVID-19', *Jurnal Riset Kefarmasian Indonesia*. doi: 10.33759/jrki.v2i2.88.
- Feny Widiyarsih, Rochmawati, I. S. (2013) 'Faktor Resiko Kejadian Tuberkulosis Paru di Unit Pelayanan Kesehatan Puskesmas Perum 2 Pontianak'.
- GOJEK (2020) *Gojek Cegah Penyebaran COVID-19 dengan*, www.gojek.com.
- Hariyanti, M. (2015) 'Analisis Data Kualitatif Miles dan Huberman', *Kompasiana*.
- Helaluddin (2018) 'Mengenal Lebih Dekat dengan Pendekatan Fenomenologi: Sebuah Penelitian Kualitatif', *Uin Maulana Malik Ibrahim Malang*.
- Indrawati, W. (2020) 'Membantu Masyarakat Mencegah Wabah Covid-19', *'Adalah Buletin Hukum & Keadilan*, 4(1), pp. 145-150.
- Jalil, A. (2020) 'Hand Sanitizer Langka, Universitas Mulawarman Produksi Sendiri'. Available at: <https://www.liputan6.com/regional/read/4203943/hand-sanitizer-langka-universitas-mulawarman-produksi-sendiri>.
- Kartika, N. E. (2020) 'Fitur Aplikasi Gojek Favorit Konsumen Pada Saat Pandemi COVID-19 Di Kota Bandung Gojek Application Features Favorite for Consumers during the COVID-19 Pandemic in Bandung City yang menjadi minat masyarakat adalah diterima oleh khalayak dan banyaknya menin', *Jurnal Ilmu Komunikasi*, 9(2), pp. 1680-1695.
- Kementerian Kesehatan Republik Indonesia (2020) 'Keputusan Menteri Kesehatan Republik Indonesia Nomor HK.01.07/MenKes/413/2020 Tentang Pedoman Pencegahan dan Pengendalian Corona Virus Disease 2019 (Covid-19)', *MenKes/413/2020*, 2019, p. 207.
- Kementerian Kesehatan Republik Indonesia (2021) *Situasi Terkini Perkembangan COVID-19 06 Maret 2021*.
- Kementerian Kesehatan RI (2014) *Perilaku Mencuci Tangan Pakai Sabun di Indonesia*, *Kemenkes RI*. Jakarta: Kementerian Kesehatan Republik Indonesia.
- Kementerian Komunikasi dan Informatika (2020) *Peran Strategis Media Online Dalam Penyebaran Informasi*. Available at: https://kominform.go.id/index.php/content/detail/3331/Peran-Strategis-Media-Online-Dalam-Penyebaran-Informasi/0/berita_satker.
- Kementerian Pendidikan dan Kebudayaan (2016) *Persepsi*. Available at: <https://kbpi.web.id/persepsi>.
- Kementerian Tenaga Kerja dan Transmigrasi Republik Indonesia (2010) 'Peraturan Menteri Tenaga Kerja dan Transmigrasi Republik Indonesia Nomor Per.08/Men/VII/2010 tentang Alat Pelindung Diri'. Jakarta: Kementerian Tenaga Kerja dan Transmigrasi Republik Indonesia.
- Khaira, N. (2019) *Gambaran Hasil Bakteri pada Telapak Tangan Sebelum dan Sesudah Penggunaan Handsanitizer*. Padang. Available at: <http://repo.stikesperintis.ac.id/694/1>

- /KTI NADYA.pdf.
- Kristo, F. Y. (2020) 'Dampak Virus Corona ke Gojek: GoRide Turun, GoFood Naik', *detikNet*.
- Lembaga Demografi Fakultas Ekonomi Bisnis Universitas Indonesia (2020) 'Laporan Penelitian Survei Pengalaman Mitra Driver Gojek Selama Pandemi Covid-19', *Lembaga Demografi*, pp. 1-11.
- Lestari, A. O. A. W. (2019) 'Relationship Between Knowledge and Attitude To Hand', *Jurnal Promkes: The Indonesian Journal of Health Promotion and Health Education*, 7(1), pp. 1-11. doi: 10.20473/jpk.V7.I1.2019.1.
- Nugroho, W. D. et al. (2020) 'Literature Review: Transmisi Covid-19 dari Manusia ke Manusia Di Asia', *Jurnal of Bionursing*, 2(2), pp. 101-112.
- Nurhuda, S. F. (2020) *Penyebaran Corona Bisa Lewat Helm, Banyak Orang Jadi Takut Beli*. Available at: <https://www.100kpj.com/motonews/5944-penyebaran-corona-bisa-lewat-helm-banyak-orang-jadi-takut-beli> (Accessed: 3 June 2020).
- Nurjana, M. A. et al. (2015) 'Faktor Risiko Terjadinya Tuberculosis Paru Usia Produktif (15-49 Tahun) Di Indonesia Risk Factors of Pulmonary Tuberculosis on Productive Age 15-49 Years', *Media Litbangkes*.
- Pittet, D., Boyce, J. M. and Allegranzi, B. (2017) *Hand Hygiene: A Handbook for Medical Professionals*. New Jersey: Wiley-Blackwell.
- Pratnyawan, A. (2020) *WHO Tetapkan Virus Corona Sebagai Pandemi, Apa Bedanya dengan Epidemi?*, *Suaracom*. Available at: <https://www.hitekno.com/sains/2020/03/12/145310/who-tetapkan-virus-corona-sebagai-pandemik-apa-bedanya-dengan-epidemi> (Accessed: 16 March 2020).
- PT. Aplikasi Karya Anak Bangsa (2020) *The solution for every situation. With Gojek, there is always a way*. Available at: <https://www.gojek.com/> (Accessed: 16 March 2020).
- Putri, R. D. (2020) 'Mengapa Tingkat Kematian Corona di Indonesia Bisa Capai 8,4 Persen?' Available at: <https://tirto.id/mengapa-tingkat-kematian-corona-di-indonesia-bisa-capai-84-persen-eF1P>.
- Rafie, B. T. (2020) 'Warning terbaru WHO: Uang tunai bisa menyebarkan virus corona'. Available at: <https://internasional.kontan.co.id/news/warning-terbaru-who-uang-tunai-bisa-menyebarkan-virus-corona?page=all>.
- Rahayu, R. N. and Sensusiyati (2020) 'Analisis Berita Hoax Covid - 19 Di Media Sosial Di Indonesia', *Jurnal Ekonomi, Sosial, & Humaniora*.
- Reporter and tirto.id (2020) *Cara Grab & Gojek Antisipasi Penyebaran Virus Corona COVID-19*, <https://tirto.id/>.
- Sampurno, M. B. T., Kusumandoyo, T. C. and Islam, M. A. (2020) 'Budaya Media Sosial, Edukasi Masyarakat, dan Pandemi COVID-19', *SALAM: Jurnal Sosial dan Budaya Syar-i*. doi: 10.15408/sjsbs.v7i5.15210.
- Tuksel, P. and Yildirim, S. (2015) 'Theoretical frameworks, methods, and procedures for conducting phenomenological studies in educational settings', *Turkish Online Journal of Qualitative Inquiry*.
- WHO (2020) *Coronavirus disease (COVID-19) outbreak*.
- Windhiyana, E. (2020) 'Dampak COVID-19 Terhadap Kegiatan Pembelajaran Online Di Perguruan Tinggi Kristen Di Indonesia', *Perspektif Ilmu Pendidikan*. doi: 10.21009/pip.341.1.
- World Health Organization (2020) 'Kriteria-kriteria kesehatan masyarakat untuk menyesuaikan langkah-langkah kesehatan masyarakat dan sosial dalam konteks COVID-19 Lampiran', *WHO*.
- World Health Organization (2021) 'COVID-19 Weekly Epidemiological Update 22', *World Health Organization*, (February), pp. 1-3.
- Zahrotunnimah, Z. (2020) 'Langkah Taktis Pemerintah Daerah Dalam Pencegahan Penyebaran Virus Corona Covid-19 di Indonesia', *SALAM: Jurnal Sosial dan Budaya Syar-i*. doi: 10.15408/sjsbs.v7i3.15103.

Kualitas Hidup Lansia di Rumah dan di UPT Pelayanan Sosial Tresna Werdha

Quality of Life on Elderly who Lived at Home and at Tresna Werdha Nursing Home

Giovanda Wahyu Andika¹⁾, Farida Wahyu Ningtyias^{1)✉}, Sulistiyan¹⁾

¹ Department of Public Health Nutrition, Public Health Faculty, Universitas Jember, Jember, Indonesia
 Corresponding directed to e-mail: farida.fkm@unej.ac.id

ABSTRACT

Background: The world's population is currently in an era of aging with the number of elderly people exceeding 7% of the population. This condition will certainly bring positive and negative impacts. It's needed to pay attention to the elderly, especially on their quality of life. **Objective:** To determine the differences in the quality of life of the elderly who live with their families in the working area of the Puskesmas Sukorejo and at Jember Tresna Werdha Social Service Unit. **Methods:** The type of this research was observational analytic using a cross-sectional research design. The study was conducted from January to March 2020. The population in this study amounted to 3472 elderly, consisting of elderly who live in the Tresna Werdha Jember Social Service Unit and live at home with their families in the working area of Sukorejo Community Health Center, Jember. The sample in this study amounted to 100 respondents, consisting of 50 respondents at each research location. The variable studied was the quality of life of the elderly from each place of residence. The data collection instruments included the MMSE questionnaire to assess cognitive impairment in the elderly and the WHOQOL-BREF questionnaire to measure the quality of life in the elderly. The sampling technique used was proportional random sampling. **Results:** The results showed that the majority of the elderly were aged 60-74 years, most of the elderly were female and never attended school. The majority of the elderly who live at home still have a partner, while those who live in the Social Service have no partner. Chi-square test results showed that there was no difference in the quality of life of the elderly in the physical, psychological, and environmental domains, but there were differences in the quality of life in the social domain. **Conclusion:** There were no differences in the quality of life in the physical, psychological, and environmental domains, but there were differences in the social domain, among respondents. The elderly who lived at home with their family had a better quality of life in the social domain. Suggestion for the elderly who live at home in the working area of the Sukorejo Community Health Center is to increase positive activities that can entertain themselves and participate in social activities, for the elderly who live at the Tresna Werdha Jember Social Services Unit, it is hoped that they can increase the intensity of good social relations between fellow elderly in homestead and do not close themselves off to the people around them, while for supervisors and caregivers in Tresna Werdha Jember Social Service Unit, it is expected to further improve assistance to the elderly to determine the quality of life of the elderly in each homestead.

Keyword: elderly, family, quality of life, Tresna Werdha Social Service Unit

ABSTRAK

Latar Belakang: Populasi dunia saat ini berada pada era penduduk menua dengan jumlah penduduk lansia melebihi 7% populasi. Kondisi ini tentunya akan membawa dampak positif maupun negatif. Tentunya diperlukan adanya perhatian pada lansia, khususnya kualitas hidup lansia. **Tujuan:** Untuk mengetahui perbedaan kualitas hidup lansia yang tinggal bersama keluarga di wilayah kerja Puskesmas Sukorejo dan di Unit Pelaksana Teknis (UPT) Pelayanan Sosial Tresna Werdha Jember. **Metode:** Jenis penelitian yaitu analitik observasional dengan menggunakan desain penelitian cross-sectional. Penelitian dilaksanakan mulai bulan Januari-Maret 2020. Populasi dalam penelitian ini berjumlah 3472 lansia, terdiri dari lansia yang tinggal di UPT Pelayanan Sosial Tresna Werdha Jember



©2021. Jurnal Promkes: The Indonesian Journal of Health Promotion and Health Education. **Open Access under CC BY-NC-SA License.**

Received: 10-12-2020, Accepted: 30-08-2021, Published Online: 20-09-2021

dan yang tinggal di rumah bersama keluarga, di wilayah kerja Puskesmas Sukorejo Kabupaten Jember. Sampel dalam penelitian ini berjumlah 100 responden, terdiri dari 50 responden pada masing-masing lokasi penelitian. Variabel yang diteliti yaitu kualitas hidup lansia dari masing-masing tempat tinggal. Instrumen pengumpulan data meliputi kuesioner MMSE untuk menilai gangguan fungsi kognitif lansia dan kuesioner WHOQOL-BREF untuk mengukur kualitas hidup lansia. Teknik pengambilan sampel menggunakan *proportional random sampling*. **Hasil:** Hasil penelitian menunjukkan bahwa mayoritas lansia berusia 60-74 tahun, dengan jenis kelamin terbanyak yakni perempuan. Mayoritas responden tidak pernah bersekolah. Sebagian besar lansia yang tinggal di rumah masih mempunyai pasangan, sementara yang tinggal di UPT Pelayanan Sosial Tresna Werdha sudah tidak memiliki pasangan. Hasil uji Chi-square menunjukkan bahwa tidak terdapat perbedaan kualitas hidup lansia pada domain fisik, psikologis, lingkungan, namun terdapat perbedaan pada kualitas hidup domain sosial. **Kesimpulan:** Tidak terdapat perbedaan pada kualitas hidup domain fisik, psikologis, dan lingkungan, namun terdapat perbedaan kualitas hidup pada domain sosial. Lansia yang tinggal di rumah bersama keluarga memiliki kualitas hidup domain sosial lebih baik dibandingkan yang tinggal di UPT Pelayanan sosial Tresna werdha. Saran bagi lansia yang tinggal di rumah adalah meningkatkan kegiatan positif yang dapat menghibur diri dan mengikuti kegiatan sosial, bagi lansia yang tinggal di UPT diharapkan meningkatkan intensitas hubungan sosial yang baik antar sesama lansia dan tidak menutup diri terhadap orang-orang sekitar. Bagi pembimbing dan pengasuh yang ada di UPT, diharapkan untuk lebih meningkatkan pendampingan terhadap lansia untuk mengetahui kualitas hidup para lansia di masing-masing wisma.

Kata Kunci: lansia, keluarga, kualitas hidup, UPT Pelayanan Sosial Tresna Werdha

INTRODUCTION

The world population in this era is in the era of ageing population, with the population aged 60 years and over exceeding 7% of the population. According to the projected population of Indonesia in 2010-2035, the elderly population is increasing every year. Indonesia has about 24.79 million elderly or around 9.27%, which means that this number has increased by about 1 million elderly from 2017 which amounted to around 23.4 million elderly (Badan Pusat Statistik, 2019). The increasing number of elderly goes hand in hand with health problems. The morbidity rate of the elderly population in 2019 was 26.20%. It means, there are 26 to 27 elderly people who are sick out of 100 elderly people (Badan Pusat Statistik, 2019).

The increasing number of elderly is expected to have an impact on life. Stanhope and Lancaster (2016) in (Kiik, Sahar and Permatasari, 2018) stated that the elderly as a population at risk have three health risk characteristics, namely, biological risks including age-related risks, social and environmental risks, and behavioral or lifestyle risks. The process of physiological functions degradation can cause non-communicable diseases that

mostly affected the elderly. In addition, degenerative diseases can reduce the body's resistance which caused the elderly to be susceptible to infectious disease infections (Ningrum and Chondro, 2019). The emergence of psychological and social changes in the elderly, such as the loss of children and partners, unwillingness to accept new realities, such as long-suffering of illness, and so on. These changes make them feel dependent on others (Nurhasanah, Jufrizal, and Abdat, 2020). The elderly will also experience psychological changes such as short-term memory, frustration, loneliness, fear of losing their freedom, fear of facing death, changes in desires, depression, and anxiety (Andesty and Syahrul, 2019).

Quality of life is an individual's perception according to the current position, both in a cultural context, a developing value system related to the goals of standard expectations, attention whose aspects include physical, psychological, social, from the health sector which is influenced by one's personal experience, beliefs, expectations, and perceptions related to certain diseases and treatments (Ratnawati, Wahyudi and Zetira, 2019). Quality of life among the elderly is physical health, psychological health, social in

functional conditions, and environmental conditions of the elderly. The level of independence on physical, psychological, social, and environmental conditions affects the quality of human life (Santoso, 2019).

The World Health Organization Quality of Life or WHOQL defines quality of life as an individual's perception of their life among society in the context of the existing culture and value system related to goals, expectations, standards, and concerns. Quality of life in this case is a very broad concept that is influenced by the individual's physical condition, psychology, level of independence, and the individual's relationship with the environment (Samper, Pinontoan and Katuuk, 2017).

Many changes and problems occur in the elderly along with the aging process. All changes that occur in the elderly will certainly be a stressor for them and will affect the welfare of the elderly. The increased welfare of the elderly will also improve the quality of life of the elderly because the aging process, disease, and various changes also degradation in function experienced by the elderly reduce the quality of life of the elderly progressively (Prima *et al.*, 2019). As individuals, the elderly know themselves including their abilities, strengths, and weaknesses. In addition, the elderly understand what they feel, think, and do. The elderly use these psychological abilities to relate to other individuals. The psychological problems of the elderly are a determining part of a person's quality of life that can be resolved with the support of the family (Ramadani, 2019). Social interaction is the key to maintaining their social status based on their ability to socialize. Social interaction is necessary for improving the quality of life (Giena, Sari and Pawliyah, 2019).

The living environment influences the health status of the elderly. Differences in residence will lead to differences in the physical, social, economic, psychological environment that will affect the health status of the elderly in it. Differences in the place of residence of the elderly cause differences in health services obtained by the elderly (Apriliana, Rohmawati and Sulistiyani, 2018). As for the elderly who live at

home, the changing roles in the family, socio-economic, and social community result in setbacks in adapting to the new environment and interacting with their social environment. Unlike the elderly who live at home with their families and interact with the community, the elderly who live in a nursing home will experience exposure to the environment and new friends that require the elderly to adapt positively or negatively, which can also affect their quality of life (Lailiyah, Rohmawati and Sulistiyani, 2018). Therefore, the purpose of this study is to determine the differences in the quality of life of the elderly living at home in the working area of the Sukorejo Community Health Center, Jember Regency, and at Tresna Werdha Jember Social Service Unit.

METHODS

The research method used was quantitative. The type of research used in this study was observational analytic using a cross-sectional approach. The study was carried out from January to March 2020. The population in this study consisted of the elderly who lived at Tresna Werdha Jember Social Service Unit and lived at home with their families in the working area of the Sukorejo Health Center, with a total of 3472 elderly. The sample in this study amounted to 100 respondents, consisting of 50 respondents at each research location. The sampling technique used proportional random sampling and Chi-square test as the data analysis.

The technique of data collection was done by conducting an interview. Interviews used the MMSE (Mini-Mental State Examination) questionnaire to determine cognitive impairment and the WHOQOL-BREF questionnaire to measure the quality of life of the elderly. WHOQOL-BREF is a WHOQOL instrument that has been narrowed down to 4 aspects, namely physical aspects, psychological aspects, social relationships, and relationships with the environment. The criteria for the elderly studied were aged ≥ 60 years, did not have cognitive impairment and did not suffer from physical disabilities, and still carried out daily activities independently.

RESULTS AND DISCUSSION

Respondents were divided into two groups including the elderly who lived with their families in the working area of the Sukorejo Community Health Center and at the Tresna Werdha Jember Social Services Unit. Each group of respondents consists of 50 elderly, the total number of respondents was 100 elderly. The working area of the Sukorejo Community Health Center consists of 4 villages, namely Karangsono, Sukorejo, Gambirano, and Curahkalong. Respondents were taken based on representatives from 4 villages in the working area of the Sukorejo Community Health Center. The elderly who were respondents at the Tresna Werdha Jember Social Service Unit was divided into 8 homesteads whose elderly could still do their activities independently, namely Lotus, Cempaka, Melati, Mawar, Sakura, Seroja, Seruni, and Dahlia.

According to Table 1, the results of the study on the characteristics of the elderly showed that the majority of the elderly in the range of 60-74 years old was 76%. Meanwhile, according to gender, there were more female elderly (58%) than the male elderly (42%). Most of the elderly who lived at home with their families and who lived in the Tresna Werdha Jember Social Services Unit never attended school (36%) and did not graduate when they were in elementary school (46%). Meanwhile, based on their marital status, the majority of the elderly living at home are married and still live with their partners at home (47%), while for the elderly living at the Tresna Werdha Jember Social Service Unit, most of them have separated from their partners (42%), both those who have divorced (15%) or the elderly partner has died (27%).

The quality of life of the elderly was measured using the WHOQOL-BREF questionnaire, which consists of four domains, namely the physical domain, the psychological domain, the social domain, and the environmental domain. The following were the results of measuring four quality of life domains in each of the elderly residences.

The results of the Chi-square analysis showed that there was no difference in the quality of life in the physical domain, psychological domain, and the environmental domain ($\sim P$ value >

0.05), but there was a difference in the quality of life in the social domain (P value < 0.05).

Table 1. Characteristics of Respondents

Characteristics	Live with Families		Live at Nursing Home	
	n	%	n	%
Age				
Elderly (60-74 years)	37	37	39	39
Old (75-90 years)	13	13	11	11
Gender				
Male	22	22	20	20
Female	28	28	30	30
Educational Level				
Did not attend school	21	21	15	15
Did not graduated from Elementary School	22	22	24	24
Graduated from Elementary School	5	5	8	8
Graduated from Junior High School	1	1	0	0
Graduated from Senior High School	1	1	3	3
Marital Status				
Never married	0	0	1	1
Married	47	47	7	7
Divorced and not remarried	1	1	15	15
Widowed and not remarried	2	2	27	27
Total	50	50	50	50

Quality of life is the functional condition of the elderly which includes physical health, psychological health, social support, and environmental conditions. Quality of life is a concept from several dimensions that include physical, mental, psychological health, and well-being which sometimes can also be considered as life satisfaction (Nursilmi, Kusharto and Dwiriani, 2017). The physical domain according to the results of the interviews with respondents showed that most of the elderly who live at home with their families and at Tresna Werdha Jember Social Service Unit have a quality of life with adequate physical health in the fair category, while the rest are in a good category. A person's overall physical health

condition has declined since a person enters the elderly phase in their life. This is marked, among others, by the emergence of various symptoms of diseases that have never been suffered at a young age. A well-functioning physique allows the elderly to achieve quality aging (Arini, Hamiyati and Tarma, 2016).

Table 2. Quality of Life Differences

Characteristics	Live with Families		Live at Nursing Home		<i>P value</i>
	n	%	N	%	
Physical Domain					
Poor	0	0	1	1	0.095
Fair	31	31	39	39	
Good	19	19	10	10	
Psychological Domain					
Fair	29	29	25	25	0.422
Good	21	21	25	25	
Social Domain					
Poor	0	0	3	3	0.042 [*]
Fair	31	31	37	37	
Good	19	19	10	10	
Environmental Domain					
Fair	22	22	19	19	0.542
Good	28	28	31	31	
Total	50	50	50	50	

According to the elderly, they were satisfied with their physical condition even though at certain times their condition has degraded. But the elderly said it was a natural thing, due to the aging process. In fact, some elderly who are still working in the fields or gardens admitted that they will get sick if they do not work in the fields or gardens. This means that the elderly still have sufficient vitality and satisfaction in carrying out activities and the ability to work. It can be assumed that when they do something according to their wishes, they get a feeling of pleasure and peace as well as life satisfaction (Hadipranoto, Satyadi and Rostiana, 2020). Likewise with the elderly who live at Tresna Werdha Jember Social Services Unit, most of the elderly can still carry out activities that require more physical abilities such as morning exercise and community development. They also have a physical domain quality of life included in the fair and good categories. Although the elderly at the Tresna Werdha Jember Social Service Unit did not carry out strenuous activities such as rice fields and gardening, they admitted that they were still strong enough to carry out home

activities such as sweeping, washing clothes, cleaning the yard, and walking to the mosque in the Social Service Unit. In terms of sleep quality, most of the elderly claimed to be comfortable with their sleep. They stated that it was quite restful when sleeping. The average bedtime of the elderly begins at 9 pm and wakes up at 3 am. Good sleep quality is also an indication that the elderly have a good quality of life (Dahroni, Arisdiani and Widiastuti, 2019).

As for the psychological domain, the quality of life of most elderly who live at home with their families were included in a fair category, the rest were included in the good category, as well as the elderly who live at the Tresna Werdha Jember Social Service Unit, half of the elderly's quality of life were included in the fair category, while the other half of the elderly included in the good category. At the stage of development of the elderly, the main development is to understand and accept the physical and psychological changes they experience and to use their life experiences to adapt to physical and psychological changes (Friska *et al.*, 2020). The elderly need assistance from those closest to them in order to understand and accept these physical and psychological changes. In this case, the elderly who live at home with their families get more assistance so that they claimed to be comfortable because they get attention from their children, grandchildren, and neighbors. According to this, the elderly get strong support to improve their quality of life in old age. The family has an important role in the concept of health and illness felt by the elderly in their old age because the family is the closest support system that provides physiological and psychological care to the elderly (Rekawati, Sahar and Wati, 2020). As for the elderly who live at Tresna Werdha Jember Social Service Unit, they also got this form of support. However, it was certainly different from the elderly who live at home with their families, even though most of them have no family, but they consider that everyone in the Tresna Werdha Social Service Unit is their new family, so they still get support from their roommates, homeowners, mentors, and caregivers at the Social Service Unit, as well as from the health workers who were there. This is a form of social interaction. Social interaction is an individual's way to maintain the individual's social behavior so

that individuals can still behave socially with other individuals (Budiarti, Indrawati and Sabarhun, 2020).

In terms of the environmental domain, the elderly who live with their families had more values of quality of life which included in the good category, the rest were included in the fair category, as well as the elderly who live at the Tresna Werdha Social Service Unit. This indicates that the quality of life of the elderly in the environmental domain was quite good. A residence is a place that must be able to create a peaceful and pleasant atmosphere for its residents so that residents can feel at home and feel like they want to continue to live in that place (Rohmah, Purwaningsih and Bariyah, 2017). Thus, the elderly will be supported by the environment to achieve a high quality of life. The elderly who live with their families admitted that they were happy to stay at home. Although the researchers assessed that some of the existing elderly homes were in poor condition, they admitted that they were comfortable and felt safe living at home, because they were always grateful and accepted whatever they had received so far. The support and attention of their children and grandchildren also make them felt more at home. High family support will provide comfort and tranquility for the elderly (Suharno, Nugraha and M, 2020). Likewise, the elderly who live at Tresna Werdha Jember Social Service Unit admitted that they felt at home in that place. In fact, there were some respondents who said that they refused to be brought home by their families because they felt comfortable and safe living at the Tresna Werdha Social Service Unit. According to the researcher, the efforts of social workers at the Social Service Unit to make the elderly who live there feel at home have been quite good with the programs and activities that have been implemented. The role of social workers in service activities at Tresna Werdha Jember Social Service Unit is to empower the elderly from the problems they face and provide motivation so that the elderly can return to functioning socially (Andriani, Tuwu and Tanzil, 2020).

In the social domain, there were differences in the quality of life of the elderly in two different places of residence. Most of the elderly claimed that the quality of life in this domain is quite

good, the numbers showed the quality of life included in the fair and good categories if calculated from both. However, in some elderly who live at the Tresna Werdha Social Service Unit, the quality of life in the social domain was included in the poor category. This was because they often had disagreements with their fellow elderly which caused them to often be ignored by other elderly. After the researchers traced this to the supervisors and caregivers at Tresna Werdha Jember Social Service Unit, it turned out that the elderly who were often ignored were elderly who were less active in participating in existing activities so that other elderly did not know this problematic elderly well, and if something happened, the problematic elderly can easily get emotional. One of the factors was the lack of social support for the problematic elderly. The social support mentioned is the support that can improve the quality of life of the elderly, which includes the components of social support itself, such as emotional attachment, social integration, recognition, reliable dependence, guidance, and opportunities for nurturing (Jannah and Rohmatun, 2018). Unlike the elderly who live at home, all of them had a good quality of life due to the harmonious relationship between their families, as well as neighbors and people around them, due to the support from their families and neighbors. In addition, other forms of support from the family such as assistance or direction in doing tasks (instrumental) as well as recognition of one's quality, belief in one's abilities in the form of feelings or actions (appreciation) (Mulyati, Rasha and Martiatuti, 2018).

CONCLUSION

The results of the study showed that there was no difference in the quality of life in the physical domain, psychological domain, and environmental domain between the elderly who lived in the work area of the Sukorejo Community Health Center and those who lived at Tresna Werdha Jember Social Service Unit. Meanwhile, there were differences in the social domain because of the misunderstandings that often occur among some of the elderly who live in nursing home.

Suggestions for the elderly who live at home in the working area of the Sukorejo Community Health Center are to increase positive activities that can entertain themselves and participate in social activities to avoid feeling lonely while facing old age. In addition, the role of the family is expected to continue to provide support and establish good communication, as well as can provide all the needs of the elderly.

As for the elderly who live at Tresna Werdha Jember Social Service Unit, it is hoped that they can increase the intensity of good social relations between the elderly in the nursing home and not close themselves off to the people around them. For supervisors and caregivers at the nursing home, it is expected to further improve assistance to the elderly in each homestead in order to get to determine the quality of life of the elderly in each homestead.

ACKNOWLEDGEMENT

The researcher expresses his gratitude to the Tresna Werdha Nursing Home and Sukorejo Health Center, Jember Regency for their cooperation so that research activities run smoothly.

