

# Perimenopause, Menopause and ADHD

Jeanette Wasserstein, Ph.D.<sup>1</sup>, Gerry A Stefanatos, D. Phil.<sup>2</sup>, Mary Solanto, Ph.D.<sup>3</sup>

<sup>1</sup> Icahn School of Medicine at Mount Sinai, New York NY

<sup>2</sup> Temple University, Philadelphia, PA

<sup>3</sup> Hofstra-Northwell School of Medicine, New York, NY

Contact: Jeanette.Wasserstein@gmail.com



## INTRODUCTION

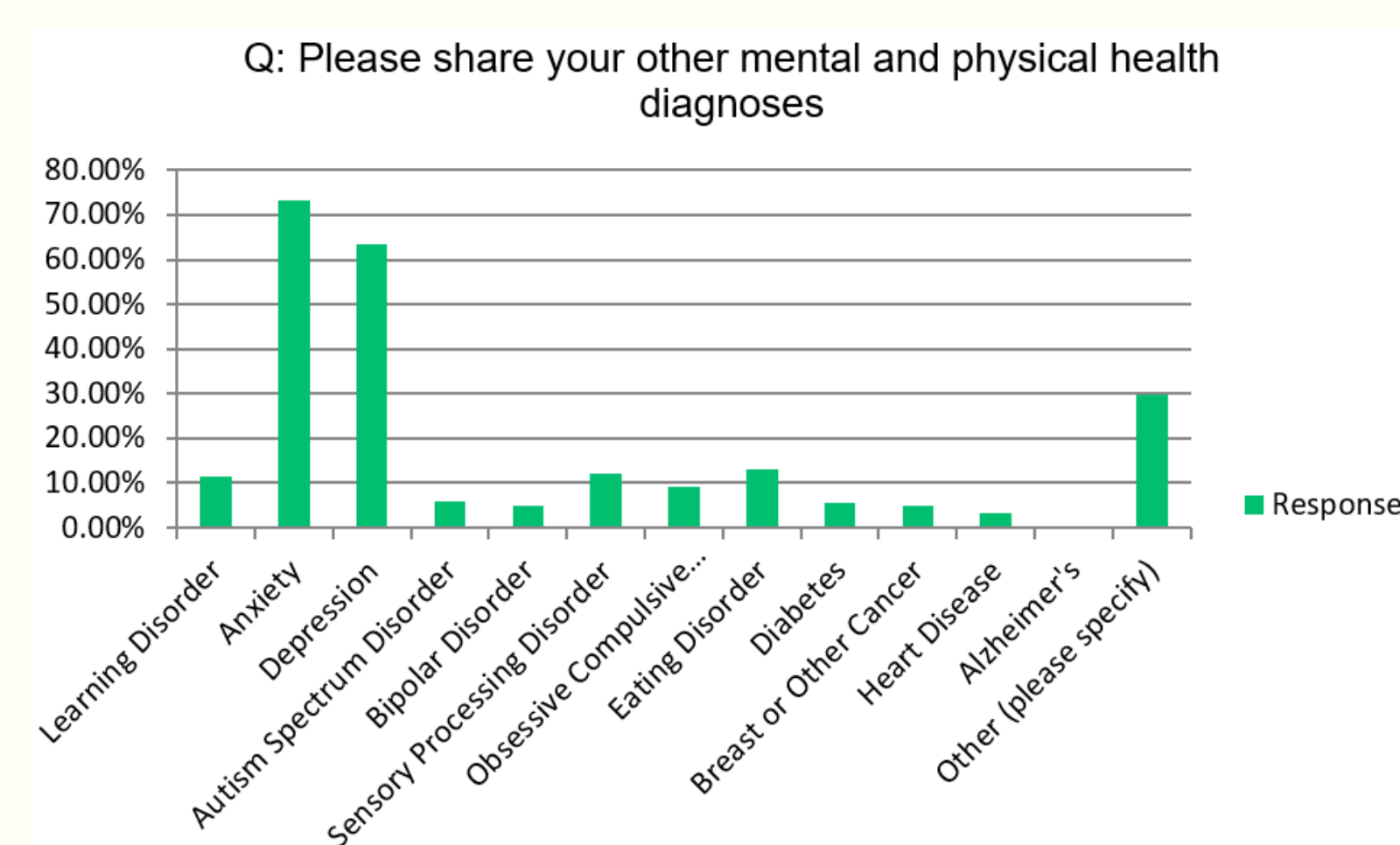
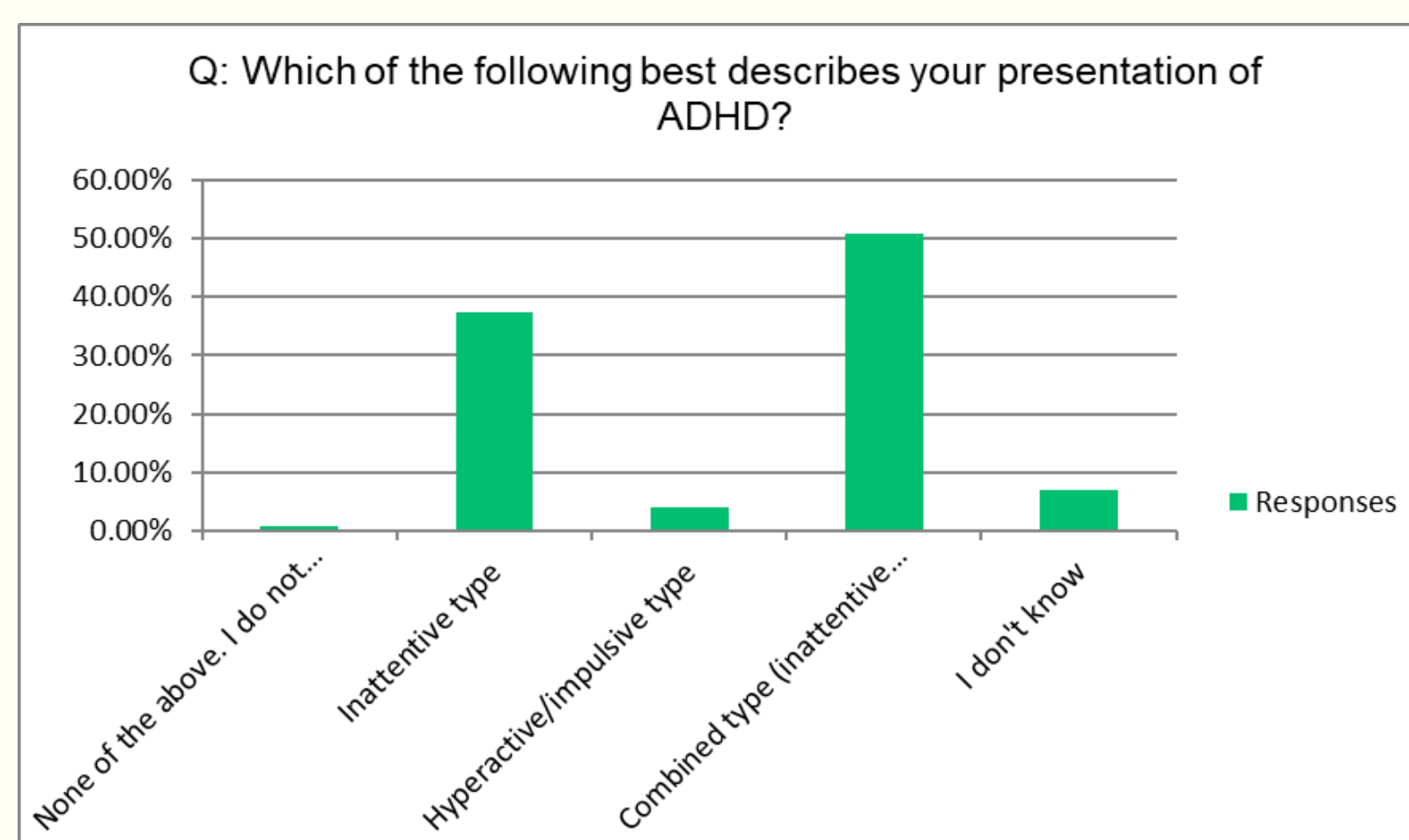
Hormones often have cognitive consequences that can disclose their influence on aspects of brain development and function. Changes in cognition<sup>4,5</sup> during menopause and perimenopause, for example, may result from neurophysiological alterations in hippocampus and prefrontal cortex which are rich in estrogen receptors. This study examines the cognitive changes that occur during the climacteric period in women diagnosed with ADHD.

