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RESEARCH ARTICLE

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The Dominant Personality Type in Hemiparetic Patients

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ABSTRACT

McCrae and Costa proposed the big five personality which includes neuroticism, extraversion, openness, agreeableness, and conscientiousness. Certain personalities appear to be dominant in terms of the relevant disease. The aim of this study was to investigate the dominant personality according to the Big Five personality in hemiparetic patients. A descriptive cross-sectional with a survey-based questionnaire design involving 72 hemiparetic patient from outpatient department of Neurology Dr. Soetomo General Hospital hemiparesis in January 2020 to June 2021 was employed. The big five questionnaire was administered online or sent by courier. There were 27 female and 45 male in total with mean age of 53.89 years (SD 12.53). Majority of the hemiparesis patients had an agreeableness dominant personality (N=55). In addition, it was found that 1 hemiparesis patient had an openness dominant personality, 3 hemiparesis patients had a conscientious dominant personality, 6 hemiparesis patients had an extraversion dominant personality, 4 hemiparesis patients had a neuroticism dominant personality, and the remaining 3 had a mixed dominant personality. The dominant personality type in hemiparesis patient is agreeableness.

Keywords: dominant; hemiparesis; personality

INTRODUCTION

Background

Personality is a collection of acquired habits, some early in life, which will shape character and influence us to behave⁽¹⁾. Personality traits are defined as descriptions of an individual in terms of stable emotions, behavior, and thoughts⁽²⁾. Each individual has a different personality⁽³⁾.

McCrae and Costa (1992) proposed a five factor model (FFM) which includes neuroticism, extraversion, openness, agreeableness, and conscientiousness. Neuroticism refers to emotional vulnerability and self-awareness. Openness is described as a cognitive disposition towards originality and artistic. Agreeableness and extraversion focus on interpersonal relationships. Extraversion reflects the inclination to be gregarious, enthusiastic, assertive, and fun-seeking. Agreeableness refers to the inclination to be kind, gentle, trustworthy, and dependable. Conscientiousness has a tendency to be obedient and be competent. These personal traits are considered as basic dimensions of personality⁽⁴⁾.

Personality is also closely related to health and may affect a person's exposure to a certain disease⁽⁵⁾. Certain personalities appear to be dominant in terms of the relevant disease. Studies show that the dominant personality conscientiousness is associated with vertigo and coronary artery heart disease^(6,7). Nurazizah et al. concluded that the dominant personality openness is associated with hypertension⁽⁸⁾.

Hemiparesis is a paresis that affects the anatomical segment of one side of the body⁽⁹⁾. One of the important diseases that may lead to hemiparesis is stroke. Hemiparesis is manifested in 85% of cases of hemorrhagic stroke and 80% of ischemic stroke⁽¹⁰⁾. According to the *Riset Kesehatan Dasar Nasional*, the prevalence of stroke in

East Java increased from 9.1‰ in 2013 to 12.4‰ in 2018^(11,12). In Surabaya, it is estimated that 720,378 people suffer from hypertension and 94,076 suffer from diabetes mellitus in 2019. With the increasing prevalence of hypertension and diabetes mellitus, the prevalence of stroke will continue to increase as well. This phenomenon is predicted to continue⁽¹³⁾. In addition, there are many other disease that may cause hemiparesis, provided that it causes lesions along the corticospinal pathways⁽¹⁴⁾.

Some diseases that may cause hemiparesis are those that develop due to an unhealthy lifestyle. For example, in stroke, many risk factors are related to an individual's lifestyle. Hemiparesis-related disease preventive and intervention efforts are also based on changes in lifestyle⁽¹⁵⁻¹⁷⁾. Previous studies have found an association between an unhealthy lifestyle and personality⁽¹⁸⁻²⁰⁾. Dr. Soetomo General Hospital is a type A referral hospital in Surabaya but so far hemiparesis has only been treated physically. Therefore, it is important to study the personality of patients suffering from hemiparesis in order to the efforts to prevent and treat hemiparesis take into account the personality aspects of each patient and provide holistic care to patients.

Purpose

The purpose of the present study was to determine the dominant personality type in patients with hemiparesis in the Neurology Department of the Outpatient Unit of Dr. Soetomo General Hospital.

METHODS

Study Design and Area

This descriptive cross-sectional study was conducted by distributing a survey-based questionnaire among patients diagnosed with hemiparesis by specialists at the Neurology Department of the outpatient unit of Dr. Soetomo General Hospital.

