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Article

Effectiveness of the First Pillar Community-Based Total Sanitation Program (STBM) Strategy Using Latrines in the working area of the Muara Nasal Health Center, Kaur Regency, Bengkulu Province in 2024

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Abstract: Tuberculosis is a direct infectious disease caused by TB germs (Mycobacterium tuberculosis), most TB germs attack the lungs, but can also affect other body organs (Manaf, et al, 2019). Tuberculosis is a dangerous infectious disease caused by TB germs with varying symptoms. Every tuberculosis sufferer can transmit the disease to other people around them and/or who are in close contact with the sufferer (Jaorana, et al, 2019) . This research is analytical with a cross sectional research design where in this research design, the independent variables (Education Level, Job Level, Knowledge, Socio-Cultural, Information Sources and Environment) and the dependent variable (Pulmonary TB Patients) are measured at the same time by means of approach, observation or data collection at one time (Point Time Approach) means that each subject is only observed once and measurements are made on the status of the subject's character or variables at the time of the examination . The population in this study were all pulmonary TB patients in Kaur Regency, Bengkulu Province in 2024 . with a total of 157 pulmonary TB patients and the sample is a portion of the number and characteristics of a population of 64 people . Univariate, bivariate and multivariate data analysis using Chi-square analysis techniques. This research began from April to May 2024. The majority of respondents who experienced pulmonary TB during the Covid-19 period were 36 respondents (56.3%) with lower secondary education as many as 38 respondents (59.4%) who did not work as many as 33 respondents (51.6%) who had correct knowledge were 47 respondents (73.4%) and who had no/low social culture were 36 respondents (56.3%) and who did not have accurate sources of information were 37 respondents (57.8%) and who were in a good environment were 35 respondents (54.7%) and 34 respondents (53.1%) had comorbidities. There is a relationship between education, employment, knowledge, social culture, sources of information, environment, comorbidities and the incidence of pulmonary TB patients during the Covid-19 period in Kaur Regency, Province. Bengkulu in 2024. And education is the most dominant factor in the incidence of stress in pulmonary TB patients during the Covid-19 period in Kaur Regency, Bengkulu Province in 2024. It is hoped that health services in Kaur Regency can improve health education in the form of counseling, especially TB, not only for TB sufferers but also the community in their work area, especially health workers, especially those in Kaur Regency, maintain the quality of service in providing services to the community, especially TB sufferers, in order to improve coordination with Health Services and TB cadres in monitoring TB sufferers and can increase supervision regarding availability. OAT is good for pulmonary TB or extra pulmonary TB, and can improve the quality of sputum examinations and increase collaboration with other health service facilities.

Keywords: Pulmonary TB-, Covid-19, Socio-Cultural, Education, Knowledge

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1. Introduction

In 2020, the World Health Organization (WHO) collected data on the world's population who still like to defecate in the open, amounting to 494 million people in the world. Some of the reasons for those who still practice open defecation include lack of toilet facilities, the place provided is not safe or comfortable, and things that are not related to toilets such as knowledge factors and so on (WHO, 2020).

A healthy latrine is a safe and comfortable place to use as a place to defecate. A healthy latrine is a faecal disposal facility that prevents contact between humans and feces, makes the feces inaccessible to insects and other animals, prevents contamination of water bodies, prevents unpleasant odors, the construction of the seat is well made, safe and easy to clean (Lamentira , 2020). Open defecation is a health and social problem that needs immediate attention. Around 17 percent of households in 2010 or around 41 million people still defecated in the open (Unicef, 2020).

STBM as a national strategy for rural sanitation development has succeeded in reducing the practice of open defecation (defecation) threefold from an average of 0.6% per year to 1.6 per year. Based on data released by the STBM secretariat, as of 2021 as many as 62 million or 53% of the rural population still do not have access to proper sanitation, 34 million of them still practice open defecation, so a 400% acceleration is needed to achieve Indonesia's target of stopping defecation. random size (SBS) in 2019 (RI Ministry of Health, 2021).

2. Materials and Methods

This research is analytical with a cross sectional research design where in this research design, the independent variables (Education Level, Job Level, Knowledge, Socio-Cultural, Information Sources and Environment) and the dependent variable (Pulmonary TB Patients) are measured at the same time using an approach, observation or data collection at one time (Point Time Approach) means that each subject is only observed once and measurements are made on the subject's character status or variables at the time of the examination .

