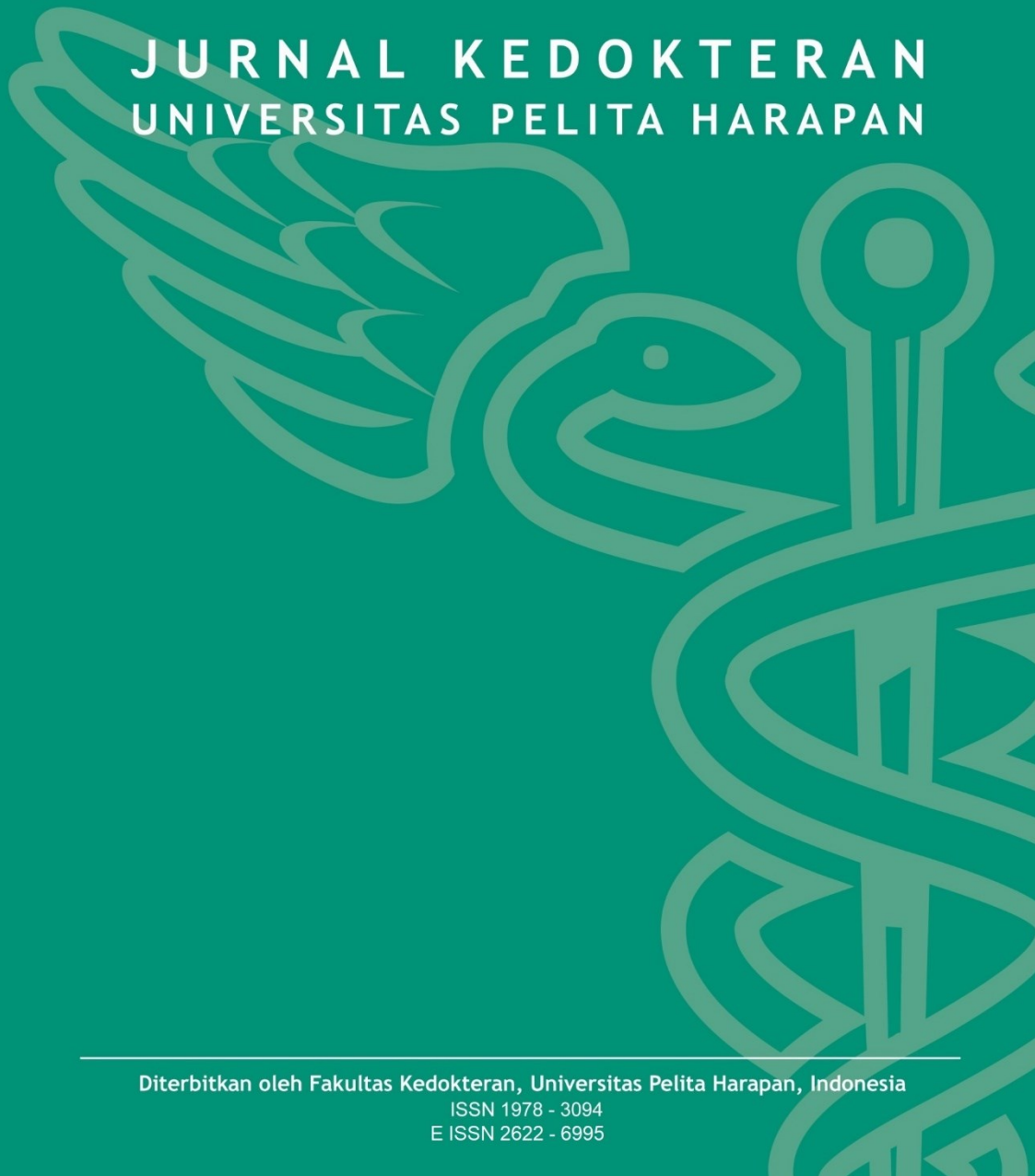


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Comparison Of Post Operative Pain Score Between Doppler-Guided Hemorrhoidal Artery Ligation And Recto Anal Repair With Open Hemorrhoidectomy On Internal Hemorrhoid Grade III-IV At Siloam Hospitals Lippo Village

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Abstract

Citation : Sudirman Taufik, Kosasih Joanna Audricia. Comparison Of Post Operative Pain Score Between Doppler-Guided Hemorrhoidal Artery Ligation And Recto Anal Repair With Open Hemorrhoidectomy On Internal Hemorrhoid Grade III-IV At Siloam Hospitals Lippo Village. *Medicinus*. 2021 June; 9(2): 38- 43

Keywords: Hemorrhoid; internal hemorrhoid; post-operative pain; DGHAL-RAR; hemorrhoidal artery ligation and recto anal repair; open hemorrhoidectomy; Milligan Morgan

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Background: Hemorrhoid is a common lesion affecting 5% of the general population. Open hemorrhoidectomy has been considered as gold standard. However, this method has a significant score of post-operative pain Because of this side effect, another alternative method to treat hemorrhoid has been invented which can reduce the post-operative pain. One of this method is doppler-guided hemorrhoidal artery ligation and recto anal repair (DGHAL-RAR). This study aims to know the comparison of the post-operative pain score between doppler-guided hemorrhoidal artery ligation and recto anal repair compared with open hemorrhoidectomy.

Method: The sample population of this study are internal hemorrhoid grade III-IV patients at Siloam Hospitals Lippo Village from 2018-2020. Visual analogue scale data are taken from medical records. Sample data is obtained using consecutive sampling method until 64 samples are met. The data obtained will be processed with Mann U-Whitney test.

Results : Incidence of post-operative pain more than VAS 3 occurred in DGHAL-RAR and open hemorrhoidectomy are 81,3% and 96,9% with p value of 0,104. The average score of Visual Analogue Scale score in DGHAL-RAR and open hemorrhoidectomy are 1,97 and 3,13 with p value of 0,001.

Conclusion : This study shows that the comparison of pain score in DGHAL-RAR and open hemorrhoidectomy is not statistically significant. The mean score of Visual Analogue Scale Score in DGHAL-RAR group are statistically significant lower than the mean score in open hemorrhoidectomy group.

Introduction

Hemorrhoid tissue is a normal anatomical part of the distal rectum and anal canal. However, the word hemorrhoid is often interpreted as a pathological process.¹ Hemorrhoids are a common lesion that affects 5% of the general population. Meanwhile in Indonesia, there are 166

patients suffering from hemorrhoids at H. Adam Malik General Hospital Medan with a prevalence of 69.17% (Wandari, 2011) and 113 people at Soedarso Hospital in Pontianak in 2009-2012 (Putra, 2013). The gold standard of hemorrhoid management is the open hemorrhoidectomy procedure. However, this procedure has a significant morbidity rate, in which

postoperative pain after this procedure is very disturbing to the patient. Therefore, other alternatives were found in the treatment of hemorrhoids to reduce postoperative pain. One of them is the doppler-guided hemorrhoidal artery ligation and recto anal repair (DGHAL-RAR) method. This method is one of the relatively new procedures when compared to other surgical procedures. The most frequently used method for assessing pain intensity is the visual analogue score (VAS), in which the patient describes the intensity of the pain as a point on a straight line that has a number from 0 to 10.²

Previous studies discussed the comparison of postoperative pain between the DGHAL-RAR method and open hemorrhoidectomy for grade III and IV hemorrhoids (external and internal), grade IV hemorrhoids, and grade II-IV hemorrhoids. Meanwhile, studies comparing postoperative pain in grade III-IV internal hemorrhoids are still minimal.

Open hemorrhoidectomy or better known as Milligan-Morgan hemorrhoidectomy (MMH), is a procedure commonly used in the UK. This open hemorrhoidectomy procedure was first described by Milligan Morgan in 1937 and has since become the gold standard of hemorrhoid management. This procedure begins by using a hemostat to hold the external component of the hemorrhoid in 3 quadrants (including the prolapsed part). Internal components are also held using hemostats. Hemorrhoids are common on the left lateral (3 o'clock in the lithotomy position), right anterior (11 o'clock) and right posterior (7 o'clock). With these three clamps, the classic triangle of exposure of Milligan is formed. Curved Mayo scissors are used to incise the perianal skin, and dissection of the external components of the external sphincter complex. The dissection will proceed to a more cephalic part of the internal sphincter. Then the top was ligated and the hemorrhoids were excised. Electrocautery can also be used for hemostasis. This procedure is accomplished by applying a hemostatic gauze pad into the anal canal. The margins of the skin were left open to heal on their own.³

In 1995, the Doppler-guided hemorrhoidal artery ligation and recto anal repair procedures were described by Morinaga et al. Prior to surgery, the patient will be given prophylactic antibiotics. The first stage of this operation is to prepare DGHAL standard equipment, which consists of A.M.I. Trilogy and DGHAL-RAR proctoscope. Then, a Doppler probe will be inserted about 3-5 cm above the dentate line to identify branches of the superior rectal artery. Accurate detection of branches of the superior rectal artery will be confirmed by Doppler sound. A figure of eight suture is then performed on the rectal mucosa where the artery has been identified by the proctoscope. After the ligation (confirmed by the loss of the Doppler signal), the ligation will be tightened using a pusher knot. The second stage is recto anal repair. Recto anal repair is performed in the same manner from the arterial ligation site up to 5 mm above the dentate line and it is tightly ligated to the rectal mucosa. The operation is completed if there is no prolapsed hemorrhoid or no arterial signal is found. Complications that can occur are bleeding, thrombosis, pain, and fissures. The pain after this procedure is relatively mild compared to other procedures.⁴

The most frequently used method for assessing pain intensity is the visual analogue score (VAS), where the patient describes the pain intensity as a point on a straight line with the numbers 0 to 10. On the Numeric Rating Scale (NRS) the patient uses a number to describe the intensity of his pain. 0 means no pain and 10 indicates very severe pain. Meanwhile, the Faces Pain Scale shows the patient's facial expressions ranging from painless to the worst pain.