REFERENCES

- Andesty, D. and Syahrul, F. (2019) 'Hubungan Interaksi Sosial Dengan Kualitas Hidup Lansia Di Unit Pelayanan Terpadu (Uptd) Griya Werdha Kota Surabaya Tahun 2017', *The Indonesian Journal of Public Health*, 13(2), p. 171. doi: 10.20473/ijph.v13i2.2018.171-182.
- Andriani, N., Tuwu, D. and Tanzil, T. (2020) 'Peran Pekerja Sosial Dalam Memberikan Pelayanan Sosial Kepada Lansia Di Panti Sosial Tresna Werdha Minaula Kendari', *Jurnal Kesejahteraan dan Pelayanan Sosial*, 1(1), p. 81. doi: 10.52423/jkps.v1i1.10875.
- Apriliana, N., Rohmawati, N. and Sulistiyani, S. (2018) 'Tingkat Konsumsi dan Aktivitas Fisik Lansia yang Tinggal Bersama Keluarga dan UPT Pelayanan Sosial Tresna Werdha', *Jurnal Nutrisia*, 20(1), pp. 6-11. doi: 10.29238/jnutri.v20i1.111.
- Arini, D., Hamiyati, H. and Tarma, T. (2016) 'Pengaruh Dukungan Sosial Keluarga Terhadap Kualitas Hidup Lansia di Panti Werdha Ria Pembangunan Jakarta Timur', *JKKP (Jurnal Kesejahteraan Keluarga dan Pendidikan)*, 3(2), pp. 68-73. doi: 10.21009/jkkp.032.04.
- Badan Pusat Statistik (2019) 'Katalog: 4104001', *Statistik Penduduk Lanjut Usia di Indonesia 2019*, p. xxvi + 258 halaman.
- Budiarti, A., Indrawati, P. and Sabarhun, W. (2020) 'Hubungan Interaksi Sosial terhadap Tingkat Kesepian dan Kualitas Hidup pada Lansia', *Jurnal Ilmiah Kesehatan*, 13(2), pp. 124-133.
- Dahroni, D., Arisdiani, T. and Widiastuti, Y. P. (2019) 'HUBUNGAN ANTARA STRES EMOSI DENGAN KUALITAS TIDUR LANSIA', *Jurnal Keperawatan Jiwa*, 5(2), p. 68. doi: 10.26714/jkj.5.2.2017.68-71.
- Friska, B. et al. (2020) 'The Relationship Of Family Support With The Quality Of Elderly Living In Sidomulyo Health Center Work Area In Pekanbaru Road', *Jurnal Proteksi Kesehatan*, 9(1), pp. 1-8. doi: 10.36929/jpk.v9i1.194.
- Giena, V. P., Sari, D. A. and Pawiliyah, P. (2019) 'Hubungan Interaksi Sosial dengan Kualitas Hidup Lansia di Balai Pelayanan dan Penyantunan Lanjut Usia (BPPLU) Provinsi Bengkulu', *Jurnal Smart Keperawatan*, 6(2), p. 106. doi: 10.34310/jskp.v6i2.271.
- Hadipranoto, H., Satyadi, H. and Rostiana, R. (2020) 'Gambaran Kualitas Hidup Lansia Yang Tinggal Di Panti Sosial Tresna Wreda X Jakarta', *Jurnal Muara Ilmu Sosial, Humaniora, dan Seni*, 4(1), p. 119. doi: 10.24912/jmishumsen.v4i1.7535.2020.
- Jannah, S. N. and Rohmatun, D. (2018) 'Dukungan Sosial', 13(1), pp. 1-12.
- Kiik, S. M., Sahar, J. and Permatasari, H. (2018) 'Peningkatan Kualitas Hidup Lanjut Usia (Lansia) Di Kota Depok Dengan Latihan Keseimbangan', *Jurnal Keperawatan Indonesia*, 21(2), pp. 109-116. doi: 10.7454/jki.v21i2.584.
- Lailiyah, P. I., Rohmawati, N. and Sulistiyani, S. (2018) 'Status Gizi dan Kualitas Hidup Lansia yang Tinggal Bersama Keluarga dan pelayanan Sosial Tresna werdha (Nutritional Status and Quality of Life of Elderly People Who's Lived With Family and Tresna Werdha Social Service in Bondowoso)', *Pustaka Kesehatan*, 6(1), p. 60. doi: 10.19184/pk.v6i1.6768.
- Mulyati, M., Rasha, R. and Martiatuti, K. (2018) 'Pengaruh Dukungan Sosial

- Keluarga Terhadap Kualitas Hidup Dan Kesejahteraan Lansia', *JKKP (Jurnal Kesejahteraan Keluarga dan Pendidikan)*, 5(1), pp. 1-8. doi: 10.21009/jkkp.051.01.
- Ningrum, B. P. and Chondro, F. (2019) 'Hubungan tingkat kemandirian dan kebugaran dengan kualitas hidup lansia', *Jurnal Biomedika dan Kesehatan*, 2(4), pp. 138-143. doi: 10.18051/jbiomedkes.2019.v2.138-143.
- Nurhasanah, N., Jufrizal, J. and Abdat, M. (2020) 'Kualitas Hidup Lansia Di Rumoh Seujahtra Geunaseh Sayang Banda Aceh', *Cakradonya Dental Journal*, 11(2), pp. 104-108. doi: 10.24815/cdj.v11i2.16152.
- Nursilmi, Kusharto, C. M. and Dwiriani, C. M. (2017) 'Hubungan Status Gizi Dan Kesehatan Dengan Kualitas Relationship Nutritional and Health Status with Quality of Life of Elderly in Two Research Areas', *Mkmi*, 13(4), pp. 369-379.
- Prima, D. R. et al. (2019) 'Pemenuhan Kebutuhan Lansia Terhadap Kualitas Hidup Lansia Di Kelurahan Grogol Jakarta Barat', *Jurnal Kebidanan*, 8(1), pp. 1-7. doi: 10.35890/jkdh.v8i1.115.
- Ramadani, N. H. (2019) *Perbedaan Kualitas Hidup Antara Lansia Wanita yang Berpasangan dengan Tidak Berpasangan di Posyandu Lansia Kecamatan Sumbersari Kabupaten Jember*.
- Ratnawati, D., Wahyudi, C. T. and Zetira, G. (2019) 'Dukungan Keluarga Berpengaruh Kualitas Hidup Pada Lansia dengan Diagnosa Diabetes Melitus', *Jurnal Ilmiah Ilmu Keperawatan Indonesia*, 9(02), pp. 585-593. doi: 10.33221/jiiki.v9i02.229.
- Rekawati, E., Sahar, J. and Wati, D. N. K. (2020) 'Dukungan Penghargaan Keluarga Berhubungan dengan Kualitas dan Kepuasan Hidup Lansia di Depok', *Jurnal Penelitian Kesehatan 'SUARA FORIKES' (Journal of Health Research 'Forikes Voice')*, 11(2), p. 166. doi: 10.33846/sf11214.
- Rohmah, A. I. N., Purwaningsih and Bariyah, K. (2017) 'Quality of Life Elderly', pp. 120-132.
- Samper, T., Pinontoan, O. and Katuuk, M. (2017) 'Hubungan Interaksi Sosial Dengan Kualitas Hidup Lansia Di Bplu Senja Cerah Provinsi Sulawesi Utara', *Jurnal Keperawatan UNSRAT*, 5(1), p. 112291.
- Santoso, M. D. Y. (2019) 'Review Article Dukungan Keluarga Meningkatkan Kualitas Hidup Lansia', *Jurnal Litbang Sukowati: Media Penelitian dan Pengembangan*, 2(2), p. 10. doi: 10.32630/sukowati.v2i2.71.
- Suharno, S., Nugraha, Y. and M, M. G. (2020) 'Hubungan Antara Senam, Pola Makan, Dan Dukungan Keluarga Dengan Kualitas Hidup Pada Lansia', *Jurnal Kesehatan*, 8(2), pp. 1033-1039. doi: 10.38165/jk.v8i2.113.

Fungsi Kognitif Lansia di Panti Sosial Tresna Werdha Islamic Village, Tangerang

Elderly Cognitive Functions at Tresna Werdha Islamic Village Nursing Home, Tangerang

Ratih Kumala Dewi¹✉

¹ Health Science Management Study Program, Faculty of Health Sciences, Universitas Nasional Karangturi, Semarang, Indonesia
Corresponding directed to e-mail: ratih.dewi@unkartur.ac.id

ABSTRACT

Background: According to aging Index data in 2035, it is projected that there will be 73 elderly people per 100 population increasing every year. The implication of increasing the number of elderly is an increase in cognitive function degradation that affects the old age ratio dependency in carrying out normal daily activities. **Objective:** The purpose of this study was to determine the elderly cognitive functions at the Islamic Village Nursing Home. **Methods:** This study used a cross-sectional study design with the sampling technique using a total population of 48 elderly woman respondents. The location of the research was carried out at the Islamic Village Nursing Home, Tangerang. Data collection was carried out in March to April 2020. Data was collected using a standard questionnaire for cognitive function measured using the standard Mini-Mental State Exam (MMSE) questionnaire and the level of independence measured using the standard Barthel Index checklist. Other respondent characteristic data were collected through interviews and observations. **Results:** Cognitive function has a significant relationship with the level of independence of elderly women with values (OR = 5.402; P value = 0.013; CI = 95% 1.430 - 20.426). Elderly women with impaired cognitive function (MMSE score > 23) are at risk of experiencing a dependency level of 4.5 times in fulfilling daily activities compared to elderly women whose cognitive function is normal. **Conclusion:** The decline in cognitive function in the elderly is the biggest cause of the inability to carry out normal daily activities and also the most common reason for being dependent on others to take care of themselves. It is hoped that services at the nursing home, especially caregivers, can improve the quality of services for the elderly by increasing overall attention both by providing a holistic, comprehensive diagnostic effort, by paying attention to the role of the elderly so that the quality of life of the elderly can be improved.

Keywords: Cognitive function, Elderly Women, Level of Independence

ABSTRAK

Latar Belakang: Data Aging Index, pada tahun 2035 diproyeksikan terdapat 73 orang lanjut usia per 100 penduduk meningkat setiap tahunnya. Implikasi peningkatan jumlah lanjut usia (lansia) adalah peningkatan penurunan fungsi kognitif yang mempengaruhi rasio ketergantungan usia lanjut (old age ratio dependency) dalam melakukan aktifitas normal sehari-hari. **Tujuan:** Tujuan penelitian ini untuk mengetahui fungsi kognitif lansia di Panti Sosial Tresna Werdha Islamic Village Tangerang. **Metode:** Penelitian ini menggunakan rancangan studi cross-sectional dengan teknik pengambilan sampel menggunakan total populasi yakni sebanyak 48 responden wanita lansia. Lokasi penelitian dilaksanakan di Panti Werdha Islamic Village Tangerang. Pengumpulan data dilakukan pada bulan Maret-April 2020. Pengambilan data untuk mengukur fungsi kognitif dilakukan menggunakan kuesioner baku Mini Mental State Exam (MMSE) dan tingkat kemandirian diukur menggunakan checklist baku Indeks Barthel. Data karakteristik responden lainnya dikumpulkan melalui interview dan observasi. **Hasil:** Fungsi Kognitif mempunyai hubungan yang signifikan dengan tingkat kemandirian wanita lansia dengan nilai (OR = 5,402; P Value = 0,013; CI = 95% 1,430-20,426). Bahwa wanita lansia yang fungsi kognitifnya mengalami gangguan (hasil score MMSE > 23) berisiko mengalami tingkat ketergantungan 5,4 kali dalam pemenuhan aktifitas

sehari-hari dibandingkan dengan wanita lansia yang fungsi kognitifnya normal. **Kesimpulan:** Penurunan fungsi kognitif pada lansia merupakan penyebab terbesar terjadinya ketidakmampuan dalam melakukan aktifitas normal harian, dan juga merupakan alasan terbanyak menyebabkan ketergantungan terhadap orang lain untuk merawat diri sendiri. Diharapkan Pelayanan di Panti terutama caregiver dapat meningkatkan kualitas pelayanan lansia dengan lebih meningkatkan perhatian secara menyeluruh baik memberikan upaya diagnosis yang holistik, komprehensif, dengan memperhatikan peran lansia sehingga kualitas hidup lansia lebih meningkat.

Kata Kunci: Fungsi Kognitif, Tingkat Kemandirian, Wanita Lansia

INTRODUCTION

The success of the health plan and socio-economy development plan of a country can usually be seen from the increase in the life expectancy of its population. As a result of the demographic transition, the life expectancy of the Indonesian population (male and female) is expected to keep increasing. The increase in life expectancy causes an increase in the number of elderly people from year to year (Sutikno, 2020).

Life expectancy in Indonesia has increased from 70.1 years in 2010 to 2015 to 72.2 years in 2030 to 2035. However, data on Healthy Life Expectancy (HALE) was only 62.1 years, which means that there was a difference of about eight years being in an unhealthy condition (Cicik, 2019). According to Aging Index data in 2035, it is projected that there will be 73 elderly people per 100 population every year. The number increased rapidly compared to 2015 which was still as many as 35 people. Meanwhile, the Potential Support Ratio showed a decrease from 12.5 years in 2015 to 6.4 years in 2035 (WHO, 2019).

An increase in the number of elderly people will cause an impact on socio-economy including in the family, community, and government (Edelman, Mandle and Kudzma, 2017). An important economic implication of the increase in population is an increase in the old age ratio dependency; the dependency of the elderly is due to the condition of the elderly experiencing various physical and psychological degradation (Sulthon and Purwanti, 2019).

In general, the physical condition of a person who has reached the elderly stage will experience degradation. It can be seen from several changes including a change in the appearance of wrinkled skin, change in

internal body organs such as the nervous system, gastrointestinal tract, change in the five senses, and motoric changes (Urena *et al.*, 2018). These motoric changes include reduced in strength, speed, and activity. These changes generally lead to a physical and psychological health degradation which will eventually affect daily life activities (Sitanggang *et al.*, 2021).

The life expectancy of women in Indonesia is longer than men. Women who have reached the process of transition from reproductive to old age (also known as senium period) will experience degradation of body organs and physical ability as the process of becoming old (Pinilih, Astuti and Rini, 2018). During the senium period, osteoporosis may occur with different intensities in each woman. Although the cause is not clear, the reduced effect of steroid hormones and reduced osteoblast activities play an important role in this case. As a result of physical degradation during this senium period, it will affect the level of independence and in need of help from others to fulfill the daily activities of the elderly (Lubis, 2016).

In addition to changes and physical degradation, the elderly also experience degradation in intellectual function. Most studies showed that after reaching the peak at the age of 45 to 55 years, most of a person's abilities will continuously experience degradation. This condition also applied to the elderly (Gitlin and Czaja, 2015).

The use of various memorization strategies for the elderly is not only possible to prevent intellectual degradation but also can increase the memory strength of the elderly. The intellectual degradation of the elderly is generally something that cannot be avoided (Picton, Marino and Nealy, 2018).

This condition is caused by various factors including illness and anxiety or depression. But the intellectual ability can basically be maintained. One of the factors that can maintain these conditions is to provide an environment that can stimulate or train the elderly intellectual skill and can also anticipate the occurrence of senility (Groot *et al.*, 2016).

Women are more at risk of experiencing cognitive function degradation due to estradiol hormone level in the changes in cognitive function (Hackney, 2016). In addition, women have a higher risk compared to men to suffer from cognitive function disorders such as Alzheimer's dementia, this is caused by the life span of women that is longer than men, while men have a higher risk of developing vascular dementia. It is estimated because men are more likely to engage in habits that can trigger vascular disorders such as smoking and consuming alcohol, while women do not have habits that can lead to vascular disorders (Kivipelto, Mangialasche and Ngandu, 2018).

The decline in cognitive function in the elderly is the biggest cause of the inability to carry out normal daily activities and is also the most common reason that causes dependence on others to take care of themselves, especially the elderly living in nursing homes (Yusuf, Indarwati and Jayanto, 2017). This condition is due to a lack of activities and physical limitations that affect cognitive function.

According to the description above, this study was conducted to determine the determinants of the cognitive function of the elderly related to the level of independence in fulfilling daily activities at the Islamic Village Nursing Home in Tangerang.

METHODS

The study used a cross-sectional analytic design study with the main objective of finding the relationship between risk factors and effects, measurement of the independent and dependent variables carried out once at a time. The location of the study was carried out at the Islamic Village Nursing Home in Tangerang. Data collection was carried out from March to April 2020. The population of this study was all elderly women living at the Islamic Village Nursing

Home in Tangerang with the reason of choosing women for the sample because the residents of the nursing home were mostly women, while the total of men residents were only 4 people. The sampling technique uses total sampling. The total of respondents involved were 48 elderly women respondents.

The dependent variables in this study were the characteristic of the elderly and the level of independence. The independent variable in this study was cognitive function. Data collection technique using standardized questionnaires. Cognitive function was measured using the standard Mini-Mental State Exam (MMSE) and the level of independence was measured using the standard Barthel Index checklist. The explanation before conducted the study (Informed Consent) was given to the elderly before the data collection process is done. Other respondent characteristics data were collected through interviews and observations.

The data obtained were analyzed descriptively and analytically using the chi-square test to determine the relationship between the independent variable and the dependent variable. The statistical test using $\alpha=5\%$. Multivariate analysis used logistic regression because the independent and dependent variables were categorical data types.

This study has gotten ethical approval from the Ethics Committee of the Institute for Research and Community Service (LPPM) of the National University of Karangturi No. ECR/UNK/92/VI/ 2019.

RESULTS AND DISCUSSION

The results of the study conducted at the Islamic Village Nursing Home in Tangerang, from the total of 48 elderly women respondents was obtained data as presented in Table 1. Of the 48 respondents, as many as 25 respondents (52.1%) aged ≥ 77 years, 43 respondents (89.6%) were included in the schooled category, 25 respondents (52.1%) were included in the category of the length of stay in the nursing home for ≤ 2 years, and 42 respondents (87.5%) included in the category not sick for the health status variable. According to the cognitive function in the elderly, 19 respondents (39.6%) had cognitive impairment. The level of independence in the elderly was

obtained from 48 respondents, there were 17 respondents (35.4%) who experienced dependence in fulfilling the needs of daily mobilization.

Table 1. Characteristics of Elderly Women by Age at the Islamic Village Nursing Home in Tangerang

Characteristics	n	%
Age		
< 77 years	23	47.9
≥ 77 years	25	52.1
Education		
Schooled	43	89.6
Unschool	5	10.4
Length of Stay		
≤ 2 years	25	52.1
> 2 years	23	47.9
Health Status		
Sick	6	12.5
Not sick	42	87.5
Cognitive Status		
Normal	29	60.4
Cognitive impairment	19	39.6
Level of Independence		
Independent	31	64.6
Dependent	17	35.4
Total	48	100

As getting older, the body's physiological reserves will decrease which make it more susceptible to disease. Approximately 5% of the elderly will experience dementia and it doubles every 5 years. In industrialized countries such as America, the number of dementia in the elderly reached 10 to 15%. The number of elderly who experience cognitive impairment was at greater risk as they get older, it was also related to women who suffer more cognitive impairment compared to men (Cacciottolo *et al.*, 2017).

Education variable according to the study showed that there was a relationship between education and the cognitive function of elderly women ($P\text{-Value} = 0.047 < \alpha = 0.05$). Education is a process of adding more life experiences as well as a process of intellectual stimulation that will affect one's cognitive (Susanti and Livana, 2019). A low level of education means that there is a less mental and environmental experience which results in less intellectual stimulation. As a result is the poor cognitive of oneself (Dewi, 2018).

Table 2. Distribution of MMSE Score by Age

Age	MMSE Score					
	Normal		Probable		Definite	
	n	%	n	%	n	%
< 77 years old	16	51.8	6	43.4	1	33.2
≥ 77 years old	15	48.2	8	56.6	2	66.8

Table 3. Determinants of Cognitive Function in Elderly Women

Variables	Cognitive Function				P-Value
	Normal		Cognitive Impairment		
	n	%	n	%	
Level of Independence					
Independent	23	79.3	6	20.7	0.020
Dependent	8	42.1	11	57.9	
Age					
< 77 years	16	69.6	7	30.4	0.696
≥ 77years	15	60.0	10	40.0	
Education					
Schooled	30	69.8	13	30.2	0.047
Unschool	1	20.0	4	80.0	
Length of Stay					
≤ 2 years	19	76.0	6	24.0	0.155
> 2 years	12	52.8	11	47.8	
Health Status					
Sick	4	66.7	2	33.3	1.000
Not sick	27	64.3	15	35.7	

The results of the length of stay variable showed that there was no significant relationship between the length of stay at the nursing home and the

cognitive function of elderly women ($P\text{-Value} = 0.155 > \alpha = 0.05$). The elderly residents of the nursing home lack both physical and cognitive activities, this has

become a concern because the lack of physical and cognitive activities will lead to an increase in the risk of cognitive degradation (Dewi and Ners, 2015). Likewise in terms of social engagement compared to the elderly who live with their families. Elderly with poor social engagement had a 2 times greater risk of getting poor cognitive function (Donnelly *et al.*, 2016). Elderly women who have stayed in the nursing home for a long time have been able to adapt to the lack of care givers personnel in the nursing home which made them still have to be independent whenever they got sick and experienced a lack of activities.

The analysis results of health status characteristics of elderly women showed that the majority of respondents were included in the category of not sick (87.5%). The result of the study showed that there was no significant relationship between health status and cognitive function ($P\text{-Value} = 1.000 > \alpha = 0.05$). The elderly with a normal cognitive function are those with quite prime physical and psychological health. The highest percentage was those who have good health. The elderly with good health can carry out daily life activities (Muhith and Siyoto, 2016).

There were several elderly women at the nursing home who suffer from hypertension. Several diseases were risk factors of dementia including hypertension, heart arrhythmias, diabetes mellitus, hypercholesterolemia, heart failure, obesity, and nutritional disorders (Turana *et al.*, 2019). It showed that most of medical history of hypertension would gradually affect the cognitive abilities of the elderly and would likely shifted to a more severe cognitive impairments if prevention was not carried out, one of which is by providing facilities for the elderly to always actively carry out activities that can train their coordination and concentration abilities, such as gymnastics and other stimulation. It was caused by health conditions, both physically and psychologically, which sometimes get sick or experience a certain disorder that caused them cannot carry out their daily activities by themselves and need the help of others in some of their activities (Gumay *et al.*, 2018).

The relationship of cognitive function and the elderly level of independence according to the result of

the study showed that there were 39.6% of the respondents experienced cognitive impairment after conducting a test using Mini-Mental Status Exam (MMSE). The degradation of cognitive function were shown in speed, short-term memory, working memory, and long-term memory. These changes have been associated with changes in brain structure and function (Shim *et al.*, 2017). The outline of various post mortem changes in the elderly brain including reduced brain volume and weight, ventricular enlargement and sulcus widening, loss of nerve cells in the neocortex, hippocampus, and cerebellum, nerve constriction and dysmorphology, reduced of synaptic density, mitochondrial damage, and degradation of DNA repairing ability (Gardener and Rainey-Smith, 2018). Thorough degradation in central nervous system function was believed to be a major contributor to changes in cognitive abilities and efficiency in processing information (Zhang *et al.*, 2019).

The results of the study showed that there was a significant relationship between cognitive function and the level of independence in elderly women ($P\text{-Value} = 0.20 < \alpha = 0.05$). Over time, the elderly will experience the degradation of cognitive function. Degradation of cognitive function is a quite serious problem because it can interfere with daily activities and reduce the level of independence. The more daily activities carried out by the elderly, the better their cognitive function. Too much activity in the elderly will cause a tendency to forget the things they have done because the elderly have experienced a decrease in brain mass (Muchiri *et al.*, 2018).

In the central nervous system, namely the reduction in brain mass and reduced blood flow to the brain will cause astrocytes to proliferate which causes neurotransmitters (dopamine and serotonin) to change. The changes in this neurotransmitter will increase the monoamine oxidases enzyme (MAO) (Chalazonitis and Rao, 2018). Another impact is a slowdown in central processes and reaction times which cause the cognitive and occupational functions to experience significant degradation in previous abilities (Botwinick, 2013). This causes the elderly to lose interest in their daily life activities. The elderly need several activities that they were formerly able to do on their own.

Table 4. Multivariate Analysis of Logistic Regression between Candidate Variable of Elderly Women's Independence Level at the Islamic Village Nursing Home in Tangerang.

Variable	P-value	OR	CI 95%	
			Lower	Upper
Length of Stay	0.106	3.012	0.793	11.448
Cognitive Function	0.013	5.402	1.430	20.426

The results of multivariate analysis using logistic regression test of 5 variables included in the multivariate model was cognitive function variable which statistically showed a significant relationship with the level of independence in elderly women (OR = 5.402; P-Value = 0.013; CI = 95% 1.430 - 20.426). The results indicated that elderly women whose cognitive function was impaired (MMSE score > 23) were at risk of experiencing a dependency level of 4.5 times in fulfilling daily activities compared to elderly women whose cognitive function was normal.

Physical activity is one of the factors that affect cognitive function. In the elderly who have difficulty in performing physical movements or have movement disorders, there will be a difference in the number of cognitive function scores, therefore the movement disorder can result in greater degradation of cognitive function compared to those who do not suffer any disorder (Purnomo, Apsari and Hadyanawati, 2019). Degradation of cognitive function is closely related to a decrease in the elderly level of independence. It can be concluded that the better the cognitive function, the more independent the elderly are in fulfilling their daily activities (Johnson, 2018).

The same results of the study that was conducted in 2019 showed that cognitive status was related to the functional status of independence and Barthel Activity of Daily Living (BADL) (Lin, Shih and Ku, 2019). However, the result was obtained in the elderly living in the community, while this study was conducted in the elderly living in the nursing homes. Services provided at the nursing home will most likely cause the elderly not carrying out daily activities, especially elderly women who are >85 years old and there were 14 elderly who used the help of wheelchairs also other assistive devices such as canes and there were 6 elderly who could only lie in bed

and always needed the help from others especially the caregivers to help them carry out their daily activities due to their health condition which did not allow to mobilize. As many as 39.6% elderly were included in the category of those who needed assistance in daily activities.

This seems to lower the assessment results on the status of cognitive function. For example, in terms of medication, during the process of filling out the questionnaire, most of the elderly remember the time to take medication and the kind of drugs they should consume. However, the caregivers at the nursing home have prepared the medicine which causes the elderly to only need to consume it, this leads the elderly to choose the option "taking medicine if it has been prepared in advance" in the questionnaire. This also applies to other activities including shopping, preparing food, and taking care of laundry.

Activities mentioned before caused the physical activity in fulfilling the daily needs of the elderly at the nursing home to be reduced because they are used to depending on the caregivers and the more often the elderly depending on the caregiver in fulfilling their daily activities, it will affect their cognitive function.

Epidemiological data showed that regular physical activity is a protective factor against cognitive degradation and reduces the risk of dementia (Muhith and Siyoto, 2016).

Physical activity is beneficial in maintaining the cognitive function of the elderly because it is expected to be beneficial towards the vascular system which continues to the cerebrovascular system, it can be directly through the decrease of vascular morbidities including hypertension, diabetes mellitus, hypercholesterolemia, and obesity. However, even if the vascular factors have been controlled, the repair effect remains (Johnson, 2018).

Physical activity also facilitates the metabolism of neurotransmitters (the basic ingredients of neurotransmitters are amino acids which are one of the most important brain nutrients that can increase alertness, reduce errors, and stimulate the process of neurogenesis, namely new neuron cell growth, increase the stimulation of molecular and cellular activity in the brain which later supports and maintains brain plasticity, namely the brain's ability to reorganize in the form of new interconnection in nerves). These processes are important to inhibit the hypertrophy of brain tissue that can lead to neuronal degeneration that has an impact on cognition. Sufficient physical activity can increase the flow of oxygen to the brain which helps the subject to maintain the memory (Handajani, 2019).

A similar study was conducted in the community at the Maastricht Aging Study, Netherland. This study used the Stroop Color and Word Test (SCWT), Concept Shifting Task (CST), Visual Verbal Learning Test (VVLVT), and MMSE as the parameters of cognitive status. Meanwhile, independence status was measured by Short Form (SF-36). The result of the study showed that cognitive status can be used to predict the independence status of the elderly in the short-term (<3 years), however, it did not apply to long-term predictions (>3 years) (Franssen *et al.*, 2018). The predicted independence status in a short term was closely related to the executive function owned by the elderly during the process of answering the independence status questionnaire (actual moment of testing) (Lorio *et al.*, 2017). The most important executive function in determining functional status continues to decline as age increasing.

CONCLUSION

Degradation in cognitive function in the elderly is the biggest cause of the inability to carry out normal daily activities and is also the most common reason that causes them to depend on others to take care of themselves. Elderly women whose cognitive function is impaired are at risk of experiencing dependency on others for the fulfillment of daily activities compared to elderly women whose cognitive function is normal.

The implications of the result of this study are expected to be used for problem-

solving, preventing the occurrence of dementia in the elderly, and making policies in the administration of nursing homes. As well as increasing knowledge and making donations, especially for the elderly who live in nursing homes which can help to improve their life's welfare.

It is hoped that services at the nursing home, especially caregivers, can improve the quality of service for the elderly by further increasing overall attention both by providing a holistic, comprehensive diagnostic effort, by paying attention to the role of the elderly so that the quality of life of the elderly can be improved.

ACKNOWLEDGEMENT

Thank you to the LPPM STIKes Tarumanagara and LPPM Universitas Nasional Karangturi University LPPM for the financial support of this research, and to dr. Sudiro, MPH., Dr.PH for guiding the research to completion.

REFERENCES

- Botwinick, J. (2013) *Cognitive processes in maturity and old age*. Springer.
- Cacciottolo, M. *et al.* (2017) 'Particulate air pollutants, APOE alleles and their contributions to cognitive impairment in older women and to amyloidogenesis in experimental models', *Translational psychiatry*, 7(1), pp. e1022-e1022.
- Chalazonitis, A. and Rao, M. (2018) 'Enteric nervous system manifestations of neurodegenerative disease', *Brain research*, 1693, pp. 207-213.
- Cicik, L. H. M. (2019) 'Info Demografi BKKBN', *Demografi BKKBN*, 1, p. 16. Available at: https://www.bkkbn.go.id/po-content/uploads/info_demo_vol_1_2019_jadi.pdf.
- Dewi, S. R. (2018) 'Pengaruh Terapi Reminiscence Terhadap Fungsi Kognitif Lansia Di UPT PSTW Bondowoso', *The Indonesian Journal of Health Science*, pp. 174-178.
- Dewi, S. R. and Ners, S. K. (2015) *Buku ajar keperawatan gerontik*. Deepublish.
- Donnelly, L. R. *et al.* (2016) 'The impact of oral health on body image and social interactions among elders in long-term care', *Gerodontology*, 33(4), pp. 480-489.
- Edelman, C. L., Mandle, C. L. and Kudzma,

- E. C. (2017) *Health promotion throughout the life span-e-book*. Elsevier Health Sciences.
- Franssen, F. M. E. et al. (2018) 'The physical, mental, and social impact of COPD in a population-based sample: results from the Longitudinal Aging Study Amsterdam', *NPJ primary care respiratory medicine*, 28(1), pp. 1-6.
- Gardener, S. L. and Rainey-Smith, S. R. (2018) 'The role of nutrition in cognitive function and brain ageing in the elderly', *Current nutrition reports*, 7(3), pp. 139-149.
- Gitlin, L. and Czaja, S. (2015) *Behavioral intervention research: Designing, evaluating, and implementing*. Springer publishing company.
- Groot, C. et al. (2016) 'The effect of physical activity on cognitive function in patients with dementia: a meta-analysis of randomized control trials', *Ageing research reviews*, 25, pp. 13-23.
- Gumay, A. R. et al. (2018) 'Pemeriksaan Kesehatan Lansia dan Upaya Pemberdayaan Kader Posyandu Lansia mengenai Pencegahan Demensia Dini dan Peningkatan Kualitas Hidup Lansia di Desa Gulon, Magelang, Jawa Tengah', *SNKPPM*, 1(1), pp. 150-152.
- Hackney, A. C. (2016) *Sex hormones, exercise and women: scientific and clinical aspects*. Springer.
- Handajani, F. (2019) *Oksidan dan antioksidan pada beberapa penyakit dan proses penuaan*. Zifatama Jawa.
- Johnson, S. G. (2018) *Geriatrics, An Issue of Physician Assistant Clinics E-Book*. Elsevier Health Sciences.
- Kivipelto, M., Mangialasche, F. and Ngandu, T. (2018) 'Lifestyle interventions to prevent cognitive impairment, dementia and Alzheimer disease', *Nature Reviews Neurology*, 14(11), pp. 653-666.
- Lin, C.-Y., Shih, P.-Y. and Ku, L.-J. E. (2019) 'Activities of daily living function and neuropsychiatric symptoms of people with dementia and caregiver burden: The mediating role of caregiving hours', *Archives of gerontology and geriatrics*, 81, pp. 25-30.
- Lorio, A. K. et al. (2017) 'Teaching dementia care to physical therapy doctoral students: A multimodal experiential learning approach', *Gerontology & geriatrics education*, 38(3), pp. 313-324.
- Lubis, N. L. (2016) *Psikologi Kespro. Wanita dan Perkembangan Reproduksi: Ditinjau dari Aspek Fisik dan Psikologinya*. Kencana.
- Muchiri, W. A. et al. (2018) 'Meaning of physical activities for the elderly: A review', *American Journal of Sports Science and Medicine*, 6(3), pp. 79-83.
- Muhith, A. and Siyoto, S. (2016) *Pendidikan keperawatan gerontik*. Penerbit Andi.
- Picton, J. D., Marino, A. B. and Nealy, K. L. (2018) 'Benzodiazepine use and cognitive decline in the elderly', *The Bulletin of the American Society of Hospital Pharmacists*, 75(1), pp. e6-e12.
- Pinilih, S. S., Astuti, R. T. and Rini, D. R. (2018) 'Hubungan Antara Lifestyle Dengan Fungsi Kognitif Pada Lansia', *Journal of Holistic Nursing Science*, 5(1), pp. 25-35.
- Purnomo, H., Apsari, A. E. and Hadyanawati, A. A. (2019) 'Quality of Life, Health and Environment in Older Adults: Nursing House Stress Aging Assessment', *International Journal of Social Sciences and Humanities*, 3(1), pp. 134-142.
- Shim, Y. S. et al. (2017) 'Characteristic differences in the mini-mental state examination used in Asian countries', *BMC neurology*, 17(1), pp. 1-9.
- Sitanggang, Y. F. et al. (2021) *Keperawatan Gerontik*. Yayasan Kita Menulis.
- Sulthon, H. A. and Purwanti, E. Y. (2019) 'Analisis Pengaruh Sosial Ekonomi Terhadap Partisipasi Kerja Penduduk Lanjut Usia Di Kota Semarang'. Fakultas Ekonomika dan Bisnis.
- Susanti, Y. and Livana, P. H. (2019) 'Peningkatan kemandirian dan kognitif lansia melalui pendidikan kesehatan tentang perkembangan psikososial lansia', *Jurnal Keperawatan*, 11(3), pp. 155-162.
- Sutikno, A. N. (2020) 'BONUS DEMOGRAFI DI INDONESIA', *VISIONER: Jurnal Pemerintahan Daerah di Indonesia*, 12(2), pp. 421-439.
- Turana, Y. et al. (2019) 'Hypertension and dementia: a comprehensive review from the HOPE Asia Network', *The Journal of Clinical Hypertension*, 21(8), pp. 1091-1098.
- Urena, R. et al. (2018) 'Intelligent m-health app to evaluate the elderly physical condition', in. IOS-Press.
- WHO (2019) 'Trends in maternal mortality

2000 to 2017: estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division'. Yusuf, A., Indarwati, R. and Jayanto, A. D. (2017) 'Brain gym improves cognitive function for elderly', *Jurnal Ners*, 5(1), pp. 79-86.

