Web-Based Counseling Problem-Solving Model for Improving Mental Health in Students During the Covid-19 Pandemic

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Abstract

Background: There was an increase of mental health problems during the Covid-19 Outbreak caused by fears of contracting COVID-19, Increasing mental health problems in college students due to the Covid-19 outbreak caused by fears of contracting COVID-19, difficulty understanding online learning materials, decreased academic achievement, limited activities, finances, and boredom during the stay at home**.**
Objective: To analyze a web-based problem-solving counseling model to improve mental health in students during the Covid-19 pandemic.
Method: Quasi-experimental design using a pre-post test with a control group. The population was all first-year students at Surakarta College of Health, who were sampled with a purposive sampling technique. Inclusion criteria: students who were experiencing anxiety, stress, depression, and suicide risk. There were a total of 60 respondents in the control group and 60 respondents in the intervention group. Data was collected using thequestionnaires Suicide Behavior Questioner-Revisi (SBQ-R) and Depression Anxiety Stress Scales (DASS). The web application intervention consisted of up-to-date testimonials, questionnaires, inspirational videos, and counseling options. The tests used were the dependent test and the independent test.
Result: There was a significant improvement of participant mental health with and results found a reduction to the the risk of suicide, depression, stress, and anxiety.
Conclusion: The Web-Based Problem-Solving Counseling Model is effective in improving students' mental health during the COVID-19 pandemic(p<0.05), and can be used as an alternative strategyfor students to address their mental health problems while maintaining privacy and low levels of stigma.

Keywords: College Students; covid-19 pandemic; mental health; web-based counseling problem-solving model

INTRODUCTION

The Covid-19 pandemic was a disaster that affected the entire world and as such the WHO designated Covid-19 as a global pandemic. This situation affected the mental health of millions of people around the world (Kemenkes RI, 2020). Increasing mental health problems in college students due to the Covid-19 outbreak caused by fears of contracting COVID-19, difficulty understanding online learning materials, decreased academic achievement, limited activities, finances, and boredom during the stay at home (Insiyah et al., 2023; Chaturvedi et al., 2021). Mental health essential to humans' quality of life.

Mental emotional disorders were shown tooccur because of the Covid-19 pandemic (Nurjanah et al., 2020). of the state of an individual's mental health problemswill continue to decline if not detected early and managed properly (Sherchan et al., 2017). Lin et al., (2018), explain that students have psychological problems; anxiety, depression, and other psychological problems, and some show suicidal tendencies. A small proportion of students with mental health problems receive treatment. Ebert et al., (2016); Karim et al., (2020), stated that during the COVID-19 pandemic, almost half of respondents experienced higher levels of anxiety, at

a younger age than at an older age, with women being more vunerabel than men, and students.

The mental health of students is very vulnerable as seen from the phenomenon at universities majoring in nursing and midwifery in Ghana there are reports of suicides among students (Nii et al., 2019). The results of a preliminary study in Surakarta city from 2021 showed that out of 1400 first-year students, 15.2% had a high risk of suicide, and 10% had a moderate risk of depression, stress, and anxiety. If prevention efforts are not carried out, student achievement and quality will be impacted. With the increasing use of the internet amongst university students, internet resources are often used as a place to find emotional support during periods of stress. Using the internet encourages seeking help online, reduces stigma, and makes it more accessible (Luca et al., 2019).

Internet-based interventions are effective for mental health treatment (Andersson et al., 2014); (Heim et al., 2018). Previous research relating to solving spiritual problems on the internet showed that these interventions were able to reduce the risk of suicide amongst college students (Khadijah et al., 2021). The purpose of this study was to analyze a web-based problem-solving model to improve mental health in students during the Covid-19 pandemic.

Depression can be reduced by using web-based interventions (Ebert et al., 2018). College student improve in self-regulation with Problem Solving Methods Through Counseling (Kharisma & Astuti, 2019). This web-based problem-solving counseling model forms an effort to improve students' mental health during the Covid-19 pandemic.

METHOD
This study used a quasi-experimental pre-posttest with a control group design. The population at the Surakarta Poltekkes is all first-year students totaling 1545 samples taken using the slovin formula with a 10% chance of dropping out obtained results of 104 divided by 2 to 52 rounded up to 60 students in each control and intervention group. Purposive sampling

technique with inclusion criteria for young adults, first-semester students, regular students, and mental health problems (anxiety, stress, depression, and suicide risk). The instrument uses the DASS visionary to measure depression, anxiety, and stress. This instrument has been widely used by previous researchers with the results of validity and reliability tests of Cronbach Alpha score 0.905 for depression, 0.852 for anxiety, and 0.881 for stress (Novitasari, 2015). SBQ-R was used to measure the risk of suicide cronbach alpha value 0.785 (Khadijah et al., 2021). Ethical clearance was received from the ethics committee of Moewardi Hospital Surakarta on June 7.2021 with certificate number 620/V/HREC/2021.