## METHODS

### Participants

Information was obtained from a reader survey sponsored by ADDitude Magazine, a resource magazine for both professionals and lay public interested in ADHD. Responses were received from 3,549 women who had experienced perimenopause or menopause, and of whom 81% had been diagnosed with ADHD. Respondants:

- ranged in age from 40 to 84 (median=52).
- were asked to indicate their age at diagnosis and the impact of each of 11 different symptoms or associated problems of ADHD at each of 5 time intervals: 0-9 years, 10-19 years, 20-39 years, 40-59 years and 60+ years.

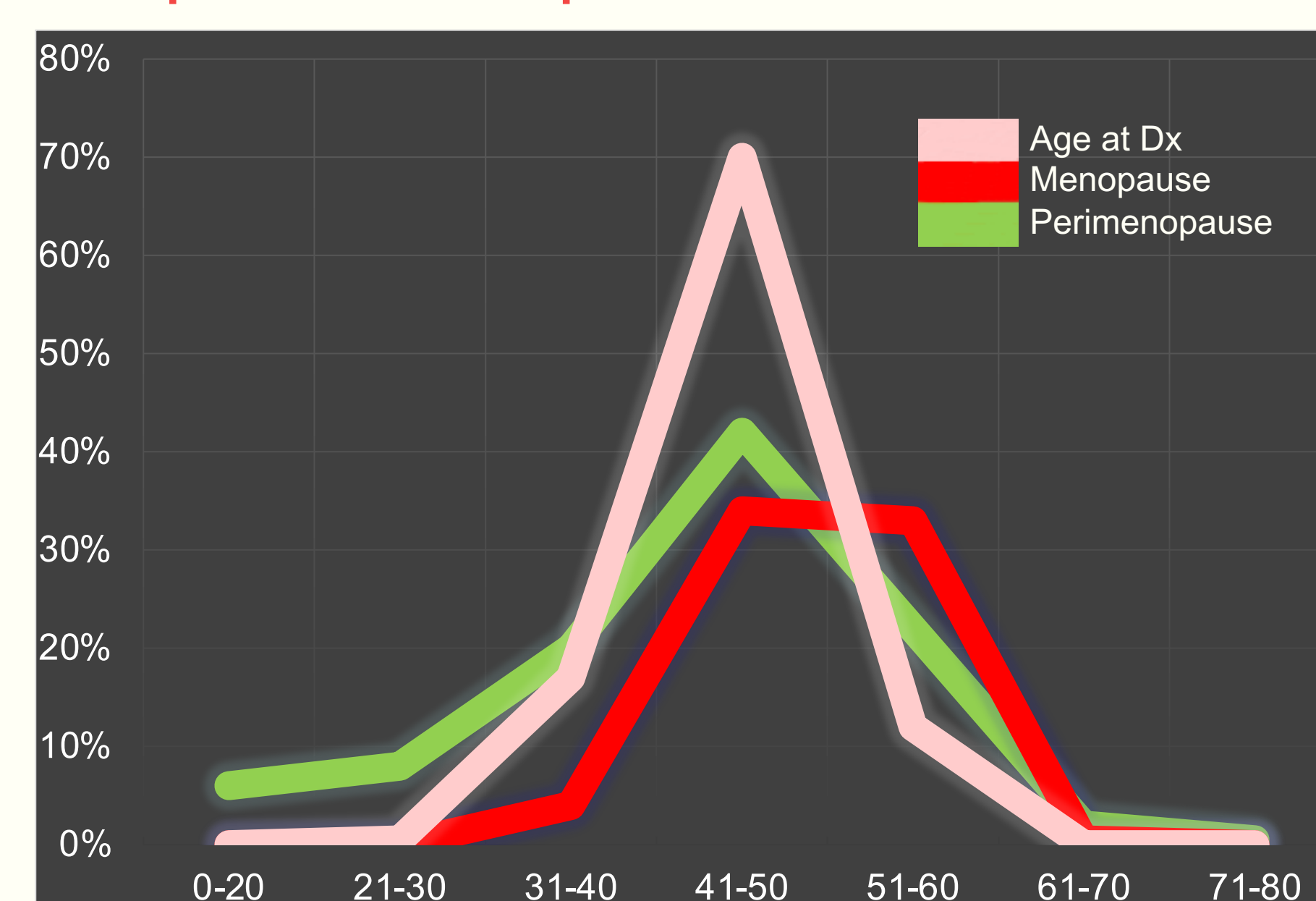


Approximately half of the sample self-reported the Combined Presentation, and approximately a third had the Predominantly Inattentive Presentation. Anxiety and depression predominated among the comorbidities, as is typically true for adults with ADHD<sup>6</sup>.

The smaller percentages for autism, OCD, learning disabilities, and eating disorders are also typical of the adult ADHD population.