3. Results

he results of univariate analysis to describe each variable used in this research include independent variables (Education Level, Job Level, Knowledge, Socio-Cultural, Information Sources and Environment) and dependent variables (Pulmonary TB Patients)[1]–[3] .

Bivariate analysis to see the relationship between independent variables, namely (Education Level, Job Level, Knowledge, Social Culture, Information Sources and Environment) with the dependent variable (Pulmonary TB Patients) . The test used in the bivariate analysis is the *Chi-Square* X2 test with a value of 0.05). This analysis aims to obtain the probability of occurrence. If the P value is > 0.05 then Ho is rejected and Ha is accepted, which means there is no relationship between the two variables[4]–[6]. Conversely, if the P value ≤ 0.05 then Ho is rejected and Ha is accepted, which means there is a relationship between the two variables. (Askhary, 2017).

Table 1.

Distribution of Frequency of Pulmonary TB Events during Covid-19

1 Incidence of Pulmonary TB during Covid-19	Frequency	Percentage
Yes	36	56.3
No	28	43.8
2 Education		

Lower	38	30.8
On	25	69.2
3 Jobs		
Doesn't work	33	51.6
Work	31	48.4
4 Knowledge		
Wrong	17	26.6
Correct	47	73.4
5 Socio-Cultural		
No	36	56.3
Yes	28	43.7
6 Information Sources		
No	37	57.8
Yes	27	42.2
7 Environment		
No	29	45.3
Yes	35	54.7
8 Concomitant Diseases		
No	30	46.9
Yes	34	53.1

Based on Table 1 above, the incidence of pulmonary TB patients during the Covid-19 period who were exposed was 36 people with lower secondary education of 38 people and on average those who did not work were 33 people with correct knowledge of 47 people with existing social culture of 36 people with existing sources of information, 37 people with a good environment, 35 people and with comorbidities, 34 people.

Table 2

The relationship between education and pulmonary TB during Covid-19 in Kaur Regency, Bengkulu City in 2023

Education	Pulmonary TB during Covid-19						*P*
	Yes		No		Total		
	n	%	n	%	N	%	
Lower	30	78.9	8	21.1	38	100.0	*0,000*
On	6	23.1	20	76.9	26	100.0	
Total	36	56.3	28	43.7	64	100.0	

Source: Research Result Data for 2024

Table 2 shows that of the 38 respondents who had lower education, 30 respondents (78.9%) suffered from pulmonary TB during the Covid-19 period and of the 246 respondents who had upper education, 6 respondents (23.1%) suffered from pulmonary TB during the Covid-19 period with (p = 0.00 0) < (α=0.05).

Table 3
The Relationship between Work and Pulmonary TB during Covid-19 in Kaur Regency, Bengkulu City in 2023

Work	Pulmonary TB during Covid-19						*P*
	Yes		No		Total		
	n	%	n	%	N	%	
Doesn't work	26	78.8	7	21.2	33	100.0	*0,000*
Work	10	32.3	21	67.7	31	100.0	
Total	26	56.3	29	43.7	64	100.0	

Source: Research Result Data for 2024

Table 3 shows that of the 33 respondents who did not work, 26 respondents (78.8%) suffered from pulmonary TB during Covid and of the 31 respondents who worked, 10 respondents (32.2%) suffered from pulmonary TB during Covid-19 with *(p= 0.00 0) < (α= 0.05)*

Table 4
Relationship between Knowledge and Pulmonary TB during Covid-19 in Kaur Regency, Bengkulu City in 2023

Knowledge	Pulmonary TB during Covid-19						*P*
	Yes		No		Total		
	n	%	n	%	N	%	
Wrong	14	82.4	3	17.6	17	100.0	*0.011*
Correct	22	46.8	25	53.2	47	100.0	
Total	36	56.3	28	43.7	64	100.0	

Source: Research Result Data for 2024

Table 4 shows that of the 17 respondents who had incorrect knowledge, 14 respondents (82.4%) suffered from pulmonary TB during Covid-19 and of the 47 respondents who had correct knowledge, 22 respondents (46.8%) suffered from pulmonary TB during Covid-19 with *(p = 0.0 11) < (α=0.05)*

