

# Pain and depression after stroke in women



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# Disclosure Statement

There are no conflicts of interest to declare

# Introduction - facts

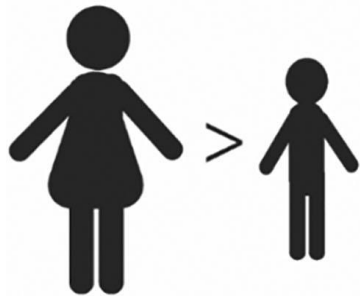
- Stroke can be different between women and men
  - Stroke is the 1st cause of death in women and kills more women than men
  - In the United States, 1 in 5 women between the ages of 55 and 75 will have a stroke
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- National Center for Health Statistics. [Multiple cause of death 2018–2022 on CDC WONDER Database](#). Accessed Feb 19, 2025
  - Seshadri S, Beiser A, Kelly-Hayes M, et al. The lifetime risk of stroke: estimates from the Framingham Study. *Stroke*. 2006;37(2):345–350

# Risk factors

History of APOs:  
Pre-term Delivery  
Gestational Hypertension  
Pre-eclampsia/ Eclampsia  
Fetal Growth Restriction



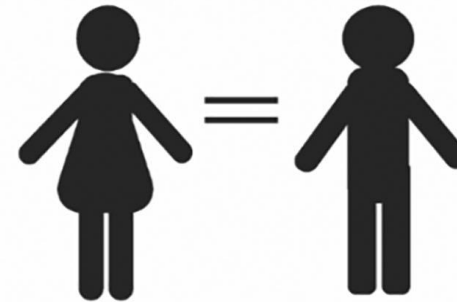
Early/ Late Menarche  
Early Menopause  
Oral Contraceptives w/ Estrogen  
Oral MHT  
Parity ( $\geq 5$  live births)  
GAHT for transwomen



Diabetes  
Hypertension  
Obesity  
Atrial Fibrillation  
Migraine w/ Aura



STROKE RISK



Physical Activity

APO indicates adverse pregnancy outcomes; GAHT, gender-affirming hormone therapy; and MHT, menopausal hormone therapy

## Stroke outcomes in women

Less favorable for women than men



Crude mortality<sup>4,124</sup> ↑

Adjusted mortality ↓ (after adjusting for confounders such as age, stroke severity, pre-stroke status, risk factors including atrial fibrillation):  
It means that women's higher mortality is attributable to advanced age, greater stroke severity, worse pre-stroke status, and higher prevalence of atrial fibrillation.

Functional recovery<sup>4,10,125-128</sup> ↓

Quality of life<sup>4,10,125-128</sup> ↓

Post-stroke depression<sup>126,129</sup> ↑

Post-stroke cognitive impairment<sup>130,131</sup> ↑

# Outcomes

- **Mortality:** At the age of 50 years, the female : male population ratio is 1.01, but this increases to 1.19 at 70 years, 1.56 at 80 years, and 2.70 at 90 years
- **Functional recovery:** Women have more physical impairments and limitations in activities of daily living (ADL), as measured by the Barthel index
- **QOL:** Only a few reports (?!) have looked at sex differences in QOL by use of stroke-specific instruments, such as the stroke impact scale or stroke-specific QOL scale. Almost all the studies show that women have lower overall QOL than do men after stroke.

US Census Bureau. Population projections. US interim projections by age, sex, race, and Hispanic origin: 2000–2050. Summary table 1A. [Sept 10, 2007]; <http://www.census.gov/ipc/www/usinterimproj/>

Gargano JW, Reeves MJ. Sex differences in stroke recovery and stroke-specific quality of life: results from a statewide stroke registry. *Stroke*. 2007;38:2541–48. doi: 10.1161/STROKEAHA.107.485482

# Outcomes

- **Depression:** Several studies also showed that women have more depressive symptoms, and are more likely to have clinically diagnosed depression after stroke than men. Post-stroke depression is known to hinder functional recovery
- **Pain:** Estimates of the prevalence of PSP vary widely, with one recent large study estimating that about 40% (10-70%) of all patients with ischemic strokes experience some type of chronic PSP. Among these patients, central post-stroke pain (CPSP) is the most frequent diagnosis, followed by peripheral neuropathic pain, pain due to spasticity, and joint subluxation

*Paradiso S, Robinson RG. Gender differences in poststroke depression. J Neuropsychiatry Clin Neurosci. 1998;10:41–47. doi: 10.1176/jnp.10.1.41.*