Intervention
In the first stage, respondents received web operational guidelines and web tutorial videos. The intervention was provided with the URL: http://psa.poltekkes-solo.ac.id. Before beginning the intervention, the control and intervention group respondents saw video testimonials from students who already had experience completing these resources, intending to motivate respondents sothat they will continue to participate and did not have to worry about confidentiality. Respondents from both the control and intervention groups filled out short answer questions about what problems they were experiencing In the second stage, the respondents began the intervention by watching inspirational PowerPoint videos. The control group only received web-based intervention up to the second stage and did not receive additional counseling.

The third stage of the intervention involved the intervention group being given counseling options. It was at this stage that the counselor providing alternative problem-solving strategies through web-based chat. The counselor did not know the identity of the respondent who communicated with them, meaning there was less potential for stigma for the respondent ad a guarantee of confidentiality. Respondents became more comfortable to consult. Consultation on the web application is preceded by making a 2-way communication appointment contract with the selected counselor, and the student's name will appear in the form of a code so that the counselor does not know who to consult on

the web. The consultation time for each respondent is 60-90 minutes and is carried out 2 times. At the first meeting the counselor provided alternative problem-solving solutions so that the respondent received mental health assistance, and counselling is evaluated on respondents by conveying their experiences after being applied in everyday life days about 1-2 weeks.

Data Collection
The pre-test was carried out the first time the respondent entered the web resource, where they immediately filled out the DASS and SBQ-R questionnaire columns. The web-based intervention lasted for approximately 2 months and then the respondents web in both the control and intervention groups filled out the post-test link on the. If the respondent had not filled in the post-test the researcher sent a motivation via e-mail the respondent. As such data collection was not found to be a problem.

Data Analysis
The results of the control group's normality test on the variables of suicide risk, stress, and anxiety used the t test while the depression variable used Wilcoxon. The intervention group was tested on suicide risk variables, depression, stress, using paired t-test and anxiety variables using Wilcoxon. Analysis of independent test data regarding depression and stress variables used independent tests, while suicide risk and anxiety variables used the Mann Whitney test.

RESULT

Table 1. Frequency Distribution of Respondent Characteristics Based on Gender, Residence, and Before academic supervisor.

Characteristic	Category	Frequency		Percentage (%)	
		Control	Intervention	Control	Intervention
	18 Year	11	12	18.3	20.0
Age	19 Year	44	46	73.3	76.7
	20 Year	5	2	8.3	3.3
Gender	Male	2	0	3.3	0.0
	female	58	60	96.7	100.0
Residence	With Family	47	44	78.3	73.3
	Boarding House	13	16	21.7	26.7
Before the academic supervisor	Self-stored	26	20	43.3	33.3
	Talk to family	8	16	13.3	26.7
	Talk to a friend	26	24	43.3	40.0

Table 1 shows that in Majority respondents were aged 19 years (control 73%, intervention 76.7%)), female sex (control 96.7%, intervention 100%), domiciled with family (control 78.3%, intervention 73%), and before going to their Academic Supervisor respondents talked to friends (control 43.3%, intervention 40%).

Table 2 . Description of pre and posttest mental health scores comparison

Group	Variable	Number of Respondents	Pre-Post	Lowest Value	Top Rated	Mean	Std. Deviation	Difference
Control	Suicide	60	Pre	3	17	7.83	3.518	0.65
		60	Post	3	15	7.18	3.352	
	Depression	60	Pre	2	31	17.18	7.106	3.00
		60	Post	1	32	14.18	6.690	
	Stress	60	Pre	0	34	20.12	7.408	4.98
		60	Post	1	37	15.03	6.556	
	Anxiety	60	Pre	1	30	14.75	5.488	2.12
		60	Post	2	24	12.63	4.783	
Intervention	Suicide	60	Pre	3	16	8.25	4.233	1.767
		60	Post	3	14	6.48	3.417	
	Depression	60	Pre	2	34	18.15	7.787	6.25
		60	Post	1	34	11.90	8.052	
	Stress	60	Pre	8	32	19.85	5.065	9.53
		60	Post	1	21	10.50	5.041	
	Anxiety	60	Pre	5	23	15.48	5.350	4.03
		60	Post	2	18	11.45	4.304	

Table 2 shows the average risk of suicide, depression, stress, and anxiety amongst college students during the COVID-19 pandemic in the control group after being given web problem-solving resulted in better mental health. The average score of suicide risk, depression, stress, and anxiety in college students during the COVID-19 pandemic in the intervention group after being given web problem-solving and additional counseling was improved after the intervention. After being given additional counseling there was a decrease in suicidal (1,767), depression (6.25), stress (9.53), and anxiety (4.03).