Table 5
Socio-Cultural Relationship with Pulmonary TB during Covid-19 in Kaur Regency, Bengkulu City in 2023

Socio-cultural	Pulmonary TB during Covid-19						P
	Yes		No		Total		
	n	%	n	%	N	%	
No	25	69.4	11	30.6	36	100.0	0.016
Yes	11	39.3	17	60.7	28	100.0	
Total	36	56.3	28	43.7	64	100.0	

Source: Research Result Data for 2024

Table 5 shows that of the 36 socio-cultural respondents, 25 respondents (69.4%) suffered from pulmonary TB during Covid-19 and of the 28 respondents who had social culture, 11 respondents (39.3%) suffered from pulmonary TB during Covid-19 with *(p = 0.0 16) < (α=0.05)*

Table 6
Relationship between Information Sources and Pulmonary TB during Covid-19 in Kaur Regency, Bengkulu City in 2023

Resources	Pulmonary TB during Covid-19						*P*
	Yes		No		Total		
	n	%	n	%	N	%	
No	26	70.3	11	29.7	37	100.0	*0.008*
Yes	10	37.0	17	63.0	27	100.0	
Total	36	56.3	33	43.7	64	100.0	

Source: Research Result Data for 2024

Table 6 shows that of the 37 respondents who did not receive information sources, 26 respondents (70.3%) suffered from pulmonary TB during Covid-19 and of the 27 respondents who received information sources, 10 respondents (37.0%) suffered from pulmonary TB during Covid-19 with *(p= 0.0 08) < (α=0.05)*

Table 7
The relationship between the environment and pulmonary TB during Covid-19 in Kaur Regency, Bengkulu City in 2023

Environment	Pulmonary TB during Covid-19						*P*
	Yes		No		Total		
	n	%	n	%	N	%	
No	22	75.9	7	24.1	29	100.0	*0.004*
Yes	14	40.0	21	60.0	35	100.0	
Total	36	56.3	28	44.6	64	100.0	

Source: Research Result Data for 2024

Table 7 shows that of the 29 respondents with a bad environment, 22 respondents (75.9%) suffered from pulmonary TB during Covid-19 and of the 35 respondents with a good environment, 14 respondents (40.0%) suffered from pulmonary TB during Covid-19 with *(p= 0.0 04) < (α=0.05).*

Table 8
Relationship between comorbidities and pulmonary TB during Covid-19 in Kaur Regency, Bengkulu City in 2023

Concomitant Diseases	Pulmonary TB during Covid-19						*P*
	Yes		No		Total		
	n	%	n	%	N	%	
No	23	76.7	7	23.3	30	100.0	*0.002*
Yes	13	38.2	21	61.8	34	100.0	
Total	36	56.3	28	43.7	64	100.0	

Source: Research Result Data for 2024

Table 8 shows that of the 30 respondents who did not have comorbidities, 23 respondents (76.7%) suffered from pulmonary TB during Covid-19 and of the 34 respondents who had comorbidities, 13 respondents (38.2%) suffered from pulmonary TB during Covid-19 *(p = 0.0 02) < (α=0.05.)*

Table 9 Candidate Variables for Multivariate Analysis

No	Pulmonary TB factors during Covid-19	*p* value	95%CI	OR
1	Education	,000	,000 - .	14,062
2	Work	.011	.013 - .757	6,409
3	Knowledge	,000	.002 - .300	19,581
4	Socio-cultural	.016	,000 - .	5,821
5	Resources	,008	.288- 366.47	7,005
6	Environment	,004	,000 - .	8,288
7	Concomitant Diseases	,002	,000 - .	9,565

Source: Research Result Data for 2024

Table 10 Multivariate Analysis Results

No	Pulmonary TB during Covid-19	*p* value	95%CI	OR
1	Knowledge	0.027	.031 -.811	-1,840
2	Education	0,000	.020 -.269	-2,620

In this model, the knowledge variable has the largest p value, namely 0.027, so the Knowledge variable is excluded from this model , as shown in Table 11 below :

Table 11 Multivariate Analysis Results

No	Pulmonary TB during Covid-19	*p* value	95%CI	OR
1	Education	0,000	.020 - .269	-2,620

Source: Research Result Data for 2024

Table 11 is the result of the final model analysis with a significant OR value (-1.620) at 95% CI (.020-.269) does not include a value equal to one which is a factor associated with pulmonary TB during Covid-19. The results of this research show that the dominant factor in pulmonary TB during Covid-19 in Kaur Regency, Bengkulu City in 2024 is education.