*O'Donnell MJ, Diener HC, Sacco RL, et al. Chronic pain syndromes after ischemic stroke: PROFESS trial. Stroke; a journal of cerebral circulation. 2013 May;44(5):1238–1243. doi: 10.1161/STROKEAHA.111.671008*

# Depression after stroke in women-facts

- Women are between 20% and 70% more likely to experience post-stroke depression than men
- Post-stroke depression was reported in about 30% of men compared with closer to 40% of women



# Depression after stroke in women

## Review Article

### Sex Differences in the Prevalence of Post-Stroke Depression: A Systematic Review

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BRITTANY POYNTER, M.D., MIRA SHUMAN, HON. B.SC.  
NATALIA DIAZ-GRANADOS, M.SC., MOIRA KAPRAL, M.D., FRCPC  
SHERRY L. GRACE, PH.D., DONNA E. STEWART, M.D., FRCPC

**Background:** *Depression after stroke occurs in 33% of individuals. It is grossly underdiagnosed and untreated. Objective:* *The authors studied sex differences in the prevalence of post-stroke depression (PSD), which have not been adequately studied, and may have important implications for clinical practice. Method:* *The authors performed a systematic review of five databases of all observational studies published between 1980 and 2008 that measured the prevalence of PSD. Results:*

# Depression after stroke in women

- Post stroke depression (PSD) is highly prevalent in both sexes, but appears to be slightly more common among women than men. Untreated depression after stroke can lead to a reduced quality of life, poorer prognosis, and increased mortality.
- The prevalence rate among women ranged from 5.9% to 78.3% and the prevalence rate among men ranged from 4.7% to 65.2%. The prevalence rate of PSD was higher among women in 35 of 45 studies (one study did not include any women).

# Depression after stroke in women

- Reasons for greater prevalence of PSD among women may include postulated factors explaining the greater prevalence in the general population, such as genetic factors and psychosocial inequities, and may also include issues related to recovery, differential support, and access to rehabilitation.

# Depression after stroke in women

## PSYCHIATRY INVESTIGATION

[Psychiatry Investig](#) > [Volume 15\(2\); 2018](#) > [Article](#)



### Original Article

Psychiatry Investigation 2018;15(2):141-146.

Published online: October 30, 2017

DOI: <https://doi.org/10.30773/pi.2017.10.11>

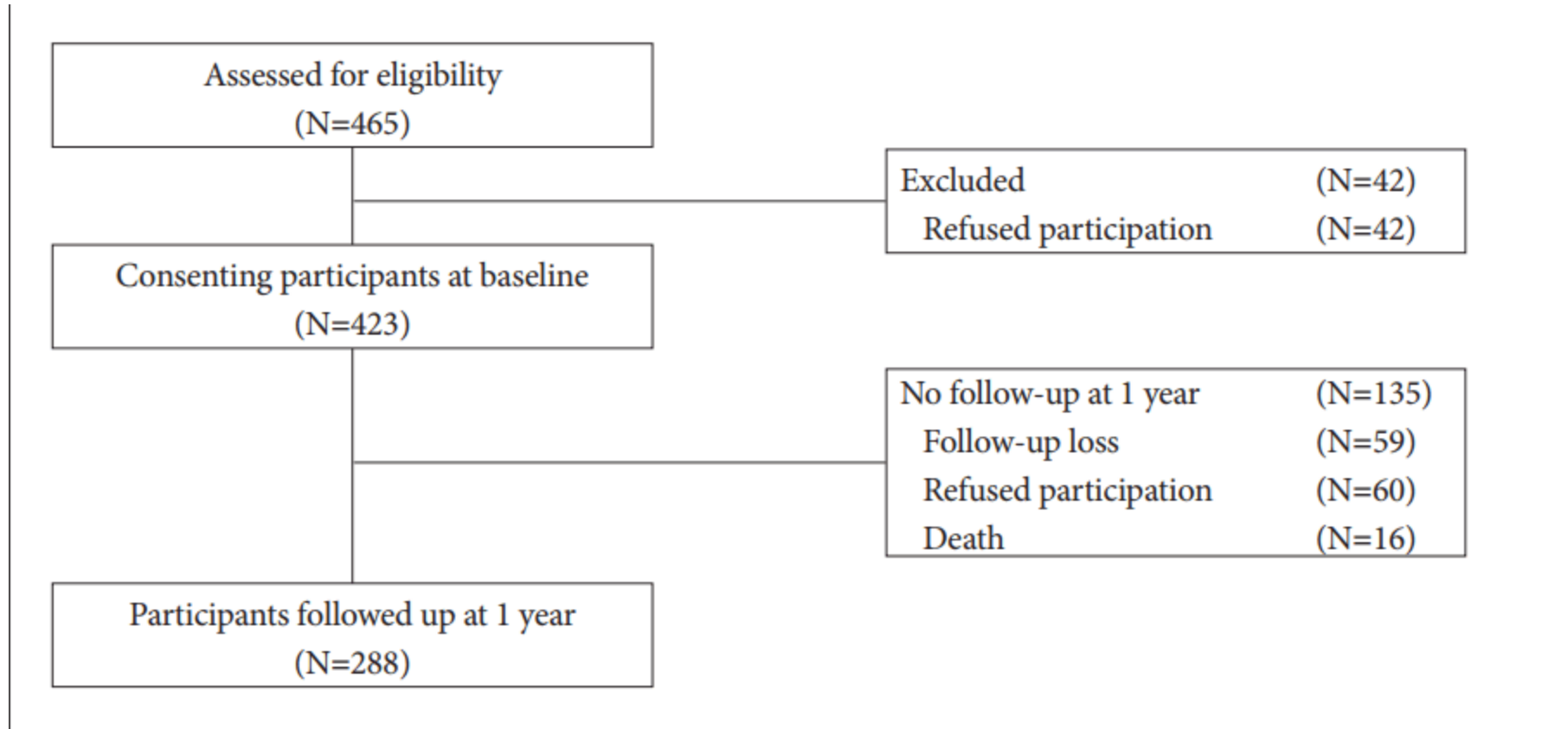
## Longitudinal Impact of Depression on Quality of Life in Stroke Patients

