UNIVERSITAS GADJAH MADA
THE DIFFERENCE IN FUNCTIONAL OUTCOME MEASURED BY BARTHEL INDEX OF ISCHEMIC STROKE PATIENT WITH DIABETES MELITUS AND WITHOUT DIABETES MELITUS RISK FACTOR IN RSUP DR. SARDJITO, YOGYAKARTA
SHABRINA NUR ALIYYA, Dr. dr. Ismail Setyopranoto., Sp.S (K) ; dr. Rusdy Ghazali Malueka, Ph.D., Sp.S
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

TABLE OF CONTENTS

RATIFICATION PAGE ..... **ii**

ASSERTION ..... **iii**

ACKNOWLEDGEMENT ..... **iv**

TABLE OF CONTENTS ..... **vi**

ABBREVIATION LIST ..... **xi**

ABSTRACT ..... **xii**

INTISARI ..... **xiii**

CHAPTER I INTRODUCTION **1**

A. Background **1**

B. Problem Formulation **4**

C. Research Question **4**

D. Research Objective **5**

E. Research Benefits **5**

F. Research Originality **5**

CHAPTER II LITERATURE REVIEW **7**

A. Literature Review **7**

1. Stroke 7

1.1. Definition of Stroke. 7

1.2. Stroke classification. 7

1.2.1. Ischemic Stroke (infarction). 7

1.2.2. Hemorrhagic Stroke. 8

1.3. Risk Factors of Stroke. 8

1.3.1. Age. 8

1.3.2. Race. 9

1.3.3. Sex. 9

1.3.4. Family history. 9

1.3.5. Hypertension. 9

UNIVERSITAS GADJAH MADA
THE DIFFERENCE IN FUNCTIONAL OUTCOME MEASURED BY BARTHEL INDEX OF ISCHEMIC STROKE PATIENT WITH
DIABETES MELITUS AND WITHOUT DIABETES MELITUS RISK FACTOR IN RSUP DR. SARDJITO, YOGYAKARTA
SHABRINA NUR ALIYYA, Dr. dr. Ismail Setyopranoto., Sp.S (K) ; dr. Rusdy Ghazali Malueka, Ph.D., Sp.S
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

1.3.6. Diabetes. 9
1.3.7. Smoking. 10
1.3.8. Atrial fibrillation. 10
1.3.9. Dyslipidemia. 10
1.3.10. Obesity. 11
1.4. Pathophysiology of Stroke. 11
1.4.1. Focal Ischemic Injury. 11
1.4.2. Cerebral Blood Flow. 12
1.4.3. Mechanism of Neuronal Injury. 13
1.4.4. Ischemic Penumbra (IP). 14
1.4.5. Neuronal Death. 15
1.4.6. Ischemic stroke 16
1.5. Stroke Prognosis 17
2. Diabetes and Stroke 19
2.1. Introduction to diabetes. 19
2.2. Diabetes classification. 20
2.3. Pathophysiology on diabetes and stroke. 20
3. Stroke Outcome Measurement. 22
3.1. Disability in Stroke Patients 23
4. Barthel Index. 25
B. Theoretical Framework 27
C. Conceptual Framework 28
D. Hypothesis 28
CHAPTER III STUDY METHODOLOGY 29
A. Study Design 29
B. Study Setting 29
C. Study Subject and Sample Size 29
1. Inclusion 29
2. Exclusion 30
3. Sample size 30
D. Study Variables 30

UNIVERSITAS GADJAH MADA
THE DIFFERENCE IN FUNCTIONAL OUTCOME MEASURED BY BARTHEL INDEX OF ISCHEMIC STROKE PATIENT WITH
DIABETES MELITUS AND WITHOUT DIABETES MELITUS RISK FACTOR IN RSUP DR. SARDJITO, YOGYAKARTA
SHABRINA NUR ALIYYA, Dr. dr. Ismail Setyopranoto., Sp.S (K) ; dr. Rusdy Ghazali Malueka, Ph.D., Sp.S
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

E. Operational Definiton of the Variables 31
F. Research Material and Tools 32
G. Statistic Method 33
H. Study Schedule 33
I. Ethical Consideration 33

