The role of cognitive flexibility on stress in hospital medical personnel in Malang

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Abstract

Covid-19 was causing a drastically changing situation, especially for healthcare workers facing increasing workloads and sudden changes in circumstances. These circumstances force health workers to adapt to these stressful changes. Cognitive flexibility is one of the protective factors for health workers to be capable of processing and coping with stress. This study aims to perceive the contribution of cognitive flexibility to stress to healthcare workers. The research hypothesis is that there is a negative role between cognitive flexibility and stress, which means the higher cognitive flexibility a health worker has, the lower the stress level. This study uses quantitative methods. Using random sampling techniques, data retrieval uses the Cognitive Flexibility Scale (CFS) and Depression Anxiety Stress Scale (DASS-21) questionnaires. The subjects of this study were 55 health workers working at hospitals in Malang, with the professional criteria of doctors, nurses, pharmacists, and midwives. Data analysis uses a simple linear regression test. The results of this study show that cognitive flexibility has a 33.3 % effect on reducing stress levels in healthcare workers.

Keywords

cognitive flexibility, covid-19, healthcare workers, mental health, stress

Introduction

Indonesia's coronavirus disease (Covid-19) pandemic has begun to attract public attention. Cracking down on these cases, the government immediately formed a task force to accelerate the handling of Covid-19. It made a psbb (Large-Scale Social Restrictions), lockdown, and self-isolation policy (Ministry of Health, Republic of Indonesia , 2021). Furthermore, in hospitals, follow-up efforts are made to provide complete services to covid patients; however, because the pandemic situation is new, regulations are needed to regulate it. Ministry of Health, Republic of Indonesia (2021) followed up on this matter, making guidelines for patient admission procedures, including the use of masks, screening procedures, arranging visit schedules, and restrictions on inpatient visitors/companions as well as separation of services for Covid-19 and non-Covid-19 patients.

As an institution considered essential and becomes the primary goal of patients, hospitals need professional nursing and qualified medical services. However, efforts to provide optimal services, the increasing workload, and various rapid changes in procedures make most medical personnel required to adapt to the situation immediately vulnerable to work stress. According to Prihatini (2007), what is meant by job stress is an adaptive response and psychological process from external actions, situations, and events. In addition, work stress also occurs because of the gap between demands and the individual's biological, psychological, and social resources (Smet , 1994). In this case, those who experience work stress are medical personnel.

In addition to demands for change, and workload experienced by medical personnel, the perceived work stress is also reinforced by a large number of medical personnel members who have been infected with Covid-19 and died. The Executive Board of the Indonesian Doctors Association, as of December 2020, stated that there was 363 medical personnel who died due to being infected with Covid-19. Strengthening this data, Report Covid 2021 noted that as of November 2021, 730 doctors and 670 medical personnel died because they were also exposed to Covid-19. This case causes more significant stress for all employees who work in hospitals, especially for medical personnel such as nurses and doctors who interact directly with patients.

In a study conducted by Musu *et al.* (2021), while in the Covid-19 ward, nurses felt stress, fear, anxiety, and panic that made them nurses feel disturbed. Often interacting directly with covid patients, nurses perceive that the hospital environment is stressful, demanding, and dangerous work environment. Therefore, employees need to deal with various psychological complaints so that they do not cause more severe stress.

Other data submitted by Silaen (2021) related to the condition of medical personnel working in hospitals during the Covid-19 pandemic, many of them experienced mild, moderate to severe depression, and they also experienced anxiety in the same range, namely mild and moderate. And

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weight and insomnia. All these complaints or psychological impacts are caused by fear of exposure Covid-19 while on duty in the hospital.

Research conducted by Puspitasari *et al.* (2021) stated that stress makes health workers feel reduced concentration, apathy, fatigue, treatment procedures that are not optimal, and poor decision-making. In addition, the most common impact is headaches, followed by other symptoms such as anger, decreased brain function, ineffective coping, and impaired relationships with coworkers.

