

Association of sleep duration and insomnia with metabolic syndrome and its components in the Women's Health Initiative

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Sleep recommendation

At least 7 hours of sleep per night

The American Academy of Sleep Medicine and Research Society

7-9 hours per night

National Sleep Foundation

7-8 adults 65 years and older

Center of Disease Control



Poor sleep

Quantity and Quality of sleep

Health

Physical

Inflammation

Cardiovascular disease

Obesity

Diabetes

Infectious disease

Mental

Depression

Anxiety

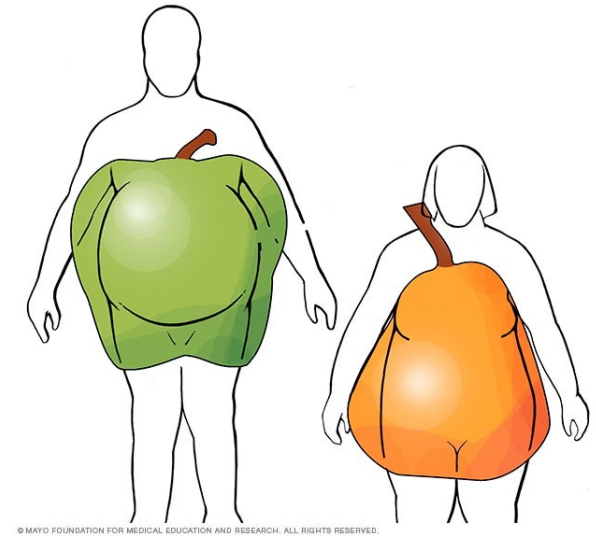
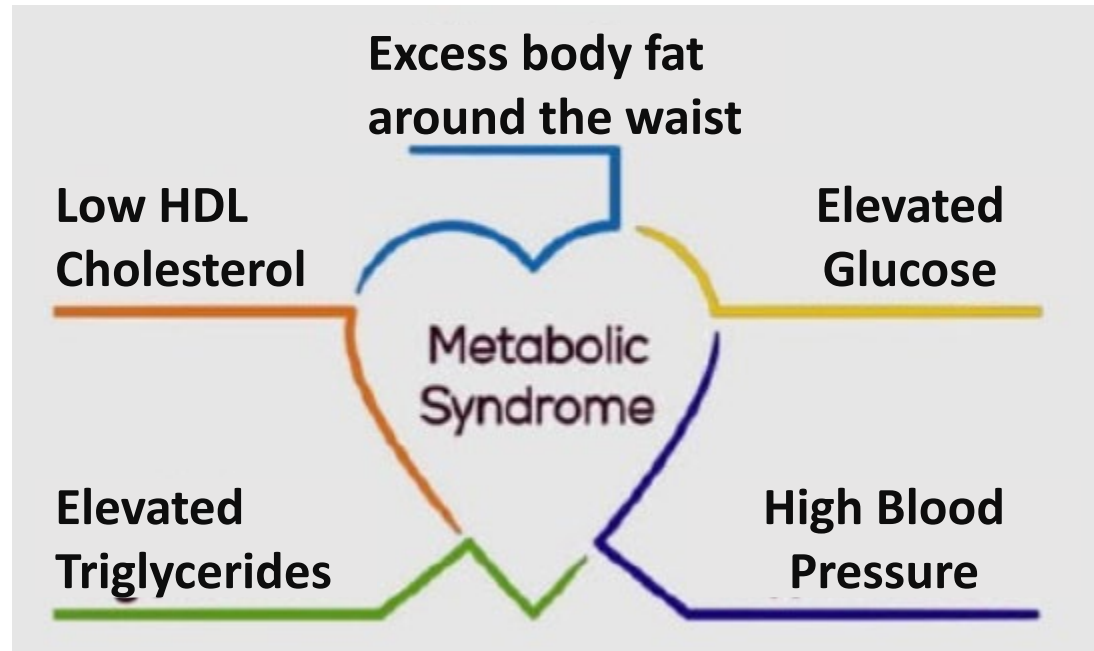
Cognitive performance

Neurodegenerative disease

Cognitive decline

Alzheimer's disease

Is Sleep Quantity and Quality Associated with Metabolic Syndrome?