Study Participants and Sample size

This study involved patients diagnosed with hemiparesis by specialists at the Neurology Department of the Outpatient Unit of Dr. Soetomo General Hospital who agreed to participate in the study from January 2020 to June 2021. Patients who could not be interviewed, such as those with speech-affecting stroke, severe mental disorders, and not compos mentis (GCS 456), were excluded from the study. The sample size was calculated using the sample size formula for descriptive research with an alpha of 5% and a precision of 10%. The minimum number of samples to be obtained was 72⁽²¹⁾.

$$n = \frac{Z\alpha^2 \times P \times Q}{d^2}$$

Where :

n = Sample size

α = Alpha (generalization error), set at 5%

$Z\alpha$ = The standard value of 5% α , which is 1,96

P = The proportion of dominant personality in previous study, which was 25% (Set lower due to differences in disease)⁽⁶⁾

Q = 1-P

d = Acceptable prediction error of dominant personality proportion set at 10%

Sampling

Samples were taken by using the total sampling technique. All patients with hemiparesis who met the inclusion criteria were contacted to fill out an online questionnaire via the Zoho platform or submit a physical questionnaire via courier services.

Ethical Consideration

This study was approved by the Ethics and Protocol Committee of Dr. Soetomo General Hospital with code number 0338/LOE/301.4.2/II/2021. A written informed consent was obtained from each participant prior to data collection.

Measurements

Data were obtained using a structured questionnaire. The collected data included socio-demographic and personality traits. Personality traits were assessed using a 40-item big five questionnaire⁽⁷⁾.

To measure their five personality dimensions, the big five questionnaire was distributed to the study subjects via an online Zoho form or sent to be filled out offline. The subjects were not required to be able to read since the questionnaire items could be read out. They answered the questionnaire items using the a scale of 1 – 5, where 1 representing the item being asked was not in accordance with the subjects habits or themselves, while 5 representing the item was in accordance with their habits or themselves. The scores obtained for each item were subsequently added up according to the personality being measured. The personality with the highest score was considered the dominant personality of the subject⁽²²⁾.

Data analysis

The collected data were analyzed using SPSS. Data were summarized using percentage, mean, and standard deviation.

RESULTS

Demographic Characteristics

Table 1 describes the demographic characteristics of the hemiparesis patient. A total of 72 hemiparetic patients consisting of 36 right hemiparetic patients and 36 left hemiparetic patients participated in this study. Overall, 27 subjects were female and 45 subjects were male. There were 19 women and 17 men in the right hemiparesis group, while in the left hemiparesis group there were 8 women and 28 men. The proportion of women was greater than that of men (52.78% women and 47.22% men) in the right hemiparesis group, while in the left hemiparesis group, the proportion of men was greater than women (77.78% men and 22.22% women). The mean age of all study subjects was 53.89±12.53.

Table 1. Demographic characteristics of respondents (N = 72)

Variable	Total research subjects	Hemiparese dextra	Hemiparese sinistra
Gender			
- Male	45	17	28
- Female	27	19	8
Age (Mean±SD)	53.89±12.53	52.89±12.78	54.89±12.37

Underlying Medical Conditions

The medical history of hemiparetic patients showed that 69 subjects had a stroke, 2 had an epilepsy/Todd paralysis, and 1 with more than 1 medical condition that could cause hemiparesis. Complete data of the medical conditions of the subjects can be found in Table 2.

Table 2. Characteristics of the research subjects' medical conditions

Variable	Frequency (%)
Stroke	69 (95.83)
Trauma	0 (0)
Primary brain tumor	0 (0)
Central nervous system infection	0 (0)
Epilepsy/todd paralisa	2 (2.78)
More than 1 medical conditions	1 (1.39)

Characteristics of the Research Subject's Personality Data

Table 3 shows the dominant personality data. It was found that 1 subject had an openness dominant personality, 3 had a conscientious dominant personality, 6 had an extraversion dominant personality, 55 had a dominant agreeableness personality, 4 had a neuroticism dominant personality, and the remaining 3 had mixed dominant personalities.

Table 3. Dominant personality data of research subjects

Personality type	Frequency	Percentage
Openess	1	1.39
Conscientiousness	3	4.17
Extraversion	6	8.33
Agreeableness	55	76.39
Neuroticism	4	5.55
Mixed	3	4.17

Table 4 showed the total score of each personality trait. Normality test using Kolmogorov-Smirnov in each personality group showed that the personality values of openness ($p=0,2$), conscientiousness ($p=0,2$), extraversion ($p=0,2$), and neuroticism ($p=0,2$) were normally distributed. Meanwhile, agreeableness personality is not normally distributed ($p=0,004$). These data indicate that the mean score for openness is 21.97 ± 3.91 , conscientiousness 23.69 ± 3.2 , extraversion 23.26 ± 4.23 , and neuroticism 20.21 ± 3.79 . Furthermore, agreeableness personality has a median score of 30 and a 25th percentile score of 28 and a 75th percentile score of 33.

Table 4. Total score of each personality traits

Personality type	Mean	Standart deviation	Median	25 th percentile	75 th percentile
Openess	21.97	3.91	22	19.25	24
Conscientiousness	23.69	3.20	24	22	26
Extraversion	23.26	4.23	23	21	25.75
Agreeableness	29.83	3.83	30	28	33
Neuroticism	20.21	3.79	20	17	23

DISCUSSION

Demographically, the study subjects were dominated by male patients. The number of subjects consisting 45 male and 27 female could happen since the study sample was dominated by patients with stroke (69 of 72 subjects) which epidemiologically is suffered more by men⁽²³⁾.