Zhang, Q. *et al.* (2019) 'Changes in cognitive function and risk factors for cognitive impairment of the elderly in China: 2005-2014', *International journal of environmental research and public health*, 16(16), p. 2847.

Faktor yang Berhubungan dengan Praktik Pencegahan Diabetes Mellitus Tipe 2

Factors Associated with Preventive Practices of Type 2 Diabetes Mellitus

Nissa Kusariana^{1*)}, Tutut Okta Hardiyanti¹⁾, Moh. Arie Wurjanto¹⁾

¹ Section of Epidemiology and Tropical Diseases, Faculty of Public Health, Universitas Diponegoro, Semarang, Indonesia

Corresponding directed to e-mail: nissakusariana@gmail.com

ABSTRACT

Background: Diabetes mellitus is a non-communicable disease that can be prevented by controlling the risk factors. Diabetes mellitus prevention practice is important so that prevention of type 2 diabetes mellitus can be carried out effectively. There are several factors that cause a person to practice prevention against diabetes mellitus. **Objective:** This study aims to analyze factors related to the practice of type 2 diabetes mellitus prevention among Diponegoro University students in Semarang. **Methods:** This is a quantitative study with an observational analytic approach and a cross-sectional study design. The time of research was May-August 2020. The instrument in this study was a google form questionnaire. The population in this study were active undergraduate students of Diponegoro University in 2020, amounting to 36,425 students. The sample size in this study was 407 respondents. The variables of the study were family history of type 2 diabetes mellitus, knowledge level, attitude, family support, and preventive practices of type 2 diabetes mellitus. This study used univariate analysis and bivariate analysis. The relationship test was performed using the chi-square test on a computer application. **Results:** This study showed there was a significant relationship between family history type 2 diabetes mellitus (0,017), knowledge level (0,00), attitude (0,00), and family support (0,00) for the preventive practices of type 2 diabetes mellitus in students. **Conclusion:** Family history of type 2 diabetes mellitus, knowledge level, attitude, and family support are factors related to the preventive practices of type 2 diabetes mellitus among students of Diponegoro University in Semarang. There is a need for education and provision of information related to knowledge on diabetes mellitus prevention for students at Diponegoro University, Semarang.

Keyword: College Students, Practice, Prevention, Type 2 diabetes mellitus

ABSTRAK

Latar Belakang: Diabetes mellitus merupakan penyakit tidak menular yang dapat dicegah dengan mengendalikan faktor risikonya. Praktik pencegahan diabetes mellitus penting dilakukan agar pencegahan penyakit diabetes mellitus dapat dilakukan secara efektif. Seseorang dalam melakukan praktik pencegahan terhadap penyakit diabetes mellitus dipengaruhi oleh beberapa faktor. **Tujuan:** Tujuan dari penelitian ini adalah menganalisis faktor yang berhubungan dengan praktik pencegahan diabetes mellitus tipe 2 pada mahasiswa Universitas Diponegoro Semarang. **Metode:** Penelitian kuantitatif dengan pendekatan analitik observasional dan menggunakan desain studi cross-sectional. Waktu pelaksanaan penelitian yaitu Bulan Mei-Agustus 2020. Instrumen dalam penelitian ini yaitu berupa angket google form. Populasi pada penelitian ini adalah mahasiswa aktif S1 Universitas Diponegoro tahun 2020 yang berjumlah 36.425 mahasiswa. Besar sampel dalam penelitian ini sebanyak 407 responden. Variabel dalam penelitian ini adalah riwayat keluarga menderita diabetes mellitus tipe 2, tingkat pengetahuan, sikap, dan dukungan keluarga dan praktik pencegahan diabetes mellitus tipe 2. Penelitian ini menggunakan analisis univariat dan analisis bivariat. Uji hubungan dilakukan dengan menggunakan uji chi-square pada aplikasi komputer. **Hasil:** Hasil penelitian menunjukkan terdapat hubungan yang signifikan antara riwayat keluarga menderita diabetes mellitus

tipe 2 (0,017), tingkat pengetahuan (0,001), sikap (0,001) dan dukungan keluarga (0,001) terhadap praktik pencegahan diabetes mellitus tipe 2 pada mahasiswa. **Kesimpulan:** Riwayat keluarga menderita diabetes mellitus tipe 2, tingkat pengetahuan, sikap, dan dukungan keluarga merupakan faktor-faktor yang berhubungan dengan praktik pencegahan diabetes mellitus tipe 2 pada mahasiswa Universitas Diponegoro Semarang. Perlu adanya edukasi dan pemberian informasi terkait pengetahuan pencegahan diabetes mellitus pada mahasiswa di Universitas Diponegoro Semarang.

Kata Kunci: Mahasiswa, Praktik, Pencegahan, Diabetes Mellitus tipe 2

INTRODUCTION

Diabetes mellitus is a disease characterized by hyperglycemic due to obstructed insulin secretion and/or insulin action. Diabetes mellitus may cause long-term damage, dysfunction, and different organ failures, especially eyes, kidneys, nerves, heart, and blood vessels (World Health Organization, 2019). Diabetes mellitus is classified into two main groups, namely, type 1 diabetes mellitus (insulin-dependent diabetes mellitus) and type 2 diabetes mellitus (non-insulin-dependent diabetes mellitus) (George, Augustine and Sebastian, 2014; World Health Organization, 2019).

Type 2 diabetes mellitus if not properly treated will cause a severity that increases risks of complication (Wahyuningrum, Wahyono and Prabandari, 2017). Long-term complications may appear in form of retinopathy, nephropathy, peripheral neuropathy, neuropathic joint disease, and autonomic neuropathy, cardiovascular disease (CVD), and sexual dysfunction (World Health Organization, 2019).

Diabetes is found in every population and region all over the world, either in low-income, middle-income, and high-income countries. WHO data mentioned that there has been an increase in its prevalence in adults from 4.7% in 1980 to 8.5% in 2014, with the biggest increase in middle-income countries compared to the high-income ones (World Health Organization, 2016).

In Indonesia, according to Basic Health Research (Riskesdas) data, diabetes prevalence in 2018 was 2.0%. International Diabetes Federation in 2019 stated that in Indonesia the national diabetes prevalence reached 6.2% in the age group of 20-79 and

ranked seventh as the highest diabetics in the world after China, India, United States, Brazil, Russia, and Mexico. In Central Java, diabetes mellitus cases ranked second in the world with cases amount of 21.85% for entire non-communicable disease cases (International Diabetes Federation, 2019). In Semarang city, according to Dinas Kesehatan Kota Semarang (District Level Health Office of Semarang City) data, type 2 diabetes mellitus ranked the second non-communicable disease of Semarang city after hypertension (Dinas Kesehatan Kota Semarang, 2018).

Type 2 diabetes mellitus is one of the non-communicable diseases that can be prevented by controlling its risk factors (Isnaini and Ratnasari, 2018). Lifestyle changes such as unbalanced eating habits that may cause obesity and a lack of physical activity are factors that were estimated to increase the risk factors of type 2 diabetes mellitus (Isnaini and Ratnasari, 2018). Routine physical exercises may increase the quality of blood vessels and improve all metabolic aspects including insulin sensitivity and glucose tolerance. Type 2 diabetes mellitus has other risk factors, such as age, family history of diabetes mellitus, body mass index (BMI), blood pressure, low education level, stress, and cholesterol level (Evi and Yanita, 2016; Rahalus, Asrifuddin and Kaunang, 2017).

College students are individuals in the age group of young adults, usually aged 18-25, during this adulthood period need to be responsible for their development, including for their adult lives (Hulukati and Djibran, 2018). The lives of independent college students, for their daily meals, will no longer be supervised directly by parents. Massive

college schedule and student participation in various non-academic activities often impact their decision-making for food consumption to be all about instant and cheap. Morning exercise routines frequency decreases, hence imbalance between energy intake and energy expenditure. Bad living pattern tendencies may cause risks of non-communicable diseases like type 2 diabetes mellitus.

Diponegoro University is one of the public universities in Central Java. Its students must be able to be agents of change that actively helping the government in the prevention effort of non-communicable diseases in Indonesia. Prevention practice for diabetes mellitus is one of which, today there has been no research about factors associated with the practice on college students and seeing opportunities of college students who can be agents of change for diabetes prevention. This research aims to analyze the factors associated with the preventive practices of type 2 diabetes mellitus on students of Diponegoro University Semarang. It is hoped that knowing the factors will increase roles and participation of the students in the disease prevention efforts in Indonesia.

METHOD

This research has been ethically approved by the ethics committee of the Public Health Faculty of Universitas Airlangga with number of 150/EA/KEPK-FKM/2020. The time of research was May to August 2020. The type of research conducted was quantitative research, with analytical observational and using cross-sectional study design. The population of this research was active undergraduate students of Diponegoro University year 2019/2020 amounted to 26,425 people and the sample was 407 of them that were not having diabetes mellitus and were willing to be respondents. The sampling technique used to determine the sample was nonprobability sampling called accidental sampling.

Variables of this research consisted of uncontrolled variables and controlled variables. The uncontrolled variables were family history of type 2 diabetes mellitus, knowledge level, attitude, and

family support. The controlled variables were preventive practices of type 2 diabetes mellitus which included smoking behavior, smoking habit, smoker's environment, alcoholic habit, blood glucose level testing, exercise type, exercise frequency, exercise duration, eating duration, type of food ingredient, food consumption, and drink with high-glycemic index.

Data collection was conducted by spreading Google form questionnaires on social media. The questionnaires consisted of questions about the research variables. Secondary data were obtained from existing data from previous research pieces as supporting data. Scoring was conducted by giving a score of 1 for correct answers and 0 for incorrect answers. Relationship test was conducted using the chi-square test on a computer application. This test was used because the research variables were nominal.

RESULTS AND DISCUSSION

One that had diabetes mellitus was suspected to have the genetics of diabetes mellitus. Either from father, mother, or sibling. It was suspected that the diabetes carrier was a recessive agent. Only someone characterized as homozygote with the recessive agent would get diabetes mellitus. If one of their parents had diabetes mellitus thus the risk to get diabetes mellitus would be 15%. If both parents had diabetes mellitus thus the risk to get diabetes mellitus would be 75%. The risk to get diabetes mellitus from mother was larger by 10-30% than father with diabetes mellitus. This was caused by a decrease in genetics when inside the womb was larger from the mother. If a sibling had diabetes mellitus thus the risk to get diabetes mellitus would be 10% and it would become 90% if the one had it was an identical twin sibling (Wolde *et al.*, 2017; Paramitha and Lestari, 2019). According to the research results, it was discovered that there were respondents with risk factors of diabetes mellitus from family by 21.4%.

Knowledge is the basis of someone to determine the attitude to hence be implemented in a form of practice (Alemayehu, Dagne and Dagnaw, 2020). The research conducted in Jordan in 2018 showed that 53.3% of the respondents had a good knowledge of diabetes mellitus (Alsous *et al.*, 2019). This research

showed that the respondents with the knowledge related to type 2 diabetes mellitus were 51.6% and it was not far from the results of the research in Jordan.

Attitude is a reaction or response that is still closed off by someone towards a stimulus or object. Attitude is a mental condition and thinking condition that is prepared to give response towards an object through experience also affect directly or indirectly on practice or action (Notoatmojo, 2012). A study that has been conducted in Sri Lanka stated that 90% of the respondents had a bad attitude towards diabetes mellitus (Herath *et al.*, 2017). This research obtained results that 53.3% of the respondents had a good attitude towards diabetes mellitus. The good attitude was hoped to be in line with the implementation of preventive practices for diabetes mellitus (Lestari, 2019).

Family support related to preventive practices of type 2 diabetes mellitus showed that the majority of the respondents had supportive families by 58.7%. Family is an influencing factor towards health beliefs and health values of someone (Hendayani and Afnuhazi, 2018). Family support is an important aspect in a family because the effects that originate from family support towards health and well-being function altogether and the engagement of family in giving support will raise a good awareness for the family members to prevent and manage a disease (Ravi, Kumar and Gopichandran, 2018).

Tabel 1. Respondent Characteristics

Respondent Characteristics	n	%
Family history of Type 2 Diabetes Mellitus		
None	320	78.6
Father and Mother	4	1.0
Mother	26	6.4
Father	46	11.3
Sibling	11	2.7
Education Level		
Good	210	51.6
Bad	197	48.4
Attitude		
Good	217	53.3
Bad	190	46.7
Family Support		
Supportive	239	58.7
Unsupportive	168	41.3
Practice		
Good	211	51.8
Bad	196	48.2
Total	407	100%

Table 1 showed that for the practices of the respondents in conducting prevention for type 2 diabetes mellitus, more than half had good practices, which was by 51.8%. Another research conducted in Jordan with respondent amount of 1,702 in 2018 showed that 62.3% of the respondents have implemented the preventive practices of diabetes mellitus and 37.7% have not implemented the preventive practices of diabetes mellitus (Alsous *et al.*, 2019).

Table 2. Bivariate Analysis Results

Table 2: Bivariate Analysis Results							
Respondent Characteristics	DMT2 Preventive practices						P Value*
	Bad		Good		Total		
	n	%	n	%	N	%	
Family history of diabetes Mellitus							
Existent	32	36.8	55	63.2	87	100.0	0.017
Inexistent	164	51.2	156	48.8	320	100.0	
Knowledge Level							
Bad	115	58.4	82	41.6	197	100.0	0.001
Good	81	38.6	129	61.4	210	100.0	
Attitude							
Bad	126	66.3	64	33.7	190	100.0	0.001
Good	70	32.3	147	67.7	217	100.0	
Family Support							
Supportive	105	62.5	63	37.5	168	100.0	0.001
Unsupportive	91	38.1	148	61.9	239	100.0	
Chi-square	*Significant p<0,05						

*Significant $p < 0.05$

Relationship between Family history of diabetes Mellitus and Preventive practices of Type 2 diabetes mellitus

Someone with a family member that has diabetes mellitus has a bigger probability to get diabetes mellitus than someone without a family member that has diabetes mellitus. Genetic risk factors become the cause of inherited diabetes mellitus, and there is the same lifestyle pattern among family members (Tamornpark *et al.*, 2017). Someone with a family member that has diabetes mellitus often connects with diabetic patients thus they have a better awareness of the incident and prevention of diabetes mellitus (Wolde *et al.*, 2017).

Results of this research showed that there was a significant relationship between family history of diabetes mellitus and preventive practices of diabetes mellitus. Respondents who knew they had the history tended to implement the preventive practices. The practices were namely not smoking, maintaining diet, and doing physical activity. The wrong diet without balanced physical activity or exercise was the trigger for overweight cases that could cause diabetes mellitus (Sudargo, 2014).

Results of this research were in line with research conducted in Ethiopia in 2014 about knowledge and preventive practices of diabetes mellitus on family members of diabetics. The research mentioned that having a diabetic family member was significantly related to good practices on incidents and preventions of diabetes mellitus (Wolde *et al.*, 2017).

Relationship between Knowledge Level and Preventive Practices of Type 2 Diabetes Mellitus

Knowledge holds a significant role in determining a whole behavior, because knowledge will form a belief that will perceive the reality, and give a basis for decision-making. Knowledge determines behavior towards a certain object, hence affects someone in doing a behavior (Amankwah-Poku, 2019). Knowledge level on type 2 diabetes mellitus can be inferred as something that is known by someone about type 2 diabetes mellitus. The knowledge includes the definition, symptoms, risk factors, diets, exercises or physical trainings, preventions, and diagnosis of type 2 diabetes mellitus. The knowledge that is possessed by an

individual can affect them in doing a behavior (Salem *et al.*, 2018). The individual with the knowledge would be able to know what is needed, also solve their life needs. The formation of a new behavior starts from knowledge (cognitive), which means that someone knows the material first then the material will form the behavior and practice. Knowledge and understanding on diabetes mellitus will form behaviors or practices that will be implemented to prevent diabetes (Silalahi, 2019).

Results of this research showed there was a relation between knowledge level and preventive practices of type 2 diabetes mellitus in students of Diponegoro University Semarang. This research was in line with research conducted by Kharono which showed that most of the respondents did not know that when there were 3 family generations with diabetes it was a risk factor of the occurrence of type 2 diabetes mellitus (Kharono *et al.*, 2017). The majority of the respondents also did not know the diagnosis of type 2 diabetes mellitus. This ignorance caused the respondents not to implement the preventive practices of type 2 diabetes mellitus.

Results of this research were in line with research in Ethiopia in 2017 which showed that there was a significant relationship between knowledge and practice level of respondents in implementing prevention of diabetes mellitus type 2 (Kassahun and Mekonen, 2017). Knowledge of diabetes mellitus, symptoms, risk factors, diets, and diagnosis of type 2 diabetes mellitus affect someone in implementing the preventive practices of diabetes mellitus. Society's knowledge on diabetes is a requirement for individuals and the society to do disease preventive actions (Rose and L.Merz, 2020).

Relationship between Attitude and Preventive Practices of Type 2 Diabetes Mellitus

Attitude is a mental condition and thinking condition that is prepared to give a response towards an object through experiences and give impact directly or indirectly on practices or actions. The formation of one's practices starts from knowledge on stimulus in form of materials or objects about diabetes prevention hence emerging new knowledge in the

subject. The next phase of the stimulus will cause an inner response in form of attitude towards the object that has been known, then, in the end, will emerge a response in form of actions of whether doing or not doing the diabetes mellitus prevention (Notoatmodjo, 2012).

Results of analysis in this research mentioned that there was a significant relationship between respondents' attitudes and preventive practices of diabetes mellitus. One's good attitudes on the importance of physical activity and maintaining a healthy diet in relation to type 2 diabetes mellitus prevention tended to cause implementation of preventive practices of type 2 diabetes mellitus. Parallel with research in Ethiopia in 2017 which showed that there was a significant relationship between attitudes and practices that one with a good attitude towards diabetes had an increase of 2-folds in practice level of diabetes mellitus prevention. Research results showed that individuals with a positive attitude towards diabetes would be easy to do a risk reduction of diabetes mellitus (Kassahun and Mekonen, 2017).

Relationship between Family Support and Preventive Practices of Type 2 Diabetes Mellitus

Family support is a helper that can be provided to other families in form of goods, services, encouragements, motivations, empathies, information, or advice which make support receivers feel loved, respected, and comfortable by the familiarity due to their existences and give the benefit of emotions or behavioral effects on the receivers. A family is a place that is safe and peaceful for its members to pour all the feelings they have to implement preventive practices and healing of a disease. The presence of others in one's private life is so needed. This happens because one does not possibly fulfill one's physical nor psychological needs by oneself. Individuals need social supports, where one of which originates from family. Family support is functional for health care, namely, health care function, and health condition maintenance function for the family members so that they have high productivity (Bisnu, Kepel and Mulyadi, 2017).

Results of this research were in line with that theory, where family support was

related to preventive practices of diabetes mellitus in college students. Parallel with research conducted in Labuhanbantu in 2019 which showed that there was a significant relationship between family support and hyperglycemia prevention in Regional General Hospital Kotapinang, Kotapinang Subdistrict, Labuhanbatu Selatan District. Family support would affect respondents' willingness in implementing hyperglycemia preventions (Harahap, 2019).

Family support can be in form of provision of foods with balanced nutrition. Other forms can be mutual reminders on the importance of eating with balanced nutrition, mutual reminders on dangers of smoking and drinking alcohols, mutual reminders on doing exercise and explaining the importance of exercising. Family also has a significant role in explaining the importance of doing blood glucose level test to prevent diabetes mellitus as early as possible. Good family support by giving attentions and motivations will make respondents implement type 2 diabetes mellitus prevention. Family support that is given, namely, in form of provision of foods with balanced nutrition, explanation on dangers of smoking and drinking alcohols, explanation on the importance of exercising and doing exercise routinely, also explanation on the importance of checking blood glucose level routinely.

CONCLUSION

The majority of respondents did not have family history of diabetes mellitus. The percentage of respondents with good knowledge level, attitude, and practices was higher than the bad ones. Respondents with supportive families on doing preventive practices of type 2 diabetes mellitus were more than those unsupported. There was a significant relationship between family history of type 2 diabetes mellitus, knowledge level, attitude, and family support on preventive practices of type 2 diabetes mellitus in students of Diponegoro University Semarang. Advice that can be given by the researcher is that education and information provision of knowledge on diabetes mellitus prevention is necessary for students of Diponegoro University Semarang.

ACKNOWLEDGEMENT

The author would like to thank Mrs. Nissa Kusariana, SKM, M.Si who always provides guidance. Thanks are also given to the respondents who have participated in completing this research.

REFERENCES

- Alemayehu, A. M., Dagne, H. and Dagne, B. (2020) 'Knowledge and associated factors towards diabetes mellitus among adult non-diabetic community members of Gondar city, Ethiopia 2019', *PLoS ONE*, 15(3), pp. 1-12. doi: 10.1371/journal.pone.0230880.
- Alsous, M. et al. (2019) 'Public knowledge, attitudes and practices toward diabetes mellitus: A cross-sectional study from Jordan', *PLoS ONE*, 14(3), pp. 1-12. doi: 10.1371/journal.pone.0214479.
- Amankwah-Poku, M. (2019) 'A cross-sectional study of knowledge and awareness of type 2 diabetes mellitus in a student population in Ghana: do demographics and lifestyle make a difference', *Health Psychology and Behavioral Medicine*, 7(1), pp. 234-252. doi: 10.1080/21642850.2019.1637261.
- American Diabetes Association (2014) 'Diagnosis and classification of diabetes mellitus', *Diabetes Care*, 37(SUPPL.1), pp. S81-S90. doi: 10.2337/dc14-S081.
- Bisnu, M. I. K. H., Kepel, B. J. and Mulyadi (2017) 'Hubungan dukungan keluarga dengan derajat hipertensi pada pasien hipertensi di Puskesmas Ranomuut Kota Manado', *e-journal Keperawatan*, 5(1).
- Dinas Kesehatan Kota Semarang (2018) *Profil Kesehatan Kota Semarang 2018*.
- Evi, K. and Yanita, B. (2016) 'Faktor-Faktor yang Berhubungan dengan Kejadian Diabetes Melitus Tipe II', *Majority*, 5(2), pp. 27-31.
- George, A., Augustine, R. and Sebastian, M. (2014) *Diabetes mellitus and human health care: a holistic approach to diagnosis and treatment*.
- Harahap, E. T. (2019) *Hubungan pengetahuan, sikap dan dukungan keluarga pasien diabetes melitus dengan pencegahan hiperglikemia di RSUD Kotapinang Kabupaten Labuhanbatu Selatan tahun 2019*. Institut Kesehatan Helvetia.
- Hendayani, W. L. and Afnuhazi, R. (2018) 'Dukungan keluarga dengan depresi pada lansia', *Jurnal Pembangunan Nagari*, 3(1), pp. 1-12.
- Herath, H. M. M. et al. (2017) 'Knowledge, attitude and practice related to diabetes mellitus among the general public in Galle district in Southern Sri Lanka: a pilot study', *BMC Public Health*, 17(1), p. 535. doi: 10.1186/s12889-017-4459-5.
- Hulukati, W. and Djibrin, M. R. (2018) 'Analisis Tugas Perkembangan Mahasiswa Fakultas Ilmu Pendidikan Universitas Negeri Gorontalo', *Bikotetik (Bimbingan dan Konseling: Teori dan Praktik)*, 2(1), p. 73. doi: 10.26740/bikotetik.v2n1.p73-80.
- International Diabetes Federation (2019) *Diabetes atlas international diabetes federation*.
- Isnaini, N. and Ratnasari, R. (2018) 'Faktor risiko mempengaruhi kejadian diabetes mellitus tipe dua', *Jurnal Kebidanan dan Keperawatan Aisyiyah*, 14(1), pp. 59-68. doi: 10.31101/jkk.550.
- Kassahun, C. W. and Mekonen, A. G. (2017) 'Knowledge, attitude, practices and their associated factors towards diabetes mellitus among non diabetes community members of Bale Zone administrative towns, South East Ethiopia. A cross-sectional study', *PLoS ONE*. Edited by M. Ciccozzi, 12(2), p. e0170040. doi: 10.1371/journal.pone.0170040.
- Kharono, B. et al. (2017) 'Knowledge, attitudes, and perceived risks related to diabetes mellitus among University Students in Uganda: a cross-sectional study', *East African Health Research Journal*, 1(2), pp. 105-112.
- Lestari, T. (2019) 'Pengetahuan dan sikap terhadap upaya pencegahan penyulit Diabetes Melitus di Puskesmas Pematang Kandis Bangko', *Jurnal Kesehatan Masyarakat*, 12(02).
- Notoatmodjo, S. (2012) *Promosi Kesehatan dan Perilaku Kesehatan*. Jakarta: PT Rineka Cipta.
- Notoatmojo, S. (2012) *Promosi kesehatan dan perilaku kesehatan*. Jakarta: Rineka Cipta.
- Paramitha, diah pradnya and Lestari, W. (2019) 'Pengaruh riwayat keluarga terhadap kadar glukosa darah pada dewasa muda keturunan pertama dari

- penderita Diabetes Mellitus tipe 2', *E-Jurnal Medika*, 8(1), pp. 61-66.
- Rahalus, R., Asrifuddin, A. and Kaunang, W. P. . (2017) 'Faktor-faktor yang Berhubungan dengan kejadian diabetes mellitus tipe 2 di Rumah Sakit Tk. III. R. W. Mongisidi Manado tahun 2017', *Kesmas*, 6(3), pp. 1-11.
- Ravi, S., Kumar, S. and Gopichandran, V. (2018) 'Do supportive family behaviors promote diabetes self-management in resource limited urban settings? A cross sectional study', *BMC Public Health*, 18(1), pp. 1-9. doi: 10.1186/s12889-018-5766-1.
- Rose, E. and L.Merz, E. (2020) 'Diabetes knowledge, fatalism and type 2 diabetes-preventive behavior in an ethnically diverse sample of college students', *Journal of American College Health*, 0(0), pp. 1-10. doi: 10.1080/07448481.2020.1751175.
- Salem, A. *et al.* (2018) 'Knowledge, attitude, and practice regarding diabetes mellitus among general public and diabetic patients in Riyadh, Saudi Arabia', 2018(1).
- Silalahi, L. (2019) 'Hubungan pengetahuan dan tindakan pencegahan diabetes mellitus tipe 2', *Jurnal PROMKES*, 7(2), p. 223. doi: 10.20473/jpk.v7.i2.2019.223-232.
- Sudargo, T. (2014) *Pola makan dan obesitas*. Yogyakarta: Gadjah Mada University Press.
- Tamornpark, R. *et al.* (2017) 'Factors associated with type 2 diabetes mellitus among the elderly hill tribe population in Thailand', *Southeast Asian Journal of Tropical Medicine and Public Health*, 48(5), pp. 1072-1082.
- Wahyuningrum, R., Wahyono, D. and Prabandari, Y. S. (2017) 'Pengelolaan diabetes melitus tipe 2 oleh apoteker', *Jurnal Farmasi Indonesia*, 9(1), pp. 7-13.
- Wolde, M. *et al.* (2017) 'Knowledge and Practice on Prevention of Diabetes Mellitus among Diabetes Mellitus Family Members, in Suburban Cities in Ethiopia', *BMC Research Notes*, 10(1). doi: 10.1186/s13104-017-2871-7.
- World Health Organization (2016) *Diabetes fakta dan angka*.
- World Health Organization (2019) *Classification of diabetes mellitus 2019*.

Characteristics of Indonesian Adolescents who had Experienced Pregnancy Under the Age of 20 Years: Basic Health Research 2018

Ratih Indraswari¹✉¹ Health Promotion and Behavioral Science Section, Faculty of Public Health, Universitas Diponegoro, Semarang, IndonesiaCorresponding directed to e-mail: ratih.indraswari@gmail.com

ABSTRACT

Background: As well as other countries, Basic Health Research 2018 (Riskesdas) reported that adolescent pregnancies (aged under 20 years) occurred in almost all provinces in Indonesia. More than 60,000 Indonesian females experienced pregnancy at a young age. **Objective:** This study aims to analyze the characteristics of Indonesian women who had been pregnant under the age of 20 years. **Methods:** This study used a quantitative study with a cross-sectional design, the data processed was from Indonesian Basic Health Research 2018. The subjects were 67,392 women who experienced their first pregnancy under the age of 20 years. The independent variables of the study included the respondent's domicile, age, education level, and occupation. The dependent variable was the age at first pregnancy. All variables were analyzed using univariate, bivariate, and multivariate analysis. **Results:** Almost all (95.4%) Indonesian women who had experienced adolescent pregnancy were in the age range of 14-19 years when they were first pregnant. Most of the respondents lived in rural areas (68.1%), were in late adulthood (32.9%) when the survey was conducted, had completed primary school education (38.7%), and were not working (47.9%). Domicile, age, education, and occupation were related significantly to the age at which they were first pregnant (P -Value = 0.0001). Education affected the age at first pregnancy in women with a history of adolescent pregnancy (OR = 2.215). **Conclusion:** Adolescent with low education level is 2.2 riskier to have early pregnancy than an adolescent with high-level education. The government needs to make it a priority and seriously provide provision of reproductive health education among children before they get into their adolescence phase.

Keyword: adolescent, adolescent pregnancy, reproductive health, Riskesdas (Basic Health Research).

INTRODUCTION

Basic Health Research 2013 and 2018 recorded that women in Indonesia had a history of having their first pregnancy at a very young age (<15 years). Most of the reasons that caused adolescents to have premarital sex were curiosity (57.5%) and it happened unplanned (38%). These reflected the lack of understanding of the adolescents regarding the dangers of having premarital sex and low skills of making healthy decisions (Masni and Hamid, 2018).

Sexual behavior that poses health risks in adolescents is influenced by several factors. Adolescents' access to pornography describing the enjoyment of sex enables them to have sex at an early age (13 to 15 years). Adolescents with

low self-esteem have 3.3 times the opportunity to engage in premarital sexual behavior. Premarital sexual behavior is also influenced by the sexual behavior of close friends, religiosity, and attitudes (Wulandari, 2016). National Population and Family Planning Board (BKKBN) reported that 35% of young men felt no need to maintain their virginity, 10% of young women felt no need to maintain their virginity, and dating without having sex was considered by 95% of adolescents as an old courtship style. These results are in accordance with other studies which showed 12.1% of the respondents admitted to having experienced sexual intercourse (BKKBN, 2018a). Adolescents with low knowledge are 1.5 times more likely to engage in

risky premarital sexual behavior, namely performing sexual intercourse by changing partners and/or without using condoms (Wulandari, 2016). This indicates that in addition to the risk of contracting Sexually Transmitted Infections (STI), their sexual behavior is also at risk for adverse or unexpected events.

Another factor that influences adolescents to have risky sexual behavior is parental supervision. Lack of supervision from parents is caused by parents who work hence enabling children to freely watch television without filtering the programs. Children's behavior is strongly influenced by their own and other people's experiences that they imitate both directly and through the media (Astarini, Hamid and Rustini, 2016).