Eun-Song Kim<sup>1</sup>, Ju-Wan Kim<sup>1</sup>, Hee-Ju Kang<sup>1</sup>, Kyung-Yeol Bae<sup>1</sup>, Sung-Wan Kim<sup>1</sup>, Joon-Tae Kim<sup>2</sup>, Man-Seok Park<sup>2</sup>, Ki-Hyun Cho<sup>2</sup>, Jae-Min Kim<sup>1</sup>

<sup>1</sup>Department of Psychiatry, Chonnam National University Medical School, Gwangju, Republic of Korea

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# Depression after stroke in women



# Depression after stroke in women

- The major finding of longitudinal study of a post-stroke cohort is that PSD had a significant and persistent negative impact on QOL at 2 weeks and 1 year after stroke. The negative effect of PSD was evident in the four WHOQOL-BREF domains and remained significant after adjusting for relevant covariates.
- The fact that PSD is underdiagnosed and undertreated is well documented

# Pain after stroke in women



# Pain after stroke in women - facts

- Pain is one of the most poorly understood complications after a stroke and is commonly under-reported, under-diagnosed and undertreated. It's estimated to affect about 30%–40% of stroke survivors.
- Up to 42% of survivors report pain 4-6 months after a stroke and up to 21% report pain a year or more after a stroke.
- Post-stroke pain can include headache, muscle and joint pain, shoulder pain and neuropathic (nerve) pain.
- Patients are often poorly informed about post-stroke pain and may stop treatment too early.



# Pain after stroke in women



Journal of the Neurological Sciences

Volume 405, Supplement, 15 October 2019, Pages 56-57



## Risk factors of post stroke pain

I. Suharjanti, V. Kusuma

- Nine variables of risk factors (age, gender, stroke duration, stroke type, stroke location, motoric strength, functional disability, depression, and smoking) were analyzed bivariate followed by multivariate. It were determined the significant variables in PSP.
- Three of nine variables in bivariate analysis showed  $p < 0.25$ , and were followed by multivariate analysis; they were **gender, stroke duration, and depression**

# Pain after stroke in women - symptoms

- Central Post-Stroke Pain (CPSP) is a term used to describe the symptom of pain arising after a stroke that is secondary to a lesion within the central nervous system (CPSP can be difficult to characterize, as it can be subjectively described by a patient in a variety of ways. Descriptions can range from aching, dull, and throbbing to sharp, stabbing, shooting, or burning pain)
- Complex regional pain syndrome (CRPS), sometimes referred to as reflex sympathetic dystrophy, is a condition characterized by burning pain, increased sensitivity to tactile stimulation, and vasomotor changes including edema and changes in skin temperature and color