Postoperative pain was treated using guidelines from the French Anesthesiology Society. The aim of these guidelines is to keep the VAS score below 3. Analgesics can be administered using the WHO system. Analgesics are given based on the VAS score which is divided into a VAS score of 1-3 (WHO class I analgesic), a

VAS score of 4-6 (WHO class II analgesic) and a VAS score of more than 6 (WHO class III analgesic).⁵

Methods

This study used a 2 groups unpaired numerical comparative analytic study with a cross-sectional design. This study was conducted on patients with grade III-IV internal hemorrhoids who underwent DGHAL-RAR surgery or open hemorrhoidectomy at Siloam Hospitals Lippo Village. The study was conducted from January 2020 to August 2020 using data obtained from medical records. Sampling was carried out by consecutive sampling until the quota was met. Data taken from medical records in the form of demographic characteristics (age and sex of the patient), working diagnosis of the patient (internal hemorrhoids grade III-IV), type of hemorrhoid treatment (DGHAL-RAR or open hemorrhoidectomy), VAS score, and patient's medical history. The inclusion criteria of this study were patients with grade III-IV internal hemorrhoids at Siloam Hospitals Lippo Village and undergoing DGHAL-RAR surgery or open hemorrhoidectomy at Siloam Hospitals Lippo Village. Patients who had previous hemorrhoid surgery, had thrombosed hemorrhoids, anal fissure, fistula were excluded from the study. A thrombosed hemorrhoid is described as a hematoma caused by tearing of a vein caused by excessive straining during defecation.² Anal fissure is a tear in the anoderm that is distal to the dentate line. A fistula is an abnormal communication between the anus at the level of the dentate line and the perirectal skin. Anal stenosis is a narrowing of the anal canal. This study used the SPSS (Statistical Package for Social Sciences) statistical test version 23 with the Mann U-Whitney test method in accordance with the sample calculation formula used, namely the unpaired numerical comparative analytical test of 2 groups. The author has received ethical approval from the Research Ethics Committee of the Faculty of Medicine, University of Pelita Harapan.

Result

From January 2018 - March 2020 there were 64 patients suffering from grade III-IV internal hemorrhoids at Siloam Hospitals Lippo Village. 32 patients underwent DGHAL-RAR and 32 underwent open hemorrhoidectomy.

The mean age of the sample was 41.25 years, of which the mean age who underwent DGHAL-RAR was higher (42.2 years) compared to open hemorrhoidectomy (40.3 years). Most samples were obtained in the age range 41 - 50 years where there were 21 samples (32.8%). The least sample was obtained in the age range above 60 years, as many as 3 samples (4.7%).

96.9% of patients who underwent DGHAL-RAR were diagnosed as having grade III internal hemorrhoids and only 3.1% were diagnosed as having grade IV internal hemorrhoids. Meanwhile, in patients who underwent open hemorrhoidectomy, 85.9% of patients were diagnosed with grade III internal hemorrhoids and 14.1% were diagnosed as having grade IV internal hemorrhoids.

There were 81.3% of patients in the DGHAL-RAR group experienced postoperative pain, while 89.1% of the patient group who underwent open hemorrhoidectomy experienced postoperative pain. The significance value (p value) obtained through the Fisher exact test is 0.104 (exceeding 0.05) which proves statistically that the results of this study are not significant. Therefore, the OR value obtained is negligible (meaningless).

The DGHAL-RAR group had an average VAS value of 1.97 and the open hemorrhoidectomy group had an average VAS value of 3. Based on the Mann U-Whitney statistical test, a significance value (p value) was obtained of 0.001 which means significant.

Table 1. Demographic data by age

Age	DGHAL-RAR		Open Hemorrhoidectomy		Total	
	n	%	n	%	n	%
<31	5	15,6	8	25	13	20,3
31-40	9	28,1	6	18,8	15	23,4
41-50	8	25	13	40,6	21	32,8
51-60	9	28,1	3	9,4	12	18,8
>60	1	3,1	2	6,3	3	4,7
Total	32	100	32	100	64	100
Mean	42,2 tahun		40,3 tahun		41,25 tahun	

Table 2. The distribution of the degree of internal hemorrhoids

Degree	DGHAL-RAR		Open Hemorrhoidectomy		Total	
	n	%	n	%	n	%
3 rd degree	31	96,9	24	75	55	85,9
4 th degree	1	3,1	8	25	9	14,1
Total	32	100	32	100	64	100

Table 3. Postoperative pain incidence

Types of surgery	Post-Operative Pain				Total		OR (95%CI)	P value
	No Pain		Pain					
	n	%	n	%	n	%		
DGHAL-RAR	6	18,8	26	81,3	32	100	7,154 (0,809- 63,299)	0,104
Open Hemorrhoidectomy	1	3,1	31	96,9	32	100		
Total	7	10,9	57	89,1	64	100		

Table 4. Average Visual Analogue Score

Types of surgery	n	mean ± standard deviation	median	P Value
DGHAL-RAR	32	1,97±1,121	2	0,001
Open Hemorrhoidectomy	32	3,13±1,385	3	

Discussion

Of the 64 patients, 55 patients were diagnosed with grade III internal hemorrhoids and the remaining 9 were diagnosed with grade IV.⁶ In a study conducted by Tarek Mohammad Sherif and Abd Elrahman Amin Sarhan, the study involved 126 grade IV hemorrhoid patients. IV.⁷ Whereas in Sadq Ghaleb Kadem's study there were 49 grade II hemorrhoids, 29 grade III hemorrhoids and 22 grade IV hemorrhoids. Research conducted by Hossein Shabahang, Ghodratolah Maddah, Asieh Sadat Fattahi, Leila Bahadorzadeh and Sadjad Noorshafiee contained 100 patients with grade III and IV hemorrhoids.⁸ The mean score of the visual analogue scale for the DGHAL-RAR group was 1.97 with a standard deviation of 1.121. While the mean value of the visual analogue scale score of the open hemorrhoidectomy group was 3.13 with a standard deviation of 1.385. The highest VAS score was 4 in the DGHAL-RAR group and 8 in the open hemorrhoidectomy group. The significance value of the comparison of the mean VAS score of the two measures was 0.001 which was statistically significant ($p < 0.05$). The results of this study are in accordance with the results obtained in the study conducted by Tarek Mohammad Sherif and Abd Elrahman Amin Sarhan where VAS in the DGHAL-RAR group was 2.66 ± 2.19 and VAS in the open hemorrhoidectomy group was 5.20 ± 2.24 . Where it can be concluded that the VAS value in the DGHAL-RAR group was lower than the open hemorrhoidectomy group and was considered statistically significant (p value < 0.05).

Conclusion

Patients who underwent DGHAL-RAR management had less complaints of postoperative pain than the group of patients who underwent hemorrhoid management using the open

hemorrhoidectomy method. The mean visual analogue score in the DGHAL-RAR group was lower than that in the open hemorrhoidectomy group. This result is statistically significant.

The results obtained from this study are in accordance with previous studies. However, this study has several differences with the studies that have been conducted which may affect this research. The first is that the design of this study is a cross-sectional study with retrospective secondary document tracing. The sample used was only grade III-IV hemorrhoid patients at Siloam Hospitals Lippo Village using secondary data (medical records) for the period 2018 - 2020. This was done because of the limitations of the study time. Because this study uses secondary data, there are several shortcomings, such as researchers cannot ensure the accuracy of the data written in medical records. This study also has a smaller number of samples when compared with other studies that have been conducted. This study did not take into account the type and dose of analgesics in each treatment. In addition, this study also did not know the number of hemorrhoid components handled. This data is not included in the patient's medical record. This can affect the pain score felt by the patient after surgery. The minimum number of samples can also affect the results of the study. Previous studies have not only compared the degree of postoperative pain between the two procedures, but also compared the postoperative complications that are prone to occur in patients. Therefore, this study cannot provide a full picture of the comparison between these two methods of treating hemorrhoids.

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Conflict of Interest

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Prevalence Of Depression, Anxiety, And Stress Among Indonesian Healthcare Workers During The Covid-19 Pandemic And Its Related Factors

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Abstract

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Keywords: COVID-19; Anxiety; Depression; Stress; Healthcare Workers

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Introduction: Healthcare workers are the most vulnerable group to infection and mental-emotional problems due to their professional exposure during the COVID-19 pandemic. The studies about healthcare workers' mental-emotional problems in Indonesia are still limited. This study aimed to determine the prevalence of depression, anxiety, and stress among Indonesian healthcare workers during the COVID-19 pandemic and its related factors

Methods: This is an analytic cross-sectional study involving Indonesian healthcare workers who were still working during the COVID-19 pandemic. An online-based questionnaire in Google Form, including the Depression Anxiety and Stress Scale – 21 (DASS-21) Questionnaire, was distributed through social media from December 2020 to February 2021. The related factors studied were age, gender, domicile, worktime experience, workplace, type of workers, marital status, comorbidities, and COVID-19 history.

Results: A total of 176 respondents were involved in the study, the overall prevalence of mental-emotional problems was 18.75%; with a prevalence of depression was 10.8%, anxiety 12.5%, and stress 12.5%. The incidence of depression was more commonly found in non-functional occupations (OR 4.97; 95% CI 1.00-24.69; p=0.05). The incidence of anxiety was less common in male health workers (OR 0.23; 95% CI 0.08 – 0.66; p=0.007), and nurse occupation (OR 6.41; 95% CI 1.65 – 24.86, p=0.007). The incidence of stress was more commonly found in nurse (OR 8.38; 95% CI 1.49 – 47.13; p=0.014), non-functional (OR 10.17; 95% CI 1.78 – 58.04; p=0.008).

Conclusion: Mental emotional problems during the COVID-19 pandemic were common among Indonesian healthcare workers, both the front-liners and non-functional health workers. Gender and type of worker were significantly associated with depression, anxiety, and stress.

Introduction

Coronavirus disease 2019 (COVID-19) was first discovered in Wuhan, China in December 2019. This disease was rapidly spreading throughout the world, so the World Health Organization (WHO) announced the COVID-19 as a pandemic on March 11, 2020.¹ The first COVID-19 case in Indonesia was discovered on March 3, 2020, and the surge of cases is still ongoing until now. From October to November 2020 there was a decreasing number of new cases but in July 2021 cases in Indonesia escalate to 56,757 confirmed cases per day.²

Healthcare workers are one of the most vulnerable groups to severe infection due to their professional exposure during the COVID-19 pandemic. Since 6 months after the pandemic, 188 Indonesian healthcare workers died because of COVID-19, and the vast majority were nurses and primary doctors.³ Other risk factors that contributed to severe COVID-19 infection were age over 60 years, comorbid diseases such as diabetes, hypertension, cardiovascular disease, chronic respiratory disease, and cancer. Male gender and smoking habits could also aggravate the course of the disease.⁴

The COVID-19 pandemic not only has had an impact on physical health but also mental health. Healthcare workers have been under overwhelming psychological pressure, which may lead to mental-emotional problems. Some studies found an increasing number of mental-emotional problems among healthcare workers during the COVID-19 pandemic; 12-78% had depression, 24-68% had anxiety, and 29-76% had stress.⁵⁻⁷ However, there have yet not been many studies about healthcare workers' mental-emotional problems in Indonesia and, some studies had been done in a limited population only. We aimed to determine the prevalence of mental-emotional problems such as depression, anxiety, and stress among Indonesian healthcare workers during the COVID-19 pandemic and its related factors.