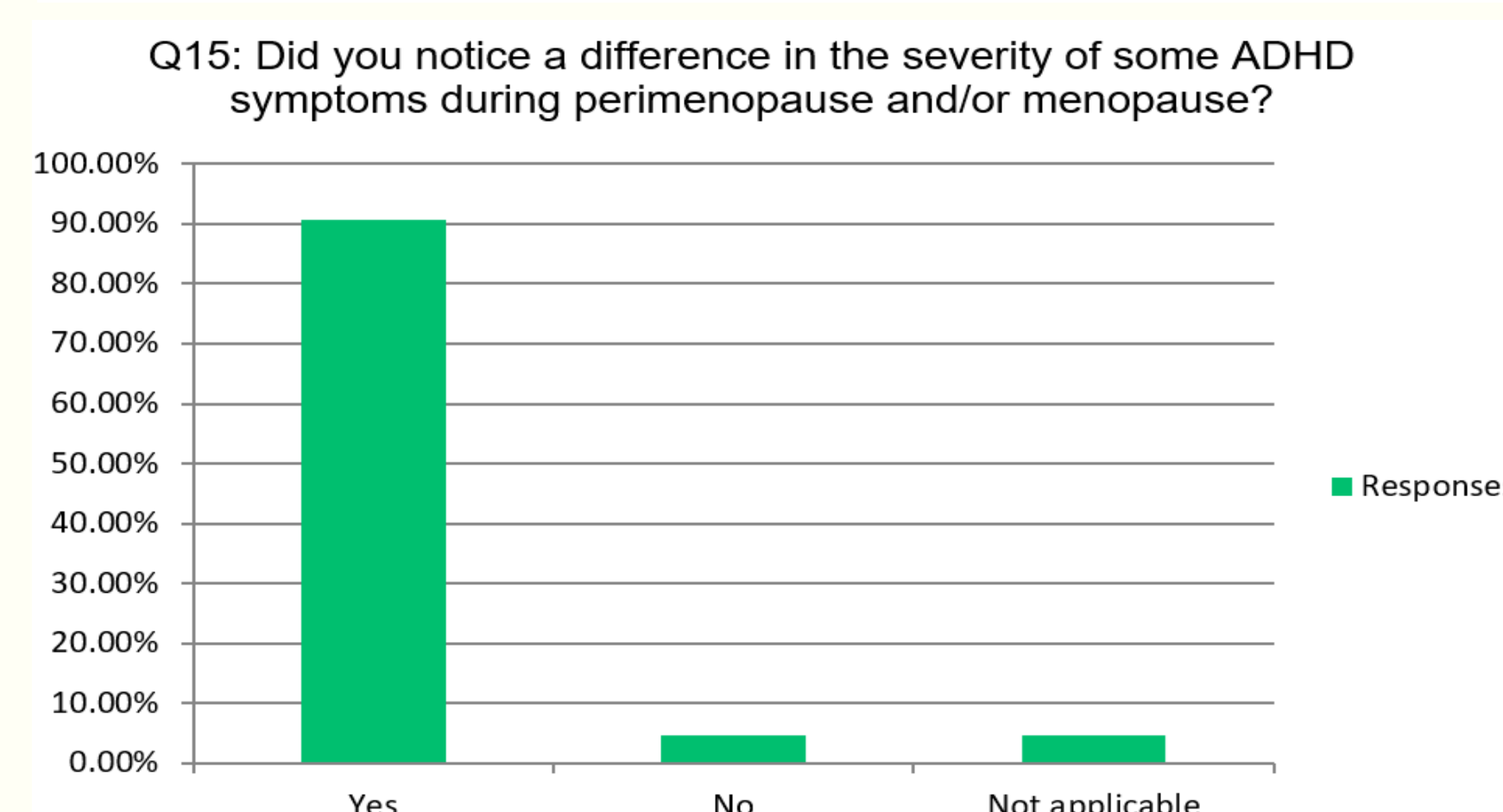
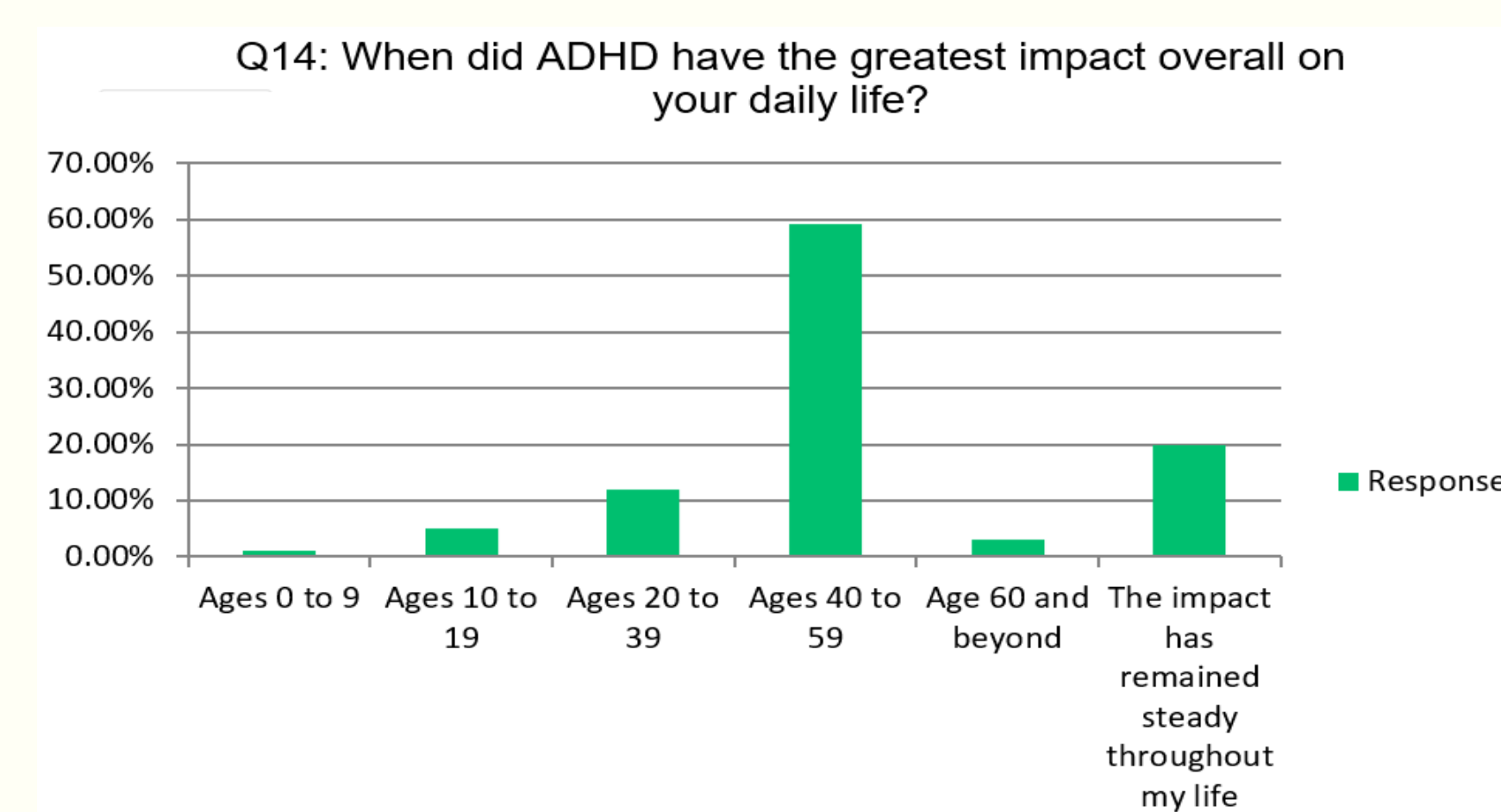
## RESULTS