When faced with unexpected circumstances, individuals must apply problem-solving skills to adapt to the environment and various challenges. The ability to solve problems and adapt is closely related to cognitive flexibility (Oktaviani , 2021). Cognitive flexibility is an important characteristic that helps individuals to deal with complex things, such as multitasking, and finds new solutions that can be adapted to demands and the environment. Three essential concepts of cognitive flexibility can help individuals cope with stress: experience, adaptation of cognitive processing strategies, and adaptation to unexpected environmental changes (Canas *et al.*, 2006). to deal with the situation in the hospital.

According to Setyawan (2020), the higher the individual's cognitive flexibility, the higher the student's forgiveness. On the contrary, the lower the cognitive flexibility, the lower the forgiveness he has. Forgiveness is a product of problem-solving. Students with high cognitive flexibility will be able to adapt to traits that can change their way of thinking and see how a problem is from different perspectives.

Oktaviani (2021) researched the relationship between cognitive flexibility and problem-solving skills. It is stated that the higher the cognitive flexibility students possess, the better their problem-solving skills. This shows that cognitive flexibility has a strong relationship with problem-solving skills and the contribution of cognitive flexibility to problem-solving skills.

Rezaeemanesh *et al.* (2021) state that cognitive flexibility is an intermediary variable that has an active and significant role in individual awareness of the surrounding environment (innovative work habits, quality of relationships between colleagues, and development in the workplace).

In addition, research by Laureiro-Martínez & Brusoni (2018) shows that in the concept of work, cognitive flexibility helps managers deal with difficult situations, recognize employee differences, and integrate these differences when making decisions. However, individuals with low cognitive flexibility can still do this even though the probability is much lower than individuals with high cognitive flexibility. Cognitive flexibility increases the individual's ability to make decisions and adapt.

Based on previous research that describes the condition of medical workers and studies that discussed cognitive flexibility, it can be concluded that medical personnel during a pandemic feels stress due to more demands, dangerous environmental conditions, and other pressures that arise due to dangerous situations. Adaptation and problem-solving are needed in this situation so there is no higher stress level. Therefore, researchers are interested in examining the effect of cognitive flexibility on stress levels. In addition, research has yet to be conducted on cognitive flexibility and stress variables in Indonesia. It is hoped that this research can update clinical psychology studies and complement cognitive flexibility research. Furthermore, it can be an insight for hospitals regarding the stress felt by health workers and consideration for hospital management to manage and deal with stress for health workers.

From that statement, it can be seen that have been drastic changes have occurred in hospitals during the Covid-19 pandemic. Therefore, adaptation is needed so that medical personnel does not continue to feel excessive stress. Therefore, for this reason, researchers need to examine the effect of cognitive flexibility on stress levels for hospital medical personnel.

Tabel 1. Demographic data of the subject of the study

Category	Frequency	%
Gender		
Man	11	20
Woman	44	80
Profession		
Pharmacist	7	13
Midwife	5	9
Doctor	4	7
Nurse	39	71
Age		
22 – 28 years old	25	45
29 – 35 years old	25	45
36 – 42 years old	5	10
Working time span		
4 – 6 hours	2	4
7 – 9 hours	41	74
10 – 14 hours	12	22

Research Method

Research Design

This research is quantitative. Quantitative research is a method used to answer research problems in the form of data in the form of numbers and statistics (Wahidmurni , 2007). Quantitative research is structured research. The design of this study is causality research intended to see the ability of one variable to predict another variable, where researchers want to know the role of cognitive flexibility on stress levels.

Research Subject

The subjects in this study were medical workers (NERS) and doctors at hospitals in Malang as many as 55 respondents. Sampling uses random sampling, a technique based on each individual having the opportunity to become a research sample (Latipun, 2017). With the criteria for the profession of doctors, nurses, pharmacists, and midwives who are in hospitals in Malang.