Methods

It was a cross-sectional study conducted from December 2020 to February 2021. The questionnaire in the form of Google Form was distributed through Instagram, Whatsapp, and Line by snowball sampling and purposive sampling. The eligible respondents were Indonesian healthcare workers who were working during the COVID-19 pandemic and filled out the questionnaire completely. Healthcare workers with previous mental-emotional problems or who had severe trauma before the pandemic was not included in this study.

The questionnaire consisted of sociodemographic data, the DASS-21 questionnaire, and mental-emotional related factors, such as age, gender, domicile, worktime experience, workplace, type of workers, marital status, comorbidities, and COVID-19 history. The DASS-21 questionnaire is an abbreviated version of the DASS questionnaire which originally had 42 questions. The DASS-21 questionnaire has been validated in Indonesia with a reliability rate using McDonald's ω 0.784 – 0.800 and has been used in various research populations in Indonesia.⁸

The DASS-21 is a self-report questionnaire, consisting of 21 items to measure the emotional states of depression, anxiety, and stress. Each of the three emotional states contains 7 items, divided into subscales with similar content. Patients are asked to score every item on a scale from 0 (did not apply to me at all) to 3 (applied to me very much). Sum scores are computed by adding up the scores on the items and multiplying them by 2. Anxiety level was categorized as normal if score 0-7, mild 8-9, moderate 10-14, severe 15-19, extremely severe 20+. Depression level was categorized normal if score 0-9, mild 10-13, moderate 14-20, severe 21-27, and extremely severe 28+. Stress level was categorized normal if score 0-14, mild 15-18, moderate 19-25, severe 26-33, and extremely severe 34+ on the DASS-21 questionnaire.⁹

The research data were analyzed with the Statistical Package for the Social Sciences (SPSS) 25 software, and displayed in the form of tables, frequencies, and percentages. Bivariate statistical analysis was performed using chi-square analysis to examine the relationship between the incidence of depression, anxiety, stress with various independent factors studied (p -value). The researcher also calculated the odds ratio, and 95% CI. This research has received approval from the ethical committee of the Faculty of Medicine, University of Pelita Harapan with the number 008/K-LKJ/ETIK/I/2021.

Results

A total of 176 respondents were involved in the study, most of them aged <60 years (98.9%), lived in Java (63,1%) at their own houses (93,2%). Most of the respondents were front-liners healthcare workers, such as general practitioners, medical specialists, and nurses. 25 respondents worked as dentists, laboratory assistants, sanitarians, midwives, and pharmacists, categorized as others. More than 50% of the respondents worked at COVID-19 reference hospital, 15 respondents who worked at private practice, Puskesmas, and private laboratories categorized as others. A total of 13 respondents (7.4%) had a history of comorbidities (asthma, diabetes, cancer, and blood hypercoagulation) and the majority of respondents (89.2%) had never been infected with COVID-19 (Table 1).

Table 1. Sociodemographic Characteristics of Respondents

	Characteristics	Frequency (%)
Age (years)	<60 years old	174 (98,9)
	≥60 years old	2 (1,1)
Gender	Male	91 (51,7)
	Female	85 (48,3)
Residence	Home	164 (93,2)
	Temporary Accommodation	12 (6,8)
Work time experience	≤ 2 years	136 (77,3)
	>2 years	40 (22,7)
Workplace	COVID-19 Reference Hospital	91 (51,7)
	COVID-19 Non-Reference Hospital	70 (39,8)
	Others	15 (8,5)
Type of worker	General Practitioners	59 (33,5)
	Medical Specialist	51 (29,0)
	Nurse	22 (12,5)
	Non-Functional/Managerial	19 (10,8)
	Others	25 (14,2)
Region	Java Island	111 (63,1)
	Outside Java	65 (36,9)
Marital Status	Married	121 (68,6)
	Single/Divorce	55 (31,3)
Comorbidities	Yes	13 (7,4)
	No	163 (92,6)
COVID-19 History	Yes	19 (10,8)
	No	157 (89,2)

The overall prevalence rate of mental-emotional problems obtained from this study was 18.75%, with a prevalence of depression of 10.8%, anxiety of 12.5%, and stress of 12.5% (table 2). There was 1 respondent (3.03%) who had depression and anxiety, 1 respondent (3.03%) had depression and stress, 5 respondents (15.15%) had anxiety and stress, and 11 respondents (33.33%) had depression, anxiety, and stress.

Table 3 showed there was a significant association between type of worker and depression; non-functional healthcare workers were more likely to have depression rather than general practitioners (OR 4.97; 95%CI 1.00-24.69; p=0.05).

There was also a significant association between type of worker and anxiety (Table 4). Nurses were 6.4 times more likely to have anxiety rather than general practitioners (OR 6.41; 95%CI 1.65 – 24.86; p=0.007). Male healthcare workers were more unlikely to have anxiety rather than female works (OR 0.23; 95% CI 0.08 – 0.66; p=0.007). Table 5 showed a significant association between type of worker and stress. Nurses were 8.38 times more likely to have stress (OR 8.38; CI 95% 1.49 – 47.13; p=0.014). Non-functionals healthcare workers were 10.17 times more likely to have stress (OR 10.17; CI 95% 1.78 – 58.04; p=0.008), and others (OR 9.00; CI 95% 1.67 – 48.40; p=0.008) compared to general practitioners.

Table 2. Prevalence of mental-emotional problem based on the DASS-21 questionnaire & combination of mental-emotional problems

Mental Emotional Problem	Frequency (%)
Depression	Normal 157 (89,2) Mild 15 (8,5) Moderate 4 (2,3)
Anxiety	Normal 154 (87,5) Mild 7 (4,0) Moderate 12 (6,8) Severe 2 (1,1) Extremely Severe 1 (0,6)
Stress	Normal 154 (87,5) Mild 13 (7,4) Moderate 7 (4,0) Severe 2 (1,1)
Combination of 2 Mental Emotional Problems	
Depression & Anxiety	1 (3,03)
Depression & Stress	1 (3,03)
Anxiety & Stress	5 (15,15)

Table 3. Bivariate analysis of the relationship between the incidence of depression and independent factors

	Variables	Depression (%)		OR	95% CI	p-value
		No	Yes			
Age	< 60 years	155 (98.7)	19 (100)	0.89	0.84 - 0.93	1.00
Gender	≥60 years	2 (1.3)	0 (0)			
	Male	85 (54.1)	6 (31.6)	0.39	0.14 - 1.08	0.10
Residence	Female	72 (45.9)	13 (68.4)			
	Home	146 (93.0)	18 (94.7)	1.35	0.16 -11.12	0.62
Work time experience	Temporary Accommodation	11 (7.0)	1 (5.3)			
	≤ 2 years	120 (76.4)	16 (84.2)	0.60	0.16 - 2.20	0.57
Workplace	>2 years	37 (23.6)	3 (15.8)			
	COVID-19 Reference Hospital	78 (49.7)	13 (68.4)	Reff	Reff	Reff
Type of worker	COVID-19 Non- Reference Hospital	66 (42.0)	4 (21.1)	2.75	0.85 - 8.83	0.13
	Others	13 (8.3)	2 (10.5)	1.08	0.21 - 5.36	1.00
	General Practitioners	56 (35.7)	3 (15.8)	Reff	Reff	Reff
	Medical Specialist	46 (29.3)	5 (26.3)	2.02	0.46 - 8.94	0.46
Marital Status	Nurse	17 (10.8)	5 (26.3)	0.93	0.17 - 5.13	1.00
	Non- Functional/Managerial	15 (9.6)	4 (21.1)	4.97	1.00 - 24.69	0.05
	Others	23 (14.6)	2 (10.5)	1.62	0.25 - 10.36	0.63
	Married	108 (68.8)	13 (68.4)	0.98	0.35 - 2.73	1.00
Comorbidities	Single/Divorce	49 (31.2)	6 (31.6)			
	Yes	10 (6.4)	3 (15.8)	2.75	0.68 - 11.06	0.15
	No	147 (93.6)	16 (84.2)			

Table 4. Bivariate analysis of the relationship between the incidence of anxiety and independent factors

Variables	Anxiety (%)		OR	95% CI	p-value	
	No	Yes				
Age	< 60 years	152 (98.7)	22 (100)	1.01	0.99 - 1.03	1.00
	≥60 years	2 (1.3)	0 (0)			
Gender	Male	86 (55.8)	5 (22.7)	0.23	0.08 - 0.66	0.007
	Female	68 (44.2)	17 (77.3)			
Residence	Home	144 (93.5)	20 (90.9)	0.69	0,14 - 3.40	0.64
	Temporary Accommodation	10 (6.5)	2 (9.1)			
Work time experience	≤ 2 years	34 (22.1)	6 (27.3)	1.32	0.48 - 3.64	0.78
	>2 years	120 (77.9)	16 (72.7)			
Workplace	COVID-19 Reference Hospital	79 (51.3)	12 (54.5)	Reff	Reff	Reff
	COVID-19 Non-Reference Hospital	62 (40.3)	8 (36.4)	1.17	0.45 - 3.05	0.92
	Others	13 (8.4)	2 (9.1)	0.98	0.19 - 4.92	0.98
Type of worker	General Practitioners	55 (35.7)	4 (18.2)	Reff	Reff	Reff
	Medical Specialist	48 (31.2)	3 (13.6)	0.85	0.18 - 4.03	1.00
	Nurse	15 (9.7)	7 (31.8)	6.41	1.65 - 24.86	0.007
	Non-Functional/Managerial	16 (10.4)	3 (13.6)	2.57	0.52 - 12.73	0.35
	Others	20 (13.0)	5 (22.7)	3.43	0.83 - 14.09	0.11
Marital Status	Married	109 (70.8)	12 (54.5)	0.49	0.20 - 1.22	0.19
	Single/Divorce	45 (29.2)	10 (45.5)			
Comorbidities	Yes	11 (7.1)	2 (9.1)	1.30	0.26 - 6.29	0.66
	No	143 (92.9)	20 (90.9)			

