

# Predictive Factors of Disability and Mortality: A Comparison of Ischemic Stroke and Hemorrhagic Stroke

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# PREDICTIVE FACTORS OF DISABILITY AND MORTALITY: A COMPARISON BETWEEN ISCHEMIC STROKE AND HEMORRHAGIC STROKE

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**OBJECTIVE** This study aimed to describe the prevalence of ischemic stroke (IS) and hemorrhagic stroke (HS) based on clinical outcome and compare the predictive factors of disability and mortality on IS and HS.

## METHOD

An epidemiology and retrospective cohort study. Data from electronic stroke register at Bethesda Hospital, Yogyakarta, Indonesia, from 2010 to 2017.

3288 subjects:  
 1887 IS patients  
 1477 HS patients

Stroke outcome clustered into 3 groups (based on modified Rankin scale)  
 Group 1: dead  
 Group 2: moderate and moderately severe disability  
 Group 3: without or mild disability or with slight disability

Another variables:  
 Age  
 Gender  
 Previous stroke history  
 Stroke symptoms  
 Comorbidities  
 Complications

**RESULTS** About 41.1% of HS subjects had a disability, 24% subjects death, and 34.9% without or mild disability, whereas 64.8% IS subjects were without or mild disability, 28.4% had a disability, and 6.8% subjects death.

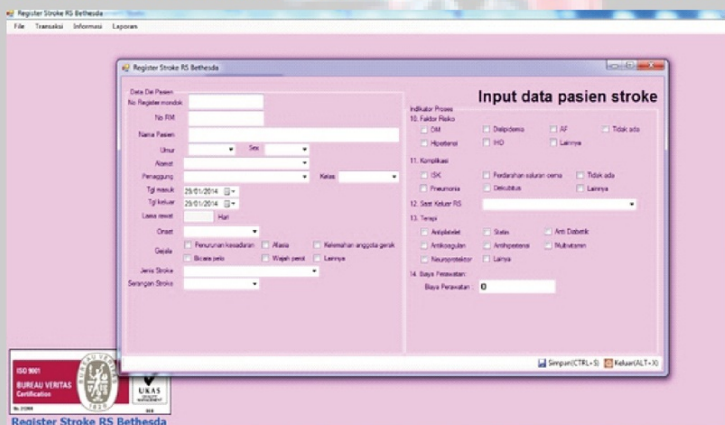
### Subjects Characteristics

Subjects dominated by male (IS: 59.6% vs HS: 56.4%), age >60 years for IS (56.6%), age <60 for HS (53.1%) and had the first time stroke (IS: 73.7%, HS: 80.7%). The most common symptom was limb weakness (IS: 75.1%, HS: 68.8%), comorbidity was hypertension (IS: 18.3%, HS: 75.8%), and complication was gastrointestinal bleeding (IS: 3.7%, HS: 17.3%).

### Analysis

Decubitus ulcer was the most significant factor of disability in IS (OR: 7.704, p: 0.000), followed by gastrointestinal bleeding, and pneumonia. GIT bleeding was the most significant factors of disability in HS (OR: 8.578, p: 0.000), followed by pneumonia and aphasia. GIT bleeding was also significant to mortality in IS (OR: 81.875, p: 0.000) and HS (OR: 53.665, p: 0.000).

**CONCLUSION** Complications are the main factor contributing to disability and mortality in IS and HS patients, especially decubitus ulcer and gastrointestinal bleeding.



Characteristics	ISCHEMIC STROKE			HEMORRHAGIC STROKE		
	Disable	Dead	Normal	Disable	Dead	Normal
Age						
>60	66%	67.7%	51.2%	50.6%	51.8%	39.1%
≤60	34%	32.3%	48.8%	49.4%	48.2%	60.9%
Gender						
Male	57.8%	52.1%	61.2%	53.1%	55.2%	61.1%
Female	42.2%	47.9%	38.8%	46.9%	44.8%	38.9%
Stroke history						
Recurrent	35.1%	35.9%	21.4%	21.0%	20.4%	16.5%
First	64.9%	64.1%	78.6%	79.0%	79.6%	83.5%
Symptoms						
Decreased of consciousness	28.8%	70.1%	5.6%	45.3%	90.4%	19.1%
Aphasia	25.9%	26.0%	8.0%	27.4%	14.7%	10.1%
Limb weakness	81.6%	64.4%	73.9%	78.5%	46.2%	76.1%
Dysarthria	26.2%	10.5%	28.1%	21.5%	4.8%	27.0%
Face asymetry	2.8%	1.2%	3.3%	2.5%	0.8%	3.5%
Hypertension	46.4%	48.2%	49.0%	75.9%	78.2%	74.1%
Dyslipidemia	32.2%	17.1%	46.1%	14.5%	7.9%	15.6%
Type 2 DM	21.3%	25.1%	21.5%	9.3%	5.9%	10.1%
IHD	6.3%	10.8%	4.7%	5.1%	2.0%	3.9%
Atrial fibrillation	5.2%	7.8%	2.2%	3.6%	3.4%	1.4%
Complications						
Urinary tract infection	2.7%	2.7%	0.6%	3.1%	0.3%	1.0%
Pneumonia	5.2%	16.8%	0.3%	7.4%	6.8%	1.0%
GIT bleeding	5.0%	31.1%	0.3%	13.2%	47.6%	1.0%
Decubitus ulcer	4.8%	4.2%	0.3%	4.0%	2.5%	0.6%

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