### Age at First ADHD Diagnosis & Age at Peri-Menopause and Menopause



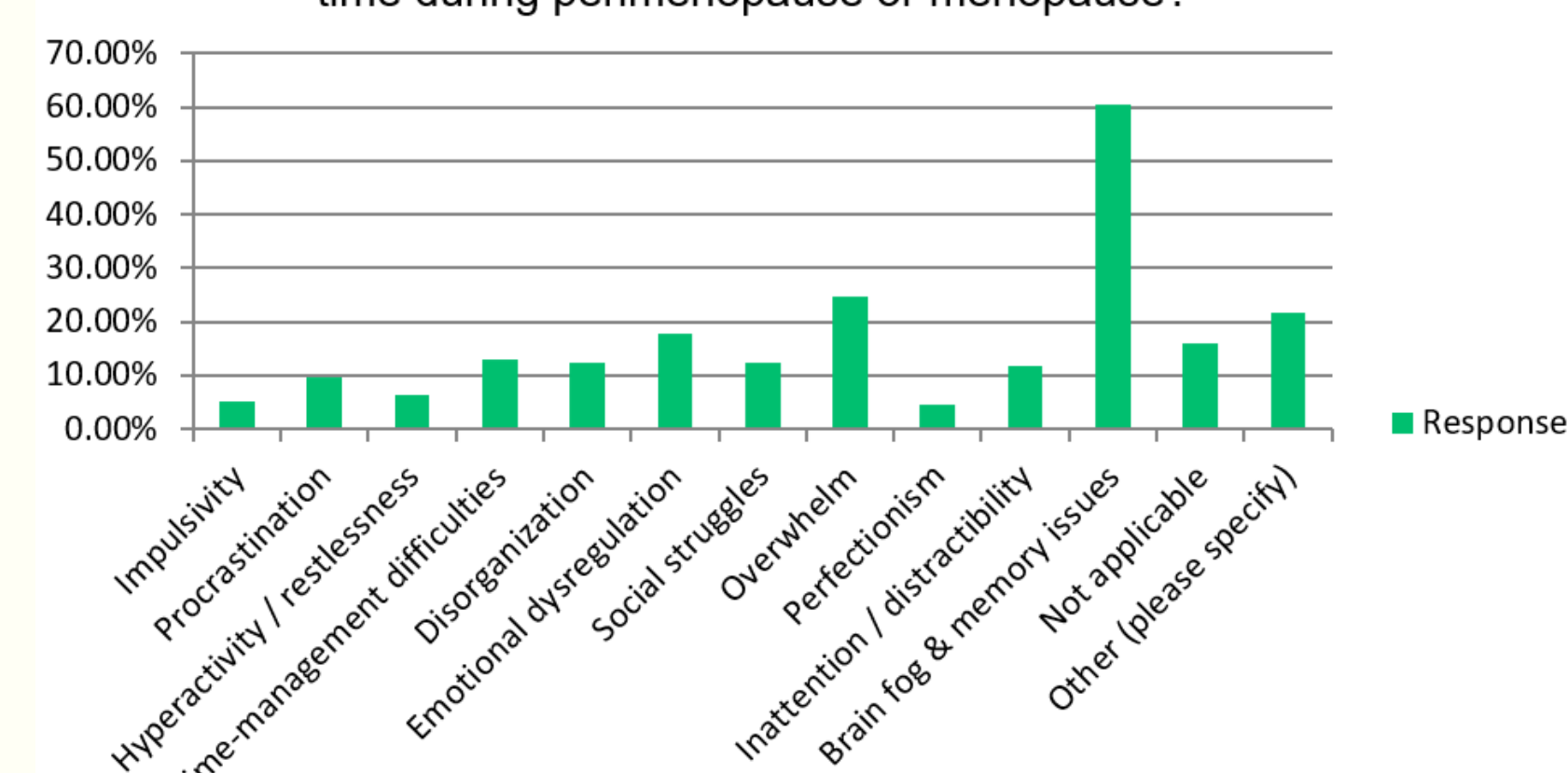
ADHD is diagnosed across the lifespan. However, diagnosis increases sharply in mid-adulthood, peaking in perimenopause and menopause, and follows a parallel course.