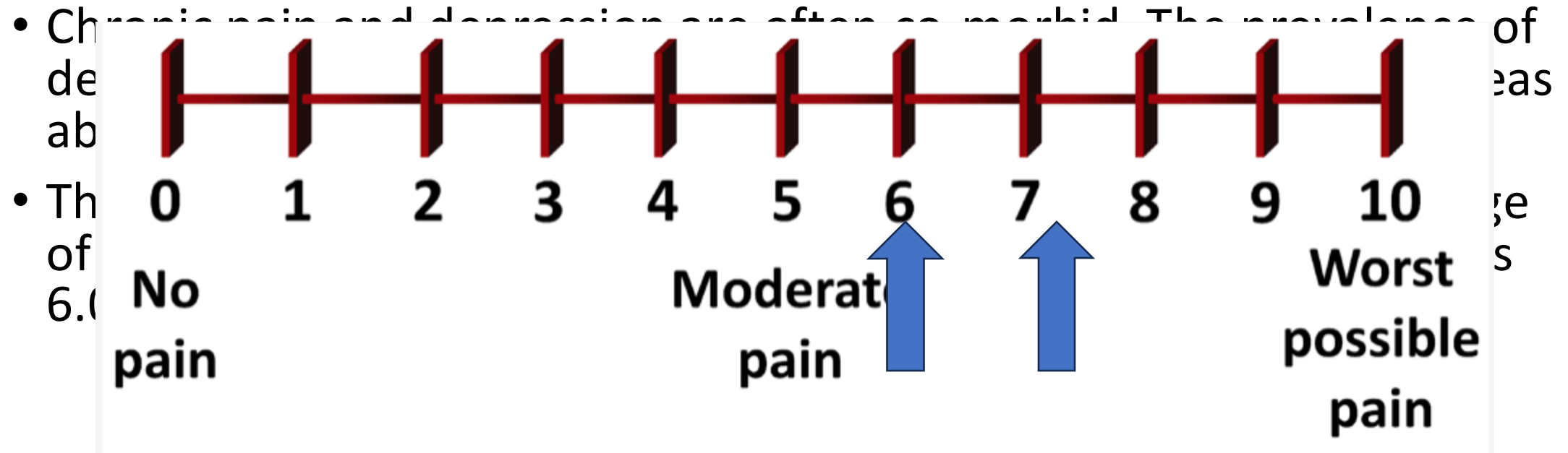
# Pain after stroke in women - symptoms

Pain associated with spasticity: Spasticity is an involuntary, often painful, contraction of muscle groups from an exaggeration of the stretch reflex. It can be seen with lesions to the central nervous system that include upper motor neuron insults, and is commonly seen in stroke as a long-term sequela. One of the devastating consequences of spasticity is the development of contractures. At this stage, the muscle body and tendon have shortened secondary to the chronic hyperactivity, and the limb may have become irreversibly non-functional.