4. Discussion

The relationship between education and pulmonary TB during Covid-19 in Kaur Regency, Bengkulu City in 2024

In Lawrence Green's theory, there are 3 factors that determine behavior, one of which is predisposing factors. These redisposition factors are factors that exist within oneself which can be manifested in the form of knowledge, attitudes, beliefs, beliefs, values, and so on. Then education is an influential factor in shaping a person's knowledge, attitudes, perceptions, beliefs and assessments of health. so that the higher a person's education, the easier it is to receive information (Yanto & Verawati, 2022).

Based on research conducted by Rezi Septa, 2022, the statistical test results showed a p value of 0.000 with a significance level of 95% for the education variable, which means that there is a relationship between education and compliance with taking pulmonary TB medication[7]–[9].

The relationship between work and pulmonary TB during Covid-19 in Kaur Regency, Bengkulu City in 2024

Work is something that is done to earn a living. To do a job certainly requires a relatively long time, the possibility of paying attention to the environment tends to decrease. Apart from that, with work conditions that take up a lot of time coupled with relatively low incomes, people will tend to think more about basic things, including food, clothing and shelter (Rahmansyah, 2012).

Work is a routine activity carried out by respondents to receive compensation in the form of money or goods to meet family needs. Income level will have a lot of influence on behavior in maintaining individual and family health. This is in accordance with research conducted by Priska et al (2014) stating that work has an influence on patient treatment compliance as well as research conducted by Novalita et al (2021) entitled Factors related to adherence to taking anti-tuberculosis medication in pulmonary TB patients in the city high cliff which states that work has a relationship with compliance with taking TB medication.

The relationship between knowledge and pulmonary TB during Covid-19 in Kaur Regency, Bengkulu City in 2024

Knowledge is the result of " *knowing* " and this occurs after people sense a particular object. Knowledge or cognitive is a very important domain for the formation of a person's actions (*overt behavior*). If the acceptance of new behavior or adoption of behavior goes through a process like this which is based on knowledge, awareness and positive attitudes, then the behavior will be *long lasting* (Notoatmodjo, 2019) .

Based on Rezi's research, 2022 shows a statistical test result of p value of 0.001 with a significance level of 95%, meaning there is a relationship between knowledge and compliance with taking pulmonary TB medication at the Sukarami Community Health Center, Palembang City in 2022. One of the supporting factors for the success of pulmonary TB treatment is knowing how much the sufferer knows about Pulmonary TB. Sufferers' knowledge of the term pulmonary TB, its symptoms and transmission is still relatively poor. In fact, the ability and knowledge of the public or sufferers about the symptoms of pulmonary TB and how it is transmitted is absolutely essential. Because at this stage, it is possible to prevent the spread of pulmonary TB. Or at least the patient's illness can be identified early so that the treatment will not take too long and there is a smaller risk of failure.

Knowledge is a cognitive domain that is very important in shaping a person's actions (over behavior) (Notoatmodjo, 2012). The results of this research are in line with research conducted by Angrain (2020) entitled Factors related to medication adherence in pulmonary tuberculosis sufferers in the Medan Deli Community Health Center working area in 2020. Based on the chi-square test, the value of p = 0.001 shows that there is a relationship. There is a significant relationship between knowledge and adherence to taking medication in pulmonary TB sufferers at the Medan Deli Community Health Center in 2020. Widianingrum's research (2017) in the work area of the Perak Timur Community Health Center, Surabaya, has a value of p=0.000, which means that there is a significant relationship between knowledge and medication adherence.