### Impact of ADHD during each age period

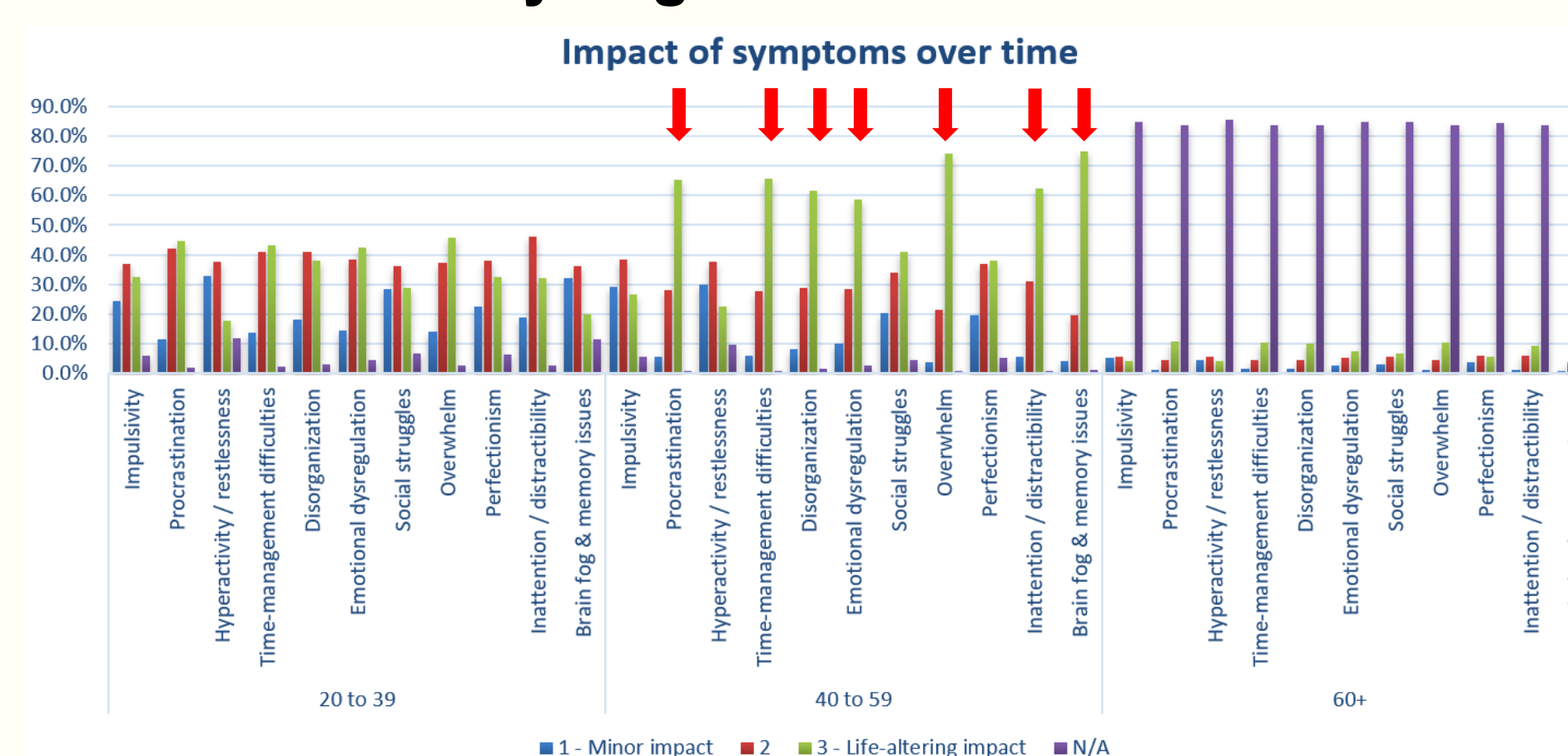


The vast majority reported the severity of ADHD symptoms increased during the peri/post-menopausal period. Similarly, the majority reported it had the greatest impact between 41 and 59.

Q16: Did any of the following symptoms appear for the first time during perimenopause or menopause?