Table 5. Bivariate analysis of the relationship between the incidence of stress and independent factors

	Variables	Stress (%)		OR	95% CI	p-value
		No	Yes			
Age	< 60 years	152 (98.7)	22 (100)	0.98	0.96 - 1.00	1.00
Gender	≥60 years					
	Male	2 (1.3) 84 (54.5)	0 (0) 7 (31.8)	2.57	0.99 - 6.65	0.77
	Female	70 (45.5)	15 (68.2)			
Residence	Home	143 (92.9)	21 (95.5)	0.61	0.76 - 5.04	1.00
	Temporary Accommodation	11 (7.1)	1 (4.5)			
Work time experience	≤ 2 years	38 (24.7)	2 (9.1)	3.27	0.73 - 14.66	0.17
	>2 years	116 (75.3)	20 (90.9)			
Workplace	COVID-19 Reference Hospital	79 (51.3)	12 (54.5)	Reff	Reff	Reff
	COVID-19 Non-Reference Hospital	62 (40.3)	8 (36.4)	0.84	0.32 - 2.20	0.92
	Others	13 (8.4)	2 (9.1)	1.01	0.20 - 5.05	1.00
Type of worker	General Practitioners	57 (37.0)	2 (9.1)	Reff	Reff	Reff
	Medical Specialist	47 (30.5)	4 (18.2)	2.42	0.42 - 13.82	0.41
	Nurse	17 (11.0)	5 (22.7)	8.38	1.49 - 47.13	0.014
	Non-Functional/Managerial	14 (9.1)	5 (22.7)	10.17	1.78 - 58.04	0.008
Marital Status	Others	19 (12.3)	6 (27.3)	9.00	1.67 - 48.40	0.008
	Married	105 (68.2)	16 (72.7)	0.80	0.29 - 2.17	0.85
Comorbidities	Single/Divorce	49 (31.8)	6 (27.3)			
	Yes	11 (7.1)	2 (9.1)			
	No	143 (92.9)	20 (90.9)	0.76	0.15 - 3.72	0.66

Discussion

The prevalence of mental-emotional problems in healthcare workers from this study was 18.75%; 10.8% of respondents had depression, and 12.5% of respondents had either stress or anxiety. This number was smaller than the study result by Zhu, which found the incidence of stress, depression, and anxiety in healthcare workers during the pandemic was 29.8%, 13.5%, and 24.1%.¹⁰ Systematic reviews from many other countries showed that

during the COVID-19 pandemic 12.1% - 55.89% of healthcare workers had depression, 24.1% - 67.55% had anxiety, and 29.8% - 62.99% had stress.^{6,7}

There are several possibilities that may cause differences in the results of this study from other previous studies. In the study by Kang, et al in Wuhan, data collection was carried out at the beginning of the pandemic, January 29 to February 4, 2020.¹¹ In addition, a similar study by Zhu, et al in China, sampling was carried out at

the beginning of the pandemic, in February 2020, where cases of COVID -19 are still relatively new since it was declared by the World Health Organization (WHO) as a pandemic.¹⁰ This research was conducted in December – February 2021, when the pandemic has been running for a year and vaccines have begun to be given to health workers in Indonesia. Apart from the time aspect, there are differences in the sampling locations. In the study of Zhu, et al, and Kang, et al, the respondents came from Wuhan, China. Wuhan was the city where the first case of COVID-19 was discovered. This can cause an increase in mental-emotional problems in respondents.^{10,11} Differences in results from studies can also be caused by the use of different questionnaires, as in the study of Wilson, et al in India using the Cohen's Perceived Stress Scale questionnaire to examine stress factors, the Public Health Questionnaire – 9 to examine depression, and Generalized Anxiety Disorder – 7 to examine anxiety.¹² In this study, the DASS-21 questionnaire was used because the questionnaire included 3 factors and because data collection during the pandemic period was required online. Therefore, the researchers looked for a more effective questionnaire so that the sample was more willing to answer.

In this study, researchers found that the incidence of health workers experiencing mental-emotional problems not only occurred in the mild category, but also 1.1% experienced severe anxiety or severe stress, and 0.6% experienced very severe anxiety. Researchers also found respondents who experienced a combination of menta-emotional problems 11 respondents (33.33%) experienced depression, stress, and anxiety, 5 respondents (15.15%) experienced a combination of stress and anxiety and 3.03% experienced a combination of stress and depression, as well as anxiety and depression. Early detection of mental-emotional problems should have been carried out to prevent complications. The combination of mental and emotional problems can cause increased burden,

needing different treatment, and more severe complications, so early detection is very important. Complications that can occur are difficulty in concentrating which can cause ineffective work, and other mental-emotional problems. Mental-emotional problems can also interfere with the immune systems, making the human body more susceptible to disease, and can lead to self-harm/suicide.¹³ In a study conducted by Sher, et al based on the research of Kawohl, et al, it was found that due to COVID-19, many people lost their jobs which caused mental-emotional problems and caused an increase of around 2135 to 9570 suicides every year in the world.¹⁴

Gender had a significant role in the incidence of anxiety ($p=0.007$), with a 95% confidence interval of 0.08 – 0.66. By odds ratio, it was found that the risk factors were more likely to occur in females. This result was similar to the study by Wilson in India and Lai in China.^{12,15} There was a significant relationship between health anxiety and metacognitive beliefs about the uncontrollability of worry in female gender. Thus, females tend to develop more anxiety compared to males.¹⁶

This study found a significant association between the type of work and depression ($p=0.03$), stress ($p=0.007$), and anxiety ($p<0.01$). Nurses were less at risk for depression than general practitioners. In terms of stress factors, the researchers found 3 populations that significantly contributed to the problem of stress, i.e. nurse, non-functional/managerial and others (dentist, laboratory assistant, sanitarian, midwife, pharmacist). The non-functional occupation was also found to be more prone to depression compared to general practitioners. The results of this study were similar with study by Lai, which showed that nurse are more prone to experienced mental-emotional problems such as stress, depression, and anxiety.¹⁵ The study Hassamal found that healthcare assistant staff such as administrative staff with indirect patient contact (OR 5.9; CI 95% 1.06 - 111.01) and administrative staff with

direct patient contact (OR 8.9; CI 95% 1.46 - 173.03) tend to experience more stress than doctors. Non-functional and managerial healthcare worker were prone to stress, due to an increase in work and dependents compared to before.¹⁷ Nurses were more prone to stress because they had more frequent contact with COVID-19 patients and were more easily exposed to COVID-19.¹⁸ They also were more likely to have anxiety compared to general practitioners. It was probably caused by fear of infecting others, being transmitted, and lack of confidence in the quality and quantity of personal protective equipment (PPE) such as masks and goggles. Increased mental and emotional problems can also be caused by the lack of personal protective equipment (PPE) available at health facilities as well as less routine swab examination and rapid test facilities for health workers.¹⁹ For this reason, it is important to carry out early detection and management to reduce emotional mental problems in all health workers.

This research also has some limitations. First, data collection for research

respondents must be done online, so many health workers refuse to be respondents. In addition, based on data from CNN Indonesia, the Ministry of Communication and Information said that Indonesia has 12,548 region that do not have a 4G network.²⁰ So there is a probability that the level of participants in certain areas is still relatively low due to difficulties in finding networks. Second, the time for data collection is limited, so that data collection is not optimal. Although there are many limitations in this study, it can be concluded that this research has not been widely carried out with a sample of health workers covering all of Indonesia.

Conclusion

The overall prevalence of health workers experiencing depression was 19 respondents (10.8%), stress and anxiety each was 22 respondents (12.5%). There is a significant relationship between gender and anxiety factors, increased in the female gender. In addition, there is a significant relationship between the type of work with depression, stress, and anxiety factors.

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Psychometric Properties of the Indonesian Version of Impact of Event Scale-Revised Questionnaire During COVID-19 Pandemic

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Abstract

Background: COVID-19 is a respiratory infection that caused by SARS CoV-2. A health-related disaster may result in a wide range of mental consequences, including PTSD. IES-R is a self-reported instrument, and it corresponds to DSM-IV symptoms of PTSD. However, there were scarce data about the validation of the Indonesian version of IESR.

Aim: The purpose of this study was to validate the IES-R in Indonesian adult population by comprehensively and systematically assessing the epidemiological evidence about PTSS during COVID-19 pandemic.

Methods: This was a cross-sectional study. The IES-R questionnaire was translated from English to Indonesian, back-translated. All health workers were excluded to avoid biased result. Pearson correlation and Cronbach's alpha coefficients to determine the validity and reliability of the questionnaire.

Results: A total of 234 Indonesian-speaking adults completed the survey. The Indonesian IES-R had proven to be a valid ($r = 0.756 - 0.938$, $p = 0.000$) and reliable (alpha coefficient: 0.858-0.868) measure for PTSS in a sample of Indonesian adult during COVID-19 pandemic. In addition, the final model which consisted of 3 subscales with 20 items demonstrated acceptable factor loadings.

Conclusion: The results of this study suggested IESR is valid and reliable to be used in Indonesian population especially during pandemic.

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Keywords: Impact of Event Scale-Revised (IESR); Indonesian validation; COVID-19 Pandemic; Health-related disaster; Indonesian adult

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Introduction

Coronavirus Disease 2019 (COVID-19), previously known as 2019 novel coronavirus is a respiratory infection that caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS CoV-2).^{1,2} In late-December 2019, the first case of Coronavirus Disease 2019 (COVID-19) was confirmed in Wuhan, China.³ On 30 January 2020, the World Health Organization declares COVID-19 to be a public health emergency of international concern.⁴ Since then, the number of cases continues to increase globally, including Indonesia and thus declared as a pandemic on 11 March 2020.⁵ Based on the World Health Organization (WHO) data on 7th August 2021, there were 3,607,863 cases, and 2.8% case fatality rate across the country.⁶ The first case of COVID-19 in Indonesia was confirmed in 2 March 2020.⁷ The physical distancing and local quarantine were commenced on 10 April 2020 in the capital city of Jakarta and followed by other provinces in Indonesia.⁸ COVID-19 affects many aspects, including daily activities, healthcare sector,⁹⁻¹⁶ and the most vital one, the country's economy.¹⁷ In addition, due to the surge of COVID-19 case in Indonesia in early July, further measure called Community Activities Restriction Enforcement or *Pemberlakuan Pembatasan Kegiatan Masyarakat di Indonesia* is taken by the government by further limiting more activities in the society. This event later affected the mid-low economic status which relied on daily income for living.