Table 3 . The Effect of Web-Based Counseling Problem-Solving Model for Improving Mental Health

Group	Test	Variable	Pre –Post-test	N	Mean	Std. Deviation	Statistics (t)	Sig (P)
Control		Suicide	Pre	60	7.83	3.518	2.212	.031
			Post	60	7.18	3.352		
	Paired T.Test		Difference		.650			
		Stress	Pre	60	20.12	7.408	3.994	.000
			Post	60	15.03	6.556		
			Difference		5.083			
		Anxiety	Pre	60	14.75	5.488	4.221	.000
			Post	60	12.63	4.783		
			Difference		2.117			
		Depression	Pre	60	17.18	-2.602		.009
	Wilcoxon		Post	60	14.18			
			Difference		3.00			
Intervention		Suicide	Pre	60	8.25	4.209	5.925	.000
			Post	60	6.48	3.078		
			Difference		1.767			
		Depression	Pre	60	18.15	7.787	7.901	.000
	Paired T.Test		Post	60	11.90	8.052		
			Difference		6.250			
		Stress	Pre	60	19.85	5.065	18.651	.000
			Post	60	10.50	5.041		
			Difference		9.350			
		Anxiety	Pre	60	15.48	-6.597		.000
	T.Test		Post	60	11.45			
			Difference		4.02			

Table 3 control group of dependent variable Paired t-test results; suicide (0.031), stress (0.000), and anxiety (0.000), Wilcoxon test results depression (0.009), there was a significant effect of web-based problem solving on mental health. While the intervention group tested the results of the Paired t-test variables of suicide, stress, and depression obtained a p-value of 0.000, the results of the Wilcoxon test anxious 0.000, there was a significant effect of the web-based problem-solving model with counseling on mental health.

Table 4 . Differences In Scores Mental Health between the intervention and control groups

Variable	Group	N	Mean	Std. Deviation	Statistics (t)	Test TSig (P)
Depression	Control	60	3.00	8.801	-2.347	.021
	Intervention	60	6.25	6.128		
	Difference		-3.250			
Stress	Control	60	4.98	9.849	-3.334	.001
	Intervention	60	9.53	3.838		
	Difference		-4.550			
Variable	Group	N	Mean	Statistics (U)	Statistics (Z)	Mann Whitney Sig (P)
Suicide	Control	60	.650	1351.000	-2.415	.016
	Intervention	60	1.767			
	Difference		-1.117			
Anxiety	Control	60	2.117	896.500	-4.827	.000
	Intervention	60	4.020			
	Difference		-1.903			

Table 4 of the t-test results showed significant differences in mental health scores: depression and stress of students during the COVID-19 pandemic in the control group with the intervention group value < 0.05. The results of the Mann-Whitney Test showed significant differences in mental health scores: student suicide during the COVID-19 pandemic in the control and intervention groups value < 0.05. So it can be concluded that there was a significant effect of the web-based Problem Solving Model and additional counseling on student mental health.

DISCUSSION

Respondent Demographics
The results of this study found that most respondents were 19 years old. At the age of 19 years this includes young adults which is a period of transition from late adolescence to adulthood. According to the theory there is a psychological danger both personally and socially, caused by failures in development that result in them becoming immature compared to other adults (Pieter & Lubis, 2017). Supported by research (Khadijah et al., 2021), it was found that suicide risk is prevalent in young adult college students, especially in first-year college students in comparison to second-year college students because it is a year of transition to higher education. Huang et al., (2022), Research in China found that extended quarantines during the Covid-19 pandemic amongst college students increased the instance of significant mental health problems i.e. suicidal ideation. Significant factors influencing the worsening of suicidal ideation were being freshman undergraduates, having a history of mental illness, depressive symptoms, and negative coping strategies (Huang et al., 2022). Student groups, especially first-year students, are young adults who are vulnerable to mental health problems because it is a transition period from late adolescence to adulthood, and requires adaptation to follow learning during the pandemic Covid-19 .

Mental health problems are higher in women than in men (Bartlett et al., 2021). Young women have a ninefold increase in having a diagnosis of mental health problems when compared to young men. a Rogowska et al., (2021), explained that the prevalence of high risk of anxiety and stress in the first three waves of the COVID-19 pandemic was found to be higher in women than men. In women, mental health problems are higher because changes

in hormones such as estrogen and progesterone affect the nervous system proven to affect neurotransmitters, neuroendocrine, and cardiac systems involved with mood, thus associated with an increased risk of mental health disorders and depression (Wharton et al., 2012); (Schimelpfening, 2020).