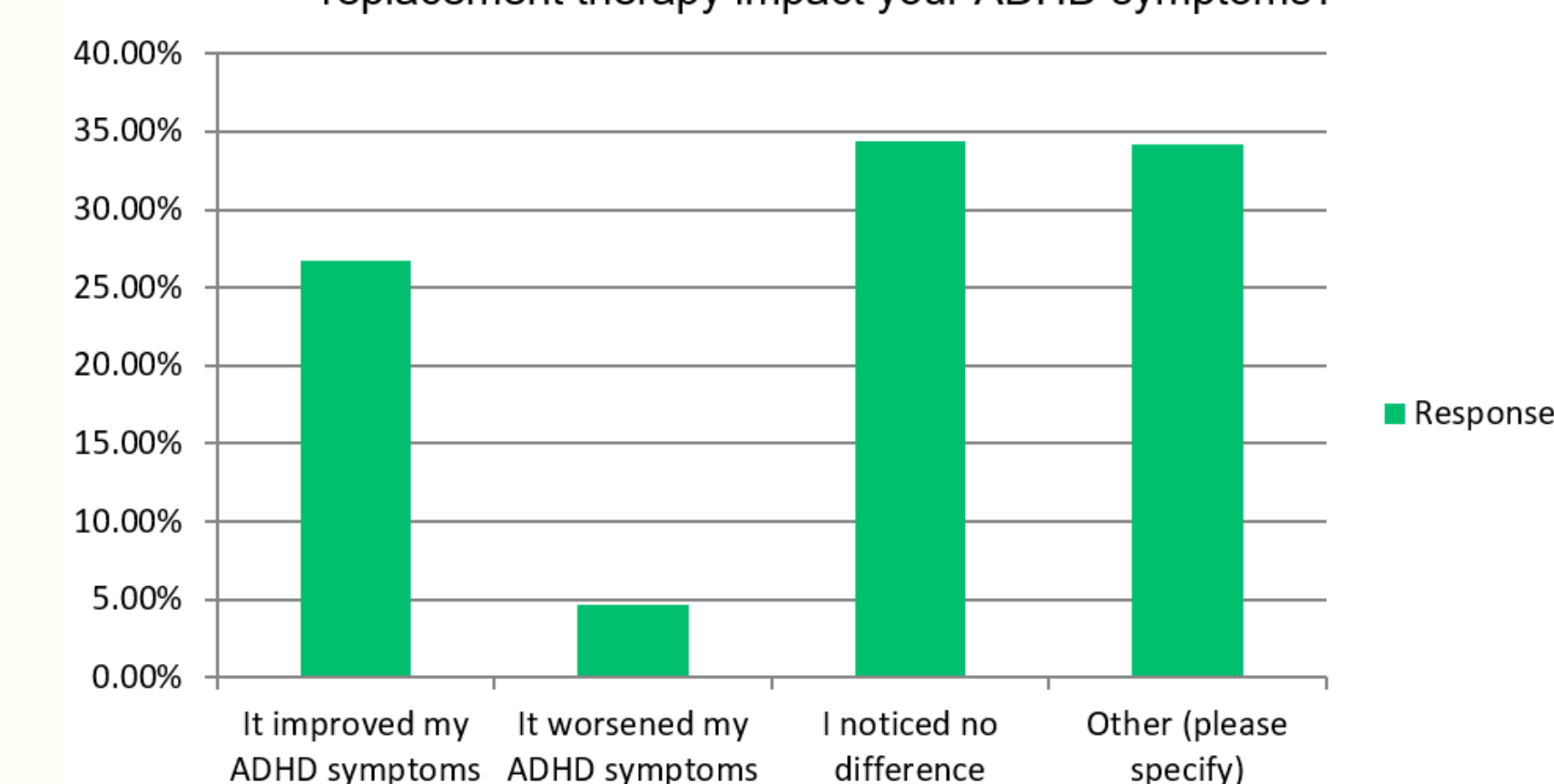
The majority of women reported that "brain fog/memory problems, feeling overwhelmed" first appeared during the peri- and menopausal period. Other symptoms reported as increasing with onset of perimenopause included feeling overwhelmed and emotional dysregulation.