Several policies were issued to break the transmission chain of COVID-19 which also lead to alteration of daily routine most people during COVID-19 pandemics. These include policy of physical distancing, self-isolation, local quarantine or the transition, tax relief, social assistance, business closure, safety protocol in public, postponed holiday, and worship regulation.¹⁸ According to World health organization (WHO), continuous changes might affect mental health as social determinant is critical influence for an individual. This determinant however very directly corresponding with

policy including income, education, and services.¹⁹

A disaster (including health-related disaster) may result in a wide range of mental and physical consequences.²⁰ Based on DSM-IV, Post-Traumatic Stress Disorder (PTSD) characterized by 3 different cluster of symptoms, which includes re-experiencing, avoidance, and hyperarousal.²¹ The study following MERS²²⁻²⁴ and SARS²⁵⁻²⁷ pandemic showed the occurrence of Post-Traumatic Stress Symptoms (PTSS) within health workers, quarantined patients in a hospital, and the society. One of the study during MERS outbreak in Korea, showed the occurrence of PTSS in 40% of the sample.²² Thus, it is really important for early identification to prevent further mental health alterations, especially during quarantine time.^{28,29} The growing worries and threats, especially in this COVID-19 situation, have heightened the awareness of disaster as a potentially important determinant of population mental health to highlight areas that need additional study in Indonesian population.

There were several tools available for PTSD screening using from an interview and self-reported instrument.³⁰⁻³⁹ Impact of Event Scale-Revised (IES-R) is a self-reported instrument and it corresponds to DSM-IV symptoms of PTSD.⁴⁰ This instrument is widely used for PTSS screening in a lot of mental health study in similar setting during previous SARS and MERS outbreak. It has been translated as well as validated into different languages, including Malay,⁴¹ Chinese,⁴² Persian,⁴³ Japanese,⁴⁴ Swedish,⁴⁵ French,⁴⁶ and Korean.⁴⁷ The Malay versions of the IES-Rm has the internal consistency reliability ranged from 0.605 to 0.845 with internal validity ranged from 0.71-0.73.⁴¹ There was scarce data about the validation of the Indonesian version of IES-R. Thus, the purpose of this study was to validate the IES-R in Indonesian adult population.

Materials and Methods

Sample and Procedure

This was a validity and reliability test of the Indonesian version of IES-R. Initially, the questionnaire was translated from English to Indonesian by two independent translators and afterwards, it was back translated to English by another two independent translator for health professional review.⁴⁸⁻⁵⁰ The data of this review were collected within the restriction period in Indonesia from April 21st to May 10th, 2020. The survey was distributed via online questionnaire to Indonesian adults across the country. All health workers were excluded from this study to avoid biased results stressful conditions during the COVID-19 pandemic.^{51,52} The survey was given in the Indonesian language with a total of 4 sections: informed consent, demographic data, and IES-R questionnaire in the Indonesian language. A total of 234 Indonesian-speaking adults completed the survey. Furthermore, we obtained e-statement of informed consent from all participants.

Instruments

Indonesian Version of the IES-R comprises 22 items that measure the subscales such as intrusion symptoms (dreams about the event), avoidance symptoms (effort to avoid reminders of the event), and hyperarousal symptoms (feeling watchful and on guard) concerning a particular life-threatening event for PTSD screening. Participants rated on a 5-point linear scale to show their experiences during the preceding 7 days. The total score on the IES-R ranges between 0 and 88. Selected items were totalled to create the 3 subscales such as intrusion, avoidance, and hyperarousal which correspond with PTSD criteria in DSM-IV. To fulfil the purpose of this review, samples were requested to complete the Indonesian translation of IES-R concerning the COVID-19 pandemic in Indonesia. Appendix A provides the Indonesian version of IES-R and appendix B provides the English version of IESR.

Statistical analysis for Validity and Reliability

To determine its' construct validity, the existing data were checked for its distribution using the 1-sample K-S test. Pearson correlation was done using bivariate correlation to show correlation between each subscale in the questionnaire. r -value of 0-0.25; 0.26-0.5; 0.51-0.75; 0.76-1 were classified as not correlated; weakly correlated; moderately correlated; strongly correlated; perfectly correlated respectively. Data with abnormal distribution and had r -value 0.80 were excluded from the analysis. Measures of Sampling Adequacy (MSA) and the Bartlett test of sphericity were done to classify variables with a strong correlation between items using data reduction factor analysis which included KMO, Barlett's and Anti-image tests to calculate MSA of each item. Items with MSA < 0.05 were excluded from the analysis process. The next process was extraction by a principal component method and Cattell's scree test. In this step, items with eigenvalue ≥ 1 were extracted and proceed to the component matrix analysis to show where each item included in the three subscales, marked by loading factor ≥ 0.5 . Rotation analysis was used to reassure the result.^{53,54} Cronbach's alpha coefficients were calculated using the reliability analysis to measure the internal reliability for each subscale. The cut-off of high internal reliability was 0.7.^{55,56}

Results

Description of the sample

The total of 234 Indonesian adults from all provinces across the country had completed the survey, 179 (60.9%) were men and 115 (39.1%) were women. Mean age of the samples was 37.19 ± 11.284 years old. In addition, the mean score of intrusion, avoidance, and hyperarousal subscales were 10.432 ± 6.75 , 11.401 ± 6.12 , and 7.874 ± 4.65 respectively. The mean score of depression, anxiety, and stress subscales were 11.03 ± 4.071 , 10.55 ± 3.63 , and 11.46 ± 4.314 respectively. The other demographics data of the samples are described in Table 1.

Table 1. Distribution of demographic variables of the respondents.

Variable	% (n)	Mean	SD
Marital Status			
Never Married	32.05 (75)		
Married	63.24 (148)		
Widow or Widower	4.7 (11)		
Gender			
Men	63.67 (149)		
Women	36.32 (85)		
Last Education			
Elementary	0.4 (1)		
Junior High School	2.1 (5)		
Senior High School	22.2 (52)		
Diploma	11.5 (27)		
Bachelor	55.1 (129)		
Master	8.54 (20)		
Age		37.19	11.284
The Impact of Event Scale-Revised			
Intrusion subscale		10.432	6.75
Avoidance subscale		11.401	6.12
Hyperarousal subscale		7.874	4.65
Total Score		29.71	16.288
Depression, Anxiety, Stress Scale-21			
Depression subscale		11.03	4.071
Anxiety subscale		10.55	3.630
Stress subscale		11.46	4.314

Data Distribution

Collected data were analysed before continuing to the next analysing process. All sub-scales data were distributed normally ($p > 0.05$).

Internal Validity and Reliability

During the process of translating back from Indonesian to English, no significant changes were found between the initial text

and the translated text. Pearson correlations were done between the subscales and the total score was high and significant ($p = 0.000$) (Table 2). Total Cronbach's coefficients were 0.90 which indicated that Indonesian IES-R had good reliability. Cronbach's Alpha; intrusion subscale = 0.868, avoidance subscale = 0.867, hyperarousal subscale = 0.858.

Table 2 Correlations between the IES-R subscale and total score

Variable	Intrusion	Avoidance	Hyperarousal
Intrusion	-----	-----	-----
Avoidance	0.756	-----	-----
Hyperarousal	0.835	0.796	-----
Total Score	0.938	0.917	0.931

All correlations were significant at the 0.001 level (2-tailed)

Principal Component Analysis of the IES-R

To assess the construct validity of the Indonesian version IES-R questionnaire, a principal component analysis (PCA) was done on the 22 items of the questionnaire. It was found that 3 components had eigenvalues > 1.0. Cattell's scree test was performed to determine the number of components to be extracted. Furthermore, a PCA using an orthogonal-varimax rotation was then performed (Table 3). Factor loading of 0.50 was considered as significant. The solution which explained

55.5 % of the variance, generated a hyperarousal subscale (items 4,10,15,18,19,21), avoidance subscale (items 5,7,8,11,12,13,17), and intrusion subscale (items 1,2,3,6,9,14,16). Factor items 20 and 22 did not load on any of the three factors and thus excluded from the questionnaire. Therefore, a PCA was performed without these items and increasing the variance explained to 59%. The final Indonesian version of IES-R is attached in appendix A.

Table 3. Principal component analysis (varimax rotation) of the Indonesian translation of the IES-R

Original factors and items	Hyperarousal	Avoidance	Intrusion
Hyperarousal			
4	0.550 ^a	0.490	-0.020
10	0.598 ^a	0.438	0.14
15	0.698 ^a	0.291	0.429
18	0.625 ^a	0.304	0.257
19	0.618 ^a	-0.022	0.493
21	0.640 ^a	0.323	0.126
Avoidance			
5	0.495	0.513 ^a	0.27
7	0.205	0.610 ^a	0.259
8	0.266	0.534 ^a	0.429
11	0.140	0.764 ^a	0.478
12	0.425	0.509 ^a	0.494
13	0.055	0.502 ^a	0.005
17	0.356	0.595 ^a	0.045
22	0.032	0.421	0.365
Intrusion			
1	0.504	0.004	0.546 ^a
2	0.426	0.243	0.835 ^a
3	0.461	0.312	0.687 ^a
6	0.486	0.268	0.645 ^a
9	0.458	0.151	0.571 ^a
14	0.181	0.190	0.881 ^a
16	0.162	0.456	0.538 ^a
20	0.412	0.142	0.498
Eigenvalue	8.573	1.538	1.150
Total variance explained (%)	42.87	7.689	5.75

^aItems that have factor loading 0.50

Discussion

This study assessed the internal consistency, and construct validity of an Indonesian translation of the IES-R questionnaire in a sample of Indonesian adults in the COVID-19 pandemic situation. The result of the Indonesian translation of the IES-R was remarkable with good internal consistency and Cronbach's alpha ranging from 0.858 to 0.907. The test-retest data were not available for this study.