Premarital sexual behavior is significantly related to access to pornography. Access to magazines, books, pornographic films, and action porn describing the pleasures of sex causes adolescents in their early stage to start trying to do so (Wulandari, 2016). As many as 60.6% of adolescents access pornography at least once a day with the majority using personal cellphone media (59.2%) and doing it at home. In fact, 1.2% of adolescents began to be exposed to pornography since they were 5 to 8 years old (Gayatri, Shaluhiah and Indraswari, 2020).

According to data from the Global School-based Health Survey (GSHS) in 2015, 5.26% of junior and senior high school students in Indonesia have had sex with only 13% of them using condoms. In addition, 27.35% of students have actively engaged in sexual intercourse under the age of 14 years (Kemenkes RI, 2016). According to Indonesian Demographic and Health Survey (IDHS), the percentage of adolescents who first had sexual intercourse at the age of 15 to 19 years increased from 59% in 2012 to 74% in 2017. As many as 6% of adolescents reported starting their first sexual experience at the age of 11 to 14 years which is the average age of early puberty and transition from childhood to adolescence (Badan Kependudukan dan Keluarga Berencana Nasional, 2018). These figures prove that there are greater risks and challenges in adolescent reproductive health problems

if prevention is not immediately pursued before children get into their adolescence phase.

Every year approximately 16 million women aged 15 to 19 years and 2.5 million women aged under 16 years in developing countries experience labor (Ghose and John, 2017; Obare, Kabiru and Chandra-Mouli, 2018). According to the United Nations Development Economic and Social Affairs in 2010, Indonesia was the 37th country with a high percentage of young marriages and was the second-highest in ASEAN after Cambodia. In 2010, there were 158 countries whose minimum legal age for marriage for women was 18 years old and over, but in Indonesia, the minimum age limit for women was 16 years. According to the Indonesian Demographic and Health Survey (IDHS), from 1991 to 2012, the age of young marriage increased every year (Kementrian Kesehatan RI, 2013).

Law Number 16 of 2019 amended Law Number 1 of 1974 on Marriage in which the minimum age for marriage became 19 years for men and women (*UU RI no 16 Tahun 2019 tentang Perubahan atas UU no 1 Tahun 1974 tentang Perkawinan*, 2019). Nevertheless, there is always a request for a marriage dispensation every year in court from the woman's parents accompanied by supporting evidence that urges immediate marriage under the age determined by law (Pengadilan Agama Klas 1.A Semarang, 2019).

Adolescent pregnancy can occur both in marriage and out of wedlock. Adolescents who are pregnant out of wedlock are faced with the choice of whether to continue their pregnancy or not, as well as the choice of getting married to cover the family's disgrace or not. Unexpected events that have occurred are more frequent to cause women to bear the physical and social consequences than men. The younger the age of the pregnant woman, the higher the health risks experienced by the baby and the mother. The immaturity of female reproductive organs under the age of 20 years causes health problems such as abortion and even maternal and

child deaths due to pregnancy complications (Aprianti, Shaluhiah and Suryoputro, 2018).

Female adolescents who choose to continue their pregnancy will tend to become both a mother and a wife with limitations in making decisions. The wife is very dependent on the husband in making decisions. While the husband himself is strongly influenced by his family to choose the decisions that will be made. This is especially frequent to happen to adolescent mothers in rural areas. As many as 64% of adolescents mothers do not work and depend on their husbands as well as husband's family for their lives which causes them not to have the freedom to make decisions. The mother's low personal autonomy has been reported to be the cause of the failure of exclusive breastfeeding. The dominant patriarchal culture also causes health problems such as determining family planning and controlling the number of children. Men still have more power than women to make decisions regarding maternal health. Whereas according to United Nations Population Fund (UNFPA) data, 72.2% of husbands have low knowledge regarding maternal health. In fact, 80.9% of husbands never asked about the results of their wife's pregnancy examination (Sutinah, 2017).

Continuing the pregnancy has both short and long-term health risks. Marriage at a young age is at risk because there are insufficient readiness in terms of health, mental-emotional, educational, socio-economic, and reproductive aspects (Sari, Umami and Darmawansyah, 2020). This has resulted in higher divorce rates and increased fertility rates (Fadlyana and Larasaty, 2016).

Marriage age is also related to birth control because the length of a woman's fertile period is related to the number of children born (Fadlyana and Larasaty, 2016; Ahiyanasari and Nurmala, 2018). The ideal age for first marriage for women according to the majority of female adolescents (37%) aged 15 to 19 years is 24 to 25, while according to the majority of male adolescents (33%) is 20 to 21 years. The ideal age for first

marriage for men according to most male adolescents (49%) and female adolescents (41%) is 24 to 25 years. However, there are still those who consider that the ideal age for first marriage is under 20 years, especially for women (Kementrian Kesehatan RI, 2013).

To prepare the design of health promotion programs, it is necessary to have a target-oriented need assessment hence the interventions implemented will be effective and efficient. Therefore, this study aims to determine the characteristics of Indonesian adolescents who have experienced pregnancy under the age of 20 years, thus reproductive health education strategies for prepubertal children can be designed by considering and adopting the findings of this study.

METHOD

This study used a cross-sectional design by processing the data from Basic Health Research 2018 of the Health Research and Development Agency of the Ministry of Health of the Republic of Indonesia. All respondents in this study were Indonesian women who had a history of pregnancy under the age of 20 years. There were 67,392 respondents who fit these criteria and all of them were used for further analysis in this study.

The independent variables of the study included the respondent's domicile, age, education level, and employment status. The dependent variable was age at first pregnancy. All variables were analyzed descriptively, bivariate relationship test with chi-square, and logistic regression test. This study used secondary data and was not carried out directly on humans, thus ethical clearance was not required in conducting the research.

RESULTS AND DISCUSSION

According to the data in Table 1, it can be seen that most of the respondents live in rural areas (68.1%), only graduated

from primary school (38.7%) with an almost evenly distributed age range between late adolescence and early elderly. This is very worrying because it entails a history of pregnancy at a young age occurs in each generation in large numbers, even though reproductive health programs have been carried out by the government and have improved since the International Conference for Population and Development (ICPD) in Cairo in 1994 (Priyatni and Rahayu, 2016).

A total of 47.9% of women who had been pregnant at the age of <20 years did not work while 24.9% worked as farmers. This is common because pregnant adolescents will always be in the most disadvantaged position. Adolescent pregnancies deprive young women of opportunities to continue their education and find better jobs. Adolescents who decide to continue their pregnancy and marry also have the responsibility to take care of their children as well as the household (Fluellen, 2016; Franjic, 2018; Sick, Spaulding and Park, 2018; Agnafors *et al.*, 2019).

Almost all women in Indonesia (95.4%) who had been pregnant at the age of <20 years experienced their first pregnancy at the age of 14 to 19 years. Pregnancy at that age is a high-risk pregnancy for its potential to endanger the safety of the mother and the fetus. This is due to the reproductive organs of women aged <20 years being not ready yet to carry a fetus than women aged 20 to 35 years (Govender, Naidoo and Taylor, 2019; Kiani, Ghazanfarpour and Saeidi, 2019).

The most worrying condition is that 4.6% of women in Indonesia had been pregnant at the age of <14 years. The average age of women in Indonesia getting into the puberty phase is 12.5 years (Wahab *et al.*, 2018), which means 4.6% of women in Indonesia had been pregnant at the age of 12.5 to 14 years. At the latest, it only takes 1.5 years to get pregnant since the woman experiences menarche, which means sexual intercourse behavior has been carried out immediately after the woman gets her period or even before.

Table 1. Characteristics of Respondents

Category	n	%
Domicile		
Urban area	21,529	31.9
Rural area	45,863	68.1
Age		
Late adolescence	8,752	13.0
Early adulthood	18,262	27.1
Late adulthood	22,200	32.9
Early elderly	18,178	27.0
Education Level		
Did not go to school	4,189	6.2
Did not graduate from primary school	11,659	17.3
Graduated from primary school	26,091	38.7
Graduated from junior high school	15,844	23.5
Graduated from senior high school	8,686	12.9
Graduated from diploma	349	0.5
Graduated from university	574	0.9
Occupation		
Did not work	32,267	47.9
Student	288	0.4
PNS/TNI/POLRI/BUMN/BU MD	419	0.6
Private employees	1,577	2.3
Entrepreneur	7,328	10.9
Farmer	16,555	24.6
Fisherman	157	0.2
Labor/driver/household assistant	3,178	4.7
Other	5,623	8.3
Age of Menarche		
≤ 12 years old	73	0.1
> 13 years old	112	0.2
Unsuitable	67,207	99.7
Obstetric History		
Age at first pregnancy		
< 14 years old	3,102	4.6
14-19 years old	64,290	95.4
Gravida		
Primigravida	8,868	13.2
Multigravida	51,227	76.0
Grandemultigravida	7,297	10.8
Paritas		
Nullipara	441	0.7
Primipara	10,136	15
Multipara	51,439	76.3
Grandemultipara	5,376	8
Abortion		
Ever	12,764	18.9
Never	54,628	81.1
Total	67,392	100

Based on the data from Basic Health Research 2018, it is known that there were 4.6% of female respondents

who had been pregnant at the age of <14 years. This small percentage is very worrying and cannot be underestimated. If serious prevention efforts are not taken immediately, sexual intercourse is very likely to occur at a much younger age (Schoefield and Bierman, 2018). The low parental control over children and easy access to pornography make this prediction highly believed to occur (Ahanhanzo *et al.*, 2018).

All respondents were in the age range of 14 to 54 years. The question regarding age of menarche was not asked to respondents aged above 20 years at the time of the survey. Thus, data on the age of menarche were only answered by less than 1% of respondents. This caused the variable age of menarche could not be tested for the relationship and its effect on the incidence of pregnancy in adolescents under the age of 20 years. However, it can be seen that there were 73 respondents who experienced their first menstruation at the age of 12 years, with the youngest was 8 years.

In addition to the age at first pregnancy, other obstetric histories were

also known, namely the number of pregnancies (gravida), number of births (partum), and number of abortions (abortion). Most of the respondents (76%) had been pregnant 2 to 5 times in their lifetime (multigravida) and 10.8% had experienced pregnancy more than 5 times. A total of 76.3% of respondents had a history of giving birth 2 to 5 times (multipara). As many as 18.9% claimed to have had an abortion, but it was not explained whether the type of abortion was spontaneous or provocative. From these data, it can be seen that there are still many Indonesian women who experience obstetric health risks.

The number of gravidas, parturitions, and abortions occurred after the first pregnancy thus these three cannot be the risk factors of the incidence of first pregnancy in women aged under 20 years. Therefore, the three variables above were only described descriptively in this study to strengthen the picture of Indonesian women who had been pregnant under the age of 20 years.

Table 2. Bivariate Test Result of Respondents' Characteristics who have Experienced Adolescent Pregnancy

Variable	Age of First Pregnant				Total		P-Value
	<14 Years Old		14-19 Years Old				
	n	%	n	%	n	%	
Domicile							
Urban area	874	4.1	20,655	95.9	21,529	100	0.0001
Rural area	2,228	4.9	43,635	95.1	45,863	100	
Age							
Late adolescence	219	2.5	8,533	97.5	8,752	100	0.0001
Early adulthood	665	3.6	17,597	96.4	18,262	100	
Late adulthood	1,082	4.9	21,118	95.1	22,200	100	
Early elderly	1,136	6.2	17,042	93.8	18,178	100	
Education Level							
Did not go to school	338	8.1	3,851	91.9	4,189	100	0.0001
Did not graduate from primary school	861	7.4	10,798	92.6	11,659	100	
Graduated from primary school	1,354	5.2	24,737	94.8	26,091	100	
Graduated from junior high school	358	2.3	15,486	97.7	15,844	100	
Graduated from senior high school	155	1.8	8,531	98.2	8,686	100	
Graduated from diploma	10	2.9	339	97.1	349	100	
Graduated from university	26	4.5	548	95.5	574	100	
Occupation							
Did not work	1,357	4.2	30,910	95.8	32,267	100	0.0001
Student	11	3.8	277	96.2	288	100	
PNS/TNI/POLRI/BUMN/BUMD	17	4.1	402	95.9	419	100	
Private employees	53	3.4	1,524	96.6	1,577	100	
Entrepreneur	351	4.8	6,977	95.2	7,328	100	
Farmer	907	5.5	15,648	94.5	16,555	100	

Fisherman	11	7.0	146	93.0	157	100	
Labor/driver/household assistant	151	4.8	3,027	95.2	3,178	100	
Other	244	4.3	5,379	95.7	5,623	100	
Gravida							
Primigravida	279	3.1	8,589	96.9	8,868	100	
Multigravida	2,261	4.4	48,966	95.6	51,227	100	0.0001
Grandmultigravida	562	7.7	6,735	92.3	7,297	100	
Paritas							
Nullipara	28	6.3	413	93.7	441	100	
Primipara	339	3.3	9,797	96.7	10,136	100	
Multipara	2,300	4.5	49,139	95.5	51,439	100	0.0001
Grandmultipara	435	8.1	4,941	91.9	5,376	100	
Abortion							
Ever	2,387	4.4	52,241	95.6	54,628	100	
Never	715	5.6	12,049	94.4	12,764	100	0.0001

Table 3. Multivariate Test Result of Respondents' Characteristics who have Experienced Adolescent Pregnancy

Variable	B	SE	Wald	df	Sig	Exp (B)	95% CI for Exp (B)	
							Lower	Upper
Domicile	-0.146	0.041	12.377	1	0.000	0.864	0.797	0.937
Age	-0.262	0.020	170.923	1	0.000	0.769	0.740	0.800
Education Level	0.795	0.077	107.405	1	0.000	2.215	1.906	2.575
Occupation	-0.086	0.038	5.246	1	0.022	0.917	0.852	0.988

There was a relationship between the respondent's domicile, age, education level, and occupation with the age at first pregnancy in adolescents who had experienced pregnancy during adolescence. Education was a variable that affected the age at first pregnancy with an OR value of 2.215. This means that adolescents with low education will be 2.2 times more likely to experience adolescent pregnancy at a younger age. The problems of education and adolescent pregnancy are like a vicious circle that continues to relate and influence each other. Pregnant women often have low education. After the school finds out about the pregnancy, they will be expelled from school which causes them not able to continue their education as their peers (Nkhoma *et al.*, 2020; Tull, 2020). Continuing education can be done again later at an older age, but many women choose not to continue their education for reasons of taking care of their children and chose to work thus they can meet the needs of daily life rather than going to school. With low education, there is very small opportunity to get a job with a higher income (Shirin *et al.*, 2016; Masuda and Yamauchi, 2017).

Pregnancy at a young age not only has short-term effects, but also long-term effects that adolescents and their families may not think about. Previous research has shown that women with low education were also at risk of having children who will behave the same way, namely having sexual intercourse in their adolescence (Cueto and Leon, 2016). As well as the vicious cycle between education and adolescent pregnancy, if this matter is not treated seriously, the problem of adolescent pregnancy will continue to recur and may cause a worse impact.

Indonesian society in general still holds a strongly patriarchal culture in living their social life. This system practices the position of men who often dominate, oppress, and exploit women. Patriarchy gives men more control over woman's bodies, sexuality, work, roles, and their status in the family as well as in society. In a social system that is strongly influenced by religion, patriarchy gives a rise to various forms of belief or ideology that men have a higher degree than women. This belief then forms a socio-cultural norm that places the ruling group with the ability to suppress weaker groups, in this case, the majority of women (Fakih, 2016;

BKKBN, 2018). Reproductive health education needs to consider social and cultural norms that run in Indonesia hence may be accepted and receive support from the surrounding environment. So far, the government is still focusing on reproductive health education whose target is the young. This is because health risks will more likely appear in the adolescence phase. This study showed that sexual intercourse behavior has been carried out by women in Indonesia as soon as they get their period. If the younger generation is not provided with reproductive health education at pre-pubertal age, the reproductive health education they receive as an adolescent will be less than optimal.

CONCLUSION

Adolescent pregnancy under the age of 20 years occurs in Indonesia every year. Most of the women who experienced pregnancy at a young age were pregnant at the age of 14 to 19 years, lived in rural areas, were in late adulthood at the time of the survey, had graduated from primary school, and did not work. There was a relationship between domicile, age, education level, and occupation on the first age of pregnancy of the adolescents. Education was a factor that affected the age of the first pregnancy.

The government needs to start to earnestly focus on addressing reproductive health problems in adolescents aged 9 to 11 years or before they get into their puberty phase. Providing provision of integrated reproductive health education with the school and family environment at an early age will be more promising to obtain optimal results than just trying to strive for prevention when they are already in their adolescence phase.

ACKNOWLEDGMENT

Thanks to the Indonesian Ministry of Health's National Institute of Health Research and Development (Balitbangkes) for giving permission to use the data of Basic Health Research 2018.

REFERENCES

Agnafors, S. *et al.* (2019) 'Mental health in young mothers, single mothers and their children', *BMC Psychiatry*,

- 19(112).
- Ahanhanzo, Y. G. *et al.* (2018) 'Factors associated with early sexual intercourse among teenagers and young adults in rural south of Benin', *Journal of Public Health in Africa*, 9(2), pp. 88-91.
- Ahiyanasari, C. E. and Nurmala, I. (2018) 'The intention of female high school students to prevent premarital sex', *Jurnal PROMKES*, 5(1), p. 39. doi: 10.20473/jpk.v5.i1.2017.39-52.
- Aprianti, Shaluhiah, Z. and Suryoputro, A. (2018) 'Fenomena Pernikahan Dini Membuat Orang Tua dan Remaja Tidak Takut Mengalami Kehamilan Tidak Diinginkan', *Jurnal Promosi Kesehatan Indonesia*, 13(1), pp. 61-73.
- Astarini, N., Hamid, S. I. and Rustini, T. (2016) 'Studi Dampak Tayangan Televisi terhadap Perkembangan Perilaku Sosial Anak', *Jurnal PGPAUD Kampus Cibiru*, 4(2).
- Badan Kependudukan dan Keluarga Berencana Nasional (2018) *Survei Demografi dan Kesehatan Indonesia 2017: Buku Remaja*. Jakarta. Available at: <https://archive.org/details/LaporanSDKI2017Remaja>.
- BKKBN (2018a) *Survei Demografi dan Kesehatan Indonesia, Administrator SDKI*.
- BKKBN (2018b) *Survei Demografi dan Kesehatan Indonesia 2017: Kesehatan Reproduksi Remaja (Indikator Utama)*. Jakarta: BKKBN. Available at: https://cis.bkkbn.go.id/latbang/?wpdmp=indikator-utama-key-indicator-report-kespro-remaja-sdki-2017_idhs-2017_english-version.
- Cueto, S. and Leon, J. (2016) 'Early Sexual Initiation among Adolescents: A Longitudinal Analysis for 15-years-olds in Peru', *Interamerican Journal of Psychology*, 50(2), pp. 186-203.
- Fadlyana, E. and Larasaty, S. (2016) 'Pernikahan Usia Dini dan Permasalahannya', *Sari Pediatri*, 11(2), p. 136.
- Fakih, M. (2016) *Analisis Gender dan Transformasi Sosial*. Yogyakarta: Insist Press.
- Fluellen, J. L. (2016) *Single Mothers of Young Children and Continuing Education*. Walden University.
- Franjic, S. (2018) 'Adolescent Pregnancy is a Serious Social Problem', *Journal of Gynecological Research and Obstetrics*, April.
- Gayatri, S., Shaluhiah, Z. and Indraswari, R. (2020) 'Faktor-faktor yang Berhubungan dengan Frekuensi Akses Pornografi dan Dampaknya terhadap Perilaku Seksual pada Remaja di Kota Bogor', *Jurnal Kesehatan Masyarakat*, 8(3), pp. 410-19.
- Ghose, S. and John, L. (2017) 'Adolescent Pregnancy: an overview', *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, 6(10), pp. 4197-4203.
- Govender, D., Naidoo, S. and Taylor, M. (2019) 'Prevalence and Risk Factors of Repeat Pregnancy among South African Adolescent Females', *African Journal of Reproductive Health*, 23(1), pp. 73-87.
- Kemenkes RI (2016) *Perilaku Berisiko Kesehatan pada Pelajar SMP dan SMA di Indonesia*. Available at: https://www.who.int/ncds/surveillance/gshs/GSHS_2015_Indonesia_Report_Bahasa.pdf?ua=1.
- Kementrian Kesehatan RI (2013) 'Situasi Kesehatan Reproduksi Remaja', ISSN 2442-7659, pp. 1-6. doi: 24427659.
- Kiani, M. A., Ghazanfarpour, M. and Saeidi, M. (2019) 'Adolescent Pregnancy: A Health Challenge', *International Journal of Pediatrics*, 7(7), pp. 9749-9752.
- Masni and Hamid, S. F. (2018) 'Determinan Perilaku Seksual Berisiko pada Remaja Makassar (Studi Kasus Santri Darul Arqam Gombara dan SMAN 6)', *Jurnal MKMI*, 14(1), pp. 68-77.
- Masuda, K. and Yamauchi, C. (2017) *The Effects of Female Education on Adolescent Pregnancy and Child Health: Evidence from Uganda's Universal Primary Education for Fully Treated Cohorts*. Tokyo.
- Nkhoma, D. E. *et al.* (2020) 'Girls' Empowerment and Adolescent Pregnancy: A Systematic Review', *International Journal of Environmental Research and Public Health*, 17(1664), pp. 1-14.
- Obare, F., Kabiru, C. and Chandra-Mouli, V. (2018) *Reducing Early and Unintended Pregnancies among Adolescents*. Geneva.
- Pengadilan Agama Klas 1.A Semarang (2019) *Laporan Pelaksanaan Kegiatan Tahun 2019*. Semarang.
- Prijatni, I. and Rahayu, S. (2016) *Kesehatan Reproduksi dan Keluarga*

- Berencana*. 1st edn. Jakarta: Kemenkes RI.
- Sari, L. Y., Umami, D. A. and Darmawansyah (2020) 'Dampak Pernikahan Dini Pada Kesehatan Reproduksi Dan Mental Perempuan (Studi Kasus Di Kecamatan Ilir Talo Kabupaten Seluma Provinsi Bengkulu)', *Jurnal Bidang Ilmu Kesehatan*, 10(1), pp. 53-65.
- Schoefield, H.-L. T. and Bierman, K. L. (2018) 'Predicting Early Sexual Activity with Behavior Problems Exhibited at School Entry and in Early Adolescence', *Journal of Abnormal Child Psychology*, 36(8), pp. 1175-1188.
- Shirin, F. et al. (2016) 'Adolescent Pregnancy: risk factors, outcome and prevention', *Chattagram Maa-O-Shishu Hospital Medical College Journal*, 15(1), pp. 53-56.
- Sick, N., Spaulding, S. and Park, Y. (2018) *Understanding Young Parent Families*. Washington DC.
- Sutinah (2017) 'Partisipasi Laki-laki dalam Program Keluarga Berencana di Era Masyarakat Postmodern', *Jurnal Masyarakat, Kebudayaan dan Politik*, 30(3), pp. 289-299.
- Tull, K. (2020) *Consequences for adolescents when they become pregnant, and become mothers*. Brighton.
- UU RI no 16 Tahun 2019 tentang Perubahan atas UU no 1 Tahun 1974 tentang Perkawinan (2019).
- Wahab, A. et al. (2018) 'Declining age at menarche in Indonesia: a systematic review and meta-analysis', *International Journal of Adolescent Medicine and Health*, (September), pp. 1-9. doi: 10.1515/ijamh-2018-0021.
- Wulandari, S. (2016) 'Perilaku Seksual Pranikah Berisiko terhadap Kehamilan Tidak Diinginkan pada Remaja SMKN Tandun Kabupaten Rokan Hulu', *Jurnal Maternity and Neonatal*, 2(2), pp. 74-84.

Analisis Perilaku Pencegahan COVID-19 pada Pasien dengan Komorbiditas Diabetes Mellitus di Palembang

Analysis of COVID-19 Prevention Behaviour among Diabetes Mellitus Comorbidity Patients in Palembang

Giszka Putri¹⁾, Hamzah Hasyim^{1)✉}, Nur Alam Fajar¹⁾

¹ Faculty of Public Health, Universitas Sriwijaya, Indralaya, South Sumatra, Indonesia
Corresponding directed to e-mail: hamzah@fkm.unsri.ac.id

ABSTRACT

Background: COVID-19 in Diabetes Mellitus (DM) patients are at higher risk for severe complications than people without DM. Preventive behaviour is the best way to avoid COVID-19 infection for DM patients due to its bad impact, such as severe symptoms requiring intensive care, leading to death. **Objective:** This study aims to analyse the COVID-19 preventive behaviour among DM comorbidity patients in Palembang. **Method:** The cross-sectional study was conducted from April 2021 to May 2021 using a questionnaire to diabetic patients at six community health centres in Palembang. The questionnaire has four sections: patient characteristics, knowledge, attitude, and COVID-19 prevention behaviour. A proportional random sampling technique was used to determine the number of samples according to the data on diabetic patients in each health centre. The total sample was 183 respondents from 1.266 total population diabetic patients in six community health centres. Respondents were diabetic patients aged ≥ 18 years old and willing to fill out the questionnaire. Univariate, bivariate, and multivariate statistical analyses were used to analyse the data. **Results:** More respondents have good knowledge (50.3%), negative attitude (57.3%), and poor COVID-19 preventive behaviour (53.0%). The findings revealed a statistical significance between knowledge (P -value = 0.0001), attitude (P -value = 0.0001), and educational status (P -value = 0.0001) with COVID-19 preventive behaviour. Furthermore, knowledge is the most determinant factor of COVID-19 preventive behaviour ($PR = 7.597$, 95% CI: 3.701 - 15.597). **Conclusion:** According to this study, diabetic patients with poor knowledge are at greater risk of having poor COVID-19 prevention behaviours. COVID-19 prevention programs, especially health education programs at the community health centre, need to be improved to ensure that diabetic patients adopt reasonable and appropriate COVID-19 prevention practices.

Keywords: Behaviour, COVID-19, Diabetes Mellitus, Prevention

ABSTRAK

Latar Belakang: Pasien diabetes mellitus (DM) yang menderita COVID-19 berisiko lebih tinggi mengalami komplikasi berat dibandingkan orang tanpa DM. Perilaku pencegahan merupakan cara terbaik untuk menghindari penularan COVID-19 bagi pasien DM karena dampaknya yang buruk, seperti gejala berat yang memerlukan perawatan intensif hingga dapat menyebabkan kematian. **Tujuan:** Penelitian ini menganalisis perilaku pencegahan COVID-19 pada pasien komorbiditas DM di Palembang. **Metode :** Studi cross sectional dilakukan pada April 2021 hingga Mei 2021 dengan menggunakan kuesioner yang diberikan kepada pasien DM di enam Puskesmas di Kota Palembang. Kuesioner memiliki empat bagian; karakteristik pasien, pengetahuan, sikap, dan perilaku pencegahan COVID-19. Penentuan jumlah sampel untuk setiap Puskesmas menggunakan teknik proportional random sampling sesuai dengan data pasien DM di masing-masing Puskesmas. Jumlah sampel sebanyak 183 responden dari total 1.266 populasi pasien DM di enam Puskesmas. Responden adalah pasien DM yang berusia ≥ 18 tahun dan bersedia mengisi kuesioner. **Hasil:** Lebih banyak responden memiliki pengetahuan baik (50,3%), sikap negatif (57,3%), dan perilaku pencegahan COVID-19 yang buruk (53,0%). Hasil penelitian secara statistik menunjukkan signifikansi antara pengetahuan (P -value = 0,0001), sikap (P -value = 0,0001), dan status

pendidikan ($P\text{-value} = 0,0001$) dengan perilaku pencegahan COVID-19. Selanjutnya, pengetahuan merupakan faktor yang paling dominan terhadap perilaku pencegahan COVID-19 ($PR = 7.597$, $95\% CI: 3.701 - 15.597$). **Kesimpulan:** Pasien DM dengan pengetahuan yang buruk berisiko lebih besar memiliki perilaku pencegahan COVID-19 yang buruk. Program pencegahan COVID-19 terutama program edukasi kesehatan di Puskesmas perlu ditingkatkan untuk dapat mendorong penerapan perilaku pencegahan COVID-19 yang baik dan tepat pada pasien DM.

Kata kunci : Perilaku, COVID-19, Diabetes Mellitus, Pencegahan

INTRODUCTION

Coronavirus disease or COVID-19 is caused by a new type of Novel Corona Virus (2019-nCoV) and was first reported in Wuhan City, Hubei, China, in December 2019 quickly spread to other countries a worldwide pandemic (Li *et al.*, 2020). COVID-19 can be transmitted from human to human through droplets by direct or indirect contact through the mucous membranes of the eyes, mouth, and nose (Centers for Disease Control and Prevention, 2020). Symptoms including fever, cough, body feeling tired, myalgia, and shortness of breath which can cause severe symptoms and death (Li *et al.*, 2020; Ali and Alharbi, 2020). The COVID-19 pandemic has had a significant impact globally, especially in the health and socio-economic sectors of the country.

According to World Health Organization (WHO) data, COVID-19 cases worldwide have exceeded 100 million people. Indonesia is ranked 18th with the highest number of COVID-19 cases globally (World Health Organization, 2021). According to data from the Ministry of Health of the Republic of Indonesia or *Kementerian Kesehatan Republik Indonesia*, confirmed cases of COVID-19 in Indonesia have almost reached 2 million, with a cure rate of 90.1% and a fatal death rate or case fatality rate of 2.7% (Satuan Tugas COVID-19, 2021). Palembang is a city with the highest number of COVID-19 cases in South Sumatra Province (Dinas Kesehatan Provinsi Sumatera Selatan, 2021).

COVID-19 had a higher risk for the elderly and people who have a history of chronic (comorbid) disease with worse complications (Akalu, Ayelign and Molla, 2020). The three comorbid diseases and the highest causes of death in COVID-19 patients in Indonesia are hypertension, Diabetes Mellitus (DM), and

cardiovascular disease (Karyono and Wicaksana, 2020). The mechanism that caused poor prognosis in COVID-19 patients with diabetes comorbidity associated with elderly, uncontrolled blood sugar levels, and comorbid diseases or complications that accompany diabetes (Muniyappa and Gubbi, 2020; Pugliese *et al.*, 2020).

Data from various countries showed that the prevalence of COVID-19 patients with diabetes is lower than those without diabetes but has a more severe impact (Pugliese *et al.*, 2020). Based on data from the Indonesian COVID-19 Handling Task Force or *Satuan Tugas COVID-19* (Satgas COVID-19), COVID-19 patients with accompanying diabetes are in the second-highest rank compared to other comorbid diseases, with a 9.7% percentage of deaths (Satuan Tugas COVID-19, 2021). In South Sumatra Province, the number of COVID-19 patients with diabetes who died was the second-highest rank of other comorbidities (Dinas Kesehatan Provinsi Sumatera Selatan, 2021). The effort made by the Indonesian Ministry of Health is to issue steps for DM patients during the COVID-19 pandemic as an effort to prevent COVID-19 in comorbid DM patients (Kementerian Kesehatan Republik Indonesia, 2020).

Prevention efforts for diabetic patients are the best steps to avoid COVID-19 infection due to its bad impact on diabetic patients, such as severe symptoms that require intensive care to death (Kumar *et al.*, 2020). Diabetic patients at risk of being infected with COVID-19 with a worse effect must have good COVID-19 prevention behaviour. Based on research on patients with chronic diseases, most patients had good knowledge, positive attitudes, and good COVID-19 prevention (Huynh *et al.*, 2020). Research on patients with DM and hypertension found that poor

knowledge affects preventive behaviour, which can directly increase the risk of transmission of COVID-19 (Melesie Taye *et al.*, 2020). The patient's knowledge and attitude influence COVID-19 prevention behaviour in diabetic patients. Based on this background, this study was conducted to analyse the preventive behaviour of COVID-19 in comorbid DM patients in Palembang City.

METHODS

The cross-sectional study was conducted from April 2021 to May 2021. The sampling technique in this study was carried out with purposive random sampling by dividing the area of Community health centres in the Seberang Ulu and Seberang Ilir areas of Palembang City. The results obtained were six community health centres, namely 1 Ulu, Karya Jaya, Talang Ratu, Pakjo, Sosial, and Basuki Rahmat. To determine the number of samples for each community health centre, a proportional random sampling technique was used according to data on diabetic patients in each health centre. Based on the results of the sample calculation, the total sample was 183 from 1.266 total diabetics patients in six community health centres. Respondents were diabetic patients aged ≥ 18 years old and willing to fill out the questionnaire.