Socio-cultural relationships with pulmonary TB during Covid-19 in Kaur Regency, Bengkulu City in 2024

These socio-cultural factors play an important role in the spread of disease and efforts to prevent it (Syafriyanti & Hadi, 2023). Therefore, it is important to understand the relationship between sociocultural factors and TB prevention. One important aspect that needs to be considered in preventing TB is the diversity of local community traditions and beliefs, such as traditional Toraja funeral traditions, for example, involving intense social interaction between community members. This can increase the risk of TB transmission if an infected individual is participating in a funeral ceremony. A good understanding of these local traditions and beliefs will enable health service providers at the Makale Community Health Center to design more effective prevention programs, while still respecting the cultural values and customs of the community (Sitio, 2021).

Local culture can also influence public health traditions and practices in TB prevention efforts. There are traditional health practices that local communities may engage in that may contribute to the spread of TB or hinder effective prevention efforts. For example, practices such as burning incense or using certain medicinal plants may not be effective in controlling the transmission of TB. In this case, there needs to be an approach

that is sensitive to local culture, where ineffective traditional health practices are combined with a medical approach that is supported by evidence. The role of local culture can also influence community participation in TB prevention programs. A strong and well-organized community can help mobilize TB prevention efforts more effectively. Local cultures that encourage solidarity, mutual cooperation, and active involvement in health issues can increase community participation in TB screening, education, or vaccination campaigns. In this case, the use of local culture as a resource in efforts to prevent TB is important to achieve optimal results (Farid, 2022; Pratiwi et al., 2012; Sulistyono et al., 2017).

The role of local culture can also be utilized in communication and education about TB. Communities may be more responsive to prevention messages conveyed through media that is appropriate to local culture, such as art, music, dance, folklore, or traditional figures. Using approaches that leverage local culture in communication and education can help create better connectivity and engagement with communities, as well as increase the effectiveness of prevention messages.

This research is in line with research by Elda Rahmania Putri (2020) which states that the role of local culture in efforts to prevent TB is very influential (Putri, 2020). Makale Community Health Center can play an active role in exploring and understanding the role of local culture in efforts to prevent TB. In designing prevention programs, it is important to acknowledge, respect, and collaborate with local communities, traditional leaders, or community leaders to ensure appropriateness and acceptability of prevention programs. Using an approach that is sensitive to local culture, Community Health Centers can integrate cultural values in education, social campaigns and participatory activities that can motivate the community to adopt effective TB prevention behavior. The role of local culture has a significant impact in prevention efforts.

Relationship between information sources and pulmonary TB during Covid-19 in Kaur Regency, Bengkulu City in 2024

Information sources are anything that becomes an intermediary in conveying information, an information medium for mass communication. Sources of information can be obtained through print media (newspapers, magazines), electronic media (television, radio, internet), and through health worker activities such as training held (Notoatmodjo, 2019).

Information obtained from various sources will influence a person's level of knowledge. If someone gets a lot of information, they tend to have extensive knowledge. The more often people read, the knowledge will be better than just hearing or seeing (Notoatmodjo, 2003). According to Rohmawati (2011) in Taufia (2017), exposure to health information for individuals will encourage health behavior[10], [11].

Various efforts have been made to overcome the problems of TB patients during the pandemic. Providing health education and medical rehabilitation is carried out in various media, one of which is *telehealth services* . Health workers can use virtual services and digital technology such as videos and text messages containing treatment supervision, educational facilities and TB treatment therapy. Virtual services and digital technology aim to ensure that TB patients receive support for treatment compliance, officers can also monitor the health of TB patients, carry out counseling and follow-up consultations (Fei et,al., 2020). Therapy using demonstration video media can also support treatment adherence and help TB patients complete treatment during the pandemic (Jain et al., 2020).

This research is in line with research by Visca, 2021, explaining that information sources (video demonstration media) can significantly reduce medication non-compliance, save time and money and increase patient satisfaction. The use of *telehealth* services during the COVID-19 pandemic can also prevent transmission and focus on health services (Dina Visca et al., 2020). The use of digital health technology must be intensified to support patients, improve communication, counseling, care and provide health education. In accordance with WHO recommendations, technology such as treatment monitoring,

educational facilities and therapy supported by video can help patients complete TB treatment (World Health Organization, 2020).

The relationship between the environment and pulmonary TB during Covid-19 in Kaur Regency, Bengkulu City in 2024

The increase in tuberculosis is influenced by the home environment, according to (Ministry of Health of the Republic of Indonesia, 1999) concerning Housing Health Requirements in this regulation there are requirements for a healthy house to have several aspects or factors, namely building materials, components and spatial arrangement, lighting, air quality, ventilation, animals. disease transmission, water, availability of safe food storage facilities, waste, and residential density. Research (Rokot et al., 2023).