Three factors solutions were accepted for the IES-R in this study, which explains 55.5% of the total variance. Item 20 ("I had dreams about it") and item 22 ("I tried not to talk about it") did not load on any of the three factors of this study. In this study, we found six items in hyperarousal subscale, seven items in avoidance subscale, and seven items in intrusion subscale. In comparison with the theoretical eight items in intrusion subscale, eight items in avoidance subscale, and six items in arousal subscale. Other items loaded on the same factors in the theoretical model.

A similar study has been conducted in other countries and showed that IES-R is a reliable questionnaire and validly translated into those languages.⁴¹⁻⁴⁷ The Malay version of IES-R by Norhayati and Aniza showed satisfactory results.⁴¹ It has achieved content validity through the translation process. The confirmatory factor analysis showed a good fit and a good convergent validity, discriminant validity, internal reliability, and construct reliability. In comparison to Norhayati and Aniza study, this Indonesian version of IES-R shows similar result. The Indonesian IES-R has

Ethics Approval

Ethical approval was given by the Review Committee of Faculty of Medicine Pelita Harapan University (141/K-LKJ/ETIK/IV/2020.)

Human and Animal Rights

None.

Consent for Publication

Not applicable.

proven to be valid and reliable through internal consistency test and has good convergent validity. The item 20 and 22 were removed from the final questionnaire since they did not load any subscales.

The advantage of this study was it assesses principal component analysis for the Indonesian version of IES-R which was the first in Indonesia. This study also excluded medical personnel samples to avoid bias due to stressful conditions during the COVID-19 pandemic.⁵² On the other hand, the limitation of this study was a small number of samples in this study. Since it was a cross-sectional study, we were unable to examine other important psychometric properties such as reassurance of reliability or sensitivity which could change over time. Thus, a study in the other population with a higher number of populations was recommended to confirm the structure and testing its invariance across samples which might be due to data retrieval methods using online questionnaire and were not easily accessible to all social level in the community. This might add further evidence to support the Indonesian version of IES-R items.

In conclusion, the Indonesian IES-R had proven to be a valid and reliable tool to measure post-traumatic stress disorder in the sample of Indonesian adults during COVID-19 pandemic. The translation and validation of the IES-R into the Indonesian language filled the important gap in healthcare's ability to screen for PTSD symptoms among Indonesian populations. Also, this study provides a principal component analysis of the IES-R Indonesian Version.

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Conflict of Interest

The authors declares no conflict of interest, financial or otherwise.

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Appendix A. IES-R Indonesian Version (IES-R versi Bahasa Indonesia)

Instruksi: Di bawah ini adalah daftar kesulitan yang kadang-kadang dialami orang setelah peristiwa kehidupan yang penuh tekanan. Harap baca setiap item, dan kemudian tunjukkan betapa sulitnya setiap kesulitan bagi Anda **SELAMA HARI TUJUH KE BELAKANG** sehubungan dengan _____, yang terjadi pada _____. Seberapa banyak Anda tertekan atau terganggu oleh kesulitan-kesulitan ini?

	Tidak sama sekali	Sedikit	Sedang	Cukup Banyak	Sangat
1. Setiap pengingat membawa kembali perasaan tentang hal itu.	0	1	2	3	4
2. Saya kesulitan tidur.	0	1	2	3	4
3. Hal-hal lain terus membuat saya memikirkannya.	0	1	2	3	4
4. Saya merasa mudah tersinggung dan marah	0	1	2	3	4
5. Saya menahan rasa marah Saya ketika Saya memikirkannya atau diingatkan tentang hal itu.	0	1	2	3	4
6. Saya memikirkannya ketika saya tidak bermaksud demikian.	0	1	2	3	4
7. Saya merasa seolah-olah itu tidak terjadi atau tidak nyata.	0	1	2	3	4
8. Saya menjauh dari pengingat akan hal itu.	0	1	2	3	4
9. Gambar tentang hal itu muncul di pikiran saya.	0	1	2	3	4
10. Saya gelisah dan mudah kaget.	0	1	2	3	4
11. Saya mencoba untuk tidak memikirkannya.	0	1	2	3	4
12. Saya sadar bahwa saya masih memiliki banyak perasaan tentang hal itu, tetapi saya tidak berurusan dengan hal itu.	0	1	2	3	4
13. Saya tidak memiliki perasaan apa-apa tentang hal itu.	0	1	2	3	4
14. Saya menemukan diri saya bertindak atau merasa seperti saya kembali pada waktu itu.	0	1	2	3	4
15. Saya sulit tidur	0	1	2	3	4
16. Saya memiliki gelombang perasaan yang kuat tentang hal itu.	0	1	2	3	4
17. Saya mencoba menghapusnya dari memori saya.	0	1	2	3	4
18. Saya kesulitan berkonsentrasi.	0	1	2	3	4
19. Pengingat akan hal itu menyebabkan saya mengalami reaksi fisik, seperti berkeringat, sulit bernapas, mual, atau jantung berdebar-debar.	0	1	2	3	4
20. Saya merasa waspada dan berhati-hati.	0	1	2	3	4

Appendix B. IES-R English Version

Instructions: Below is a list of difficulties people sometimes have after stressful life events. Please read each item, and then indicate how distressing each difficulty has been for you DURING PAST SEVEN DAYS with respect to _____ (event) that occurred on _____ (date). How much have you been distressed or bothered by these difficulties?

	Not at all	A little bit	Moderately	Quite a bit	Extremely
1. Any reminder brought back feelings about it.	0	1	2	3	4
2. I had trouble staying asleep.	0	1	2	3	4
3. Other things kept making me think about it.	0	1	2	3	4
4. I felt irritable and angry.	0	1	2	3	4
5. I avoided letting myself get upset when I thought about it or was reminded of it.	0	1	2	3	4
6. I thought about it when I didn't mean to.	0	1	2	3	4
7. I felt as if it hadn't happened or wasn't real.	0	1	2	3	4
8. I stayed away from reminders of it.	0	1	2	3	4
9. Pictures about it popped into my mind.	0	1	2	3	4
10. I was jumpy and easily startled.	0	1	2	3	4
11. I tried not to think about it.	0	1	2	3	4
12. I was aware that I still had a lot of feelings about it, but I didn't deal with them	0	1	2	3	4
13. My feelings about it were kind of numb.	0	1	2	3	4
14. I found myself acting or feeling like I was back at that time	0	1	2	3	4
15. I had trouble falling asleep.	0	1	2	3	4
16. I had waves of strong feelings about it.	0	1	2	3	4
17. I tried to remove it from my memory.	0	1	2	3	4
18. I had trouble concentrating.	0	1	2	3	4
19. Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart.	0	1	2	3	4
20. I had dreams about it.	0	1	2	3	4
21. I felt watchful and on-guard.	0	1	2	3	4
22. I tried not to talk about it.	0	1	2	3	4

The Relationship between the Duration of Online Learning during the COVID-19 Pandemic and Symptoms of Depression in Medical Students of Pelita Harapan University: A Cross Sectional Study

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Abstract

Introduction: The COVID-19 outbreak that started in Wuhan, China in December 2019 has become a global pandemic. The existence of the COVID-19 pandemic has led to a change in the university learning system into online learning. Online learning that occurs during the COVID-19 pandemic can have an indirect impact on the mental health of students, one of which is depression. Depression that occurs in online learning can be affected by the duration of online learning.

Aim: This study is conducted to determine the relationship between online learning during the COVID-19 pandemic and symptoms of depression in medical students of Pelita Harapan University.

Method: This study used a cross-sectional study to be conducted on 161 students of the Faculty of Medicine, University of Pelita Harapan. Sampling will use purposive sampling method. Collecting data using a questionnaire about the duration of online learning and using the Patient Health Questionnaire-9 (PHQ-9) for depression symptoms. The results of this study analysed using chi square analysis with data processing using SPSS 26.

Results: There were 161 samples that matched the inclusion and exclusion criteria of this study. The majority of the sample was female (52.8%), came from the 2018 class (46.0%), 20 years old (50.3%), residing outside the Greater Jakarta area (57.8%), doing more online learning than 6 hours (57.8%) and experienced mild depression (53.4%). The results showed that there was no significant relationship between the duration of online learning and symptoms of depression (OR 1.273; 95%CI (0.669-2.421); $p = 0.565$).

Conclusion: There was no significant relationship between the duration of online learning and symptoms of depression. Further studies with large samples and randomized sampling are required to minimize biases in future studies.

Introduction

The Coronavirus Disease-19 (COVID-19) epidemic that began in Wuhan, China in December 2019 has become a global pandemic.¹ In Indonesia, the first two cases were announced on March 2, 2020.² On March 15, 2020, the President of the Republic of Indonesia gave an appeal for all agencies to carry out large-scale social restrictions (PSBB), so that people are encouraged to do all work and education from home due to the impact of the COVID-19 pandemic that has hit Indonesia.³ This policy provides changes to the education system to carry out education online (online). Learning in a network is learning that is carried out using the internet network without direct face-to-face interaction between teachers and students.⁴ Online learning can be carried out synchronously where there is direct interaction between teachers and students through meeting applications such as Zoom, and asynchronous without any interaction between teachers and students, so students can independently access learning materials through their respective school or university websites.⁵ The online learning has been carried out at the Faculty of Medicine, University of Pelita Harapan since March 18, 2020.

Depression is a mental disorder characterized by depressive symptoms, loss of interest and excitement, and reduced energy leading to increased fatigue and decreased activity that lasts for two weeks.⁶ Depression can put a big burden on the patients because it can affect the quality of life, working, and academic performance for

the patients. A systematic review study conducted by Rotenstein et al. 2016 showed that out of 129,123 medical students from 47 countries, the prevalence of medical students experiencing depression was 27.2 percent and 11.1 percent of them had suicidal thoughts.⁷ This shows that depression is a dangerous thing for students because it can reduce quality of life and academic performance for students, as well as depression can increase mortality from suicide.