This study used a questionnaire given to diabetic patients at the community health centres. The questionnaire has four sections, patient characteristics (age, gender, education, and occupation). Furthermore, fifteen knowledge questions about COVID-19 and its prevention efforts for diabetic patients, five favourable and five unfavourable attitude statements about COVID-19, and twelve COVID-19 prevention behaviours were made by diabetic patients. Before distributing the questionnaires, 30 non-participating diabetic patients were tested for validity and reliability. The results of the questionnaire validity and reliability test were; in the knowledge section, 15 valid and reliable questions with Cronbach's alpha 0.842 (> 0.60); in the attitude section, ten valid and reliable statements with Cronbach alpha 0.796; and in the COVID-19 prevention behaviour section, 12 valid with Cronbach alpha 0.907. One variable was studied in univariate

analysis, while two variables were examined in bivariate analysis. Multiple variables were analysed in multivariate statistical analysis. The Health Research Ethics Commission of Sriwijaya University has approved this study (145/UN9.FKM/TU.KKE/2021).

RESULTS AND DISCUSSION

Univariate analysis was used to examine each research variable: patient characteristics (age, gender, education, and occupation), knowledge, and attitudes. In the next step, a bivariate analysis was used to examine the association between patient characteristics (age, gender, education, occupation), knowledge, and attitudes towards COVID-19 prevention. A multivariate analysis was also carried out to determine the dominant factors influencing COVID-19 prevention in diabetic patients. The results of the studies are shown in Tables 1, 2, and 3.

Table 1. Respondents Frequency Distribution Based on Dependent and Independent Variables

Variable	n	%
Age (years old)		
18-59	95	51.9
≥ 60	88	48.1
Gender		
Male	74	40.4
female	109	59.6
Educational status		
Low ($<$ high school)	108	59.0
High (\geq High School)	75	41.0
Occupation		
Working (employed)	116	63.4
Unemployed	67	36.6
Knowledge		
Poor	91	49.7
Good	92	50.3
Attitude		
Negative	106	57.9
Positive	77	42.1
COVID-19 Preventive Behaviour		
Poor	97	53.0
Good	86	47.0
Total	183	100

Table 1 shows the characteristics of the respondents (age, gender, education, and occupation). There are more respondents in the age group 18 - 59 years (51.9%), and most of them are female (59.6%). In addition, more respondents have higher education (59%), and most respondents are employed (63.4%).

In table 1, the results of the univariate analysis show that 50.3% of respondents have good knowledge. Respondents had more negative attitudes towards COVID-19 (57.9%). In addition, Table 1 also shows that 53% of respondents have poor COVID-19 prevention behaviour. The questionnaire lists preventive behaviours such as compliance and proper masks, handwashing with soap or hand sanitiser, and social withdrawal. In addition, preventative measures that diabetic patients must follow, such as regular medication or insulin injections, blood sugar monitoring, a healthy diet, and regular exercise.

Table 2 shows that 26 diabetic patients have poor knowledge of poor COVID-19 prevention behaviour, and 71 diabetic patients with good knowledge practice poor COVID-19 prevention behaviour. The chi-square test shows that knowledge is significantly associated with COVID-19 prevention behaviour in diabetic patients (P-value 0.0001). In addition, 37 diabetic patients have negative attitudes towards COVID-19 and poor COVID-19 prevention behaviours. The bivariate analysis results show a significant association between attitudes and COVID-19 prevention in diabetic patients (P-value 0.0001).

Table 2. Bivariate Analysis of Factors Associated with COVID-19 Preventive Behaviour in Diabetes Mellitus Patients

Diabetes Mellitus Patients								
Variable	COVID-19 Preventive Behaviour				Total		P-value	PR (95% CI)
	Poor		Good					
	n	%	n	%	n	%		
Knowledge								
Poor	26	28.6	65	71.4	91	100	0.0001	3.129 (2.103-4.657)
Good	71	77.2	21	22.8	92	100		
Attitude								
Negative	37	34.9	69	65.1	106	100	0.0001	2.948 (1,895-4588)
Positive	60	77.9	17	22.1	77	100		
Age (years Old)								
≥ 60	44	50.0	44	50.0	88	100	0.443	0.884 (0.650-1.203)
18-59	53	55.8	42	44.2	95	100		
Gender								
Male	45	60.8	29	39.2	74	100	0.081	0.749 (0.536-1.048)
Female	52	47.7	57	52.3	109	100		
Educational status								
Low (< high school)	27	36.0	48	64.0	75	100	0.0001	0.550 (0.404-0.747)
High (≥ high school)	70	64.8	38	35.2	108	100		
Occupation								
Unemployed	36	53.7	31	46.3	67	100	0.881	1.025 (0.743-1.413)
Working (employed)	61	52.6	55	47.4	116	100		

Table 3. Multivariate analysis with Multiple Logistic Regression

Variable	P-value	Prevalence Ratio (PR)	95% CI
Knowledge	0.0001	7.597	3.701 - 15.597
Attitude	0.0001	5.803	2.754 - 12.229

The bivariate analysis results in Table 2 also show that 70 diabetic patients with high educational status have poor COVID-19 prevention behaviour. The data analysis results show a significant association between education and COVID-19 prevention in diabetic patients (P-value 0.0001). Meanwhile, the bivariate analysis results on age, gender, and occupation characteristics show no statistical significance with COVID-19 prevention behaviour in diabetic patients (P-value > 0.05).

The multivariate analysis results show the most dominant factor or variable related to COVID-19 prevention behaviour in Diabetes Mellitus (DM) patients. It is the knowledge variable with the highest adjusted prevalence ratio value, 7.597 (95% CI 3.701 - 15.597), which means DM patients with poor knowledge had a 7.597 times greater risk of having bad COVID-19 prevention behaviour compared to diabetic patients with good knowledge.

COVID-19 patients with accompanying diabetes are at higher risk for severe complications and death than

those without diabetes (Hussain, Bhowmik and do Vale Moreira, 2020; Abdi *et al.*, 2020). Preventive behaviour is the best effort to control and prevent COVID-19 because no treatment is considered adequate for COVID-19 and its adverse effects on diabetic patients. Research on COVID-19 prevention behaviour and knowledge, Attitude, Practice (KAP) in diabetic patients has not been widely carried out, especially in Indonesia.

This study found a higher prevalence in diabetic patients who had good knowledge of COVID-19 (50.3%). More respondents answered questions about COVID-19 and its prevention correctly, especially for patients with diabetes mellitus. However, for diabetic patients who had poor knowledge, it tended to be high as well (49.7%). This issue is similar to research conducted on patients with chronic diseases in Northwest Ethiopia and a survey of diabetes and hypertension patients in Ethiopia who had better knowledge outcomes. However, for those who had poor knowledge, it also did increase (Akalu, Ayelign and Molla, 2020; Melesie Taye *et al.*, 2020). In Huynh's (2020) study conducted on chronic disease patients in Vietnam, results for those with good knowledge were high (Huynh *et al.*, 2020). In addition, the study conducted on patients with type 1 DM in India also found that the results of most respondents with good knowledge were high (Pal *et al.*, 2020). Although COVID-19 is a new disease, research on the general public in Indonesia, South Korea, Malaysia, China, and Sudan also showed that most respondents had a good level of Knowledge about COVID-19 (Sulistyawati *et al.*, 2021; Lee, Kang and You, 2021; Azlan *et al.*, 2020; Zhong *et al.*, 2020; Mohamed *et al.*, 2021).

Misinformation is negatively related to a lack of information and knowledge. When people get the wrong information, they tend to feel less in need of information about COVID-19 and its prevention (Kim *et al.*, 2020). Incorrect details on COVID-19 can lead to inappropriate COVID-19 prevention behaviour, so information delivery must be more proactive, especially in correcting misinformation in the community (Azlan *et al.*, 2020). The high percentage of poor knowledge can be attributed to misinformation and lack of access. Appropriate and easily accessible sources

of information are needed to increase knowledge about COVID-19.

A negative attitude has a higher prevalence (57.9%), as seen from the favourable and unfavourable attitude questionnaire results, which shows that diabetic patients have a negative attitude towards COVID-19 disease. This issue is similar to research conducted in Uganda, with most respondents having a negative attitude (79%) (Olum *et al.*, 2020). However, it is different from studies conducted on patients with chronic diseases, DM and hypertension patients, and patients with type 1 DM, which showed that most patients had a positive attitude towards COVID-19 so that they were more alert to the transmission of COVID-19 (Huynh *et al.*, 2020; Melesie Taye *et al.*, 2020; Pal *et al.*, 2020).

The negative attitude of diabetic patients towards COVID-19 can harm diabetic patients with higher risk who should be more aware of the transmission and prevention of COVID-19. In this study, the prevalence of poor COVID-19 prevention behaviour in diabetic patients was higher (53%). More diabetic patients do not perform excellent and appropriate preventive behaviour according to expert recommendations. This issue has similarities with research conducted in Sudan (Mohamed *et al.*, 2021).

In addition, a study conducted on chronic disease patients in Northwest Ethiopia and a study on diabetes and hypertension patients in Ambo, Ethiopia; also showed that most patients had poor preventive behaviour, such as not wearing a mask when going out, not avoiding crowds, and not keeping a social distance (Akalu, Ayelign and Molla, 2020; Melesie Taye *et al.*, 2020). Research on the knowledge, awareness, and behaviour of diabetic patients in Pakistan showed that diabetic patients did not perform optimal preventive behaviour and did not comply with COVID-19 prevention measures (Ajay *et al.*, 2020). During the COVID-19 pandemic, DM patients need to make behavioural changes to avoid COVID-19 transmission, but only 28% had their blood sugar checked regularly (Nachimuthu *et al.*, 2020). Most patients with chronic diseases had a low perception and willingness to carry out COVID-19 prevention behaviours (Dires, Gedamu and Getachew, 2021).

Meanwhile, in a study in the USA, most patients with chronic diseases such as DM and hypertension made changes in their behaviour and daily routines to prevent COVID-19 (Wolf *et al.*, 2020). Diabetic patients need to be extra in carrying out COVID-19 prevention practices compared to those who do not have diabetes (Yan *et al.*, 2020). COVID-19 prevention behaviour is the best step to avoid COVID-19 because no treatment is considered adequate for COVID-19 (Ali and Alharbi, 2020). Poor preventive behaviour can increase the risk of transmitting COVID-19.

Factors significantly associated with preventive behaviour are knowledge (P-value 0.0001), attitude (P-value 0.0001), and education (P-value 0.0001). Research in Northwest Ethiopia, Vietnam, South Korea, and China also showed that knowledge is significantly related to COVID-19 prevention practices (Akalu, Ayelign and Molla, 2020; Huynh *et al.*, 2020; Lee, Kang and You, 2021; Zhong *et al.*, 2020). Good knowledge is associated with good COVID-19 prevention behaviour (Melesie Taye *et al.*, 2020). Based on research in South Korea, knowledge related to COVID-19 prevention behaviour is carried out by wearing masks, maintaining hand hygiene, and avoiding crowds (Lee, Kang and You, 2021).

In a study of diabetic and non-diabetic patients, diabetic patients expressed concern about the risk of COVID-19 infection. They changed behaviour and lifestyle due to the COVID-19 pandemic (Yan *et al.*, 2020). Knowledge and attitudes are associated with COVID-19 prevention behaviour (Pal *et al.*, 2020; Zhong *et al.*, 2020; Reuben *et al.*, 2021). Good knowledge and a positive attitude are significantly associated with COVID-19 prevention behaviour compared to other factors (Andarge *et al.*, 2020). Meanwhile, according to a 2020 study in Sudan, knowledge and attitudes do not significantly affect COVID-19 prevention behaviour (Mohamed *et al.*, 2021). Knowledge and attitudes are part of the predisposing factors influencing behaviour change (Porter, 2016). Efforts to increase knowledge and encourage positive attitudes are needed for diabetic patients to make behavioural changes to prevent COVID-19.

The multivariate analysis of this study found that the most dominant factor influencing COVID-19 prevention behaviour is knowledge. Knowledge as a determinant also has similarities with research on chronic disease patients, which showed that respondents with good knowledge are 1.24 times more likely to have good COVID-19 prevention behaviour than respondents with poor knowledge (Huynh *et al.*, 2020). This case is different from the research conducted on patients with DM and hypertension in public health facilities which showed that respondents who do not have formal education have three times greater risk of carrying out bad COVID-19 prevention behaviours than those with formal education (Melesie Taye *et al.*, 2020).

This study found that poor knowledge has a greater risk of carrying out bad preventive behaviour. Therefore, efforts are needed to increase knowledge and avoid misinformation. Information regarding COVID-19 should focus more on correcting misinformation in the community that can lead to inappropriate preventive behaviour (Azlan *et al.*, 2020). Access and good sources of information are needed to increase public knowledge about COVID-19. A health education program is required to increase knowledge about COVID-19 prevention measures to help encourage good COVID-19 preventive behaviour practices for diabetic patients.

CONCLUSION

Patients with diabetes exhibited suboptimal COVID-19 prevention behaviours. Knowledge, attitudes, and educational status significantly predict COVID-19 prevention behaviour. Knowledge is the most critical factor in preventing COVID-19 behaviour in diabetes mellitus patients. Preventing COVID-19 transmission is the best way to control it because no treatment is available, which affects diabetic patients the most. Knowledge about COVID-19 requires appropriate and easily accessible sources of information. COVID-19 preventive initiatives, particularly those focused on health education at community health centres, must be strengthened to ensure reasonable and suitable COVID-19

prevention practices are properly followed.

ACKNOWLEDGEMENT

Thank you to the head and staff of six community health centres in Palembang and all respondents who have helped and supported this research.

REFERENCES

- Abdi, A. *et al.* (2020) 'Diabetes and COVID-19: A systematic review on the current evidences', *Diabetes Research and Clinical Practice*, 166(July), p. 108347. doi: <https://doi.org/10.1016/j.diabres.2020.108347>.
- Ajay, K. *et al.* (2020) 'Knowledge & Awareness about COVID-19 and the Practice of Respiratory Hygiene and Other Preventive Measures among Patients with Diabetes Mellitus in Pakistan', *European Scientific Journal ESJ*, 16(12), pp. 53-62. doi: <https://doi.org/10.19044/esj.2020.v16n12p53>.
- Akalu, Y., Ayelign, B. and Molla, M. D. (2020) 'Knowledge, Attitude and Practice Towards COVID-19 Among Chronic Disease Patients at Addis Zemen Hospital, Northwest Ethiopia', *Infection and Drug Resistance*, Volume 13, pp. 1949-1960. doi: <https://doi.org/10.2147/IDR.S258736>.
- Ali, I. and Alharbi, O. M. L. (2020) 'COVID-19: Disease, management, treatment, and social impact', *Science of The Total Environment*, 728, p. 138861. doi: <https://doi.org/10.1016/j.scitotenv.2020.138861>.
- Andarge, E. *et al.* (2020) 'Intention and Practice on Personal Preventive Measures Against the COVID-19 Pandemic Among Adults with Chronic Conditions in Southern Ethiopia: A Survey Using the Theory of Planned Behavior', *Journal of Multidisciplinary Healthcare*, Volume 13, pp. 1863-1877. doi: <https://doi.org/10.2147/JMDH.S284707>.
- Azlan, A. A. *et al.* (2020) 'Public knowledge, attitudes and practices towards COVID-19: A cross-sectional study in Malaysia', *PloS one* ONE. Edited by W.-J. Tu, 15(5), p. e0233668. doi: <https://doi.org/10.1371/journal.pone.0233668>.
- Centers for Disease Control and Prevention (2020) *How COVID-19 Spreads, Centers for Disease Control and Prevention*.
- Dinas Kesehatan Provinsi Sumatera Selatan (2021) *Situasi Terkini Perkembangan COVID-19 Provinsi Sumatera Selatan*.
- Dires, A., Gedamu, S. and Getachew, Y. (2021) 'Perception of COVID-19 Prevention Methods Efficacy and Intention to Use Among Patients with Chronic Disease in Dessie Town, Northeast Ethiopia: A Multicentered Cross-sectional Study', *Journal of Multidisciplinary Healthcare*, Volume 14(June), pp. 1325-1339. doi: <https://doi.org/10.2147/JMDH.S313796>.
- Hussain, A., Bhowmik, B. and do Vale Moreira, N. C. (2020) 'COVID-19 and diabetes: Knowledge in progress', *Diabetes Research and Clinical Practice*, 162, p. 108142. doi: <https://doi.org/10.1016/j.diabres.2020.108142>.
- Huynh, G. *et al.* (2020) 'Knowledge, Attitude, and Practices Regarding COVID-19 Among Chronic Illness Patients at Outpatient Departments in Ho Chi Minh City, Vietnam', *Risk Management and Healthcare Policy*, Volume 13, pp. 1571-1578. doi: <https://doi.org/10.2147/RMHP.S268876>.
- Karyono, D. R. and Wicaksana, A. L. (2020) 'Current prevalence, characteristics, and comorbidities of patients with COVID-19 in Indonesia', *Journal of Community Empowerment for Health*, 3(2), p. 77. doi: <https://doi.org/10.22146/jcoemph.57325>.
- Kementerian Kesehatan Republik Indonesia (2020) *Langkah - Langkah Pencegahan bagi Penyandang Diabetes Melitus di Masa Pandemi COVID-19*.
- Kim, H. K. *et al.* (2020) 'Effects of COVID-19 Misinformation on Information Seeking, Avoidance, and Processing: A Multicountry Comparative Study', *Science Communication*, 42(5), pp. 586-615. doi: <https://doi.org/10.1177/1075547020959670>.
- Kumar, A. *et al.* (2020) 'Is diabetes mellitus associated with mortality and severity of COVID-19? A meta-analysis', *Diabetes & Metabolic Syndrome*:

- Clinical Research & Reviews*, 14(4), pp. 535-545. doi: <https://doi.org/10.1016/j.dsx.2020.04.044>.
- Lee, M., Kang, B. and You, M. (2021) 'Knowledge, attitudes, and practices (KAP) toward COVID-19: a cross-sectional study in South Korea', *BMC Public Health*, 21(1), p. 295. doi: <https://doi.org/10.1186/s12889-021-10285-y>.
- Li, H. et al. (2020) 'Coronavirus disease 2019 (COVID-19): current status and future perspectives', *International Journal of Antimicrobial Agents*, 55(5), p. 105951. doi: <https://doi.org/10.1016/j.ijantimicag.2020.105951>.
- Melesie Taye, G. et al. (2020) 'COVID-19 Knowledge, Attitudes, and Prevention Practices Among People with Hypertension and Diabetes Mellitus Attending Public Health Facilities in Ambo, Ethiopia', *Infection and Drug Resistance*, Volume 13, pp. 4203-4214. doi: <https://doi.org/10.2147/IDR.S283999>.
- Mohamed, A. A. O. et al. (2021) 'Knowledge, attitude and practice of the Sudanese people towards COVID-19: an online survey', *BMC Public Health*, 21(1), p. 274. doi: <https://doi.org/10.1186/s12889-021-10319-5>.
- Muniyappa, R. and Gubbi, S. (2020) 'COVID-19 pandemic, coronaviruses, and diabetes mellitus', *American Journal of Physiology-Endocrinology and Metabolism*, 318(5), pp. E736-E741. doi: <https://doi.org/10.1152/ajpendo.00124.2020>.
- Nachimuthu, S. et al. (2020) 'Coping with diabetes during the COVID - 19 lockdown in India: Results of an online pilot survey', *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, 14(4), pp. 579-582. doi: <https://doi.org/10.1016/j.dsx.2020.04.053>.
- Olum, R. et al. (2020) 'Coronavirus Disease-2019: Knowledge, Attitude, and Practices of Health Care Workers at Makerere University Teaching Hospitals, Uganda', *Frontiers in Public Health*, 8(April), pp. 1-9. doi: <https://doi.org/10.3389/fpubh.2020.0181>.
- Pal, R. et al. (2020) 'Knowledge, attitudes and practices towards COVID-19 among young adults with Type 1 Diabetes Mellitus amid the nationwide lockdown in India: A cross-sectional survey', *Diabetes Research and Clinical Practice*, 166(January), p. 108344. doi: <https://doi.org/10.1016/j.diabres.2020.108344>.
- Porter, C. M. (2016) 'Revisiting Precede-Proceed: A leading model for ecological and ethical health promotion', *Health Education Journal*, 75(6), pp. 753-764. doi: <https://doi.org/10.1177/0017896915619645>.
- Pugliese, G. et al. (2020) 'Is diabetes mellitus a risk factor for CoronaVirus Disease 19 (COVID-19)?', *Acta Diabetologica*, 57(11), pp. 1275-1285. doi: <https://doi.org/10.1007/s00592-020-01586-6>.
- Reuben, R. C. et al. (2021) 'Knowledge, Attitudes and Practices Towards COVID-19: An Epidemiological Survey in North-Central Nigeria', *Journal of Community Health*, 46(3), pp. 457-470. doi: <https://doi.org/10.1007/s10900-020-00881-1>.
- Satuan Tugas COVID-19 (2021) *Indonesia; Data Sebaran, covid19.go.id*.
- Sulistiyawati, S. et al. (2021) 'Knowledge, Attitudes, Practices and Information Needs During the COVID-19 Pandemic in Indonesia', *Risk Management and Healthcare Policy*, Volume 14, pp. 163-175. doi: <https://doi.org/10.2147/RMHP.S288579>.
- Wolf, M. S. et al. (2020) 'Awareness, Attitudes, and Actions Related to COVID-19 Among Adults With Chronic Conditions at the Onset of the U.S. Outbreak', *Annals of Internal Medicine*, 173(2), pp. 100-109. doi: <https://doi.org/10.7326/M20-1239>.
- World Health Organization (2021) *WHO Coronavirus Disease (COVID-19) Dashboard, World Health Organization*.
- Yan, A. F. et al. (2020) 'Perceived risk, behavior changes and Health-related outcomes during COVID-19 pandemic: Findings among adults with and without diabetes in China', *Diabetes Research and Clinical Practice*, 167(January), p. 108350. doi: <https://doi.org/10.1016/j.diabres.2020.108350>.
- Zhong, B.-L. et al. (2020) 'Knowledge, attitudes, and practices towards COVID-

19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey', *International Journal of*

Biological Sciences, 16(10), pp. 1745-1752. doi:
<https://doi.org/10.7150/ijbs.45221>.

Pendekatan Ekologi Cakupan Imunisasi Dasar Lengkap pada Bayi di Indonesia (2017-2019)

Ecological Analysis of Complete Basic Immunization Coverage for Infants in Indonesia (2017-2019)

Yuli Puspita Devi¹⁾✉, Sabarinah Prasetyo¹⁾, Muthmainnah^{2,3)}

¹ Faculty of Public Health, Universitas Indonesia, Depok, Indonesia

² Doctoral Program, Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia

³ Department of Epidemiology, Demography Biostatistics and Health Promotion and Behaviour, Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia

Corresponding directed to e-mail: yuli.puspita@ui.ac.id

ABSTRACT

Background: Complete basic immunization for infants in Indonesia is an obligation in an effort to protect infant health. It is one of the important indicators in determining the quality of health services in a certain area. However, the coverage of complete basic immunization in Indonesia in 2017 and 2018 has not been achieved nationally with National Strategic Planning and it has not been achieved the targets of 80% of districts/cities in 2019. **Objective:** This study aims to analyze the factors correlated to the complete basic immunization coverage of infants in Indonesia in 2017-2019. **Methods:** Ecological analysis was carried out using secondary data from the report of the Ministry of Health of the Republic of Indonesia in 2017-2019. Univariate analysis was conducted using descriptive statistics and one sample Kolmogorov Smirnov. Bivariate analysis was conducted by correlation test (Pearson and Spearman) and scatter plot. **Results:** Complete basic immunization for infants had a significant correlation with the adequacy of midwives at the primary health care in 2017 ($r = -0.337$). There was significant correlation between poverty and complete basic immunization in 2017 and 2018 ($r = -0.362$ and $r = -0.535$). In 2019, active Integrated Service Post (Posyandu) was correlated to the complete basic immunization ($r = 0.444$). The first neonatal visit was correlated to the complete basic immunization of infants for three consecutive years (2017-2019). **Conclusion:** Efforts that can be made to increase the coverage of complete basic immunization in Indonesia are increasing the distribution of midwives in Indonesia, increasing the coverage of the first neonatal visit by paying attention to Posyandu cadres, especially in provinces with high poverty rates.

Keywords: Active Integrated Service Post, Complete basic immunization, First neonatal visit, Good-health, Poverty, Well-being

ABSTRAK

Latar Belakang: Imunisasi dasar lengkap pada bayi di Indonesia bersifat wajib sebagai upaya melindungi kesehatan bayi. Cakupan imunisasi dasar lengkap pada bayi merupakan salah satu indikator penting dalam menentukan kualitas pelayanan kesehatan di suatu daerah. Namun imunisasi dasar lengkap di Indonesia tahun 2017 dan 2018 belum tercapai secara nasional dengan Renstra dan belum tercapainya target 80% kabupaten/kota pada tahun 2019. **Tujuan:** Penelitian ini bertujuan untuk menganalisis faktor yang berhubungan dengan cakupan imunisasi dasar lengkap bayi di Indonesia tahun 2017-2019. **Metode:** Analisis ekologi dilakukan dengan menggunakan data sekunder dari laporan Kementerian Kesehatan Republik Indonesia tahun 2017-2019. Analisis univariat dilakukan dengan statistik deskriptif dan satu sampel Kolmogorov Smirnov. Analisis bivariat dilakukan dengan uji korelasi (pearson dan spearman) dan scatter plot. **Hasil:** Imunisasi dasar lengkap pada bayi memiliki korelasi yang signifikan dengan kecukupan bidan di Puskesmas tahun 2017 ($r = -0,337$). Ada hubungan yang signifikan antara kemiskinan dengan imunisasi dasar lengkap tahun 2017 dan 2018 ($r = -0,362$ dan $r = -0,535$). Pada tahun 2019, posyandu

aktif berkorelasi dengan imunisasi dasar lengkap ($r = 0,444$). Sedangkan kunjungan neonatus pertama berkorelasi dengan imunisasi dasar lengkap bayi selama tiga tahun berturut-turut (2017-2019). **Kesimpulan:** Upaya yang dapat dilakukan untuk meningkatkan cakupan imunisasi dasar lengkap di Indonesia adalah meningkatkan distribusi bidan di Indonesia, meningkatkan cakupan kunjungan neonatal pertama dengan memberi perhatian pada kader posyandu khususnya pada daerah dengan tingkat kemiskinan yang tinggi.

Kata kunci: Posyandu aktif, Imunisasi dasar lengkap, Kunjungan neonatal pertama, Kesehatan, Kemiskinan, Kesejahteraan

INTRODUCTION

Every infant (aged 0-11 months) in Indonesia is required to receive complete basic immunizations consisting of 1 dose of Hepatitis B, 1 dose of BCG, 3 doses of DPT-HB-HiB, 4 doses of polio drops, and 1 dose of measles/MR. DPT immunization coverage was moderately correlated to the number of diphtheria cases in 2018 (Setiawan *et al.*, 2021). A previous study stated that incomplete immunization was correlated to pneumonia in toddlers (Fitriyah, 2019).

The percentage of districts/cities that achieve 80% of complete basic immunization for infants was one indicator of equity and quality of health services in the health development targets in the 2015-2019 Strategic National Planning, with a target of 95% in 2019. Percentage of districts/cities that achieved 80% of basic immunizations completeness in infants tends to increase, and in 2017 it reached 85.41% districts/cities. However, in 2018 it decreased to 72.76%. In 2019, 73.74% of districts/cities had achieved 80% complete basic immunization, but this still did not meet the set target of 95% (Ministry of Health in Indonesia, 2018, 2019, 2020). The percentage of districts/cities with universal child immunization status was significantly related to malnutrition in toddlers (Wahyuni and Mahmudah, 2018).

Complete basic immunization in Indonesia reached 91.12% in 2007. This number was slightly below the 2017 Strategic Plan target of 92%. Meanwhile, fifteen provinces had achieved the 2017 Strategic Plan target (Ministry of Health in Indonesia, 2018). Based on the 2018 Indonesian Health Profile, complete basic immunization coverage in Indonesia in the last five years had always been above 85%

but had not yet reached the target of the Strategic Plan of the Ministry of Health. In 2018, complete basic immunization in Indonesia was 90.61%, which was slightly below the 2018 Strategic Plan target of 92.5% (Ministry of Health in Indonesia, 2019). However, In 2019, complete basic immunization in Indonesia was 93.7%, this had met the 2019 Strategic Plan target of 93% (Ministry of Health in Indonesia, 2020).

A previous study stated that one of the causes of the unsuccessful implementation of complete basic immunization coverage was the lack of health workers at the primary health care (Amir, Darwin and Lestari, 2018). The data of the national level reported that 83.53% of primary health care had more than the standard number of midwives. Nevertheless, there were still 12.91% of primary health care which was included in the less category.

Integrated Service Post or *Pos Pelayanan Terpadu (Posyandu)* is a form of Community-Based Health Efforts carried out by, from, and with the community, to empower and provide convenience to the community to obtain health services for mothers, infants, and children under five years. *Posyandu* had an important role in the first neonatal visit and immunization program (Cintyamina *et al.*, 2021). In 2019, Indonesia had 296,777 *Posyandu*. There were 188,855 or around 63.6% of active *Posyandu* in Indonesia (Ministry of Health in Indonesia, 2020).

The number of poor people in Indonesia in March 2019 was 25.14 million people (9.41%), which decreased from March 2018 which was 25.95 million people (9.82%). During the period of March 2018 to March 2019, the poor

population in urban areas decreased by 0.15 million people, while in rural areas decreased by 0.65 million people. The percentage of poor people in September 2018 was 9.66%, has decreased to 9.41% in March 2019 (Ministry of Health in Indonesia, 2020). The higher the income level of a person, the higher the chance to complete basic immunization (Debie *et al.*, 2020).

Indonesia's coverage of first neonatal visit achievement in 2019 was 94.9%, smaller than in 2018 which was 97.4%. However, this achievement had met the 2019 Strategic Plan target of 90%. A total of 16 provinces (47.1%) had met the target. A new strategy is needed between health workers and caregivers in monitoring complete basic immunizations (Mutua *et al.*, 2016). Therefore, this study aimed to determine the factors correlated to the complete basic immunization coverage of infants in Indonesia from 2017 to 2019.

METHOD

The design of this study used an ecological analysis. Ecological studies focus on comparisons between groups, not individuals. The data analysis was aggregated data in certain groups or levels, which in this study was the provincial level. Variables in ecological analysis can be aggregate measures, environmental measures, or global measures (Mooney and Pejaver, 2018; Laksono and Kusri, 2020; Laksono and Sandra, 2020).

This study used secondary data from the 2018 Data and Information of Indonesia Health Profile report. The report was officially issued by the Ministry of Health of the Republic of Indonesia annually. The unit of analysis in this study was the province as many as 34 provinces. All variables were obtained from the 2017-2019 Health Profile as follows.

The dependent variable in this study was complete basic immunization for infants. This was obtained from the number of infants who received complete basic immunization compared to the total number of infants in the province.

The independent variables in this study were the percentage of primary health care with less midwives, percentage of active *Posyandu*,

percentage of poor population, and percentage of first neonatal visits. Percentage of primary health care with less midwives was defined as the minimum standard for the number of midwives in the non-inpatient health centers which as many as four midwives and in the inpatient health centers with a minimum of seven midwives. If the primary health care had midwives less than the minimum standard, then it is included in the category of primary health care with less midwives (Ministry of Health in Indonesia, 2020).

Percentage of Active *Posyandu* was defined as the percentage of *Posyandu* that are able to carry out their main activities regularly every month (MCH: pregnant women, postpartum mothers, infants, toddlers, family planning, immunization, nutrition, prevention, and control of diarrhea) with a minimum coverage of 50% each and carry out additional activities (Ministry of Health in Indonesia, 2020).