There are mental health issues in students living with their families due to online learning and the quarantine of the covid 19 pandemic. This is supported by research by Bhakat & Das (2023), namely the increasing prevalence of mental health problems, namely depression, anxiety, and stress due to difficulties facing new ways of learning, fear of termination of education due to financial constraints, limited physical interaction, and prolonged screening during the pandemic, so this study suggests counseling and strategies to overcome mental health disorders. Mental health disorders that were common during the COVID-19 quarantine were anxiety, depression, symptoms of post-traumatic stress, sleep problems, and somatic problems (Rajkumar et al., 2022). Students t indicated that the closure of offline learning impacted their mental health and made them feel frustrated (Ela et al., 2021). Loneliness is associated with the presence of depression and anxiety symptoms (Stickley & Ueda, 2022).

Respondents who had mental health problems before talking to their academic supervisor first talked to many friends. This is in line with the research of Huang et al., (2018), who explains that peer support has a positive effect on depression, and anxiety disorders, promising peer-based interventions as tools during the COVID-19 pandemic. Depression and anxiety occur due to social restrictions (Calista et al., 2020). Family support was urgently needed during the COVID-19 pandemic (Hoda et al., 2022).

Effect of Web Troubleshooting Model on control group
The average results of suicide, depression, stress, and anxiety after being given the web-based Problem Solving Model improved mental health compared to prior to the intervention. This web problem solving model is effective because it is time and place efficient, low stigma, the presence of testimonials add motivation to follow web problem

solving interventions and offers alternative aid for mental health by looking at inspirational videos and interventions on the web.

Ebert et al., (2018), explain that Web-based interventions and mobile treatments are effective in reducing various negative conditions associated with subclinical depression. Online therapy can be used without time restrictions and meetings are able take place in various time zones. Each meeting is educational and free. Online videos are used to overcome anxiety (Morin, 2021). Respondents experienced an increase in social problem-solving skills found to mediate a decrease in suicide (Breitborde et al., 2021) this is also supported by the research of Lutz et al., (2020), . Problem-solving therapy is a psychotherapeutic intervention able to reduce anxiety, depressive symptoms, and suicide risk. Research by Lucas et al., (2019), Providing problem-solving training interventions has minimal costs compared to medication. The results of the problem-solving training proved to be significantly adaptable so as to reduce self-harm, depression, and improve quality of life.

The effect of web problem solving with counseling on control groups and intervention groups
The results of the Problem Solving Model plus web-based counseling have proven effective in reducing mental health problems amongst college students during the Covid-19 pandemic. The web problem solving model coupled with web counseling showed higher results than the control group because online counseling services via the web are appealing to students because of the perceived confidentiality and low stigma. This is supported by previous research which showed that counseling services using online media during the Covid-19 pandemic are mental health services that are widely used both individually and in groups (Hastuti & Tyas, 2021).

Counseling through this website provided knowledge, skills in problem solving by doing thought stopping, positive thinking, doing positive affirmations and strengthening spirituality so as to improve mental health. Thought stopping can reduce anxiety. Building positive thoughts will increase mental health resilience (Garnier-villarreal, 2019). To solving problems through positive affirmations adds to one's confidence (Munar,

2018). Connecting with spirituality helps to manage with the difficult situation of the Covid-19 pandemic (Kang et al., 2020). Practicing surrender to God can reduce stress (Rahma, 2005).

Problem-solving methods through group counseling provide effective results for student self-regulation (Kharisma & Astuti, 2019). Internet-based interventions could be an effective treatment approach for grief related symptoms in grieving adults, distressed, and high post-traumatic stress intervention satisfaction (Zuelke et al., 2021). Students who felt stressed or anxious during the Covid-19 pandemic had the most support from lecturers (Lischer et al., 2021).

Rantanen et al., (2021), Interventions that focus on counseling men participate less because men who have poor mental health there is an association of negative attitudes towards web-based health and social care services, therefore attention needs to be given guidance, education about the reliability, and ease of use of web-based services, important to convince and motivate participation in web-based mental health services.

The limitations of this study are first, delays in sending both pre and post-test. Secondly, there was difficulty in contacting respondents because maintaining the confidentiality of researchers in the web system did not require respondents to include mobile phone numbers and as such researchers could only contact respondents via email. Further testing could involve the class leader as a research assistant to motivate and remind respondents to respond and participate in a timely manner.

CONCLUSION
This study showed that the Web-Based Problem Solving Counseling Model had an influence on reducing mental health problems such as the risk of suicide, depression, stress, and anxiety in students during the COVID-19 pandemic. This web-based problem-solving counseling model could be used as a solution for students to get help for their mental health problems while maintaining their privacy and preventing stigmatization. The implication this study has on mental health nurses' practice is that the enouraging the use of these web-based resources may improve students' mental health in tertiary institutions.

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