Several studies have been conducted in 2020 on the relationship between duration of online learning during the COVID-19 pandemic and depressive symptoms in adolescents and college students. Research conducted by Madhav, et al. in United States of America in 2016 showed that the use of screen time in above 6 hours duration have a significant relationship to the onset of depressive symptoms in 4201 adults, in which including adolescents that accessing the digital media for learning purposes.⁸ Research conducted in China by Zhou et al. in adolescent women show that there is no significant relationship between mean duration of online learning over 4 hours in duration with symptoms of depression in this population.⁹ In Indonesia, research conducted by Watyana, et al. shows that there is no significant relationship between students doing online learning and level of stress and depression.¹⁰ This study is conducted to determine the relationship between duration of online learning and symptoms of depression in medical students of Pelita Harapan University

Methods

Samples

The research sample was obtained from all medical students in Faculty of Medicine, Pelita Harapan University in term 2018, 2019, and 2020, both men and women who met the inclusion criteria. They agreed to participate in this study by signing an informed consent. The total of 161 participants were collected from January to March 2021.

Study Design

A cross sectional study was conducted in Faculty of Medicine, Pelita Harapan University from January to March 2021. The research was conducted with online instruments. A consecutive sampling was conducted to collect 161 respondents as minimum sample required based on different proportion calculation method.

Data Collection Method

Data was collected using several questionnaire methods. The sociodemographic information such as name, age, gender, batch, have diagnosed with depression in 2 years before, consumed anti depressive medications, residence in Greater Jakarta area or outside Greater Jakarta area, Chronic illnesses or COVID-19 history, duration of online learning and duration of non-academic online activities were collected using a self-administered questionnaire. Perceived stress data was collected using the Perceived Stress Scale-10 questionnaire (PSS-10), and the depressive symptoms were collected using Patient Health Questionnaire-9 (PHQ-9). The answers regarding the duration of online learning and

non-academic online activities were classified with the cutoff of 6 hours based on the research that Madhav, et.al. conducted in United States.⁸ The Perceived Stress Scale-10 questionnaire answers are classified into mild stress (0-13), moderate stress (14-26), severe stress (27-40).¹³ The PHQ-9 questionnaire consist of 9 questions regarding the depressive symptoms based on Diagnosis and Statistical Manual of Mental Disorders-V (DSM-V) diagnostic criteria for major depressive disorder, the score can classified into no depression (0-4), mild depression (5-9), moderate depression (10-14), and severe depression (15-27).¹¹ The exclusion criteria for this study are having diagnosed with depressive symptoms since 2 years prior to this study, consuming anti-depressant medications, having history of chronic illnesses or COVID-19 infection, and have a severe perceived stress.

This study has been approved by Ethical Committee Faculty of Medicine, Pelita Harapan University No 195VK-LKJ/ETIK/XII/2020.

Statistical Analysis

All of the collected data were analyzed using Microsoft Excel 2019 and Statistic Package for Social Sciences 26th version (IBM SPSS 26). The relationship between online learning duration and depressive symptoms in medical students of Pelita Harapan University were analyzed using Chi square test. Other variables such as duration of non-academic online activities and residence are also analyzed using Chi square tests. The result said to be significant if the p-value below 0.05 ($p \leq 0.05$) in two tailed hypothesis testing.

Results

Demographical Data and Respondent Characteristics

Table 1. Demographical Data and Respondent Characteristics (N=161)

Variable	Frequency (n)	Percentage (%)
Gender		
Men	76	47.2
Women	85	52.8
Age (Year)		
18	23	14.3
19	52	32.3
20	81	50.3
21	4	2.5
22	1	0.6
Batch		
2018	74	46
2019	50	31.1
2020	37	23
Residence		
Greater Jakarta	68	42.2
Outside Greater Jakarta	93	57.8
Online learning Duration		
> 6 hours	93	57.8
≤ 6 hours	68	42.2
Non-Academic Online Activities Duration		
≤ 6 hours	24	14.9
> 6 hours	137	85.1

In this study, 161 respondents were obtained who were active pre-clinical students of the Faculty of Medicine, Pelita Harapan University. The respondents have met the inclusion criteria. Respondent characteristics can be seen in **table 1**. The majority of respondents in this study were female respondents as many as 85 people

(52.8%), aged 20 years as many as 81 people (50.3%), respondents from the 2018 batch were 74 people (46.0%), and resided outside the Greater Jakarta area as many as 93 people (57.8%), duration > 6 hours as many as 93 people (57.8%) and doing non-academic online activities with a duration of ≤ 6 hours as many as 137 people (85.1%).

Description of the Depressive Symptoms in Medical Students of Pelita Harapan University

Table 2. Description of the Depressive Symptoms Level Based of PHQ-9 Result (N=161)

Depressive Symptoms	Frequency	Percentage
	(n)	(%)
No Depression	61	37.9
Mild Depression	86	53.4
Moderate Depression	11	6.8
Severe Depression	3	1.9

The level of depressive symptoms was assessed based on the PHQ-9 scoring. The description of the depressive symptoms level in medical students of Pelita Harapan

University can be seen in **table 2**. The majority of the respondents have mild depressive symptoms as many as 86 people (52.4%).

Bivariate Analysis

The Relationship Between Online Learning Duration and Depressive Symptoms in Medical Students of Pelita Harapan University

Online Learning Duration	Depression				Total	OR (95% CI)	p-value
	No Depression		Depression				
	n	%	n	%	N	%	
≤ 6 hours	28	41,2	40	58,8	68	100	1,273
> 6 hours	33	35,5	60	64,5	93	100	(0,669-2,421)
Total	61	37,9	100	62,1	161	100	

Table 3. The relationship between online learning duration and depressive symptoms in medical students of Pelita Harapan University

In this study, statistical analysis assessed using the Chi squared test to obtain a p value of 0.568 ($p > 0.05$). This shows that

there is no significant relationship between the duration of online learning and depressive symptoms.

The Relationship between the Duration of Non-Academic Online Activities and Symptoms of Depression in Medical Students of Pelita Harapan University

Table 4. The Relationship between the Duration of Non-Academic Online Activities and Symptoms of Depression in Medical Students of Pelita Harapan University

Duration of Non-Academic Online Activities	Depression				Total		OR (95% CI)	<i>p-value</i>
	No Depression		Depression					
	n	%	n	%	N	%		
> 6 hours	6	25	18	75	24	100	0,497	0,237
≤ 6 hours	55	40,1	82	59,9	137	100	(0,186-1,331)	
Total	61	37,9	100	62,1	161	100		

The results of statistical analysis using Chi square test obtained p value of 0.237 ($p > 0.05$) which indicates that there is no significant relationship between non-

academic duration and symptoms of depression in students of the Faculty of Medicine, Pelita Harapan University.

The Relationship between Place of Residence and Symptoms of Depression in Medical Students of Pelita Harapan University

Table 5. The Relationship between the Place of Residence and Symptoms of Depression in Medical Students of Pelita Harapan University

Place of Residence	Depression				Total		OR (95% CI)	<i>p-value</i>
	No Depression		Depression					
	n	%	n	%	N	%		
Greater Jakarta	28	41,2	40	58,8	68	100	1,273	0,452
Outside Greater Jakarta	33	35,5	60	64,5	93	100	(0,669-2,421)	
Total	61	37,9	100	62,1	161	100		

The results of statistical tests using the Chi square test obtained a p value of 0.452 ($p > 0.05$) which indicates that there is no

significant relationship between the place of residence and symptoms of depression.

Discussion

In this study, there is no significant relationship between the duration of online learning and depressive symptoms in medical students of Pelita Harapan University. This study is not in line with the cross-sectional study conducted by Madhav, et al in 2016 on 4,201 students in the United States which stated that the duration of online learning was significantly associated with symptoms of depression in students in the United States, where the duration of online learning was more than 6 hours affects the onset of depressive symptoms in students in the United States at that time. This can happen because in this study the number of samples was larger than the number of samples set by the researchers in this study so that this study obtained more significant results than the number of samples set by the researchers in this study. In addition, differences in the characteristics of the sample within a country as in the study can also affect the results of this study, where country differences can affect differences in the education system and culture that can make research results different, as well as the random sampling method used in the study can lead to more significant differences in results.⁸

However, another cross-sectional study conducted by Zhou, et al. in 2020 in China in 3,254 female adolescents showed a non-significant relationship between duration of online learning and depressive symptoms in female adolescents in China.⁹ This study has a sample size that is not much different from the number of samples in a study conducted by Madhav, et al.⁸ but had insignificant results due to differences in the characteristics of the respondents where the respondents in the study of Zhou, et al.⁹ all of them are female respondents, the sampling method is purposive sampling where the number of respondents who do not fill out the questionnaire completely. And in this study, there are also differences in the benchmark average duration determined by the research of Madhav, et al.⁸ Where the study of Zhou, et al. used a benchmark of 4 hours duration while

Madhav, et al. used the benchmark duration of 6 hours, as well as differences in the use of questionnaires where Zhou, et al. used the CES-D questionnaire⁹ while Madhav, et al. used the PHQ-9 questionnaire.⁸

In this study, it was found that the relationship between non-academic duration and symptoms of depression in students of the Faculty of Medicine, Universitas Pelita Harapan showed a p-value of 0.237 (OR 0.497, 95%CI (0.186-1.331) which indicates that the non-academic asynchronous learning duration of the respondent has no statistical significant effect on the onset of depressive symptoms, but according to Odd Ratio, this result has clinically significant, as asynchronous learning duration has smaller impact on depressive symptom in medical students. This is contradicted with research conducted by Chi, et al. in 2020 which showed that the duration of online non-academic activities had no significant effect on causing depressive symptoms in students in China at that time.¹⁴

The relationship between the place of residence and the symptoms of depression in medical students of Pelita Harapan

University got a p value of 0.452 which means that the variable of residence does not significantly affect the onset of symptoms of depression in students of the Faculty of Medicine, University of Pelita Harapan so that the respondent's place of residence during online learning was not a confounding factor in this study. This is contrary to research conducted by Liu, et al. in 2020 on 552 medical students in China which showed that one of the factors that significantly influenced the onset of symptoms of depression in students who carried out online learning was the student's residence during online learning.¹⁵ This can happen because in Liu et al.'s research, the location where the research was carried out is different where in the study the research location was carried out in Hubei province and outside Hubei province, where at that location, there were differences in the number of cases of COVID-19 infection so that it could affect the significance of these variables.¹⁵

Conclusion

In conclusion, majority of respondents in this study do the online learning with duration for > 6 hours/day and have mild depressive symptoms. The result of this study shows that there is no significant relationship between the duration of online learning during the COVID-19 pandemic and symptoms of depression in medical students of Pelita Harapan University.