CHAPTER IV RESULTS AND DISCUSSION 34
A. Research Result 34
1. Variable Descriptive 34
2. Bivariate Analysis 36
2.1. Difference between Barthel Index Score in the Independent Variable. 36
2.2. Difference between Barthel Index Score in the Confounding Variables. 37
2.2.1. Comparison of Barthel Index in Age Group. 37
2.2.2. Comparison of Barthel Index in Gender Group 38
2.2.3. Comparison of Barthel Index in Hypertension History ... 38
2.2.4. Comparison of Barthel Index in Obesity History 39
2.2.5. Comparison of Barthel Index in Dyslipidemia History ... 40
2.2.6. Comparison of Barhel Index in Atrial Fibrilation History40
2.2.7. Comparison of Barthel Index in Smoking History 41
3. Multivariate Analysis 41
B. Discussion 42

CHAPTER V CONCLUSION AND SUGGESTION 54
A. Conclusion 54
B. Suggestion 54

REFERENCE 55

APPENDICES 59

UNIVERSITAS GADJAH MADA
THE DIFFERENCE IN FUNCTIONAL OUTCOME MEASURED BY BARTHEL INDEX OF ISCHEMIC STROKE PATIENT WITH
DIABETES MELITUS AND WITHOUT DIABETES MELITUS RISK FACTOR IN RSUP DR. SARDJITO, YOGYAKARTA
SHABRINA NUR ALIYYA, Dr. dr. Ismail Setyopranoto., Sp.S (K) ; dr. Rusdy Ghazali Malueka, Ph.D., Sp.S
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

LIST OF TABLES

Table 1. Research on diabetes mellitus and ischemic stroke 6
Table 4. Difference of Barthel Index score based on Diabetic history 36
Table 5. Difference of Barthel Index based on Age Group 37
Table 6. difference of Barthel Index based on Gender Group 38
Table 7. Difference of Barthel Index based on Hypertension history..... 39
Table 8. Difference of Barthel Index based on Obesity history..... 39
Table 9. Difference of Barthel Index based on Dyslipidemia history..... 40
Table 10. Difference of Barthel Index score based on Atrial Fibrillation history 40
Table 11. Difference of Barthel Index based on Smoking history..... 41
Table 12. Multivariate Analysis of factors related to Barthel Index..... 42

UNIVERSITAS
GADJAH MADA
THE DIFFERENCE IN FUNCTIONAL OUTCOME MEASURED BY BARTHEL INDEX OF ISCHEMIC STROKE PATIENT WITH
DIABETES MELITUS AND WITHOUT DIABETES MELITUS RISK FACTOR IN RSUP DR. SARDJITO, YOGYAKARTA
SHABRINA NUR ALIYYA, Dr. dr. Ismail Setyopranoto., Sp.S (K) ; dr. Rusdy Ghazali Malueka, Ph.D., Sp.S
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

LIST OF APPENDICES

Appendix 1. Output Bivariate Analysis 59
Appendix 2. Multivariate Analysis 62
Appendix 3. Ethical Clearance..... 64

UNIVERSITAS GADJAH MADA
THE DIFFERENCE IN FUNCTIONAL OUTCOME MEASURED BY BARTHEL INDEX OF ISCHEMIC STROKE PATIENT WITH
DIABETES MELITUS AND WITHOUT DIABETES MELITUS RISK FACTOR IN RSUP DR. SARDJITO, YOGYAKARTA
SHABRINA NUR ALIYYA, Dr. dr. Ismail Setyopranoto., Sp.S (K) ; dr. Rusdy Ghazali Malueka, Ph.D., Sp.S
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

ABBREVIATION LIST

WHO	: World Health Organization
CVD	: Cardiovascular disease
T2DM	: Type 2 diabetes mellitus
ADL	: Activities of daily living
FIM	: Functional Independency Measurement
NIHSS	: National Institutes of Health Stroke Scale
mRS	: modified Rankin scale
TIA	: Transient Ischemic Attack
AVM	: Arteriovenous Malformation
BMI	: Body Mass Index
CBF	: Cerebral blood flow
IP	: Ischemic penumbra
CSF	: Cerebrospinal Fluid
SWD	: Spontaneous waves of depolarization
CN	: Coagulation necrosis
ES	: Embolic stroke
NO	: Nitric oxide
ROS	: reactive oxygen species
GADPH	: glyceralde- hyde 3-phosphate dehydrogenase
FFA	: free fatty acid
HDL	: high density lipoprotein
LDL	: high on low density lipoprotein
NGT	: nasogastric tube
PEG	: percutaneous endoscopy gastrostomy
AF	: Atrial Fibrillation
ECG	: Electrocardiogram
BI	: Barthel Index