The present study found that the subjects had a mean age of 53.89 ± 12.53 . This remains line with a previous study which showed that patients with stroke tend to have a mean age of around 65 years⁽²⁴⁾. This slightly lower mean age could be due to the fact that there were several study subjects with epilepsy which, according to the existent literature, had a mean age of 28 years⁽²⁵⁾.

The above data show that patients with hemiparesis are dominated by patients with stroke. Of the 377 samples of patients with hemiparesis, 340 are patients with stroke, 37 with epilepsy, 16 with primary brain tumor and 7 with central nervous system infection. This is in line with the high prevalence of stroke (0.02-8/1000) and hemiparesis as a common clinical feature of stroke (53.4% of the total samples)^(26,27). Thus, the discussion of this study will be directed to determine the relationship between personality and stroke, although a few patients had diseases other than stroke.

Agreeableness is the dominant personality in hemiparetic patients in the present study. Agreeableness can be described as being friendly, trustworthy, and cooperative⁽²⁸⁾. Despite the fact that previous studies did not show that agreeableness was associated with an individual's health condition, a recent study showed that a higher score of agreeableness predicted poorer health outcomes⁽²⁹⁾.

Based on the health behavior model by considering the risk factors for stroke, there is one study that supports the results of the present study. A study conducted by Kye and Park stated that a high score of agreeableness was associated with poor and unhealthy dietary⁽³⁰⁾. An unhealthy dietary habit can trigger strokes and support other such stroke risk factors as diabetes, hypertension, and dyslipidemia that may lead a person to hemiparesis⁽¹⁵⁾.

However, other studies examining indirect risk factors for stroke, such as inadequate physical activity, obesity, and smoking, did not support higher agreeableness scores in stroke patients when associated with stroke risk factors⁽¹⁵⁾. Physical activity as a risk factor does not have a significant relationship with agreeableness personality⁽¹⁸⁾. Furthermore, obesity is only affected by conscientiousness personality⁽¹⁹⁾. The tendency to smoke and return to smoking after smoking cessation is affected by the personality domains of neuroticism, extraversion, and conscientiousness⁽²⁰⁾. A conclusion could be drawn that agreeableness personality may not be a personality with a high score when this maladaptive behavior begins to appear but is caused by the course of the disease that is a predisposing factor for stroke.

On the other hand, the high score of agreeableness can be caused by changes that occur due to the acquired disease, which is a risk factor for stroke. This is supported by Rassart et al. who revealed that, in patients with type I diabetes mellitus, men had a higher score of agreeableness than that of the control population⁽³¹⁾. This can explain the high score of agreeableness in stroke cases. In addition, the high proportion of men in stroke cases also supports this⁽²³⁾.

In addition, a study conducted by Jokela et al. also showed that in chronic disease the score for personality could decrease. A decline in personality scores is found in extraversion, conscientiousness, and openness traits. Meanwhile, the neuroticism trait had a slowdown in decline. This decrease was also found in patients with diabetes mellitus and hypertension, which are risk factors for stroke. Only agreeableness is not reduced. A decrease in the scores for agreeableness was only observed after a person had a stroke which could explain the cause of the dominant agreeableness personality in patients with stroke and also hemiparesis⁽³²⁾.

The present study has several limitations. First, although the results of the present study indicate that personality predicts an individual's health outcome, there remains many aspects of the relationship between health and personality that can be studied, particularly the relationship between personality and hemiparesis. Second, some of the questionnaires were filled out online. This reduces the reliability of the subjects' responses since, in case of any item the subjects not understood, the subjects could not ask the researchers. However, the impact of this was mitigated by responding every question that came to the researcher via private chat or telephone via WhatsApp. Third, there were many confounding factors, such as a wide age range and socioeconomic conditions, the researchers could not controlled in the present study. Despite the finding of previous studies that personality tends to be stable at older ages, there remains significant differences in the age range used by researchers (>21 years)^(33,34).

To our knowledge, the present study is a novel study in Indonesia. With the increasing prevalence of chronic diseases such as diabetes mellitus and hypertension, such diseases as stroke are also increasing. Interventions in the treatment of various neurological diseases are also increasing as technology advances. However, this does not guarantee that the patient would always follow the doctor's advice in maintaining their health, both before suffering from a neurological disease (such as a stroke) and after suffering from an illness. This is influenced by the lifestyle of each patient and the lifestyle is influenced by their personality. The present study is expected to help clinicians provide preventive and intervention efforts in accordance with the personality characteristics of each patient. Therefore, the present study is highly relevant to be undertaken at clinics despite the limitations.

CONCLUSION

The dominant type of personality in hemiparetic patients at Dr. Soetomo General Hospital from January 2020 to June 2021 according to the Big Five Personality is agreeableness.

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