Limitation

The limitation of this study including the method of sampling by non-randomized sampling method which can increase risk of experiencing bias in this study. The use of the self-reporting questionnaire where the researcher only asks subjectively about the duration of online learning conducted by the respondent so that data collection using this questionnaire can be subjective so this is also can lead to recall bias and under or over-reporting in the study. And the use of the PHQ-9 questionnaire which is not the gold standard method for assessing depressive symptoms. The gold standard questionnaire that can be used is Hamilton Depression Rating Scale.

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A 1-month-old baby with Osteogenesis Imperfecta : A Case Report

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Abstract :

Osteogenesis imperfecta (OI) is a connective tissue formation disorder that is generally characterized by bone fragility, osteopenia, blue sclera, dentinogenesis imperfecta (DI), and hearing loss. This disease occurs due to changes in collagen type 1 that forms the basis of bone formation, so that bones tend to be thinner and smaller. The bones become weak and easily cracked. OI has been classified by type according to the system based on the mode of inheritance, clinical features, and information from the X - ray. There is a four types of osteogenesis imperfecta, namely Type I, Type II, Type III and Type IV. Health problems often seen in children and adults who have OI include: short stature, weak tissues, fragile skin, muscle weakness, and loose joints, bleeding, easy bruising, frequent nosebleeds , and tiny amounts of the heavy bleeding from the wound,impaired loss of hearing can begin in childhood and affects approximately 50 % of adults, breathing problems, a higher incidence of asthma plus risk for other lung problems, spinal curvature.

Introduction

Osteogenesis imperfecta (OI) is a genetic disorder that is characterized by recurrent fractures, low bone mass, blue sclera and dentinogenetic imperfecta (DI). It is a rare disorder with an overall incidence of 1 in 10,000-20,000 births. ¹The etiology remains unclear however, it is estimated that ~90% of cases are associated with mutations in the collagen type I, $\alpha 1$ (COL1A1) or COL1A2 genes and the remaining 10% of cases are associated with other genes.²

OI is a heterogeneous disease and type I is the most common and mild form. The clinical classification by Silence et al., is the most helpful in prognosis and genetic counseling and it groups OI into four types: Type I OI is mild, type II is perinatal lethal, type III is progressive deforming and type IV is moderately severe. It is characterized by multiple and recurrent fractures, which are intrauterine or perinatal or post-natal. Other features include blue sclera, otosclerosis

with hearing loss, high arched palate, hyperlaxity of ligaments and skin, "dentinogenetic imperfecta" (defective dentition), scoliosis and growth retardation. Wormian bones could also be seen on skull X-ray. Intelligence is not affected. Diagnosis can be made clinically. Radiographic support and confirmation by collagen analysis of skin fibroblast culture or blood deoxyribonucleic acid analysis may be necessary in some cases. This is important for genetic counseling and cases of suspected child abuse. Prenatal diagnosis for at risk pregnancies by fetal ultrasonography in the early 2nd trimester is possible and enables care. There's no cure for OI. Management is multidisciplinary involving mainly surgery, physiotherapy and rehabilitation. However, medical treatment, especially with bisphosphonate, has shown good prospects.

Case Illustration

A baby girl aged 1 month 24 days comes with complaints of bowing feet since birth (**Figure 1**). As the patient was 1 month old, the bowing legs became more prominent and the patient's mother admitted that she cried more often when she was carried. Referred to an orthopedic specialist and based on x-ray results the diagnosis is Osteogenesis Imperfecta. The patient's mother also admitted that at 29 weeks of gestation based on prenatal ultrasound there was a skeletal dysplasia in the fetus. Based on the nutritional status and anthropometry of the baby, the results showed normal weight according to age, normal stature, good nutritional status,

normocephalic. On physical examination found blue sclera on both eyes (**Figure 2**) and bowing in femur bilateral and tibial region (femur and tibia sinistra appear more dominant) (**Figure 3**). In this case, the baby deformities in the extremity that occurred without prior trauma and there was a gray-blue sclera, all the abnormality was present from birth. On X-ray examination, bowing of the femur, tibia and fibula are shown bilaterally. The bones appear to have diffuse osteopenia with a thinning cortex (**Figure 4**). Also, on x-ray examination of bilateral manus, showing results epiphyseal plate has not closed (according to age), suspicious contracture in bilateral human bones and bone density decreased with coarse trabeculation (**Figure 5**).



Figure 1. Patient's Clinical Appearance at Birth. Bowing of the femur, tibia and fibula bilaterally.



Figure 2. Blue sclera in osteogenesis imperfecta.



Figure 3. Patient's clinical appearance at 1 month. Bowing of the femur, tibia and fibula bilaterally (the femur Sinistra and Tibia Sinistra appear more prominent).



Figure 4. X-Ray - Lower Extremity Bilateral AP, Lateral View. Findings bowing Os of the femur, tibia and fibula were shown bilaterally and the bones appear Diffuse osteopenia with thinning cortex.



Figure 5. X-Ray Manus Bilateral AP, Oblique View. Findings epiphyseal plate has not closed. Suspect bilateral contracture of the human bones and bone density decreases with coarse trabeculation.

Discussion

Osteogenesis imperfecta is caused by a genetic disorder characterized by bones that break easily, that affects the body's production of collagen. One of the genes that has function for the body to make a specific protein (type I collagen) is defective in person with osteogenesis imperfecta. Type I collagen is a major component of the connective tissues in bones, ligaments, teeth and sclerae. A person with osteogenesis imperfecta may have associated features, including short stature/dwarfism, macrocephaly, blue sclerae, dentinogenetic imperfecta, hearing loss and neurological and pulmonary complications. Most cases of osteogenesis imperfecta are caused by genetic effect. If one parent has osteogenesis imperfecta, the child has 50 percent chance of being born with osteogenesis imperfecta.

Type II of OI is the severe form of osteogenesis imperfecta. The collagen is improperly formed. Bones may break even while the fetus is in the uterine, and many infants are still-born or die after birth. In addition to complete medical history and physical examination, diagnostic procedures for oogenesis imperfecta may include a skin biopsy to evaluate the amount and structure of collagen. However, this test is complicated and not many quality laboratories are available to perform the procedure.

The diagnostic approach involves all aspects including family history of the same disease, pregnancy history, and physical examination. In general, the diagnosis can be made clinically. Only in some situations special examinations are required such as collagen and DNA examinations, namely if after clinical examination in the form of anamnesis, physical examination, and radiological examination, the diagnosis of OI cannot be confirmed or is still in doubt.

The main questions that should be asked of the family history are regarding the height of the family members, the color of the sclera, history of fractures and the presence of deafness in the family members. In this case, there is no family history of blue

sclera, skeletal abnormalities or deafness, and the possibility of gene damage that occurs is from a spontaneous mutation. The sign of OI is the presence of brittle bones accompanied by fractures either without, or accompanied by trauma of a mild or moderate nature. In general, the earlier the fracture occurs, the more severe the degree of OI you suffer. The lower extremity is the area most commonly affected. Fracture The femoral is the most common type of fracture of the long bone, with its general location in the convex, transverse, and minimally displaced part of the bone. In this case, the patient had multiple deformities in the extremities that occurred without prior trauma and the abnormality was present at birth from ultrasonography prenatal.

Until now, there is no known treatment option that will cure osteogenesis imperfecta. Early-termination is preferable. The goal of treatment is to prevent deformities and fractures and allow the child to function as independently as possible. Management of osteogenesis imperfecta can be either non-surgical or surgical. Non-surgical interventions may include one or more of the following;

- Physical therapy
 - Positioning aids (to help sit, lie or stand)
 - Braces and splints (to prevent deformity and promote support or protection)
 - Medications-bisphosphonates, growth hormone
 - Psychological counseling
 - Gene therapy
- Surgical interventions may be considered to manage the following conditions
- Fractures
 - Bowing of bone
 - Scoliosis
 - Dental procedures
 - Heart problem

Research into other treatment methods is continuing. Several clinical trials are focused on the use of medications to improve bone strength and decrease fracture rates.

Pamidronate (a bisphosphonate) has been found to inhibit bone resorption. As a result, chronic bone pain lessens, bone density increases, fewer fractures occur and mobility improves. Administration of bisphosphonates at an early age leads to less incurving of bone, thus allowing minimally invasive rod insertion surgery, even in the patient with more severe OI. Major complications of surgical included external migration, absence of elongation with fracture, internal migration with fracture, injury of the physis, bent rod, rod displacement into the joint, backing out of the proximal femoral rod, and severe external rotation. Minor complications included internal migration without fracture, absence of elongation, detachment of the T-piece, and superficial infection.

In this case, the therapy carried out was conservative by giving 400 IU drops of vitamin D supplementation and coming back to the doctor for re-control after 2 weeks. In addition, education is carried out to parents because the baby is still in the stage of development and growth. In the future when they start walking they must wear special shoes. Parents must also be pay attention with their spine, because it can break and experience paralysis in their children. It is necessary to pay attention to their weight too, try to still be in the ideal weight,

because if the child is obese it can cause additional weight on the bones which are already had brittle quality, which can worsen the condition of the bone deformity and can fracture the bones. For future planning, if both parents want to have more children, it is advisable to do genetic consultation to estimate what percentage can be affected by the child, which is then done for future planning so that the next child does not happen like this and the last one in this baby should not be carried carelessly, it must be the person who already trained because of the risk of fracture. Finally, patients with osteogenesis imperfecta who are at risk of vitamin D deficiency are advised to bask at 10-15 minutes of sun exposure every morning because the benefits of vitamin D to maintain bone strength.

Conclusion

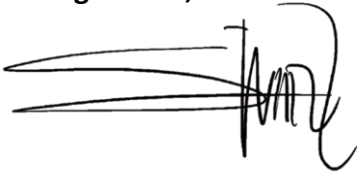
OI is a rare inherited disorder Osteogenesis imperfecta is a progressive condition that needs life-long management to prevent deformity and The prognosis of an individual with osteogenesis imperfecta varies greatly depending on the number and severity of symptoms. The interdisciplinary healthcare team helps the family to improve the functional outcomes and to provide support.

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Signature ,

A handwritten signature in black ink, consisting of several horizontal strokes followed by a vertical line and a cursive flourish.

Lisa Rehinda Tampake