Diagnosis: presence of at least 3 factors

(National Cholesterol Education Program's Adult Treatment Panel-III report 2004)

Elevated Blood Pressure



Systolic Blood Pressure ≥ 130 mmHg
Diastolic Blood Pressure ≥ 85 mmHg
Use of anti-hypertension medication

Excess body fat around the waist

Waist circumference



measured at the narrowest point of the waist
greater than 88 cm (34.6 inches)

Elevated Glucose

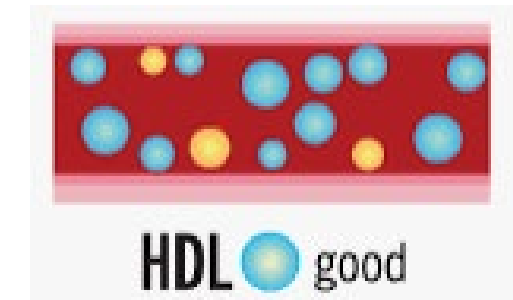
Fasting glucose greater than 100 mg/dL



Low High Density Lipoprotein (Good Cholesterol)

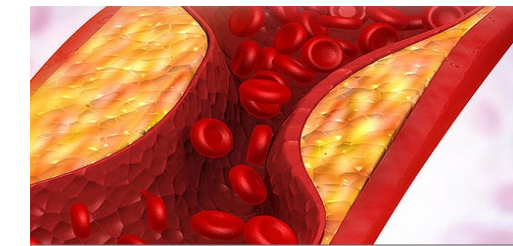
Less than 50 mg/dL

Cholesterol lowering medication



High Triglycerides

Greater than 150 mg/dL





American Heart Association

Why having Metabolic Syndrome matters?