# Pain after stroke in women - symptoms

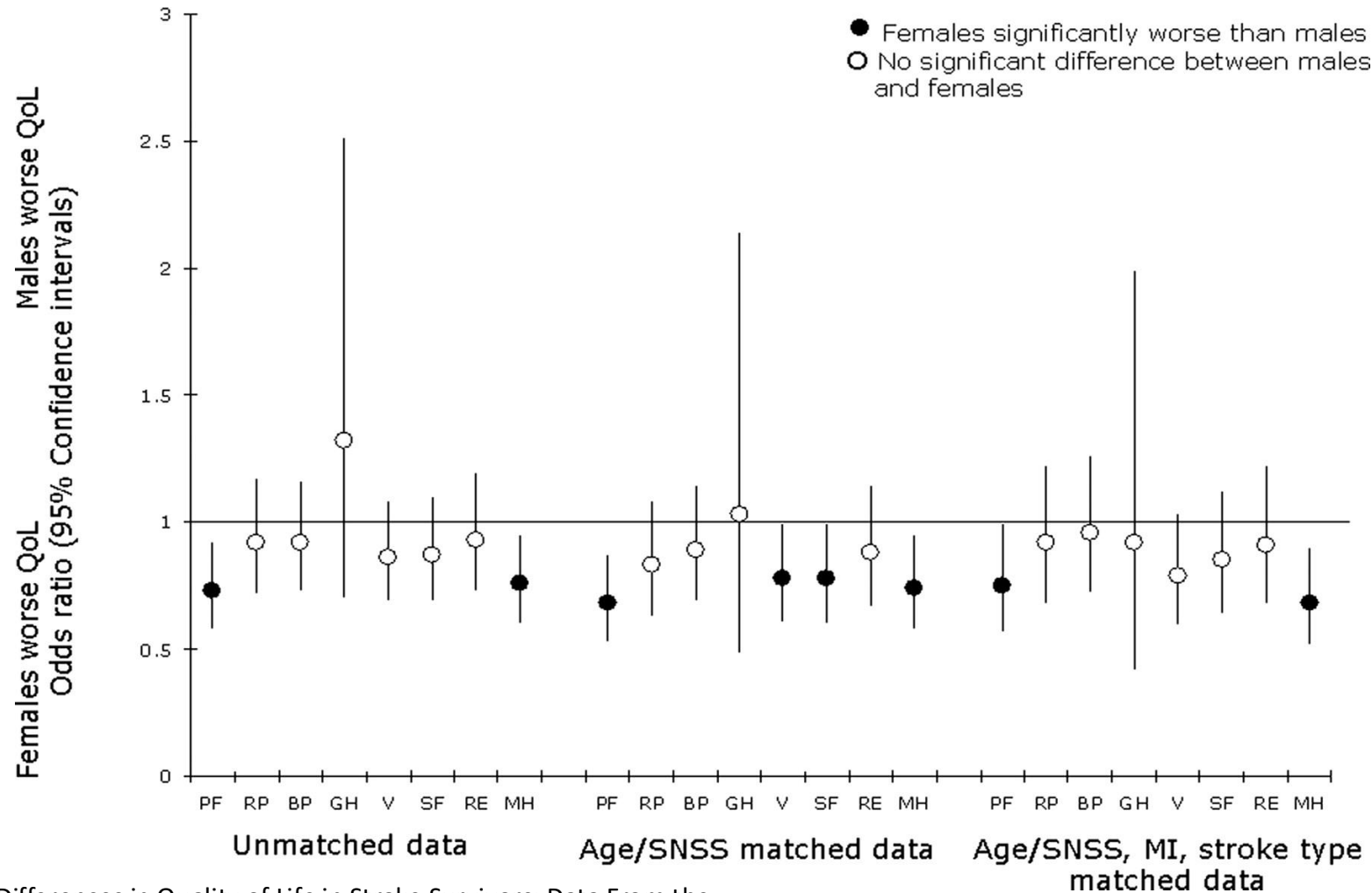
- Subluxation and other painful disorders of the hemiplegic shoulder:  
When a hemiplegic limb is left unsupported, external forces may place extra stress on that joint leading to subluxation. The most commonly involved limb in post-stroke pain syndromes is the arm at the shoulder joint most likely due to the effects of gravity. This often occurs during the early stages of stroke recovery when the paretic limb is flaccid, and should be monitored carefully in the acute inpatient setting

# Pain and depression after stroke



Wong, W.S., Chan, S.T., Fung, V.B. *et al.* The differential mediating effects of pain and depression on the physical and mental dimension of quality of life in Hong Kong Chinese adults. *Health Qual Life Outcomes* 8, 1 (2010). <https://doi.org/10.1186/1477-7525-8-1>

# Pain and depression after stroke: QoL



All models adjusted for age, baseline systolic blood pressure, baseline severity, premorbid mRS, premorbid residency, history of myocardial infarction, stroke type (cardioembolic, large artery), and treatment group. PF indicates physical functioning; RP, role physical; BP, bodily pain; GH, general health; V, vitality; SF, social functioning; RE, role emotional; MH, mental health. SNSS, Scandinavian Neurological Stroke Scale

# Pain and depression after stroke: conclusions



# Pain and depression after stroke: conclusions

- Women have worse QOL (quality of life) than men after stroke, even after adjusting for important sociodemographic variables, stroke severity, and disability
- Women are more likely to experience chronic pain and depression after a stroke than men
- These differences come from various factors, including hormonal differences, variations in pain perception, and social influences



# Pain and depression after stroke: conclusions

- The fact is that PSD and PSP are often underdiagnosed and undertreated
- Raising awareness about these problems is the only way to prevent a lower quality of life
- We have to use post-stroke checklists to improve QoL
- More research is needed to assess the responsiveness of women to physical, cognitive, and social interventions during the post-stroke period. These studies might support the development of sex-specific interventions that improve post-stroke recovery for women and reduce their excess burden of disability.

# Pain and depression after stroke: conclusions

- It is essential to understand that addressing pain and depression in women post-stroke requires a comprehensive approach
- It is necessary to have holistic approach considering both the physical and emotional dimensions of recovery
- Educating patients, caregivers, and healthcare providers about these specific challenges can help facilitate better management strategies, ensuring that women receive the support they need for holistic recovery