Percentage of Poor Population was defined as the percentage of people who had an average consumption expenditure per capita per month below the poverty line. The poverty line shows the minimum amounts of rupiah needed to meet the minimum basic needs of food which is equivalent to 2100 kilocalories per capita per day and non-food basic needs. The percentage of poor people is the percentage of poor people in urban and rural areas in each province (Ministry of Health in Indonesia, 2020).

Percentage of First Neonatal Visit was defined as the percentage of the services during first neonatal visits including counseling for newborn care, exclusive breastfeeding, administration of vitamin K1 injection, and Hepatitis B0 injection (if have not been given). The coverage of the first neonatal visit is the indicator that describes the health efforts made to reduce the risk of death in the neonatal period, which is 6-48 hours after birth (Ministry of Health in Indonesia, 2020).

Data were analyzed using univariate and bivariate analysis. Univariate analysis was conducted to describe the statistical description of the variables using descriptive statistics and normality tests. Normality test was analyzed by One-Sample Kolmogorov Smirnov because of the small amounts of data. Bivariate

analysis was carried out using a scatter plot and correlation test to show the correlation between two variables. Pearson correlation was used for normal data distribution. While Spearman correlation was used for non-normal data distribution. The *r* score indicates the strength of the linear relationship between two variables. If the *r* score is positive, this means that the correlation is unidirectional and if the *r* score is negative, this means that there is an inverse correlation. The analysis process utilized SPSS 21 software.

RESULTS AND DISCUSSION

Results show that the average coverage of complete basic immunization for infants by the province in Indonesia in 2017 was 87.1882%. Meanwhile, the average of complete basic immunization coverage for infants by the province in Indonesia in 2018 decreased by 85.2121%

(29.6% - 102.99%). In 2019, the average coverage of complete basic immunization for infants by the province in Indonesia rose to 89.0882% (50.9% - 104.2%) (Table 1).

The highest complete basic immunization coverage in 2017, 2018, and 2019 respectively were South Sumatra Province, Central Java Province, and Bali Province. Meanwhile, the provinces with the lowest achievements in 2017-2019 were North Kalimantan (66.2%), Papua (29.60%), and Aceh (50.9%) (Table 1).

The results of the normality test show that poor population, active *Posyandu*, first neonatal visit, and complete basic immunization were normally distributed, thus, the correlation test used the Pearson test. While the less of midwives in primary health care was not normally distributed (*P*-value <0.05), thus, the correlation test used the Spearman test.

Table 2. Descriptive Statistics and Normality Tests of Complete Basic Immunization Coverage in Infants and other Related Variables in Indonesia (N = 34)

Variable	Year	Range (Min - Max)	Mean	Asymp. Sig of normality test
Percentage of Primary health care with less midwives	2017	0.00 - 71.06	14.6921	0.016
	2018	0.00 - 65.31	14.9803	0.010
	2019	0.00 - 68.45	10.5788	0.003
Percentage of Poor Population	2017	3.78 - 27.76	10.9512	0.270
	2018	3.55 - 27.43	10.6076	0.378
	2019	3.47 - 27.53	10.4550	0.355
Percentage of Active <i>Posyandu</i>	2017	17.70 - 95.58	51.7826	0.997
	2018	7.92 - 99.14	55.3529	0.840
	2019	0.00 - 95.60	54.5765	0.735
Percentage of First Neonatal Visit	2017	48.89 - 118.38	84.9250	0.532
	2018	53.37 - 128.93	89.1715	0.932
	2019	53.10 - 106.10	88.6353	0.689
Complete Basic Immunization Coverage of Infants	2017	66.20 - 102.30	87.1882	0.557
	2018	29.60 - 102.99	85.2121	0.557
	2019	50.90 - 104.20	89.0882	0.790

Table 3. Correlation Test on Basic Infant Immunization Coverage in Indonesia by Province in 2017-2019

No	Variable	2017		2018		2019	
		r	P value	r	P value	r	P value
1	Percentage of Primary health care with less midwives	-0.337	0.047	-0.209	0.229	-0.307	0.073
2	Percentage of Poor Population	-0.362	0.033	-0.535	0.001	-0.327	0.055
3	Percentage of Active <i>Posyandu</i>	0.184	0.289	0.134	0.443	0.444	0.007
4	Percentage of First Neonatal Visit	0.617	0.000	0.743	0.000	0.516	0.002

Factors Correlated to the Complete Basic Immunization Coverage of Infants

In 2017, three variables were significantly related to complete basic immunization coverage for infants, namely the percentage of primary health care that had less midwives, the percentage of poor population, and the percentage of first neonatal visits. In 2018, two variables were significantly related to complete basic immunization coverage for infants, namely the percentage of poor population and percentage of first neonatal visits. In 2019, three variables were significantly related to complete basic immunization coverage for infants, namely the percentage of active *Posyandu* and the percentage of first neonatal visits (Table 2).

Correlation between the Less of Midwives in Primary Health Care and Complete Basic Immunization

The percentage of primary health care that had less midwives was significantly related to complete basic immunization coverage in 2017 with the value of $r = -0.337$. However, in 2018 and 2019, there was no significant correlation between the less of midwives in primary health care and complete basic immunization (Table 2).

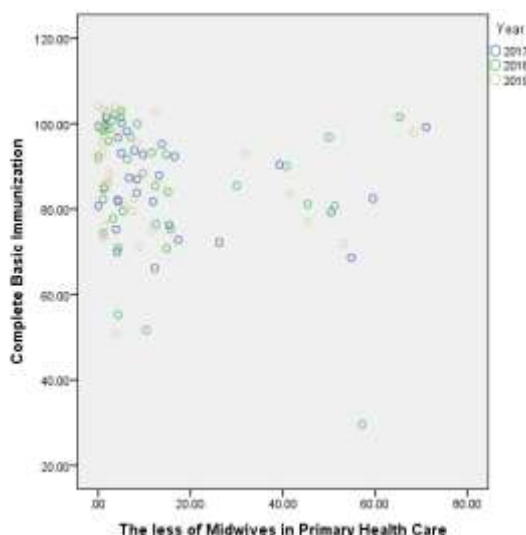


Figure 1. Scatter Plot of the Less of Midwives in Primary Health Care and Complete Basic Immunization in Province of Indonesia 2017-2019.

According to the scatter plot, figure 1 shows that the plots spread on the left and top, this means that there was an inverse relationship between the less of midwives in primary health care and complete basic immunization coverage.

A previous study showed that the management of the immunization program by the village midwives was one of the variables that had a direct influence on the efficacy of the immunization program (Aliansy and Hafizurrachman, 2016). Immunization services were the most widely provided health services by health workers compared to other health services (Martiana *et al.*, 2019).

The existence of primary health care that did not have a sufficient number of midwives was caused by the uneven distribution of midwives. Therefore, there was an excess of midwives in most of the primary health care. Most of the primary health care in one province in Indonesia were sub-health centers so they did not pay much attention to the adequacy of midwives (Ministry of Health in Indonesia, 2020). However, there was a decrease in the r score of the adequacy of midwives in 2018 and 2019 compared to 2017 (Table 2), which means that there had been an effort to distribute midwives in health centers in Indonesia after 2017.

Correlation between Poor Population and Complete Basic Immunization

Results show that the percentage of the poor population was correlated to complete basic immunization in 2017 and 2018 with $r = -0.362$ and $r = -0.535$. However, there was no significant correlation between the percentage of the poor population and complete basic immunization coverage in 2019 (Table 2).

The scatter plot results show that the plots spread on the left and top side, this means that the higher the percentage of the less of midwives in primary health care, the lower complete basic immunization coverage in the province of Indonesia (Figure 2). This is in line with previous research which stated that the higher a person's income level, the higher the chance for complete basic immunization (Debie *et al.*, 2020; Fenta *et al.*, 2021).

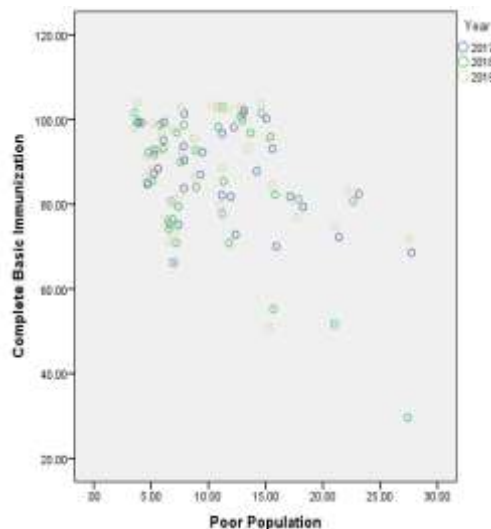


Figure 2. Scatter Plot of the Poor Population and Complete Basic Immunization in Province of Indonesia 2017-2019.

Immunization coverage gaps due to income-based inequality were widened by maternal education and place of residence (Sharma *et al.*, 2021). Incomplete basic immunizations were lower in children from wealthier households, compared to those from poorer households (Noh *et al.*, 2018; Ndwanwe *et al.*, 2021). In addition, low-income households were more likely to participate in *Posyandu* than high-income households (Nazri *et al.*, 2016).

Correlation between Active *Posyandu* and Complete Basic Immunization

In 2017 and 2018, there was no significant relationship between active *Posyandu* and basic immunization coverage for infants in Indonesia. However, in 2019, there was a significant relationship between active *Posyandu* and basic immunization coverage for infants in Indonesia with the score of $r = 0.444$.

The scatter plot results show that the plots spread on the right side more, this means that the higher the percentage of the active *Posyandu* in the province, the higher the complete basic immunization coverage for infants in Indonesia (Figure 3). A previous study stated that the achievement of complete neonatal visits in *Posyandu* with an active role for health cadres was greater than the achievement of neonatal visits in *Posyandu* with a less active role for health cadres (Setyatama, 2019). This happened because health services at *Posyandu* were

highly dependent on *Posyandu* cadres, the presence of *Posyandu* cadres was needed as a system to provide basic health services.

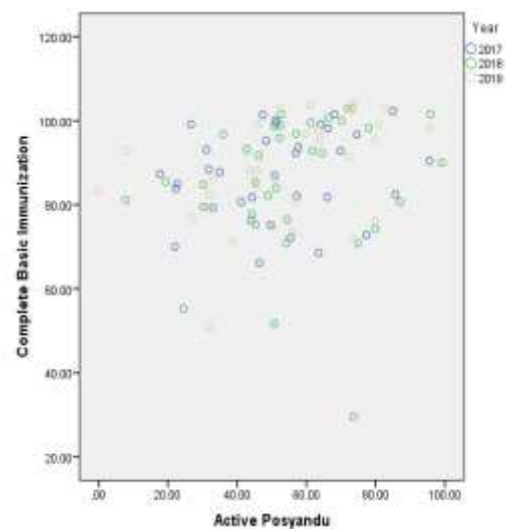


Figure 3. Scatter Plot of the Active *Posyandu* and Complete Basic Immunization in Province of Indonesia 2017-2019.

Posyandu is one of the places to monitor complete basic immunization. Meanwhile, active *Posyandu* is important to achieve complete basic immunization and neonatal visit. The main reason for mothers to attend *Posyandu* is to know the progress and to monitor the nutritional status of children under five years old (Nazri *et al.*, 2016) because the second step in the five-table or five-step system in *Posyandu* is the monitoring step of the child's nutritional status. Complete basic immunization at *Posyandu* also depends on maternal's education and knowledge (Suhaid and Faranita, 2018; Zida-Compaore *et al.*, 2019). Maternal participation to come to the *Posyandu* also depends on the services of health workers (Astuti and Fitri, 2017). Therefore, the existence of a training intervention for the health workers in primary health care will improve the performance of health workers in the immunization program (Nicol, Turawa and Bonsu, 2019).

Correlation between First Neonatal Visit and Complete Basic Immunization

The proportion of first neonatal visits was correlated to complete basic immunization coverage in 2017-2019. In

addition, the r value shows a strong and positive value (Table 2).

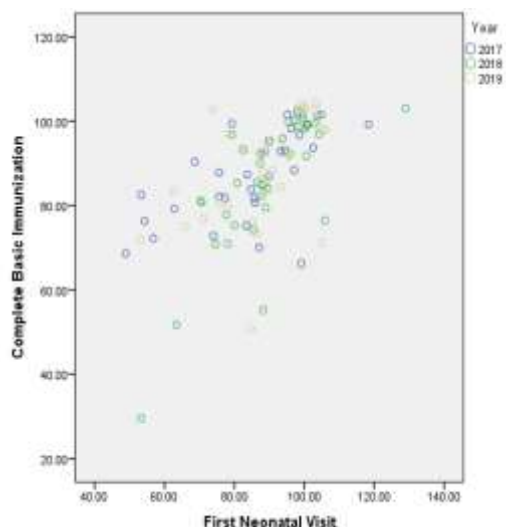


Figure 4. Scatter Plot of the First Neonatal Visit and Complete Basic Immunization in Province of Indonesia 2017-2019.

According to figure 4, the scatter plot shows that the plot spread on the right and to the top side, this means that the higher the percentage of first neonatal visits, the higher the complete basic immunization coverage in the province. This is supported by a previous study that stated there was a causal relationship between neonatal visits and complete basic immunizations (Astuti and Fitri, 2017). This happened because neonatal visits on 0-7 days provide health services to infants, especially the provision of HB0 immunization which is one of the indicators of complete basic immunization in Indonesia. A previous study showed that 55% of respondents were not given the Hb0 immunization (Sidabutar, Friani and Pasaribu, 2021). In addition, neonatal visits can increase neonatal access to basic health services, one of which is the provision of HB0 immunization (Ginting, Melva and Ningsih, 2017).

Adequacy of midwives in primary health care can help to improve the quality of health services by continuously monitoring maternal and child health. A previous study has mentioned that mothers who did not get re-monitoring after childbirth from health workers caused to be not indifferent to carrying out neonatal visits, moreover

immunization (Rahmawati, Husodo and Shaluhiah, 2019).

CONCLUSION

The adequacy of midwives was a factor correlated to the complete basic immunization in 2017. The poverty factor was correlated to the complete basic immunization in 2017 and 2018. While active *posyandu* was a factor correlated to the complete basic immunization in 2019. *Posyandu* is an important factor in the implementation of the first neonatal visit and complete basic immunization. The percentage of first neonatal visit coverage has been the most important factor correlated to the complete basic immunization coverage for three consecutive years (2017-2019) in Indonesia. The coverage of the first neonatal visit is important for infant immunization coverage as one of the first neonatal visit services is HB0 immunization. Therefore, it is necessary to increase the distribution of midwives in primary health care in Indonesia hence neonatal visits can be carried out intensively by health officers/cadres to encourage mothers to participate in implementation of complete basic immunization for infants in Indonesia. In addition, provinces with high poverty rates should be given more attention to receive intervention programs for increasing infant immunization coverage in Indonesia.

ACKNOWLEDGEMENT

This work was funded by the Indonesia Endowment Fund for Education, abbreviated as LPDP (*Lembaga Pengelola Dana Pendidikan*), and supported by the Ministry of Health of the Republic of Indonesia for providing a report as material for analysis in this study.

REFERENCES

- Aliansy, D. and Hafizurrachman (2016) 'Pengaruh Penatalaksanaan Program Imunisasi Oleh Bidan Desa, Kepatuhan Standar Operasional Prosedur, dan Ketersediaan Sarana Prasarana Terhadap Efikasi Imunisasi Dasar di Kabupaten Cianjur Tahun 2014', *Midwife Journal*, 2(1), pp. 1-10.
- Amir, A. N., Darwin, E. and Lestari, Y. (2018) 'Analysis Factors Related to

- Implementation of Complete Basic Immunization in Work Area of Pengambiran Public Health Center in Padang 2017', *Journal of Midwifery*, 3(1), p. 52. doi: 10.25077/jom.1.1.52-61.2018.
- Astuti, H. and Fitri (2017) 'Analisis Faktor Pemberian Imunisasi Dasar', *Jurnal Ners dan Kebidanan Indonesia*, 3(1), pp. 1-13.
- Cintyama, U. *et al.* (2021) 'Scaling up public health interventions: case study of the polio immunization program in Indonesia', *BMC Public Health*, 21(1), pp. 1-12. doi: 10.1186/s12889-021-10647-6.
- Debie, A. *et al.* (2020) 'Individual and Community-Level Determinants for Complete Vaccination among Children Aged 12-23 Months in Ethiopia: A Multilevel Analysis', *BioMed Research International*, 2020, pp. 1-10. doi: 10.1155/2020/6907395.
- Fenta, S. M. *et al.* (2021) 'Determinants of full childhood immunization among children aged 12-23 months in sub-Saharan Africa: a multilevel analysis using Demographic and Health Survey Data', *Tropical Medicine and Health*, 49(1). doi: 10.1186/s41182-021-00319-x.
- Fitriyah, E. N. (2019) 'Hubungan Usia, Jenis Kelamin, Status Imunisasi dan Gizi dengan Kejadian Pneumonia pada Baduta', *Jurnal Biometrika dan Kependudukan*, 8(1), pp. 42-51.
- Ginting, B. B., Melva and Ningsih, T. M. S. (2017) 'Faktor-faktor yang berhubungan dengan pemberian imunisasi hepatitis B0 bayi 0-7 hari pada bidan delima di kota medan tahun 2016', *Maternal Dan Neonatal*, 2(2), pp. 1-12.
- Laksono, A. D. and Kusri, I. (2020) 'Ecological analysis of stunted toddler in Indonesia', *Indian Journal of Forensic Medicine and Toxicology*, 14(3), pp. 1685-1691. doi: 10.37506/ijfmt.v14i3.10666.
- Laksono, A. D. and Sandra, C. (2020) 'Analisis Ekologi Persalinan di Fasilitas Pelayanan Kesehatan di Indonesia', *Buletin Penelitian Sistem Kesehatan*, 23(1), pp. 1-9. doi: 10.22435/hsr.v23i1.2323.
- Martiana, T. *et al.* (2019) 'Characteristics of the maternal and child health service of female workers with maternal and child health status in Indonesia', *Indian Journal of Public Health Research and Development*, 10(5), pp. 1499-1503. doi: 10.5958/0976-5506.2019.01148.3.
- Ministry of Health in Indonesia (2018) *Health Profile of Indonesia 2017*. Jakarta.
- Ministry of Health in Indonesia (2019) *Health Profile of Indonesia 2018*. Jakarta.
- Ministry of Health in Indonesia (2020) *Health Profile of Indonesia 2019*. Jakarta. doi: 10.5005/jp/books/11257_5.
- Mooney, S. J. and Pejaver, V. (2018) 'Big Data in Public Health: Terminology, Machine Learning, and Privacy', *Annual Review of Public Health*, 39, pp. 95-112. doi: 10.1146/annurev-publhealth-040617-014208.
- Mutua, M. K. *et al.* (2016) 'Fully immunized child: Coverage, timing and sequencing of routine immunization in an urban poor settlement in Nairobi, Kenya', *Tropical Medicine and Health*, 44(1), pp. 1-12. doi: 10.1186/s41182-016-0013-x.
- Nazri, C. *et al.* (2016) 'Factors influencing mother's participation in Posyandu for improving nutritional status of children under-five in Aceh Utara district, Aceh province, Indonesia', *BMC Public Health*, 16(1), pp. 1-9. doi: 10.1186/s12889-016-2732-7.
- Ndwandwe, D. *et al.* (2021) 'Incomplete vaccination and associated factors among children aged 12-23 months in South Africa: an analysis of the South African demographic and health survey 2016', *Human Vaccines and Immunotherapeutics*, 17(1), pp. 247-254. doi: 10.1080/21645515.2020.1791509.
- Nicol, E., Turawa, E. and Bonsu, G. (2019) 'Pre- and in-service training of health care workers on immunization data management in LMICs: A scoping review', *Human Resources for Health*, 17(1), pp. 1-14. doi: 10.1186/s12960-019-0437-6.
- Noh, J. W. *et al.* (2018) 'Factors affecting complete and timely childhood immunization coverage in Sindh, Pakistan; A secondary analysis of crosssectional survey data', *PLoS ONE*, 13(10), pp. 1-15. doi: 10.1371/journal.pone.0206766.
- Rahmawati, A., Husodo, B. T. and Shaluhiah, Z. (2019) 'Faktor-Faktor

- Yang Berhubungan Dengan Perilaku Ibu Dalam Kunjungan Neonatal Di Wilayah Kerja Puskesmas Kedungmundu Semarang', *Jurnal Kesehatan Masyarakat (e-Journal)*, 7(2), pp. 64-72.
- Setiawan, A. *et al.* (2021) 'The mapping and analysis of diphtheria cases in surabaya (2017-2018)', *Jurnal Biometrika dan Kependudukan*, 10(1), pp. 45-52. doi: 10.20473/jbk.v10i1.2021.45.
- Setyatama, I. P. (2019) 'Pengaruh Peran Aktif Kader Kesehatan Terhadap Kunjungan Neonatus Lengkap Di Posyandu Desa Timbangreja Wilayah Kerja Puskesmas Lebaksiu Kabupaten Tegal', *Bhamada: Jurnal Ilmu dan Teknologi Kesehatan (E-Journal)*, 10(1), p. 11. doi: 10.36308/jik.v10i1.116.
- Sharma, S. *et al.* (2021) 'Income-based inequality in full immunization coverage of children aged 12-23 months in Eastern India: A decomposition analysis', *Clinical Epidemiology and Global Health*, 11(March), p. 100738. doi: 10.1016/j.cegh.2021.100738.
- Sidabutar, S., Friani, S. and Pasaribu, R. M. (2021) 'Factors Related to Giving Hb0 Immunization at Batu Anam Health Center, Simalungun', *Health Notions*, 5(4), pp. 123-128.
- Suhaid, D. N. and Faranita, F. (2018) 'Factors Associated with Basic Immunization Status of Infants', *SEAJOM: The Southeast Asia Journal of Midwifery*, 4(1), pp. 32-39. doi: 10.36749/seajom.v4i1.26.
- Wahyuni, I. I. and Mahmudah, M. (2018) 'Random Effect Model pada Regresi Panel untuk Pemodelan Kasus Gizi Buruk Balita di Jawa Timur Tahun 2013-2016', *Jurnal Biometrika dan Kependudukan*, p. 52. doi: 10.20473/jbk.v6i1.2017.52-61.
- Zida-Compaore, W. I. C. *et al.* (2019) 'Immunization coverage and factors associated with incomplete vaccination in children aged 12 to 59 months in health structures in Lomé', *BMC Research Notes*, 12(1), pp. 1-7. doi: 10.1186/s13104-019-4115-5.

Pengalaman Pernikahan dari Perspektif Anak Perempuan: Scoping Review

Marriage Experience from the Girl's Perspective: A Scoping Review

Farhah Kamilah¹✉, Elsy Maria Rosa¹

¹ Master of Nursing, Postgraduate Program, Universitas Muhammadiyah Yogyakarta, Jl. Brawijaya, Geblagan, Tamantirto, Kec. Kasihan, Bantul, Daerah Istimewa Yogyakarta, 55183, Indonesia
Corresponding directed to e-mail: farhahkamilah28@gmail.com

ABSTRACT

Background: Child marriage is a marriage that is conducted formally or informally by spouses or with one of the spouses aged 18. Child marriage is a phenomenon that involves socio-cultural elements thus many factors influence it. Girls are 3 times more likely to experience child marriage than boys. Various conditions that occur in child marriage have generated interest in seeing a broader view of how married girls view their married life. **Objective:** This review was conducted to explore research findings related to the experiences of girls who were married under 18 years of age so that it could be used as an illustration to see the condition of girls in child marriage life. **Methods:** This review used three databases PubMed, ProQuest, and EbscoHost. The search for articles used main keywords, namely "child marriage", "women experience", and "marriage life" combined with helper keywords. The articles were full-text, in English, not limited by year and country, and discussed child marriage from a woman's perspective. **Results:** This review was done on 10 articles that were screened and analyzed out of 2259 articles. All articles used a qualitative method and were originated from Malaysia (2 articles), Pakistan (2 articles), Iran (2 articles), United States, Morocco, Jordan, and Israel. The total participants were 187 people from all articles. The causes of marriage in girls were poverty, prevention of premarital sex, adolescent pregnancy solutions, and personal desires of the girls. The state of marriage was seen from self-actualization and pressures on the role of girls in married life. **Conclusion:** This review summarized the reasons for marriage before the age of 18 were due to poverty factors, the avoidance of premarital sex, teenage pregnancy solutions and the willingness of girls themselves to marry. This review also summarized the situation of girls in child marriages who were unable to be self-reliant and were under pressure to perform their position in the household. Child marriage also caused new issues in the lives of girls, hence it was necessary to consider getting married at the age of under 18 years.

Keyword: Child Marriage, Teenager, Marriage Life, Scoping Review

ABSTRAK

Latar Belakang: Pernikahan anak merupakan pernikahan yang dilakukan secara formal atau informal oleh pasangan atau salah satu dari pasangan yang berusia dibawah 18 tahun. Pernikahan anak merupakan fenomena yang melibatkan unsur sosial budaya sehingga banyak faktor yang mempengaruhi. Anak perempuan 3 kali lebih berisiko mengalami pernikahan anak dibandingkan anak laki-laki. Berbagai kondisi yang terjadi pada pernikahan anak memunculkan ketertarikan untuk melihat lebih luas bagaimana pandangan anak perempuan yang telah menikah pada kehidupan pernikahannya. **Tujuan:** Tinjauan ini dilakukan untuk mengeksplorasi temuan penelitian terkait pengalaman perempuan yang menikah di bawah 18 tahun sehingga dapat menjadi gambaran untuk melihat kondisi anak perempuan dalam kehidupan pernikahan anak. **Metode:** Tinjauan ini menggunakan tiga database PubMed, ProQuest, EbscoHost. Pencarian artikel menggunakan kata kunci utama yaitu "child marriage", "women experience", dan "marriage life" yang dikombinasi dengan kata kunci bantuan. Artikel full text, berbahasa inggris, tidak dibatasi tahun dan negara, serta membahas pernikahan anak dari sudut pandang perempuan. **Hasil:** Tinjauan ini mengulas 10 artikel yang telah disaring dan dianalisis dari 2259 artikel. Seluruh artikel merupakan artikel dengan metode kualitatif. Artikel yang ditinjau berasal dari Malaysia (2 artikel), Pakistan (2 artikel), Iran (2 artikel), United States, Moroko, Jordan, dan Israel.

Total partisipan dalam tinjauan ini adalah 187 orang dari seluruh artikel. Penyebab pernikahan pada anak perempuan adalah kemiskinan, pencegahan premarital sex, solusi kehamilan remaja, dan keinginan pribadi dari anak perempuan. Kondisi pernikahan dilihat dari aktualisasi diri dan tekanan peran anak perempuan dalam pernikahan. **Kesimpulan:** Tinjauan ini merangkum adanya faktor kemiskinan, pencegahan premarital sex, solusi kehamilan remaja, dan keinginan dari anak perempuan untuk menikah sebagai alasan pernikahan dilakukan sebelum 18 tahun. Tinjauan ini juga merangkum kondisi anak perempuan dalam pernikahan anak yang tidak mampu untuk mengaktualisasikan diri dan mengalami tekanan untuk pemenuhan peran dalam rumah tangga. Pernikahan anak sering kali menimbulkan permasalahan baru pada kehidupan anak perempuan sehingga perlu dipertimbangan untuk melakukan pernikahan pada usia di bawah 18 tahun.

Kata Kunci : Pernikahan Anak, Remaja, Kehidupan Pernikahan, Scoping Review

INTRODUCTION

Child marriage is a marriage conducted formally or informally by spouses or with one of the spouses aged below 18 years (Zaman and Koski, 2020). Child marriage is a phenomenon that involves social elements hence there have always been new cases every year (International Center for Research on Women, 2020). The United Nations Children's Fund (UNICEF) report showed that during 2009-2019 a decrease in the cases had occurred by 4% of the total (United Nations Children's Fund, 2019). It was still far from the target for case reduction in the span of the last 10 years. UNICEF predicted that they would continue to increase to 120 billion in 2030 (United Nations Children's Fund, 2020). UNICEF also showed that in 2018, the top 10 countries with the highest number of cases consisted of developing countries (Machel and Roinson, 2018). India became the country with the highest absolute number in 2018. (Machel and Roinson, 2018).. Data also showed that a percentage of child marriage in developed countries existed despite the number was far smaller than in developing countries.

The development of the cases in the world was caused by several factors, such as beliefs in a culture or religion, teen pregnancies, poverties, and the child's personal desires (Kabir, Ghosh and Shawly, 2019; Lowe, Joof and Rojas, 2020). Girls were three times more at risk to experience marriage below 18 years old than boys (United Nations Children's Fund, 2020). Society still assumed that girls were destined to marry, manage a house, and give birth to a child as soon as

possible (John, Edmeades and Murithi, 2019). Girls were also more frequently being used as a solution to the low economy of the family by being married off someone much more mature and steady in terms of occupation (Chirwa *et al.*, 2019). Girls were thought to be insignificant to have high education since they would only end up managing a house and offspring. Marriage conducted as early as possible was believed to be able to prevent girls from being infertile thus a lot married off their daughters at the age considered younger (Sedekia *et al.*, 2017). Child marriage on girls would also impact the child's life post the marriage.

The majority of girls that have gotten married reported not go back to school (Sekine and Hodgkin, 2017). The desire to go was often hindered by pregnancies post-marriage or the change of their role as a wife or mother (Dewi, 2018). Girls that were married tended to have problems in pregnancies due to the overly young age and mental condition not ready to experience the pregnancy-labor processes (Adedokun, Adeyemi and Dauda, 2016). The stress level in girls that experienced child marriage was also considerably high as girls were forced to be able to adapt quickly in the married situation and with the roles and responsibilities that came from being a wife, daughter-in-law, and mother (John *et al.*, 2019). Another condition that often occurred in girls married at a young age was losing the power of decision-making for themselves or their families (Shahabuddin *et al.*, 2017). This frequently induced pressure in girls since the perceptions of husbands and the husbands' families about them who thought were still immature thus unable

to decide the best choice for themselves or even the families (Taylor *et al.*, 2019). Different conditions in child marriage triggered an attraction to see thoroughly how the married girls view their married lives. This review focuses on exploring and summarizing (scoping) literature that covered motivations, experiences, and views of girls that have been married before 18 years old towards their married lives. The purpose of scoping review is to provide the general picture of literature which have high potentials and were related to a wide topic (Arksey and O'Malley, 2005; Pham *et al.*, 2014). This literature review aims to see various reasons and conditions on child marriage hence helping healthcare workers in identifying problems that emerge in child marriage. This review also can give a picture to girls regarding marriage below the age of 18.

METHODS

This review used scoping review method that aimed to map and give a wide picture of the covered literature (Arksey and O'Malley, 2005; Pham *et al.*, 2014). Scoping review was done by identifying research questions, identifying related studies using a systematic literature search based on the research questions that have been formulated, collecting study results, conducting discovery tabulations, compilations, analysis, descriptions, and result reporting (Arksey and O'Malley, 2005). This review was guided by the first question, "how did child marriage happen?" and the second question, "how was the girl's condition after the marriage happened?"

This review utilized three databases namely PubMed, ProQuest, Ebsco. The main keywords were "child marriage", "women's experience", and "marriage life". These keywords were developed with helper keywords ("early marriage", "qualitative") from MeSH and were combined with "OR" and "AND". Articles used were published full-text articles and articles that were issued up to year of 2020 (not restricted by publication date). The non-existent restriction in year relied on the purpose that would widely explore the condition of child marriage. The articles used English, qualitative method, and the research locations weren't restricted by countries. The articles referred to the discussion on

child marriage taken from the perspective of women that have experienced marriage of the age below 18. The focus of this review was the cause of child marriage and the condition of the girls after the marriage thus the articles selected should describe the situation.

Participants in this review article were women, not restricted by age, who have been married at the age below 18, and not restricted by their current marital status. Articles that were not included in this review were those that covered child marriage but referring to conference abstracts or blogs, those that did not explain age, age of being married for the first time, and sex, also those that did not enclose research ethics.