Cardiovascular disease
heart attacks
stroke

Peripheral vascular disease

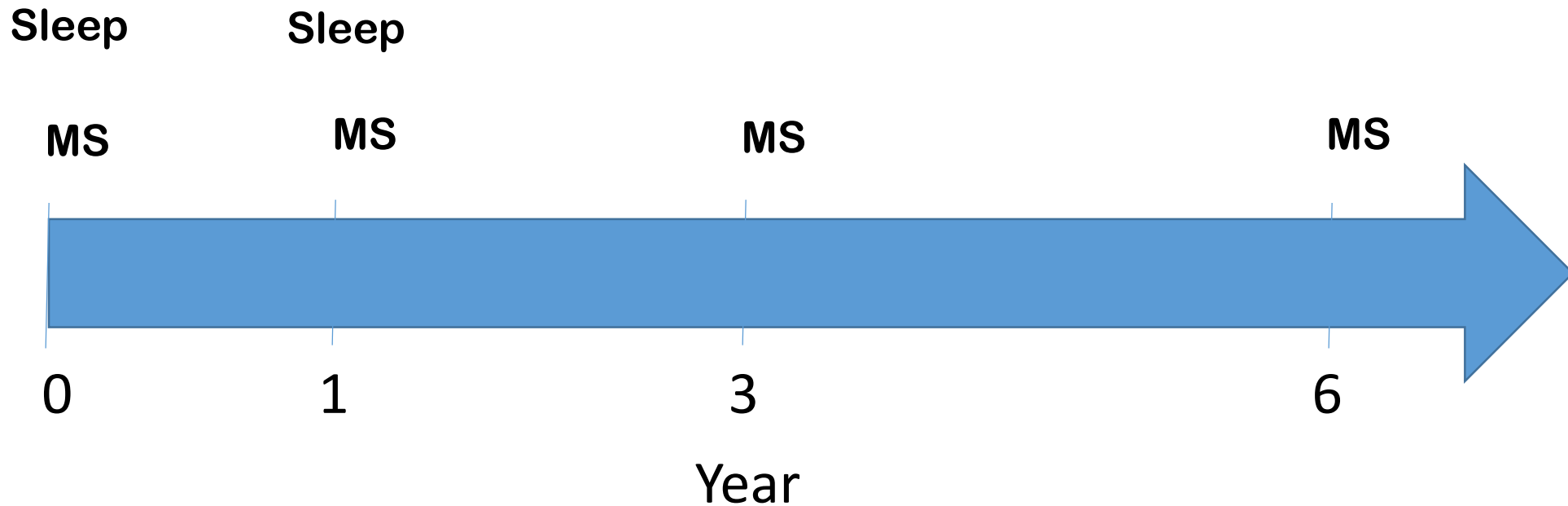
Type 2 diabetes

Liver and kidney disease

Over a billion people in the world are now affected by Metabolic Syndrome (*Saklayen MG, Curr Hyperten Rep, 2018*)

Women's Health Initiative – timeline

(baseline 1993-1998)



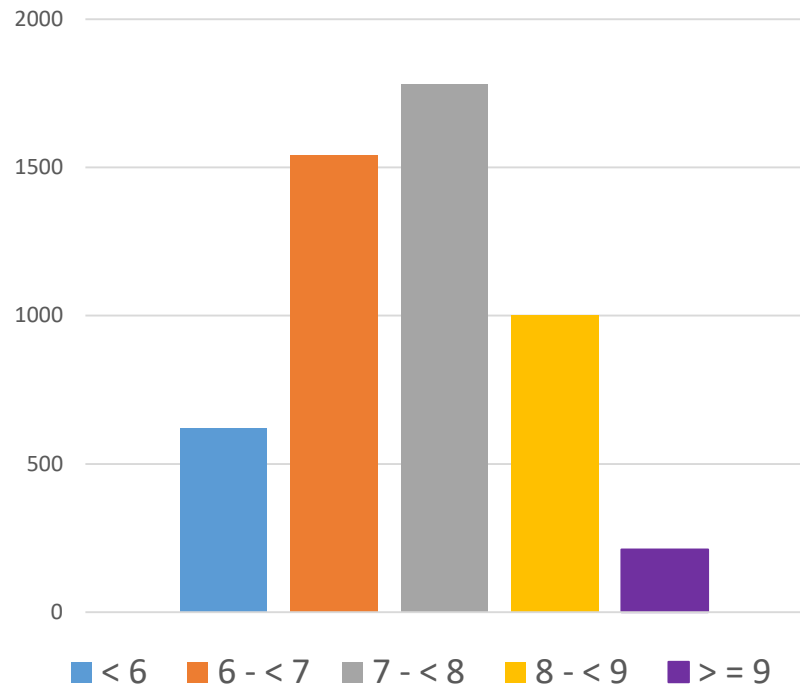
Women in the study: 5,163

MS: metabolic syndrome components

Women's Health Initiative Sleep questionnaire

Quantity – Duration

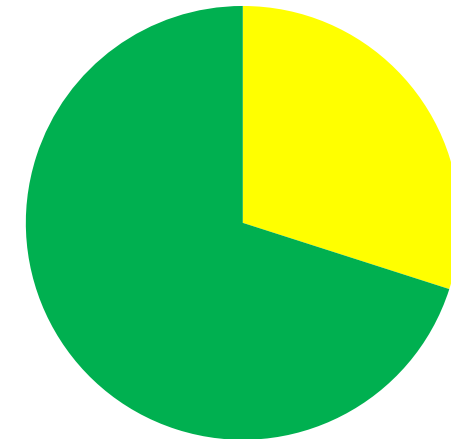
“about how many hours of sleep did you get on a typical night during the past four weeks?”