Table 1 shows that the subjects of this study were predominantly female (80%). The majority of professions are nurses, as much as 71%, and then the rest spread to the professions of pharmacists, midwives and doctors. The age distribution of subjects also varied from 22-28 years as much as 45%, 29-35 years as much as 45%, and 36-42 years as

much as 10%. The working hours of each shift spread across 4 – 14 hours, but most subjects have 7 – 9 hours of work.

Variables and Research Instruments

Cognitive flexibility is the ability of health workers to adapt and solve problems in the work environment. The Cognitive Flexibility Scale (CFS) is a scale developed by Martin & Rubin (1995) based on three aspects, namely awareness, will (willingness), and self-efficacy (self-efficacy). The scale has 12 items, with 8 favorable and 4 unfavorable items. The CFS Indonesian version was translated by Elvina (2019) and tested on 73 subjects who had criteria close to the original subject. Some questions such as "I can convey an idea in a variety of different ways", "I can find applicable solutions to problems that seem insurmountable", and "I feel like I have never made a decision" are among the questions on every aspect of the scale. After the trial, the reliability coefficient for the overall cognitive flexibility scale was obtained at 0.72. The reliability coefficient number close to 1.00 means that the scale has fairly high reliability. CFS uses a Likert scale type with the + key; answers in the form of "strongly agree" are scored 6, "agree" are scored 5, "somewhat agree" are scored 4, "somewhat disagree" are scored 3, and "disagree" are scored 2, and "strongly disagree" are scored 1. Whereas in the -key, answers in the form of "strongly agree" are given a score of 1, "agree" is given a score of 2, "somewhat agree" is given a score of 3, and "somewhat disagrees" is given a score of 4, "disagrees" is given a score of 5, and "strongly disagrees" is given a score of 6.

Stress is the feeling that an individual experiences when he feels pressure from within himself due to the threat of demands that are considered to exceed his capacity. The Depression Anxiety Stress Scale (DASS) was developed by Lovibond & Lovibond (1993) to measure an individual's negative emotional state, such as depression, anxiety, and stress. This study only used dimensions that measure stress levels. The aspects measured are tension, agitation, and negative affect. The items taken in DASS-21 to measure stress levels are items 1, 6, 8, 11, 12, 14, and 18. The Indonesian version of the DASS-21 scale was dubbed and tested by Onie *et al.* (2020). The answer to the statement in DASS-21 uses a scale of "never" scored 0, "sometimes" scored 1, "often" scored 2, and "very often" scored 3. The score categories in DASS-21 are normal (0-14), light (15-18), moderate (19-25), heavy (26-33), and very heavy (34+).

Procedure and Data Analysis

Preparation This stage begins with deepening the material with theoretical studies of the variables to be studied and designing research proposals. The instruments used are the CFS**?** (Cognitive flexibility Scale), which is adapted by Elvina (2019) research and DASS (Depression Anxiety Stress Scale). These two instruments do not require a tryout because their validity and reliability have been proven in previous studies.

Implementation At this stage, researchers spread the scale on the subject of medical labour that matches the characteristics of samples in hospitals in Malang online to avoid direct contact with medical personnel. First, the selection of hospitals was carried out randomly by drawing several hospitals in Malang, then 4 hospitals were obtained, namely Hospital A, Hospital B, and Hospital C. However, due to administrative constraints (permits), only Hospital A was used as a sample in this study. In addition, a scale distribution was carried out in a google form to health workers who work in hospitals in Malang. Data collection was carried out for three months, from January 2022 to March 2022.

Tabel 2. Description of variable research

Variable	Category	Interval	N
Stress	Usual	0 - 7	12
	Light	9-Aug	5
	Keep	12-Oct	9
	Heavy	13 - 16	8
	Very heavy	$>$ 17	21
Cognitive Flexibility	Low	$>$ 20	0
	Keep	20-42	6
	Tall	$>$ 42	49

Data analysis At this stage, the researcher analyzes the data obtained from the results of the scale distribution of the sample. The data obtained were processed and tested with a simple linear regression test using IBM Statistical 25 calculations.