Article search on 3 databases obtained 2259 articles. These articles were being read on the titles and abstracts for selection. Titles and abstracts that were not aligned with this review's purpose were excluded (exclusion) hence they became 111 articles. The filtered articles were being re-reviewed by focusing on duplication and reading the entirety of the articles therefore 14 articles were left. All of the articles were being re-read by paying attention to the congruence and clarity of results on each article and it was decided that there were 10 that fit this review.

RESULTS AND DISCUSSION

Articles used in this review were 10 articles, as follows: 2 Malaysian, 2 Pakistan, 2 Iranian, 1 United States, 1 Maroko, 1 Jordan, and 1 Israel (Table 1). In these articles, the causes of child marriage in girls aged below 18 and the married lives of girls married at the age below 18 (Hamid, Johansson and Rubenson, 2009; Nasrullah *et al.*, 2014; Henry *et al.*, 2015; Sedekia *et al.*, 2017; Al-Kloub *et al.*, 2019; Kohno *et al.*, 2019; Targari *et al.*, 2019; Wahi *et al.*, 2019; Beredugo *et al.*, 2020).

Causes of Marriage on Girls Aged Below 18

Poverty

Poverty has become the reason for girls to marry at a younger age. Poverty often caused girls to stop schooling (Kohno *et al.*, 2019). Girls were thought not to need the ownership of a high education because they would serve households and follow their husbands (Britwum *et al.*, 2017). Girls that were unschooled, were not able to do

manual labor as well thus they only stayed at home. It's different with boys, as they usually would still be kept not to marry to continue school (Misunas, Gastón and Cappa, 2019). In case the boys stop going to school, they would be able to do manual labor to help the life of the family thus they would not be married off at a young age. Girls that did not go to school usually would help with household chores like managing the house, cooking, or babysitting their younger siblings (Beredugo *et al.*, 2020).

Girls able to do household chores were generally thought to be ready for marriage despite their age was still not appropriate according to marriage requirements (Britwum *et al.*, 2017). The condition of girls that did not go to school nor have other skills caused them not to have any other purpose hence to get married was assumed to be the best decision (Kohn *et al.*, 2020). The marriage that happened to girls in poor families was often thought of as the solution for a load of the economy of the families (Al-Kloub *et al.*, 2019). Married girls were no longer the families' responsibilities thus families were not obligated to provide for their life necessities. Early marriage would help the families to stabilize the family economy due to the help from the males' families. (Efevbera *et al.*, 2019). Not only that, the families with low economy felt they were not able to provide proper lives for their daughters thus they married off the daughters early in the hope for an improvement in the daughters' lives (Kohn *et al.*, 2020).

Prevention of Premarital Sex

Marriage at a younger age became one of the reasons most families for prevention of premarital sex in their daughters (Kohn *et al.*, 2019). Families felt the need to marry off their daughters to prevent pregnancies outside marriage which stained the families' reputations (El Arab and Sagbakken, 2019). Social life with promiscuity tendencies and risky behaviors such as alcohol consumption or prohibited drugs strengthened the families' reason to married off their daughters (Kohn *et al.*, 2020). Many child marriage cases happened because the daughters did not return home or slept over at their boyfriends' even though they have not known to have done premarital sex or if there were pregnancies (Dewi, 2018).

The girls mentioned that their families thought marrying off their daughters to prevent premarital age had a smaller disadvantage than being pregnant outside marriage (Al-Kloub *et al.*, 2019). Families with higher religious levels also limited their daughters' social lives and married the daughters off younger to prevent zina and sins due to violating the orders of the religions (El Arab and Sagbakken, 2019; Kohn *et al.*, 2020).

Solution to Teen Pregnancy

Marriage was thought to be the way out for unwanted teen pregnancies (teen pregnancies outside marriage) (Tirgari *et al.*, 2019; Kohn *et al.*, 2020). Families assumed that marriage was a form of responsibility for the actions that their daughters did. They felt not able to pay for the processes of pregnancy and labor hence marrying off their daughters to the ones that got them pregnant was the best solution (Tirgari *et al.*, 2019).

The girls also thought it was better to get married soon than not to have a husband when the child was born (Kohn *et al.*, 2020). Girls tended to support the parents' desire for them to get married soon because they did not have other solutions to solve the pregnancy problems they were going through. Abortion became another choice but it had bigger risks and induced the guilt of killing their own children (Kenny *et al.*, 2019).

Family Traditions

The traditions of family in marrying of the daughters at a young age was experienced by several families. The elders would choose the spouse with the best qualities in the economy, education, and morals to be married with their daughters (Henry *et al.*, 2015). The best proposals usually would be easily accepted despite the age of the daughters not reached 18 (Nasrullah *et al.*, 2014). Families have matchmade their daughters since birth and would marry them off after they got their first menstruation (Hamid, Johansson and Rubenson, 2009).

Matchmaking was also often done with far relatives or close acquaintances of the families thus the daughters would not be able to refuse the marriage (Moreh and O'Lawrence, 2016). Refusals could destroy the good relationships that have been established among the families and embarrass the families thus the daughters

did not have the ability to refuse the proposals (Henry *et al.*, 2015). The daughters did not even know who the guys they would marry and did not even see the faces of the future husbands until the marriage day (Wahi *et al.*, 2019).

Regrets were often felt by the girls for having to marry strangers whose faces and characters were unbeknownst to them thus violence frequently occurred (Nasrullah *et al.*, 2014). Different from the previous cases, some girls mentioned they were happy and grateful that their parents matchmade them with good and attentive spouses (Kohno *et al.*, 2019). Their husbands helped the families' economy and encouraged them to still be able to live their teenage lives as usual (Wahi *et al.*, 2019).

Personal Desires of the Girls

Child marriage could also happen because of the desires of the girls themselves. Girls felt that it was their destiny to marry at the age that was considered young (Kohno *et al.*, 2020). Girls thought that marriage was a fun thing and it would bring them into maturity (Tirgari *et al.*, 2019). Marriage was also conducted as an expression of love to the spouses. The girls mentioned that when deciding to get married they did not think of the long-term impacts that would happen and only did it impulsively also did not think thoroughly (Kohno *et al.*, 2019).

Several girls said that they were disappointed by the decision to get married that they came up with by themselves as they have just realized that the guys they married were not the ones they loved (Segal-Engelchin, Huss and Massry, 2016). They only got carried away by the feelings of burning youth and decided to get married as a form of proof of love for the spouses at the moment. After marriage, a lot of things have changed including the behaviors of the spouses that made them seem like they were different people (Segal-Engelchin, Huss and Massry, 2016). The girls felt that getting married at an overly young age was a bad thing however some girls had a different experience.

Several cases mentioned that the girls thought of marriage as a way out to get love and attention that they lacked at home (Henry *et al.*, 2015). The girls expressed that getting married induced a comfortable feeling in them from having someone that would care for them. They felt loved and

treated nicely. They hoped by getting married early would fill the void and loneliness they felt all this time (Wahi *et al.*, 2019).

Married Lives of Girls Married at the Age Below 18

Self-Actualization

Girls married at the age below 18 felt the loss of opportunity to achieve success and self-achievements (Segal-Engelchin, Huss and Massry, 2016). Marriage indirectly buried their dreams away (Kohno *et al.*, 2019). The girls often lost the opportunity to get high education and a good career. The desire to go back to school was oftentimes blocked by the role switches after marriage (Mehra *et al.*, 2017). Some cases mentioned that the husbands did not allow the girls to go back to school because of the desire to have children soon (Segal-Engelchin, Huss and Massry, 2016). Pregnancies and labors were also the causes of the married girls having difficulties going back to school (Al-Kloub *et al.*, 2019).

Not getting to go back to school caused the lack of skills and knowledge in them. They expressed that it was hard for them to look for proper jobs with the skills they possessed (Segal-Engelchin, Huss and Massry, 2016). They were not independent financially and relying their lives on their husbands. The girls usually were not confident to discuss decision-making in the families (Ketema and Erulkar, 2018). They did not think they had the sufficient capacities and experiences to solve problems. They were often thought to be too young and inexperienced thus their opinions were mostly ignored (Sedekia *et al.*, 2017).

Girls felt that marriage would not be a good thing when it was done too early hence they hoped their children in the future would not experience the same thing as them (Segal-Engelchin, Huss and Massry, 2016). Some girls mentioned a different condition in their marriage despite it was done early. They explained that they got understanding husbands thus they could continue their education with encouragement from their husbands. They thought that their husbands were kind since they were willing to pay and give consent for the wives to continue their education so they felt much more respected as women (Engelbrechtsen *et al.*, 2020).

Role Pressures

Girls that got married at a young age tended to experience confusion in facing the married life (Segal-Engelchin et al., 2016). They did not possess sufficient knowledge to perform their responsibilities as wives, in-laws, even mothers (Tirgari et al., 2019). The girls thought that marriage was a way out of the problems they had but did not realize that after marriage there would be even more problems that had to be experienced (Wahi et al., 2019). They assumed marriage would be so fun like in fairytales without knowing the big responsibilities that lied within (Segal-Engelchin, Huss and Massry, 2016). They mentioned the feelings of stresses, depressions, worries, and confusions when faced with the condition of sexual fulfillments, pregnancies, and child care (Al-Kloub et al., 2019; Tirgari et al., 2019; Wahi et al., 2019). The unstable emotional condition at a young age caused the erratic feelings (ambivalent) when facing these conditions (Al-Kloub et al., 2019).

The girls mentioned that they were too young to experience pregnancies and labor (Shahabuddin et al., 2016). They no longer felt the teen life like their friends because of their duties and responsibilities as wives and mothers (Al-Kloub et al., 2019). Feelings of being pressured often appeared because they had to face all the new things that they have never even learned before (Segal-Engelchin et al., 2016). Some girls that were matchmade said that they did not know about the sexual needs that had to be done with the spouses. They found it difficult and terrifying to face the situations (John, Edmeades and Murithi, 2019). They thought intimate relationships with their spouses were inappropriate and still felt too young to experience them (Segal-Engelchin, Huss and Massry, 2016). They also could not refuse and express their feelings as the things they were scared about were supposed to be normal in married life (Tirgari et al., 2019).

Pressures also often came from the spouses' families. The married girls had a role as the daughter-in-laws in the families. Some girls mentioned a stereotype in the families that forced them to fulfill the expectations as ideal wives for the spouses (John, Edmeades and Murithi, 2019). The girls were pushed to be able to cook, clean the house, and gave birth to a child. The families thought that the success of girls as wives was when they succeeded to give

birth (Henry et al., 2015). This condition generally caused fear in the girls that had gone through a year of marriage but still had no child. The girls also usually chose not to use contraception or postponing pregnancies due to the fear of infertility (Sedekia et al., 2017).

Several girls expressed that during the pregnancy-labor processes they often experienced certain conditions like severe anemia, preeclampsia, bleeding, appetite loss, and difficulties in labor (Beredugo et al., 2020). They were more worried about not having a child than the risks that could happen in pregnancies with the age of the mother below 18. They thought that by giving birth, they would be much more respected and accepted in the families for having fulfilled their role as ideal wives (Sedgh et al., 2012).

CONCLUSION

This review has summarized that there were poverty, prevention of premarital sex, solution for teen pregnancies, and desires of the girls to marry as factors of marriage at the age below 18. This condition was affected by the backgrounds of culture, social, religion, and belief, therefore child marriage could not be generalized as an act that was wrong or right. There was a need for a deep understanding and a comprehensive approach to assessing the reasons for child marriage. The child marriage phenomenon could not be seen from one perspective only, there should be a thorough study on all aspects that might affect the odds of child marriage.

This review has also summarized the conditions of the girls in child marriage on self-actualization and role pressures that they were facing. The girls assumed that their marriage caused the loss of opportunity to go back to school and get self-achievements thus they could not fulfill their need for self-actualization. They also experienced confusion facing the roles in marriage. They thought sexual needs in marriage were inappropriate and difficult to meet. They thought they were too young to marry and experience pregnancies also labor. They also often had pregnancy problems such as severe anemia, preeclampsia, bleeding, and appetite loss. The child marriage generally caused new problems in girls' lives hence

doing child marriage at the age below 18 needed to be evaluated.

ACKNOWLEDGEMENT

The authors would like to thank the Universitas Muhammadiyah Yogyakarta and all parties who involved in this research process.

REFERENCES

- Adedokun, O., Adeyemi, O. and Dauda, C. (2016) 'Child marriage and maternal health risks among young mothers in Gombi, Adamawa state, Nigeria: Implications for mortality, entitlements and freedoms', *African Health Sciences*, 16(4), pp. 986-999. doi: 10.4314/ahs.v16i4.15.
- Al-Kloub, M. I. et al. (2019) 'Young women's experience of adolescent marriage and motherhood in Jordan', *Culture, Health and Sexuality*, 21(4), pp. 462-477. doi: 10.1080/13691058.2018.1489067.
- El Arab, R. and Sagbakken, M. (2019) 'Child marriage of female Syrian refugees in Jordan and Lebanon: a literature review', *Global Health Action*. Taylor and Francis Ltd., p. 1585709. doi: 10.1080/16549716.2019.1585709.
- Arksey, H. and O'Malley, L. (2005) 'Scoping studies: Towards a methodological framework', *International Journal of Social Research Methodology: Theory and Practice*, 8(1), pp. 19-32. doi: 10.1080/1364557032000119616.
- Beredugo, L. I. et al. (2020) 'Determinant Factors And Health Implications Of Early Marriage On The Girl Child In Otuan Community Bayelsa State Of Nigeria', *Indian Journal of Health and Wellbeing*, 11(01), pp. 93-99. doi: 10.15614/ijhw.v11i01.19.
- Britwum, A. O. et al. (2017) 'Case study on girls who have dropped out of school due to pregnancy and factors facilitating and/or preventing their re-entry into school after delivery', (June), p. 78.
- Chirwa, G. C. et al. (2019) 'An evolution of socioeconomic related inequality in teenage pregnancy and childbearing in Malawi', *PLoS ONE*, 14(11), pp. 1-16. doi: 10.1371/journal.pone.0225374.
- Dewi, N. (2018) 'Child Marriage in Short Stories From Indonesia and Bangladesh: Victor, Survivor, and Victim', *International Journal of Humanity Studies*, 2(1), pp. 51-60. doi: 10.24071/ijhs.2018.020106.
- Efevbera, Y. et al. (2019) 'Girl child marriage, socioeconomic status, and undernutrition: Evidence from 35 countries in Sub-Saharan Africa', *BMC Medicine*, 17(1), p. N.PAG-N.PAG. doi: 10.1186/s12916-019-1279-8.
- Engelbrechtsen, S. et al. (2020) 'Adolescent girls' migration and its impact on early marriage: Qualitative findings in Mali', *PLoS ONE*, 15(3), pp. 1-18. doi: 10.1371/journal.pone.0230370.
- Hamid, S., Johansson, E. and Rubenson, B. (2009) "'Who am I? Where am I?'" Experiences of married young women in a slum in Islamabad, Pakistan', *BMC Public Health*, 9, p. 265. doi: 10.1186/1471-2458-9-265.
- Henry, E. G. et al. (2015) 'Sociocultural factors perpetuating the practices of early marriage and childbirth in Sylhet District, Bangladesh', *International Health*, 7(3), pp. 212-217. doi: 10.1093/inthealth/ihu074.
- International Center for Research on Women (2020) *ICRW | PASSION. PROOF. POWER.*
- John, N. A. et al. (2019) 'Child marriage and relationship quality in Ethiopia', *Culture, Health and Sexuality*, 21(8), pp. 853-866. doi: 10.1080/13691058.2018.1520919.
- John, N. A., Edmeades, J. and Murithi, L. (2019) 'Child marriage and psychological well-being in Niger and Ethiopia', *BMC public health*, 19(1), p. 1029. doi: 10.1186/s12889-019-7314-z.
- Kabir, M. R., Ghosh, S. and Shawly, A. (2019) 'Causes of Early Marriage and Its Effect on Reproductive Health of Young Mothers in Bangladesh', *American Journal of Applied Sciences*, 16(9), pp. 289-297. doi: 10.3844/ajassp.2019.289.297.
- Kenny, B. et al. (2019) 'A qualitative exploration of the sexual and reproductive health knowledge of adolescent mothers from indigenous populations in Ratanak Kiri Province, Cambodia', *Rural and Remote Health*, 19(4), p. 5240. doi: 10.22605/RRH5240.
- Ketema, H. and Erulkar, A. (2018) 'Married adolescents and family planning in rural Ethiopia: Understanding barriers and opportunities', *African Journal of Reproductive Health*, 22(4), pp. 26-34. doi: 10.29063/ajrh2018/v22i4.3.

- Kohno, A. *et al.* (2019) 'In-depth examination of issues surrounding the reasons for child marriage in Kelantan, Malaysia: A qualitative study', *BMJ Open*, 9(9). doi: 10.1136/bmjopen-2018-027377.
- Kohno, A. *et al.* (2020) 'Investigation of the key factors that influence the girls to enter into child marriage: A meta-synthesis of qualitative evidence', *PLoS ONE*, 15(7 July), pp. 1-20. doi: 10.1371/journal.pone.0235959.
- Lowe, M., Joof, M. and Rojas, B. M. (2020) 'Social and cultural factors perpetuating early marriage in rural gambia: An exploratory mixed methods study', *F1000Research*, 8, p. 1949. doi: 10.12688/f1000research.21076.1.
- Machel, G. and Roinson, M. (2018) 'Girls Not Brides', *The unfinished revolution*, pp. 287-296. doi: 10.2307/j.ctt1t891s3.32.
- Mehra, A. A.-K. O. *et al.* (2017) 'Early Marriage and Less Education as Independent Predictors for High Fertility in Yemen', *Annals of Medical and Health Sciences Research*, 7(4), pp. 251-255.
- Misunas, C., Gastón, C. M. and Cappa, C. (2019) 'Child marriage among boys in high-prevalence countries: An analysis of sexual and reproductive health outcomes', *BMC International Health and Human Rights*, 19(1). doi: 10.1186/s12914-019-0212-8.
- Moreh, S. and O'Lawrence, H. (2016) 'Common risk factors associated with adolescent and young adult depression', *Journal of Health and Human Services Administration*, 39(2), pp. 283-310.
- Nasrullah, M. *et al.* (2014) 'Knowledge and attitude towards child marriage practice among women married as children-A qualitative study in urban slums of Lahore, Pakistan', *BMC Public Health*, 14(1), pp. 1-7. doi: 10.1186/1471-2458-14-1148.
- Pham, M. T. *et al.* (2014) 'A scoping review of scoping reviews: Advancing the approach and enhancing the consistency', *Research Synthesis Methods*, 5(4), pp. 371-385. doi: 10.1002/jrsm.1123.
- Sedekia, Y. *et al.* (2017) 'Using contraceptives to delay first birth: A qualitative study of individual, community and health provider perceptions in southern Tanzania', *BMC Public Health*, 17(1), pp. 1-14. doi: 10.1186/s12889-017-4759-9.
- Sedgh, G. *et al.* (2012) 'Legal Abortion Levels and Trends By Woman's Age at Termination', *International Perspectives on Sexual and Reproductive Health*, 38(3), pp. 143-153. doi: 10.1363/3814312.
- Segal-Engelchin, D., Huss, E. and Massry, N. (2016) 'The Experience of Early Marriage: Perspectives of Engaged and Married Muslim Women in Israel', *Journal of Adolescent Research*, 31(6), pp. 725-749. doi: 10.1177/0743558415605167.
- Sekine, K. and Hodgkin, M. E. (2017) 'Effect of child marriage on girls' school dropout in Nepal: Analysis of data from the Multiple Indicator Cluster Survey 2014', *PloS one*, 12(7), pp. e0180176-e0180176. doi: 10.1371/journal.pone.0180176.
- Shahabuddin, A. *et al.* (2017) 'Exploring maternal health care-seeking behavior of married adolescent girls in Bangladesh: A social-ecological approach', *PLoS ONE*. Edited by U. Simeoni, 12(1), p. e0169109. doi: 10.1371/journal.pone.0169109.
- Shahabuddin, A. S. M. *et al.* (2016) 'What influences adolescent girls' decision-making regarding contraceptive methods use and childbearing? A qualitative exploratory study in Rangpur District, Bangladesh', *PLoS ONE*. Edited by P. Anglewicz, 11(6), p. e0157664. doi: 10.1371/journal.pone.0157664.
- Taylor, A. Y. *et al.* (2019) 'Child Marriages and Unions in Latin America: Understanding the Roles of Agency and Social Norms', *Journal of Adolescent Health*, 64(4), pp. S45-S51. doi: 10.1016/j.jadohealth.2018.12.017.
- Tirgari, B. *et al.* (2019) 'Experiences of Iranian Teen Mothers with Parenting Stress: A Qualitative Study', *Comprehensive Child and Adolescent Nursing*, 0(0), pp. 1-14. doi: 10.1080/24694193.2019.1651420.
- United Nations Children's Fund (2019) *Child Marriage (internet)*.
- United Nations Children's Fund (2020) *Child marriage - UNICEF DATA, United Nations Children's Fund*.
- Wahi, A. *et al.* (2019) 'The Lived Experience of Child Marriage in the United States', *Social Work in Public Health*, 34(3), pp. 201-213. doi: 10.1186/s12889-017-4759-9.

10.1080/19371918.2019.1575312.
Zaman, M. and Koski, A. (2020) 'Child
marriage in Canada: A systematic

review', *PLoS ONE*, 15(3), p. e0229676.
doi: 10.1371/journal.pone.0229676.

Analisis Dampak Pandemi COVID-19 terhadap Pelayanan Imunisasi pada Anak

Impact Assessment of COVID-19 on Immunization Service for Children

Kharisma Nurul Fazrianti Rusman^{1)✉}, Evi Martha²⁾

¹ Reproductive Health Study Group, Faculty of Public Health, Universitas Indonesia, Depok, Indonesia

² Department of Health Education and Behavioral Sciences, Faculty of Public Health, Universitas Indonesia, Depok, Indonesia

Corresponding directed to e-mail: kharismanfazrianti@gmail.com

ABSTRACT

Background: Coronavirus Disease 2019 (COVID-19) or the coronavirus disease caused by the SARS-CoV-2 virus has become a concern around the world, especially in Indonesia. As of January 31, 2021, the total cases of COVID-19 infection in the world reached 103 million with 2.22 million cases. The COVID-19 pandemic threatened to have an impact on health progress and particularly on children's development due to the obstruction of immunization services as a national program. **Objective:** This study aims to assess the impact of the COVID-19 pandemic on child immunization services. **Methods:** The method used was a narrative literature review conducted by synthesizing and analyzing 4 search engines including ProQuest, ScienceDirect, Pubmed, and SpringerLink. The search for this manuscript found 22 texts that matched the specified topic, namely the impact of the presence of COVID-19 on immunization services in children, searched for the keywords immunization, COVID-19, immunization service, and child. **Results:** The COVID-19 pandemic has an impact on changes in immunization services for children who have become obstructed, reduced service coverage, perceptions of parents reflecting the high demand for immunization, and an impact on health status, namely by carrying out routine immunizations resulting in trained immunity and generating immunity. **Conclusion:** COVID-19 has a special impact on child immunization services. Immunization services must continue to run and carry out according to applicable standards following local government policies by taking into account the principles and guidelines given. Collaboration between the government, the community, non-governmental organizations, and health professionals are needed to prevent a double burden during the COVID-19 pandemic.

Keyword: Child health, COVID-19, Immunization, Service

ABSTRAK

Latar Belakang: Coronavirus Disease 2019 (COVID-19) atau penyakit virus corona yang disebabkan oleh virus SARS-CoV-2 telah menjadi perhatian di seluruh dunia khususnya di Indonesia. Terhitung total kasus infeksi COVID-19 di dunia per-31 Januari 2021 mencapai 103 juta kasus dengan jumlah kasus meninggal sebanyak 2,22 juta kasus. Pandemi COVID-19 mengancam akan berdampak pada kemajuan kesehatan dan secara khusus pada perkembangan anak dikarenakan terhambatnya pelayanan imunisasi sebagai program nasional. **Tujuan:** Tujuan dari penelitian ini adalah untuk mengkaji dampak pandemi COVID-19 terhadap pelayanan imunisasi anak. **Metode:** Metode yang digunakan adalah narrative literature review dilakukan dengan melakukan sintesis dan analisis pada 4 mesin pencari meliputi ProQuest, ScienceDirect, Pubmed, dan SpringerLink. Pencarian naskah ini menemukan 22 naskah yang sesuai dengan topik yang ditentukan, yaitu dampak dari adanya COVID-19 terhadap pelayanan imunisasi pada anak dicari dengan kata kunci immunization, COVID-19, immunization service, dan child. **Hasil:** Pandemi COVID-19 memberikan dampak terhadap perubahan pelayanan imunisasi pada anak yang menjadi terhambat, cakupan pelayanan yang menjadi berkurang, persepsi orang tua yang mencerminkan tingginya permintaan imunisasi, dan adanya pengaruh terhadap status

kesehatan. **Kesimpulan:** COVID-19 memberikan dampak khusus terhadap pelayanan imunisasi anak. Pelayanan imunisasi harus tetap diupayakan berjalan dan dilaksanakan sesuai standar yang berlaku mengikuti kebijakan pemerintah setempat dengan memperhatikan prinsip dan panduan yang diberikan. Perlu adanya kolaborasi antara pemerintah, masyarakat, organisasi non-pemerintah dan profesional kesehatan untuk mencegah terjadinya beban ganda dimasa pandemi COVID-19.

Kata Kunci: Imunisasi, COVID-19, pelayanan, kesehatan anak

INTRODUCTION

Coronavirus Disease 2019 (COVID-19) caused by the SARS-CoV-2 virus initially occurred in Wuhan, China, and triggering a tremendous epidemic in many cities of China, spreading globally to different countries, including Indonesia. As of January 31st, 2021 the total of COVID-19 infections in the world has reached 103 million cases with 2.22 million deaths. In Indonesia the confirmed positive cases of COVID-19 as of January 31st, 2021 has reached 1.05 million with 29 thousand deaths. The confirmed positive cases in Indonesia were increasing as days were passing (Wu, Chen and Chan, 2020; Ministry of Health Ontario, 2021; Satuan Tugas Penanganan COVID-19, 2021).

Many efforts have been conducted to prevent and reduce the number of morbid cases and deaths caused by COVID-19. In Indonesia, the government has established the Large-Scale Social Restrictions (PSBB) as well as recommendations to do physical distancing. This recommendation has triggered several impacts on important sectors such as the health sector that has been experiencing changes in its work (Ristyawati, 2020). In this pandemic situation, non-emergency health services were restricted as an effort to reduce the risk factors of COVID-19 transmissions, including the immunization service for children (Aritonang *et al.*, 2020; Ranganathan and Khan, 2020).

Immunization was one of the public health essential efforts effective to give specific immunity towards Preventable Diseases with Immunization (PD3I) (World Health Organization, 2020a). The existence of COVID-19 had impacts on the implementation of health programs, particularly the immunization and surveillance services of PD3I.

According to Global Alliances for Vaccines and Immunization (GAVI) data, the World Health Organization (WHO) and United Nations Children's Fund (UNICEF) have mentioned that there were 80 million kids aged below 1 year old with risks of diphtheria, measles, and polio due to the hindrance on the route immunization services in the middle of the COVID-19 pandemics. This was certainly risky for the occurrence of Extraordinary Incident (KLB) of PD3I (Kementerian Kesehatan Republik Indonesia and United Nations Children's Fund, 2020; Nielsen and Bronwer, 2020; United Nations Children's Fund, 2020).

Healthcare facilities like the Community Health Center (Puskesmas) and Integrated Health Post for Child Health (Posyandu) stated that there have been delays or stoppages on the immunization services by 84% during the COVID-19 pandemics. This was caused by parents' worries also healthcare workers' doubts about providing the immunization services in the middle of the COVID-19 pandemics. The same went for the coverage of route immunization to prevent diseases on children such as measles, rubella, and diphtheria, which kept decreasing. For instance, the number of coverage of immunizations for diphtheria, pertussis, tetanus (DPT3), and measles-rubella (MR1) decreased by more than 35% in May 2020 compared to the same period of time in the previous year (Kementerian Kesehatan Republik Indonesia and United Nations Children's Fund, 2020).

To reduce the impacts of COVID-19 on the provision of healthcare services, the Ministry of Health has released a guide, circular letter, and information materials to continue immunization services according to the global guide established by the World Health

Organization (WHO). The guide emphasized the continuation of routine immunizations by staying under the health protocols. This recommendation was in line with research in Africa which found that the health benefits from deaths prevented by keeping routine immunizations on children were more than the risks of excess deaths due to COVID-19 related to clinic visitations, especially for vaccinated children (Abbas *et al.*, 2020).

Health promotion programs became one of the important things in the improvement on achievement and services of immunization for children also optimization on the immunization services for children during COVID-19 pandemics. The health promotion programs should become a solution to problems related to parents' worries as well as healthcare workers' doubts in providing immunization services in the middle of COVID-19 pandemics. The information given by the healthcare workers and community health workers has not resulted in an increase in knowledge and awareness on society regarding the importance of immunizations in the middle of COVID-19 pandemics (Kementerian Kesehatan Republik Indonesia, 2020).

This was parallel with target data of the low coverage of immunizations in 401 districts/cities in Indonesia which was on the number of 80%, and there were only 200 districts/cities that reached the complete basic immunizations by more than 80%. The failure was caused by parents who were afraid and worried about getting the SARS-CoV-2 virus if they visited the health facilities. Also, the parents were not aware of the danger of the diseases that were preventable with immunizations. Other reasons were the ignorance of parents about immunization schedules also incorrect information related to immunizations (Kementerian Kesehatan Republik Indonesia, 2020).

Health promotions should give positive impacts on society, particularly on parents, from knowing to being willing and being able to improve and maintain health, especially in providing immunization for children. Meanwhile, some hindrances stated included the lack of spirit in healthcare workers in implementing health promotion about

the complete basic immunizations on society thus causing the lack of knowledge about the importance of providing immunizations for kids during COVID-19 pandemics. Also, there were no promotion media in the forms of invitations to bring children for immunizations in public places and forms of board media like billboards and so on.

COVID-19 pandemic period should not reduce the spirit in healthcare workers and society to keep doing the important steps regarding immunizations and making sure every child was protected from dangerous diseases that were preventable with immunizations (Johri *et al.*, 2015). Because if such conditions continued to go on, the national coverage of immunization would decrease, hence immunity of communities would also decrease, which could induce risks of PD3I KLB.

PD3I KLB if occurred in COVID-19 pandemics would become a double load for the government, healthcare workers, and the entire society. Based on that background, a study on the impacts of COVID-19 pandemics on the immunization services was necessary to be able to describe changes in the services for children during the COVID-19 period.

METHOD

Methods in this research were traditional narrative literature reviews which entailed a synthesis from several study results that were published based of the substantial of this writing. An article review with a comprehensive strategy of searching on online databases of research journals using primary sources derived from research results such as journals and articles with reputable journals nationally and internationally with a theme of immunization services for children during the COVID-19 pandemic period. The literature search in this literature review used databases including ProQuest, ScienceDirect, PubMed, and SpringersLink browsed using keywords of COVID-19, Child Health, and Immunization Services. Researcher obtained the access for the literature sources through institutional account owned by the researcher. Data selection and analysis through literature search

was conducted for the publish time of journal from 2020 to 2021 resulted in 638 articles according to the keywords.