hours of sleep

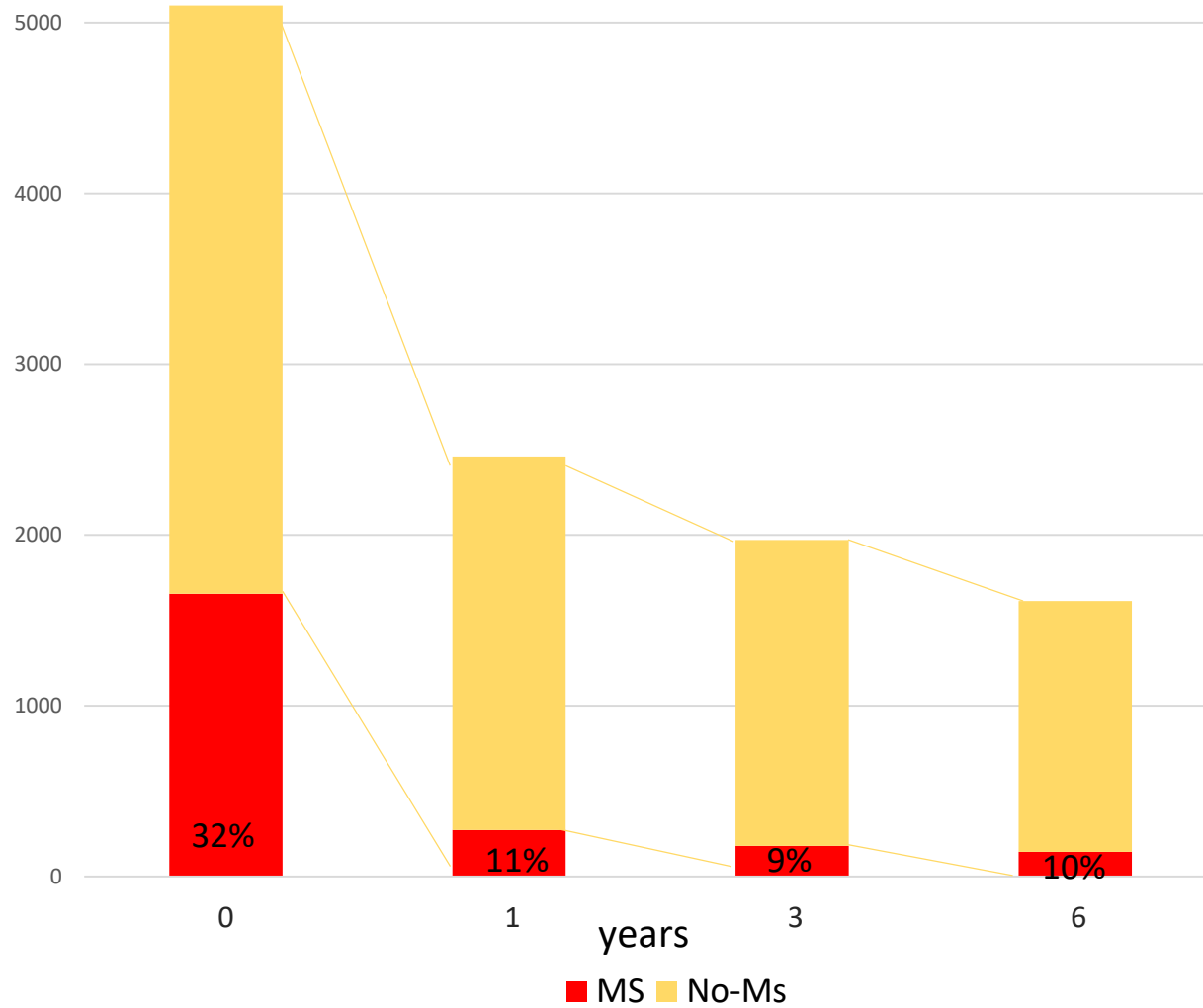
Quality – Insomnia

trouble falling asleep
waking up several times during the night
waking up earlier than planned
trouble getting back to sleep
how restful sleep was during the past 4 weeks