Result

The subjects in this study were workers in hospitals located in Malang City, East Java, with an age range of 22-42 years. The total subjects of this study were 55 people; 11 males and 44 females.

Table 2 shows that the majority of the study subjects experienced severe stress, as many as 21 people, while the other 34 were spread across normal, mild, moderate, and severe categories. In addition, 49 of the 55 subjects were known to have a high level of cognitive flexibility.

The linear regression test of the variables x and y has a relationship of 0.577 (R); the value of r square is 0.333, which means that the free variable cf influences the stress-bound variable by 33.3% and 66.7% caused by other factors.

From the output, it is known that with a significance value of 0.000 $<$ 0.05, the regression model can be used to predict the Stress variable (Y) and the influence of the VARIABLE CF (X) on the Stress variable (Y). The constant value (a) is 62.696, while the value of CF (b)/regression coefficient is -0.864 which indicates a negative influence between variables, so the regression equation is Y = a + bX; 62.696 - 0.864. The equation shows that the consistency value of the Stress variable is 62,696; if the individual does not have CF, then the stress that will be experienced is 62,696. Then the CF regression value is 0.864; with every addition of 1% of the CF value, the appearance of stress is reduced by 0.864. Then a sig value of 0.000 $<$ 0.05 was obtained, concluding that the CF variable affects the stress variable.

Discussion

This study was conducted to examine the role of *cognitive flexibility* in stress. The subjects in this study were health workers who worked at hospitals in Malang with an age range of 22-42 years. The results of the hypothesis test of this study used a simple regression test that showed that

Tabel 3. Simple linear regression test

	β	R Square	R	Sig.	C	(df) F
Stress towards Cognitive Flexibility	-0.577	0.333	0.577	0	62.696	(1. 53) 26.428

cognitive flexibility harmed stress. This means that the higher the *cognitive flexibility* the individual possesses, the lower the stress that arises, and vice versa. This indicates that the hypothesis in this study is acceptable.

The results of this study show that the influence exerted by cognitive flexibility is only 33.3% on stress and other stronger variables cause the rest. Another factor that affects stress can be the average subject of this study is 22-35 years of age in early and middle adulthood. Individual thinking became more realistic during this development period, and his idealism also declined. In that age range, individuals begin to realize the differences in perspectives that others have. In addition, the verbal skills of individuals are increasing, and their abstract thinking ability is also decreasing Santrock (2012).

In everyday life, *cognitive flexibility* is the ability to adapt to continuous environmental changes. Individuals with *cognitive flexibility* can quickly reorganize the knowledge they have to be able to adjust their response to changes in certain situations. In addition to having an open mind and being better able to adapt well, individuals with *cognitive flexibility* also have the endurance of limitations in observation and recognition, so that the individual will think more critically in making decisions, whether it is to acknowledge or deny something and do or end something (Susanna , 2014). With *cognitive flexibility*, individuals will have a more open mind when facing unexpected circumstances, negative feelings, and unpleasant experiences, especially stressed individuals.

When the person experiencing stress has high *cognitive flexibility*, the individual can understand the emotions, thoughts and intentions that he and others have (Bock *et al.*, 2015). In addition, *cognitive flexibility* can improve the ability to think critically and help the individual to avoid the refraction of something, and the individual is better able to recognize the problem in himself and find solutions to overcome the problem. Conversely, individuals with low *cognitive flexibility* will have more difficulty facing new problems or situations, looking for problem-solving, and feeling depressed, leading to other problems. Even the individual will continue to use the same methods or strategies even in changed conditions (Canas *et al.*, 2006).

Stress can affect both physical and mental health; then individuals aware of stress and its symptoms are more likely to be able to avoid the adverse consequences of stress. For example, the research conducted by Rafiq (2020) has results where awareness has a negative relationship between self-awareness and stressors in work stress (role conflicts and workload overload) in nurses, and medical staff, where high awareness can reduce work stress.