Housing density, humidity, lighting, ventilation are related to the incidence of tuberculosis. Research by Apriliani et al., (2021) shows that there is a relationship between the physical condition of the house, including: the presence of ceilings, wall quality, floor quality, residential density, the presence of ventilation, the presence of windows, the presence of glass tiles, room humidity, room temperature, and family behavior. including smoking behavior and smoking history and fuel use when cooking. TB transmission can be prevented by adopting a clean and healthy lifestyle. People should immediately improve the physical condition of their homes in accordance with healthy homes so that the incidence of TB can immediately decrease[12]–[14].

Research by Rahmawati, Ekasari and Yuliani, (2021) shows that the environment (ventilation area, humidity and lighting) is related to the incidence of tuberculosis. Research conducted by (Hapsari et al, 2020) in Malang City found that environmental factors related to tuberculosis cases were residential density, house walls, inadequate ventilation. The behavioral factor studied by Hapsaria was the behavior of opening windows, which found that the behavioral factor of opening windows was a factor related to tuberculosis cases. Research conducted by (Setiarni et al, 2013) in West Kalimantan, there were several behavioral factors studied, namely smoking behavior factors and economic factors[15]–[17].

The relationship between comorbidities and pulmonary TB during Covid-19 in Kaur Regency, Bengkulu City in 2024

The severity of COVID-19 is influenced by several things, one of which is comorbid factors or comorbidities that Covid-19 patients have, comorbidities or comorbidities in this case include Diabetes Mellitus, Autoimmune, Kidney Disease, Hypertension, Chronic Obstructive Pulmonary Disease (COPD) , Tuberculosis (Indonesian Ministry of Health, 2020). Diseases such as diabetes, hypertension and chronic kidney failure (CKD) continue to increase in prevalence from year to year. The older population is more vulnerable to this coronavirus invasion. Various studies show that older populations with comorbidities have a higher risk of mortality compared to other populations. The large influence of a history of diabetes, hypertension, chronic kidney failure, chronic obstructive pulmonary disease and the presence of respiratory tract symptoms needs to be studied properly to be able to become the basis for implementing further health policies related to priority health services for COVID-19 patients and efforts to suppress the increase in the prevalence of non-communicable diseases. in the future (Clement Drew, 2021).

This research is in line with research conducted by Gana, 2022, showing that of the 295 respondents, 295 (100%) Covid-19 patients did not have TB comorbidities and 0 (00.0%) had TB comorbidities. , so it can be concluded that the 295 respondents who were positive for Covid-19 did not have comorbid TB (Tuberculosis). TB sufferers infected with SARS-CoV-2 can present a poor clinical picture, especially if there are interruptions during tuberculosis (TB) treatment. Symptoms can be felt to be more severe if there has been damage to lung structure and function due to previous TB (Soeroto et al, 2020). TB bacteria float in the air in droplets for several hours after a TB patient coughs, sneezes, screams, or sings and people who inhale them can become infected. The size of these droplets is a key

factor that determines the infectiousness of TB disease, the concentration of bacteria can be reduced by ventilation and direct sun exposure.

5. Conclusion

Most of the respondents who experienced pulmonary TB during the Covid-19 period were 36 respondents (56.3%) with lower secondary education, 38 respondents (59.4%), who did not work, 33 respondents (51.6%) who had correct knowledge, 47 respondents (73.4%).) and those who have no/low social culture are 36 respondents (56.3%) and those who do not have an accurate source of information are 37 respondents (57.8%) and those who live in a good environment are 35 respondents (54.7%) and those who have comorbidities are as many as 34 respondents (53.1%) There is a relationship between Education, Employment, Knowledge, Socio-Cultural, Information Sources, Environment, Concomitant Diseases and the Incidence of Pulmonary TB patients during the Covid-19 Period in Kaur Regency, Bengkulu Province in 2024. And Education is the most dominant factor Stress Incidents of Pulmonary TB Patients During the Covid-19 Period in Kaur Regency, Bengkulu Province in 2024.

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