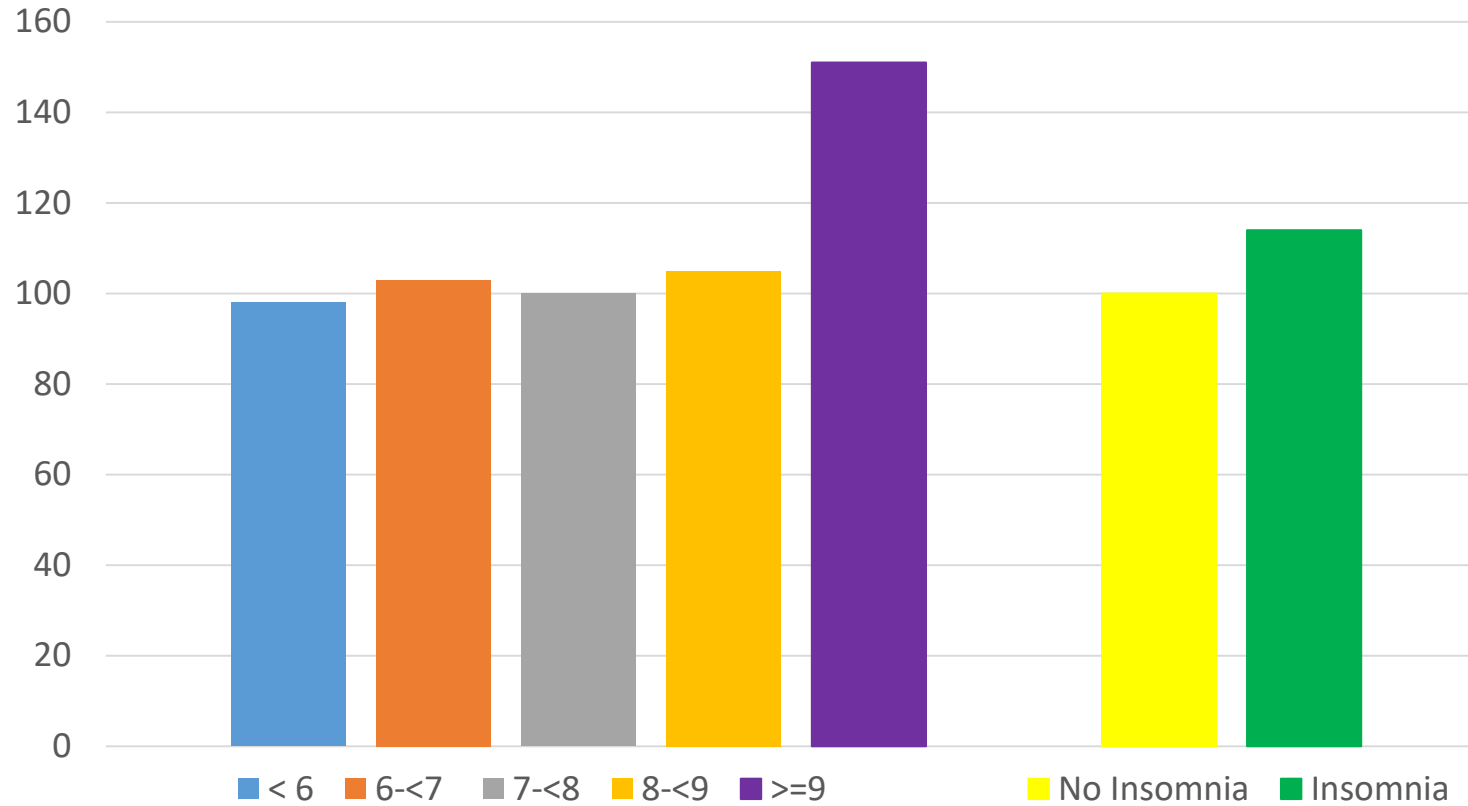


insomnia no-insomnia

Metabolic Syndrome



Occurrence of Metabolic Syndrome at year 0



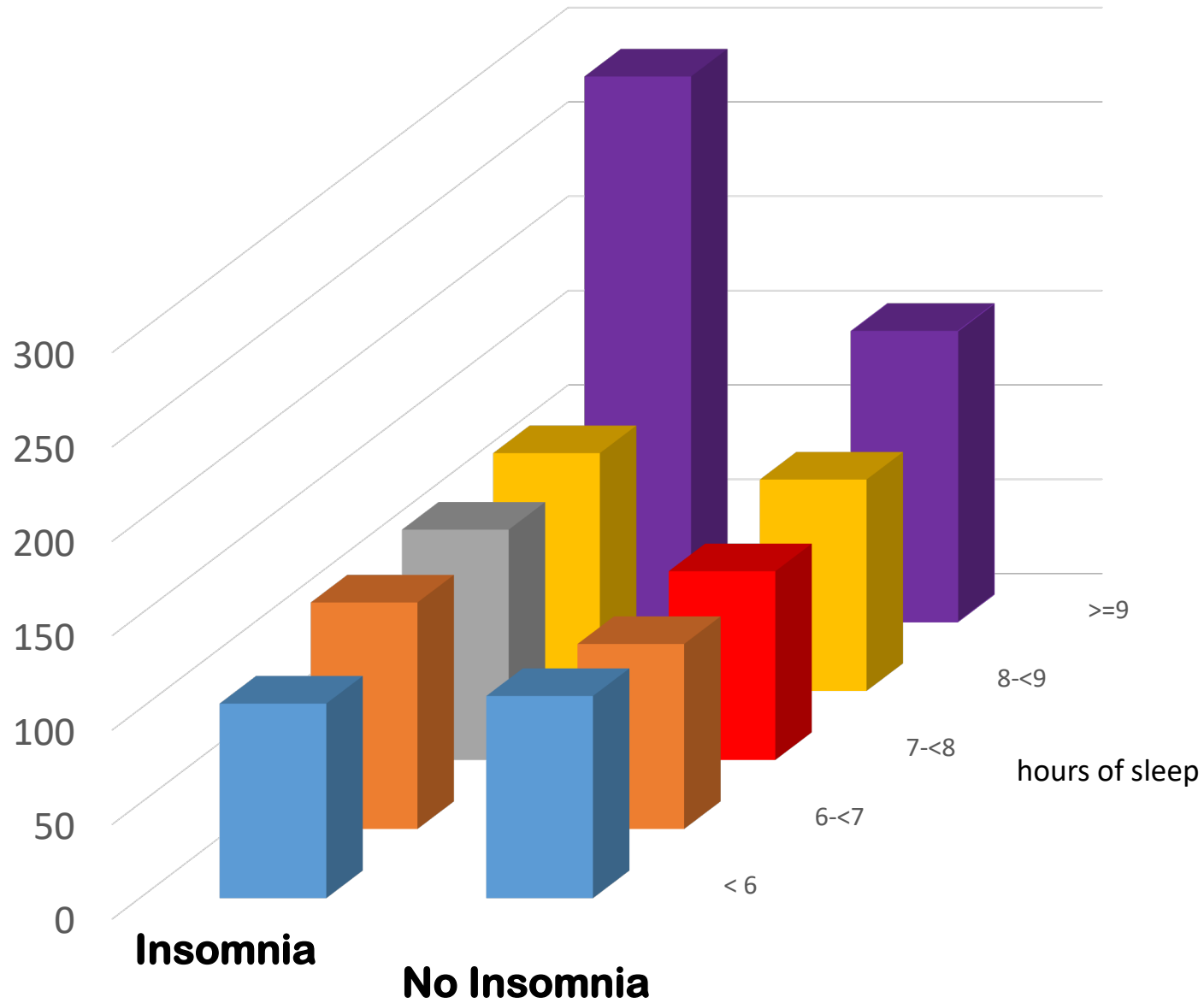
Hours of sleep

Large waist circumference
High triglycerides

No Insomnia
Insomnia

Large waist circumference
High glucose

Occurrence of Metabolic Syndrome at year 0



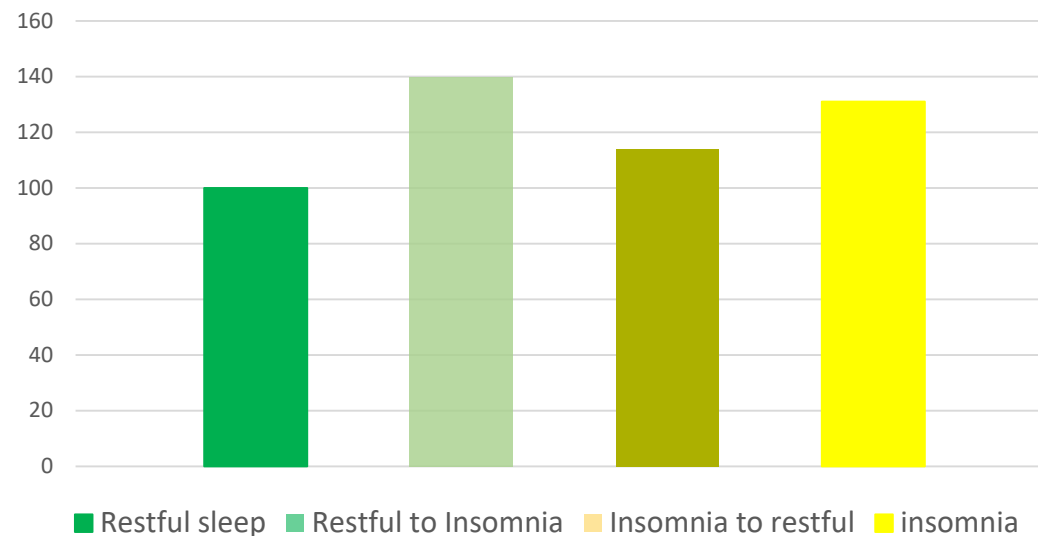
Risk of Metabolic Syndrome at future time

Sleep duration

Women with different duration of sleep had a similar risk of developing metabolic syndrome

Women with less than two 6 hours of sleep reported on two consecutive exams had an increase risk of Hypertension.

Insomnia





The WHI study has shown...

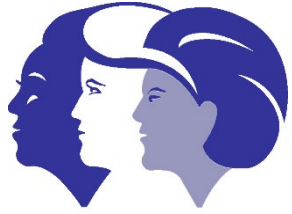
...“ Among postmenopausal women in the WHI, sleep duration and insomnia were associated with current and future risk of having metabolic syndrome”

Women with **long hours of sleep** were more likely to have **metabolic syndrome**, large waist circumference, and high level of triglycerides.

Women with **insomnia** were more likely to have **metabolic syndrome**, large waist circumference, and high glucose level.

Women with persistent **short hours of sleep** over time were more likely to develop **hypertension** later on.

Women who developed **insomnia** over time were more likely to develop **metabolic syndrome** and high level of triglycerides.



The WHI study results are in agreement with other studies on sleep duration in women

Long sleep duration
Insomnia



Reduced energy

Reduced physical activity

Lower muscle mass

The WHI study is the first one that examined the changes in sleep quality over time and metabolic syndrome

Changes in pattern of sleep over time



Metabolic syndrome

How to practice good sleep

Develop a consistent sleep routine

Maintain a regular bed time

Skip your afternoon naps

Change of sleeping environment

Manage Pain, Anxiety, and **Medical Conditions**

Address your stress levels - Let your mind and body

slow down close to bedtime

Try using more pillows if you have body aches

Address snoring issues





**“If you have trouble falling asleep, lick your feet
for a few minutes. It works for my cat!”**

Thank you !