In general, there are three mechanisms that are able to make medical personnel who feel stress able to reduce their physical and psychological symptoms, namely by **increasing awareness** of their condition, having the **willingness** to overcome and having a good **self-efficacy** that can overcome the perceived condition. These three mechanisms are generally summarized in the form of **cognitive flexibility**. As for the detailed explanation of each of these mechanisms, it is as follows:

The fist is *awareness*, when individuals are aware that they are experiencing stress, they will try to create a system to control themselves. However, if the individual does not have self-awareness, it is difficult for the individual to be able to control his negative emotions and cannot overcome the problem. The first is *awareness*; *when* individuals are aware that they are experiencing stress, they will try to create a system to control themselves. However, if the individual does not have self-awareness, it is difficult for the individual to be able to control his negative emotions and cannot overcome the problem. In line with Rafiq (2020), he stated that awareness has a negative relationship with stress experienced at work due to dual role conflicts and the workload of nurses and medical staff. Nurses and medical staff who have good awareness lower stress.

The second is willingness when individual desires to accept new things around him and overcome and adapt to sudden changes. In the presence of desire, individuals will try to adapt, solve problems, and find solutions when facing stress. Therefore, knowing what factors can help reduce stress in the health workforce is essential. Research by Ahmead *et al.* (2022) states that health workers have a reasonably high-stress level. So health workers need to have a desire to overcome these problems. Problem-solving and resilience to face stress are protective factors for health workers that can help to reduce stress levels.

The third is self-efficacy. After the individual has awareness and desire, the individual will believe that he can do something optimally and optimally. Therefore, individuals with high efficacy tend to find solutions to the problems they experience in the form of practical solutions. This is supported by research courtesy of Garcia *et al.* (2021), which shows a negative relationship between self-efficacy and stress in nurses. Furthermore, it was found that nurses with higher self-efficacy were less likely to experience stress. It is essential to immediately cope with the stress individuals feel at work because it interferes with the organization and the individual himself. Research by Safitri & Gilang (2020) shows that stress negatively influences work productivity. Various working conditions can cause stress in health workers, one of which is the physical condition of the work environment.

This research has advantages and limitations. The advantage of this study is the use of health workers as research subjects, especially during pandemics that rarely occur. That way, this study specifically uses subjects who have the opportunity to have direct contact with the spread of the virus during this pandemic. This study also examines protective factors for health workers. There is not much literature, especially on the *variables of cognitive flexibility* to stress, where researchers did not find other studies that specifically examined both variables simultaneously. The results of this study are expected to be able to contribute

literature to subsequent research using *cognitive flexibility* and stress variables.

The limitation of this study is that the subjects used in this study were only 55 people, which is still lacking in describing the stress of health workers in Malang. This is because the questionnaires distributed gave invalid results (empty identities, not answered properly). This study also did not explore the contribution of demographic factors of health workers to stress variables. In the design of this study, the use of DASS, which measures stress, is less able to describe the stress of health workers in the form of work stress and stress during a pandemic. Developing a tool to measure work stress and stress during a pandemic will make an important contribution to measuring specific stress levels

Conclusions

The results of this study show that cognitive flexibility and stress have a negative influence, where when cognitive flexibility is high, the stress you have is reduced, and vice versa. This shows that cognitive flexibility has a role in the stress experienced by health workers during the Covid-19 pandemic. As a protective factor, cognitive flexibility gives a good role to reduce the level of stress felt by health workers in Malang City, especially during the Covid-19 pandemic, especially during the pandemic. These results indicate that cognitive flexibility plays a role in helping health workers adapt to circumstances and come up with solutions to new problems that arise suddenly, especially in their work environment.

The implication of this study is that it is important for individuals, especially health workers, to cultivate cognitive flexibility as the ability to adjust during a pandemic, because it is undeniable that there are many changes and occur suddenly. Hospitals can help health workers to provide psychoeducation about fostering cognitive flexibility. The education includes self-awareness, stress coping, and self-efficacy.

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