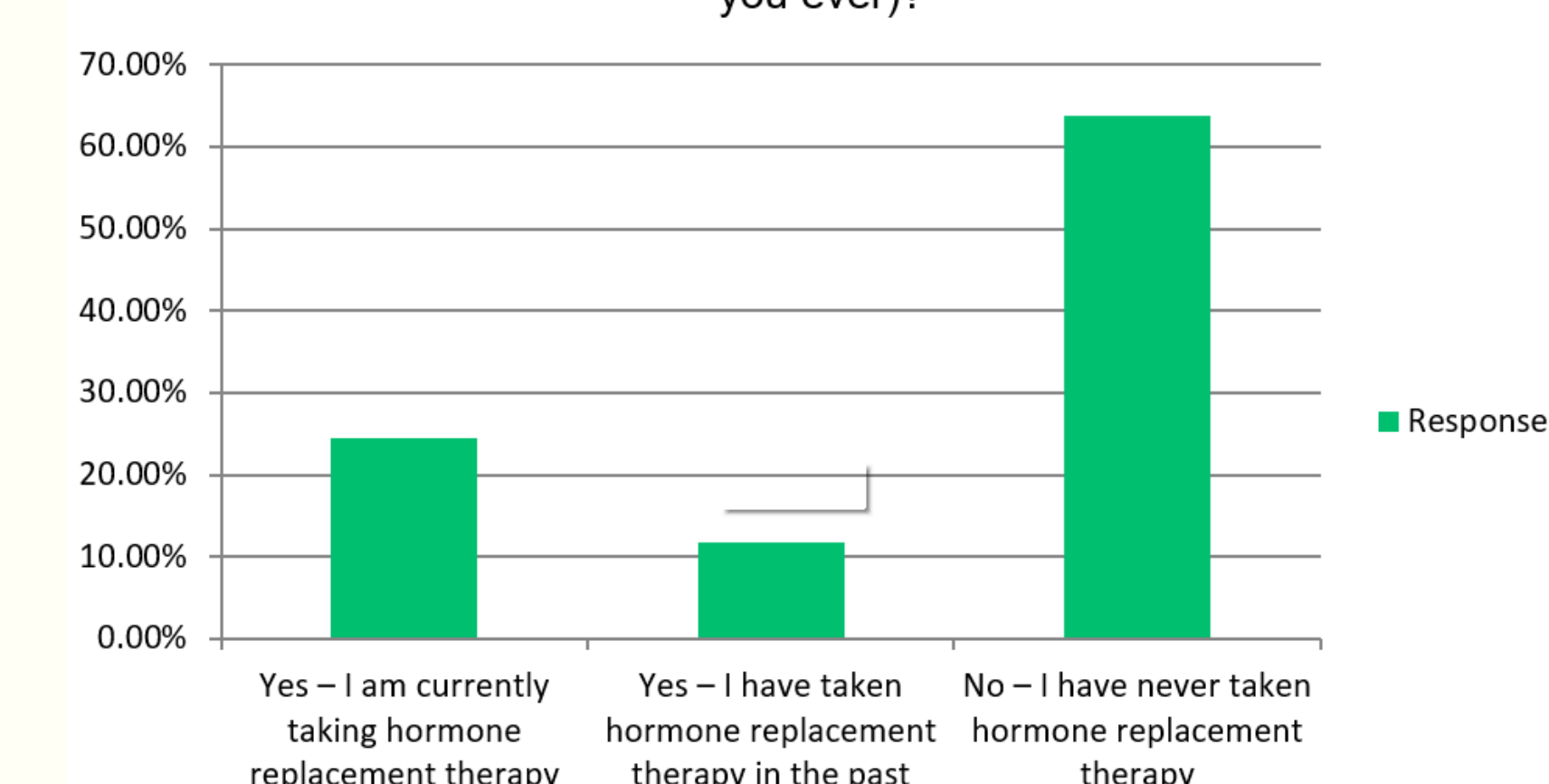
Problems with procrastination, time-management, organization, emotional regulation, feeling overwhelmed, inattention and memory/brain fog became most pronounced ( $\geq 50\%$ ) between 40 to 59 years. All symptoms dropped off dramatically after 60 years.

## Hormone Replacement Therapy (HRT)

Q23: If you answered yes to question #21, how did hormone replacement therapy impact your ADHD symptoms?



Q21: Are you taking hormone replacement therapy (or have you ever)?



HRT appears to differentially impact symptoms of ADHD

- Close to half have tried or are currently taking HRT (n=1273).
- Of these, 27% noticed improvement in ADHD symptoms while 34% noticed no difference
- Approximately 5% reported worsening of symptoms with HRT

## CONCLUSIONS

- The diagnosis of ADHD overlaps with hormonal changes in women, increasing sharply in mid-adulthood, peaking in perimenopause and menopause, and following a parallel course
- The cognitive symptoms of ADHD increase during perimenopause, especially problems with memory/brain fog, emotional dysregulation, and feelings of being overwhelmed
- Underlying hormonal fluctuations likely account for these associations, although other factors need to be considered
- Hormonal manipulation could have therapeutic value
- Hormone fluctuations may contribute to a subset of those falling into the category of 'Adult Onset' ADHD

## REFERENCES

- Epperson, C. N., Shanmugan, S., Kim, D. R., Mathews, S., Czarkowski, K. A., Bradley, J., . . . Brown, T. E. (2015). New onset executive function difficulties at menopause: a possible role for lisdexamfetamine. *Psychopharmacology (Berl)*, 232(16), 3091-3100.
- Shanmugan, S., Loughhead, J., Nanga, R. P., Elliott, M., Hariharan, H., Appleby, D., . . . Epperson, C. N. (2017). Lisdexamfetamine Effects on Executive Activation and Neurochemistry in Menopausal Women with Executive Function Difficulties. *Neuropsychopharmacology*, 42(2), 437-445.
- Kessler, R. C., Adler, L. A., Barkley, R. A., Biederman, J., Conners, C. K., Demler, O., . . . Zaslavsky, A. M. (2006). The prevalence and correlates of adult ADHD in the United States: Results from the national comorbidity survey replication. *American Journal of Psychiatry*, 163(4), 716-723.