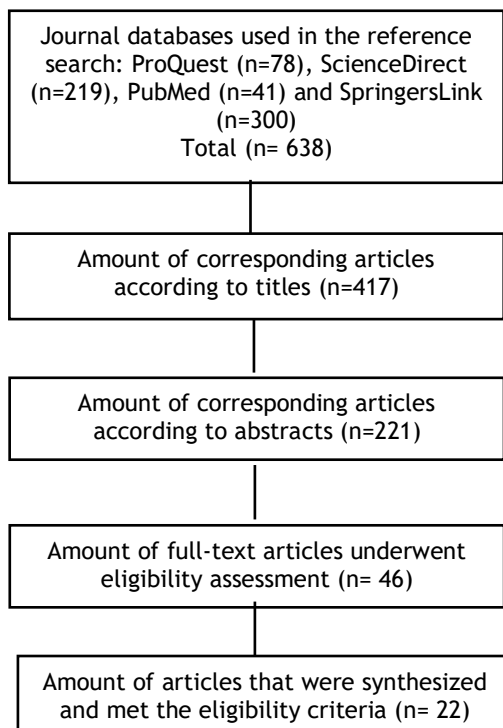


Figure 1. Research Literature Review Flowchart

Furthermore, this research was supported by secondary data (secondary sources) like the guide books published by the Ministry of Health, WHO, and UNICEF.

RESULTS AND DISCUSSION

Results of the findings from 22 articles corresponded with the topic identified there were impacts of COVID-19 on the change in immunization services for children. In general, it was found that the change happened during COVID-19 pandemics. This change affected the immunization services and children's health, and there were parents' worries, as well as healthcare workers in conducting the services during the pandemics period.

Knowing one's behavior so they would be willing to do the immunizations for children in a complete manner could be done by analyzing according to the psychology theory approach to explain how health behavior is done by someone. There were several experts that expressed behavior change. Lawrence Green in Notoatmojo (2012) explained the

classification of behavior change into three kinds. First, predisposing factors are factors possessed by individuals, consisted of knowledge, attitudes, beliefs, values, and so on. Second, enabling factors are factors that supported someone to do something in physical form consisted of facilities or infrastructure. Third, reinforcing factors are supporting factors from the outside derived from attitudes and behaviors of reference groups in society.

Apart from Green's theory, there is also one of the specific theories: the Health Belief Model (HBM). Health Belief Model is a psychology theory model that aims to explain how someone has healthy behavior. This theory has a focus on attitudes and beliefs of individuals when doing a behavior. Health Belief Model (HBM) consisted of a few main variables such as perceived susceptibility, perceived severity, perceived benefits, and perceived barriers, cues to action, self-efficacy, and knowledge. For example, perceived susceptibility that is felt will happen when one believes that one is susceptible to health conditions. This is in line with several pieces of research which said that mothers with perceptions and perceived their infants to be susceptible to communicable diseases had a bigger odd to give immunizations to the infants than mothers that perceived their infants to be not susceptible (Utviaputri, 2018).

Perceived severity of a person or individual occurs when the person believes that their condition has serious consequences. In this case, a person will seek treatment and prevention of the disease driven by the seriousness of the disease. Individuals or parents who did not immunize when they were a child, are likely to cause a disease, one of which is a disease that was not previously immunized, so they will seek treatment or are more likely to immunize their children (Utviaputri, 2018).

Perceived benefits of individuals are yet very significant in HBM. By giving immunizations to infants, then there would be a benefit that is protection from communicable diseases that may lead to death. According to research which said that mothers who perceived those immunizations are very beneficial for their infants had a 1.83 bigger probability to give immunizations to their infants than

mothers who perceived those immunizations for infants were not beneficial (Yuningsih, 2020).

Perceived barriers of individuals also cause a negative outcome related to health action. This phase occurs when one believes that the negative effect of an action is bigger than its benefit. Parents who perceive that giving immunizations will negatively affect their infants' health will thus perceive this as a barrier that is unnecessary to be done. Mothers with the perception that there were a lot of barriers when giving immunizations to their infants had a 0.96% smaller possibility to give immunizations to the infants than mothers with the perception that there was no barrier when giving immunization to their infants (Yuningsih, 2020).

Another example is, self-efficacy will happen when one is sure of one's ability to act or change one's behavior. In this matter, either parents or healthcare workers will be in this phase when they realize the benefits of giving complete basic immunizations to infants according to the needs required by the government (Fitria, 2013).

There is a difference in immunization services conducted both before and during the pandemics, particularly when the lockdown policy was decided. Some journals have emphasized the importance of immunizations in this COVID-19 pandemic period. Immunizations became important as it was responsible in diseases that had potentials to be fatal hence immunizations might save millions of lives in the world. In fact, immunizations were estimated to be able to prevent 2-3 million deaths every year caused by diseases such as diphtheria, tetanus, pertussis, flu, and measles (Stefanati *et al.*, 2021).

Furthermore, children can act as a virus carriers that may harm the lives of other individuals. Neonates and infants also can easily get infected by family members without having to be exposed to the outside world. COVID-19 is indeed affecting children in the same manner as other age groups. Hence the best treatments needed to be done while dealing with these children populations one of which is by keep doing the immunizations (Saleem *et al.*, 2020).

Table 2. Matrix of Journal Topics of Impacts of COVID-19 Pandemics on Immunization Services for Children

Topics	Methods	Aspects	Results
Coronavirus Disease 2019 (COVID-19) in Children: Vulnerable or Spared? (Saleem, et al 2020)	Systematic Review	Children populations were susceptible to COVID-19 infection	COVID-19 affected children populations. But there were differences in the severity level of the symptoms on COVID-19 infected children. Research had provided data of children having complications who were at risk of dying due to COVID-19.
Promoting and supporting children's health and healthcare during COVID-19 - International Paediatric Association Position Statement (Klein, et al 2020)	Original Research	Recommendations from International Pediatric Association for children's health and healthcare during COVID-19	- All children should be vaccinated according to the usual schedule - Planning of immunizations should cover effective communication strategies and engagements of stakeholders and society
Covid-19 and its impact on immunization programs: reflections from Brazil (Matos, et al 2020)	Original Research	Reflection of immunization programs in Brazil during COVID-19 pandemics	Immunization programs in Brazil faced challenges. For instance, there was a decrease in the coverage level of vaccines which cause a health crisis.
A Review of Recommendations for Routine Immunization Services During COVID-19 Pandemic That are Relevant for Nursing Personnel Involved in the	Literature Review	Recommendations for immunizations services during COVID-19 pandemics for nurse practice	Nurses had an important role in the implementation and promotion of vaccination and emphasize the importance of immunizations for children. Therefore, it was important for nurses to have the newest information about vaccinologist intervention that reduced the

Topics	Methods	Aspects	Results
Implementation of Immunoprophylaxis (Bednarek, et al 2020)			transmission of SARS-CoV-19 infection.
The Impact of the COVID-19 Pandemic on Immunization Campaigns and Programs (Lassi et al, 2020)	Systematic Review	Impacts of COVID-19 on vaccine coverage in the entire world and identify the potential factors that caused that matter.	<ul style="list-style-type: none"> - A decrease in vaccine coverage caused children to lose vaccine doses. - Contributing factors to the low vaccine coverage including fear of getting exposed to the virus in healthcare facilities, movement restrictions in the city, lack of workers, and resource transfer.
Value of Immunizations during the COVID-19 Emergency (Stefanati, et al 2020)	Report	Disturbances of vaccination services were reported in 68 countries, with the involvement of 80 million kids in the world.	<ul style="list-style-type: none"> - Restoration and Integration of vaccination services were needed for susceptible individuals. - Implementation of adequate steps of monitoring and supervising. - Implementation was hoped for many countries to deal with the global health emergency today particularly the COVID-19 pandemics.
Childhood vaccinations: Hidden impact of COVID-19 on children in Singapore (Zhong et al, 2020)	Multi-center retrospective cohort study	Decrease in vaccine coverage of children in 3 kinds of healthcare facilities in Singapore: <ul style="list-style-type: none"> - Primary Treatment Clinic - Pediatric Unit of hospitals and private - Children doctor clinic 	Public health effort was highly needed to maintain effective routine vaccine coverage for children during COVID-19 pandemics.
COVID-19 and routine childhood immunization in Africa:Leveraging systems thinking and implementation science to improve immunization system performance (Adamu, et al 2020)	Report Perspective	Immunization System	<p>A concept of system thinking paradigm and the use of implementation science in immunization.</p> <p>System thinking might inform a more holistic understanding of the relation between COVID-19, its control strategies, and immunizations for children.</p>
Impact of COVID-19 pandemic response on uptake of routine immunizations in Sindh, Pakistan (Chandir, et al 2020)	Analysis of provincial electronic immunization registry data	Pandemic Responses during Immunizations	The more children that did not get immunizations during the lockdown, caused them susceptible to diseases that could be prevented with vaccines. There was the need for intervention customized with promoting immunization visits and provision of safe immunization services.
The indirect impact of COVID-19 on child health (Ashikkali, et al 2020)	Report	COVID-19 had impacts on children and teenagers.	<ul style="list-style-type: none"> - Indirectly, this implication should not be neglected. - This explored the physical and psychological effects. - Roles of healthcare workers in offering advice and

Topics	Methods	Aspects	Results
Potential impact of COVID-19 pandemic on vaccination coverage in Children (Carias, et al 2020)	A case study	Projection of vaccination coverage	<p>practical services were what needed to be paid attention to.</p> <ul style="list-style-type: none"> - Modelling of vaccination coverage of measles in many scenarios gave useful information on how massive the potentials and impacts of the lack of immunization coverage are. - Efforts to fill the continuous gap were needed to ensure that the vaccination coverage would maintain to be high.
Reflection on lower rates of COVID-19 in children: Does childhood immunizations offer unexpected protection? (Lyu,et al 2020)	Report	Children's immunity sytem	Children's cellular immunity system was different from adults' that might have been the main key to children experiencing mild symptoms compared to the adults.
Routine childhood immunisation during the COVID-19 pandemic in Africa (Abbas K,et al 2020)	A benefit-risk analysis	High impact scenario and low impact scenario to estimate children deaths that could have caused by a decrease in immunization coverage during COVID-19 pandemics.	<ul style="list-style-type: none"> - Deaths prevented by maintaining childhood routine immunizations in Africa were higher than the risk amount of death due to COVID-19 concerning visitation to vaccination clinics, particularly for children that we vaccinated. - Routine programs of immunizations for children should be maintained in Africa also still considered other factors such as logistics problems, lack of staff, and resources reallocations during COVID-19 pandemics.
COVID-19 and missed routine immunizations: designing for effective catch-up in Canada (MacDonald et al, 2020)	Report	Canada indicated that vaccinations for children had to keep going.	<p>Components that needed to be integrated:</p> <ol style="list-style-type: none"> (1) Identify children who missed vaccines; (2) Detect gaps in the distribution of vaccines. (3) Adapt, adjust, and develop strategies to fill the gaps; (4) Communicate, document, evaluate, and readjust the immunization program. <p>Everything had to be adjusted with the developing reality.</p>
Infant and child health and healthcare before and after COVID-19 pandemic: will it be the same ever? (El-Shabrawi, et al 2020)	Report	Direct and indirect impacts of COVID-19 pandemics on children.	<ul style="list-style-type: none"> - COVID-19 crisis hugely impacted children's health, not only on medical aspects but also social, psychological, economic, and educational aspects. - All these detrimental implications needed identification and treatment with the individual based approach in short term and

Topics	Methods	Aspects	Results
The COVID-19 pandemic threatens the Expanded Program on Immunization: recommendations for sustaining vaccination goals (Hamid et al, 2020)	Report	Responses to COVID-19 pandemics	long term.
			The immune system of children aged <5 was more susceptible to infections than of other age groups.
Immunization During the COVID-19 Pandemic: Recommendations From Indian Academy of Pediatrics Advisory Committee on Vaccines and Immunization Practices (Kasi et al, 2020)	Report	Recommendations of SARS-CoV-2 suspect routine immunizations for children.	Immunizations were thought to be essential health activities that needed to be conducted and sustained as early as possible.

Coverage of Immunization Services for Children Before and During COVID-19 Pandemics

Out of 22 research manuscripts, there were four research journals that covered the coverage of immunization services for children before and during COVID-19 Pandemics. Results of this research stated that in the United States, vaccination data showed a decrease starting from a week after the national COVID-19 emergency was announced. In Pakistan, a decrease also occurred on the daily average total of vaccination during COVID-19 lockdown (Matos, Barbieri and Couto, 2020). The same thing applied in India that one of every two children in Sindh Province have missed routine vaccinations during COVID-19 lockdown. Children that did not receive immunizations increased during the lockdown, which caused them susceptible to diseases that could be prevented by immunizations (Chandir *et al.*, 2020). And in Singapore, the coverage decreased to 74-84% between children aged 12 months to 2 years old, far below the 95% standard (Zhong *et al.*, 2021).

While before COVID-19 in Indonesia, around 90% of children have received immunizations in public facilities which were 75% Integrated Health Post for Child Health (Posyandu), 10% Community Health Center (Puskesmas), 5% Village Maternity Cottage (Polindes), and 10% clinics and private hospitals. However, during COVID-19 pandemics it was showed that clinics and private hospitals became the main source to get immunization services for children (more than 43%), Puskesmas

(29%), and Posyandu (21%). This happened because there were no provided immunization services, especially at Posyandu and Puskesmas level (Kementerian Kesehatan Republik Indonesia, 2019).

Before there were COVID-19 pandemics, coverage of vaccination increased rapidly in many parts of the world. It was estimated that 90% of children would be vaccinated with Bacillus Calmette-Guerin (BCG), third dose of diphtheria vaccines, tetanus, and pertussis (DTP), oral polio (OPV3), and measles vaccines. However, WHO and UNICEF warned about the decrease in vaccination levels for children during the COVID-19 pandemics (World Health Organization, 2020b). The existence of COVID-19 also hampered the supply chain of drugs and vaccines. Hence, at last, reducing the coverage of immunization. This could place children at risk of diseases that could have been prevented with immunizations along with complications (Hamid *et al.*, 2020).

Perception of Parents in Giving Immunization Services COVID-19 Pandemics

As many as four research pieces covered perceptions of parents or caretakers during COVID-19 pandemics. Parents and caretakers were worried about the risks of being infected by COVID-19 in healthcare facilities and this became an important consideration. Most parents assumed that immunization services in Integrated Health Post for Child Health or even house visits would be safer compared to immunization services in healthcare facilities. Nearly 82% of parents reported

the need of getting accurate information from the government regarding the provision of safe immunization services. Parents could ensure that the healthcare workers implemented the health protocols which were corresponding to the recommended standard (Kementerian Kesehatan Republik Indonesia and United Nations Children's Fund, 2020).

The importance of immunizations on infants and children could be re-emphasized through organized and conceptualized health promotion that could be done by healthcare workers or community health workers to educate parents so they would be able to motivate parents or caretakers to continue to proceed with the scheduled immunization visits (Adamu *et al.*, 2020; Kementerian Kesehatan Republik Indonesia and United Nations Children's Fund, 2020).

With knowledge, one might do changes so one's behavior might develop. All activities carried out by parents or caregivers regarding the implementation of immunization in children are nothing but the results obtained from knowledge (Rahmawati and Umbul, 2014).

This was in line with Notoatmodjo's theory (2010) which stated that activities in the form of providing health information or messages as well as health counseling aim to increase knowledge and attitudes towards health needed by a person so as to make it easier for someone to initiate healthy behavior which in this case is the perception of parents to immunize children during the COVID-19 pandemic (Notoatmodjo, 2010).

Furthermore, it should be emphasized that the level of knowledge about immunization is a factor with an important role. The public, especially parents, should be given information about the importance of immunization for children during the COVID-19 pandemic so that they would be aware of the implementation of immunizations and would do chase of immunizations if any was missed by their children (Kasi *et al.*, 2020).

It was also needed to share the appropriate prevention and control of infections to parents and caretakers, such as through provision of handwash facility in locations of immunization services. Altogether, this reflected the high demand for immunization where parents and caregivers sought alternative health care

facilities that offered immunization services they felt were safe (Kementerian Kesehatan Republik Indonesia and United Nations Children's Fund, 2020).

Impacts of Immunizations on Children's Health during COVID-19 Pandemics

Out of all literature that was obtained, it was also found journals covered the impacts of immunizations on children's health during COVID-19 pandemics. One of which conducted in Africa in 2020 stated that COVID-19 pandemics allowed several children to be vaccinated and assumed that the children groups who were not vaccinated had a risk of being susceptible to death until the age of 5 (Zhou, 2020). In line with research conducted in India which mentioned that if children were given complete immunizations as scheduled hence would add the dose boosters as well as minimum occurrences of emerging diseases (Hamid *et al.*, 2020).

Although direct impacts of COVID-19 pandemics on children's health were low, however, there were indirect impacts in many aspects (Sidiq *et al.*, 2020). It was needed to be paid attention at that children were the most susceptible group to get respiratory pathogens, but COVID-19 virus did not cause severe cases among them (Velavan, Pollard and Kremsner, 2020). According to a pathology stud of COVID-19, children's cellular immune system was different from adults' which might be the main key. By doing routine and scheduled vaccinations in children would result in trained immunity of innate immune system, also in an occurrence of antibody protection in children (Lyu *et al.*, 2020; Saso, Skirrow and Kampmann, 2020).

Changes in Immunization Services for Children during COVID-19 Pandemics

WHO has released guides to maintain health services which felt to be significant during COVID-19 pandemics, including immunization service as core healthcare services that should be prioritized and maintained during pandemics. WHO advised that massive vaccination campaigns needed to be postponed temporarily and kept following recommendations on physical distancing also ensuring provision of immunizations would not contribute to the COVID-19 transmission. However, the planning and effort to fill the gap of immunizations for

children should be conducted quickly by paying attention to prevention strategies for susceptible populations including children, hence reducing the increase of morbidity and mortality risks of diseases that were prone to cause epidemic (El-Shabrawi and Hassanin, 2020; Klein *et al.*, 2020).

In line with that, research conducted in Amerika suggested that continuous monitoring on routine immunizations was needed to understand the impacts of COVID-19 pandemics. It was also needed an effort to fill the gap in immunizations and innovative strategies necessary to be developed to prevent occurrences of other diseases that would potentially harm lives (Carias *et al.*, 2020).

Research conducted in Canada in 2020 also mentioned that immunizations remained to be valid and provided for infants and children by identifying children who missed immunizations. After that adaptation and adjustment, strategy development in many aspects to fill the gap, also communication, documentation, and evaluation readjusting immunization services according to COVID-19 pandemics (MacDonald *et al.*, 2020).

Recommendations of Immunization Services during COVID-19 Pandemics

There were 8 literature and research that covered the recommendations related to immunizations during COVID-19 pandemics. Immunization services had to remain being enforced to happen and conducted according to immunization schedules of the valid national programs following the government's policy by adhering to the PPI principles and keeping a safe distance (Kementerian Kesehatan Republik Indonesia, 2020; Minhas *et al.*, 2020).

Based on results of risk mapping analysis, it was obtained that recommendations of immunization services could be a selection of service sites that corresponded with regional conditions (Jain *et al.*, 2021). Healthcare facilities like Community Health Center and Integrated Health Post for Child Health in areas that remained as susceptible could conduct the services with a proactive system. In case the situations did not allow, hence recommendations of immunization postponement, with a recording of healthcare workers and community health workers. After that, a

list of children that have not received immunizations would be obtained to thus be prioritized soon when the opportunity of next immunizations were available (Nadhifa *et al.*, 2020).

During pandemics, it was important to monitor the level of immunization services and analyses the coverage among general populations and certain susceptible groups (Or Caspi, Michael J. Smart, 2020). Providers of immunization services should start to prepare the list of children that have missed vaccine doses and develop action plans for immunization-gap-filling efforts adjusted according to needs.

Based on the experiences obtained during epidemics and emergency health situations previously, support of essential healthcare services such as immunizations became WHO's priority concerns. However, it should be developed that we faced pandemics that have never occurred before. WHO underlined that immunizations were the basic healthcare services and hence should be the priority and be maintained even during COVID-19 pandemics (Jain *et al.*, 2021)

Children Health Promotion Efforts and the Relation with Immunization Services in the Middle of COVID-19 Pandemics

Indonesian society has various social characteristics, starting from age, education level, economy level, and exposure to internet/mass media, social environment, culture, ethnic groups, hence have different understanding and attitudes towards COVID-19 pandemics. The understanding and attitudes that were formed could affect the action/behavior of society, in this case, parents and healthcare workers and their relation to the provision of immunization services for children (Yuningsih, 2020).

To maintain society's demand for immunization services during COVID-19 pandemics, a promotion strategy should be particularly planned to give accurate health information of children hence answering society's worries, increasing relationships with the society which in the end encouraging the usage of sustainable immunization services. Health promotion conducted needed an active role of community health workers, religious leaders, society leaders, civil society networks, and local security officers. In this case, in particular, parents will be more obedient and trusting in giving

immunizations to their children if all elements of society are always active in urging the implementation of immunizations for children. Society should obtain clear information regarding the continuity of services and be strongly encouraged to continue to carry out scheduled visits while still complying with the recommendations for physical distancing from the local government through maximum health promotion efforts that could be carried out by relevant stakeholders (World Health Organization and United Nations Children's Fund, 2020)

Health workers should also be trained to carry out COVID-19 prevention and control measures concerning the provision of immunization services for children. Immunization visits should also be used as an opportunity to disseminate messages as a health promotion strategy to encourage behaviors that could reduce the risk of transmission of the COVID-19 virus in children, recognize the symptoms and signs of COVID-19 disease, and provide guidance on what to do if symptoms occur so that every child could be protected from dangerous diseases that could be prevented by immunization while also reducing the risk of the possibility of being exposed to the COVID-19 virus, national immunization coverage would slowly be achieved thus it was hoped double burden of the risk of outbreaks of PD3I and COVID-19 in children would be prevented (World Health Organization and United Nations Children's Fund, 2020).

Research Limitations

Limitations of this research were that most of the journals and literature that were analyzed originated from foreign countries and in English which could indicate there were cultural differences with Indonesia due to the limited journals that covered the impacts of COVID-19 on immunization coverage in Indonesia, particularly those that reported hindrances or factors affecting perspective disorders of users and providers. In addition, another weakness of this research was there could be a bias during the selection of articles for review which was adjusted with the knowledge or experience of the researcher.

CONCLUSION

According to the results of the literature, it was shown that COVID-19 gave an impact on the changes in immunization services for children. The changes occurred namely immunization services were hindered, immunization coverage in children decreased compared to the previous year, also impacts on the health status of children. These were caused by parents' worries to visit healthcare facilities and give immunizations to their children, and the lack of information that society got on the importance of immunizations for children during COVID-19 pandemics. Then, there were hopes from parents to be able to access safe immunizations and accurate information. Therefore, the government, society, non-governmental organizations, and health professionals should work collaboratively to prevent the occurrence of the double burden caused by the non-fulfillment of basic immunization services during COVID-19 pandemics.

ACKNOWLEDGEMENT

The author expresses his gratitude to Dr. Evi Martha, Dra., M.Kes as thesis supervisor who has helped in completing this research and scientific article.

REFERENCES

- Abbas, K. *et al.* (2020) 'Routine childhood immunisation during the COVID-19 pandemic in Africa: a benefit-risk analysis of health benefits versus excess risk of SARS-CoV-2 infection', *The Lancet Global Health*, 8(10), pp. e1264-e1272. doi: 10.1016/S2214-109X(20)30308-9.
- Adamu, A. A. *et al.* (2020) 'COVID-19 and routine childhood immunization in Africa: Leveraging systems thinking and implementation science to improve immunization system performance', *International Journal of Infectious Diseases*, 98, pp. 161-165. doi: 10.1016/j.ijid.2020.06.072.
- Aritonang, J. *et al.* (2020) 'Kecemasan Pandemi Covid-19 Dalam Keikutsertaan Posyandu Di Kelurahan Pekan Tanjung Morawa Tahun 2020', *Jurnal Reproductive Health*, 6(1), pp. 34-42.
- Carias, C. *et al.* (2020) 'Potential impact of COVID-19 pandemic on vaccination coverage in children: A case study of measles-containing vaccine

- administration in the United States (US)', *Vaccine*, (xxxx), pp. 2018-2021. doi: 10.1016/j.vaccine.2020.11.074.
- Chandir, S. *et al.* (2020) 'Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID- 19 . The COVID-19 resource centre is hosted on Elsevier Connect , the company ' s public news and information ' , (January).
- El-Shabrawi, M. and Hassanin, F. (2020) 'Infant and child health and healthcare before and after COVID-19 pandemic: will it be the same ever?', *Egyptian Pediatric Association Gazette*, 68(1). doi: 10.1186/s43054-020-00039-7.
- Hamid, H. *et al.* (2020) 'The COVID-19 pandemic threatens the Expanded Program on Immunization: recommendations for sustaining vaccination goals', *Drugs and Therapy Perspectives*, 36(11), pp. 523-525. doi: 10.1007/s40267-020-00774-2.
- Jain, R. *et al.* (2021) 'COVID-19 related immunization disruptions in Rajasthan, India: A retrospective observational study', *Vaccine*. 2021/06/12, 39(31), pp. 4343-4350. doi: 10.1016/j.vaccine.2021.06.022.
- Johri, M. *et al.* (2015) 'Strategies to increase the demand for childhood vaccination in low- and middle-income countries: A systematic review and meta-analysis', *Bulletin of the World Health Organization*, 93(5), pp. 339-346C. doi: 10.2471/BLT.14.146951.
- Kasi, S. G. *et al.* (2020) 'Immunization During the COVID-19 Pandemic: Recommendations From Indian Academy of Pediatrics Advisory Committee on Vaccines and Immunization Practices', *Indian Pediatrics*, 57(12), pp. 1147-1152. doi: 10.1007/s13312-020-2071-8.
- Kementerian Kesehatan Republik Indonesia (2019) *Profil Kesehatan Indonesia Tahun 2019*, Kementerian Kesehatan Republik Indonesia.
- Kementerian Kesehatan Republik Indonesia (2020) *Petunjuk Teknis Pelayanan Imunisasi Pada Masa Pandemi Covid-19*, COVID-19 Kemenkes.
- Kementerian Kesehatan Republik Indonesia and United Nations Children's Fund (2020) 'Imunisasi Rutin pada Anak Selama Pandemi COVID-19 di Indonesia: Persepsi Orang tua dan Pengasuh Agustus 2020', pp. 1-16.
- Klein, J. D. *et al.* (2020) 'Promoting and supporting children's health and healthcare during COVID-19-International Paediatric Association Position Statement', *Archives of Disease in Childhood*, 105(7), pp. 620-624. doi: 10.1136/archdischild-2020-319370.
- Lyu, J. *et al.* (2020) 'Reflection on lower rates of COVID-19 in children: Does childhood immunizations offer unexpected protection?', *Medical Hypotheses*, 143(April). doi: 10.1016/j.mehy.2020.109842.
- MacDonald, N. E. *et al.* (2020) 'COVID-19 and missed routine immunizations: designing for effective catch-up in Canada', *Canadian Journal of Public Health*, 111(4), pp. 469-472. doi: 10.17269/s41997-020-00385-4.
- Matos, C. C. de S. A., Barbieri, C. L. A. and Couto, M. T. (2020) 'Covid-19 and its impact on immunization programs: reflections from Brazil', *Revista de Saude Publica*, 54(114), pp. 1-6. doi: 10.11606/s1518-8787.2020054003042.
- Minhas, A. S. *et al.* (2020) 'Takotsubo Syndrome in the Setting of COVID-19', *JACC: Case Reports*, 2(9), pp. 1321-1325. doi: 10.1016/j.jaccas.2020.04.023.
- Ministry of Health Ontario (2021) *Guidance for COVID-19 Immunization In Long-Term Care Homes and Retirement*. Ontario.
- Nadhifa, K. *et al.* (2020) 'Analisis Evaluasi Program Imunisasi Pada Masa Pandemi COVID-19'. Available at: https://www.researchgate.net/publication/348060074_Analisis_evaluasi_program_imunisasi_pada_masa_pandemi_covid-19_analysis_of_the_immunization_program_evaluation_during_the_covid-19_pandemic.
- Nielsen, H. and Bronwer, P. (2020) 'Guidance on routine immunization services during COVID-19 pandemic in the WHO European Region', pp. 1-12.
- Notoatmodjo, S. (2010) 'Promosi Kesehatan, Teori & Aplikasi, ed. revisi 2010', Jakarta: Rineka Cipta. doi: 10.1108/JMTM-03-2018-0075.
- Or Caspi, Michael J. Smart, R. B. N. (2020) 'Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus

- COVID-19', *Ann Oncol*, (January), pp. 19-21.
- Rahmawati, A. I. and Umbul, C. (2014) 'Faktor yang mempengaruhi kelengkapan imunisasi dasar di kelurahan krengan utara', *Jurnal Berkala Epidemiologi*, 2, pp. 59-70.
- Ranganathan, R. and Khan, A. M. (2020) 'Routine immunization services during the coronavirus (COVID-19) pandemic', *Indian Journal of Community Health*, 32(2 Special Issue), pp. 236-239. doi: 10.47203/ijch.2020.v32i02supp.011.
- Ristyawati, A. (2020) 'Efektivitas Kebijakan Pembatasan Sosial Berskala Besar Dalam Masa Pandemi Corona Virus 2019 oleh Pemerintah Sesuai Amanat UUD NRI Tahun 1945', *Administrative Law and Governance Journal*, 3(2), pp. 240-249. doi: 10.14710/alj.v3i2.240-249.
- Saleem, H. *et al.* (2020) 'Coronavirus Disease 2019 (COVID-19) in Children: Vulnerable or Spared? A Systematic Review', *Cureus*, 2019(5). doi: 10.7759/cureus.8207.
- Saso, A., Skirrow, H. and Kampmann, B. (2020) 'Impact of COVID-19 on immunization services for maternal and infant vaccines: Results of a survey conducted by imprint—the immunising pregnant women and infants network', *Vaccines*, 8(3), pp. 1-15. doi: 10.3390/vaccines8030556.
- Satuan Tugas Penanganan COVID-19 (2021) *Analisis Data COVID-19 Indonesia*. Available at: <https://covid19.go.id/p/berita/analisis-data-covid-19-indonesia-update-31-januari-2021>.
- Sidiq, K. R. *et al.* (2020) 'Does Early Childhood Vaccination Protect Against COVID-19?', *Frontiers in Molecular Biosciences*, 7(May). doi: 10.3389/fmolb.2020.00120.
- Stefanati, A. *et al.* (2021) 'Value of Immunizations during the COVID-19 Emergency', *International Journal of Environmental Research and Public Health*, 18(2), p. 778. doi: 10.3390/ijerph18020778.
- United Nations Children's Fund (2020) 'Frequently Asked Questions (FAQ) Immunization in the context of COVID-19 pandemic', (April), pp. 1-12.
- Utviaputri, L. P. (2018) 'Faktor Pengaruh Petunjuk Untuk Bertindak Terhadap Kelengkapan Imunisasi Dasar Di Puskesmas Kenjeran Surabaya', *Promkes*, 06 (1), pp. 46-58.
- Velavan, T. P., Pollard, A. J. and Kremsner, P. G. (2020) 'Herd immunity and vaccination of children for COVID-19', *International Journal of Infectious Diseases*, 98, pp. 14-15. doi: 10.1016/j.ijid.2020.06.065.
- World Health Organization (2020a) 'Guidance on developing a national deployment and vaccination plan for COVID-19 vaccines: interim guidance', *World Health Organization*, (V), p. 89.
- World Health Organization (2020b) 'Operational Guidance For Maintaining Essential Health Services During An Outbreak', *World Health Organization*, (March), pp. 1-10.
- World Health Organization and United Nations Children's Fund (2020) 'Imunisasi dalam konteks pandemi COVID-19', (April), pp. 1-13.
- Wu, Y. C., Chen, C. S. and Chan, Y. J. (2020) 'The outbreak of COVID-19: An overview', *Journal of the Chinese Medical Association*, 83(3), pp. 217-220. doi: 10.1097/JCMA.0000000000000270.
- Yuningsih, R. (2020) 'Promosi Kesehatan Pada Kehidupan New Normal Pandemi Covid-19', *Info singkat*, XII(Juni), pp. 13-18.
- Zhong, Y. *et al.* (2021) 'Childhood vaccinations: Hidden impact of COVID-19 on children in Singapore', *Vaccine*, 39(5), pp. 780-785. doi: 10.1016/j.vaccine.2020.12.054.
- Zhou, A. K. (2020) 'Sustaining routine childhood immunisations during COVID-19 in Africa', *Journal of Paediatrics and Child Health*. doi: 10.1111/jpc.15228.