

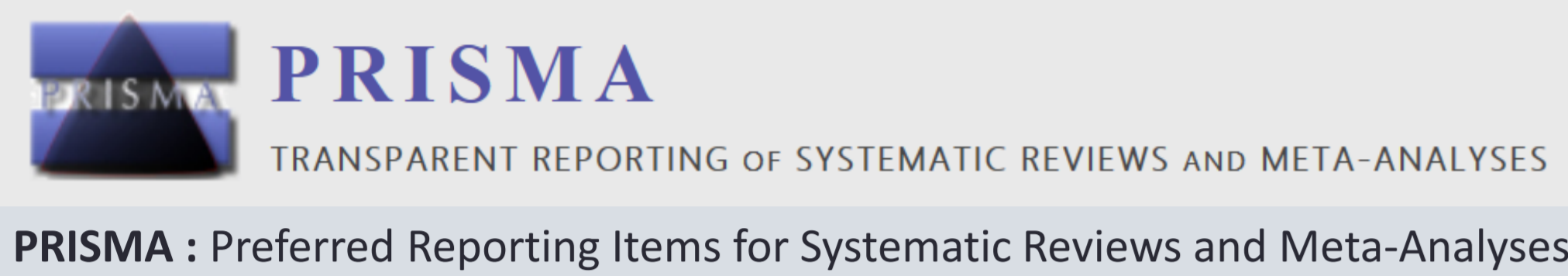
# Measuring Physiological Stress Response in Adults, Are the Exclusion Criteria Consistent Through Studies?

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## INTRODUCTION

In order to standardize its application, a Systematic Review was performed examining one of the most widely-used stress paradigm on adults, the Trier Social Stress Test (TSST).

Following the application of the PRISMA methodology, procedure-related data available on the TSST protocol was extracted from studies using the latter.



A total of 33 exclusion criteria were found:

**25 exclusion criteria used for the sample selection:** (a) alcohol, (b) already exposed to TSST, (c) cardiovascular disorder, (d) chronic diseases, (e) contraception, (f) diabetes, (g) drug abuse, (h) endocrine disease, (i) hypertension, (j) metabolic disorder, (k) neurological disorder, (l) night shift work, (m) nursing, (n) poor health, (o) pregnancy/lacting, (q) anxiety disorders, (r) mental disorders, (s) depression, (t) DSM-IV Axis 1 disorders, (u) visual difficulties, (v) BMI (not less than), (w) BMI (not more than), (x) nicotine/tobacco, (y) medication intake.

**8 exclusion criteria used for TSST protocol application:** participants were not allowed to (a) brush teeth/floss, (b) exercise, (c) eat, (d) drink (except water), (e) drink alcohol, (f) consume caffeine, (g) smoke, (h) consume drugs/illicit substances prior the stress test.

Our primary observations as to the basic exclusion criteria:

There seems to be no consensus as to exclusion criteria applications and selection among studies, despite their proven effect on the HPA axis activation.

Thereby, there is an inconsistency in the application of exclusion criteria as well as a lack of rigor in their selection: they were generally not discriminating enough to effectively minimize the repercussions of confounding variables.

## MAIN OBJECTIVE

Propose recommendations regarding the use of the exclusion criteria for future studies using the TSST and consequently, facilitate accurate replication of studies by establishing a consistent procedure.

## METHODOLOGY

### 1. Application of the PRISMA methodology

Extraction of the 33 exclusion criteria in 27 articles

### 2. Descriptive statistical analysis of their selection and application among those 27 articles

I. Average use of exclusion criteria per study

II. Frequency of use

III. Use rate (%)

IV. Number of different types of application (If applicable)

Weighted average / Standard deviation

### 3. Development of recommendations

## REFERENCES



## RESULTS

Figure 1. Frequency of Exclusion Criteria Used Among the Sample

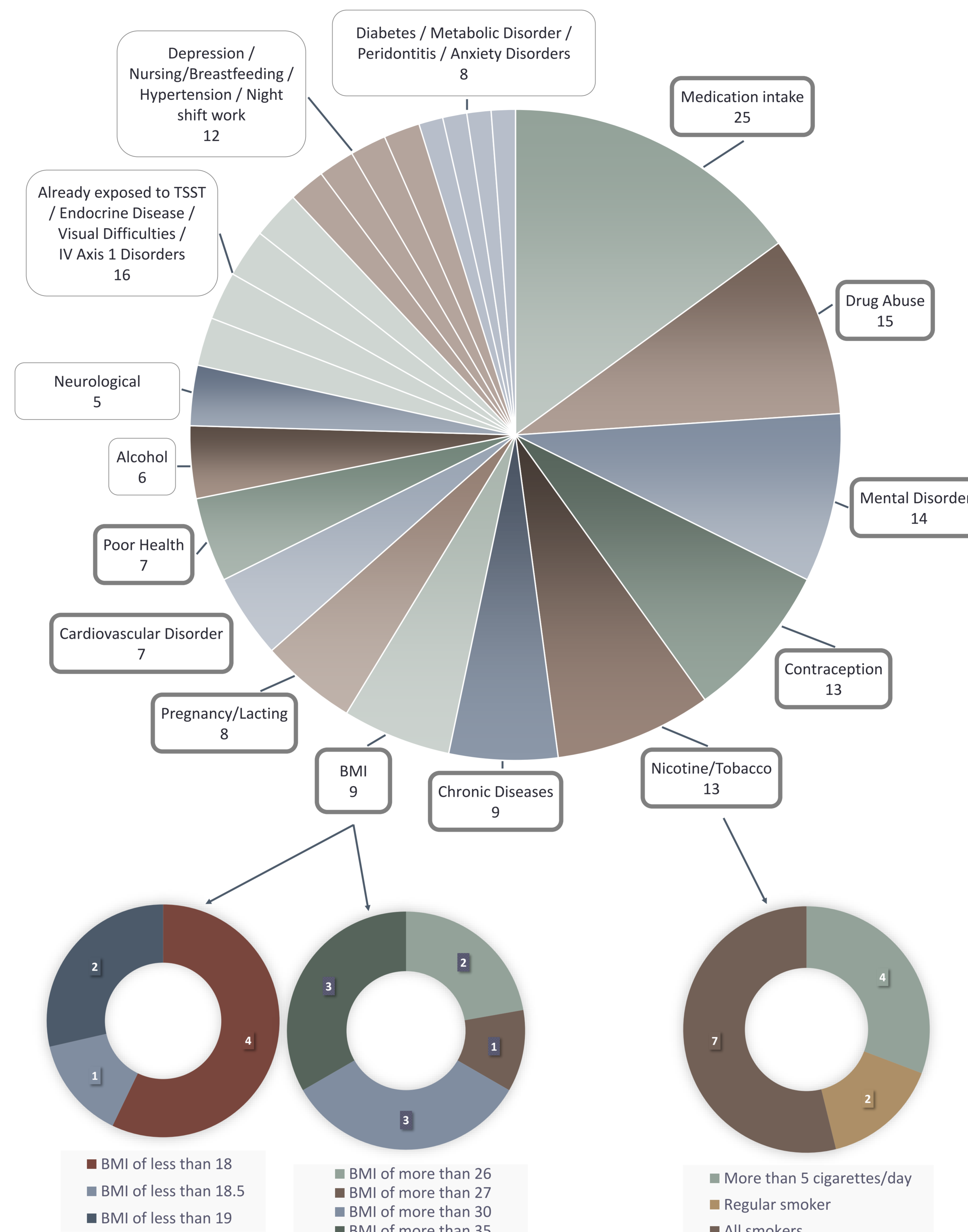
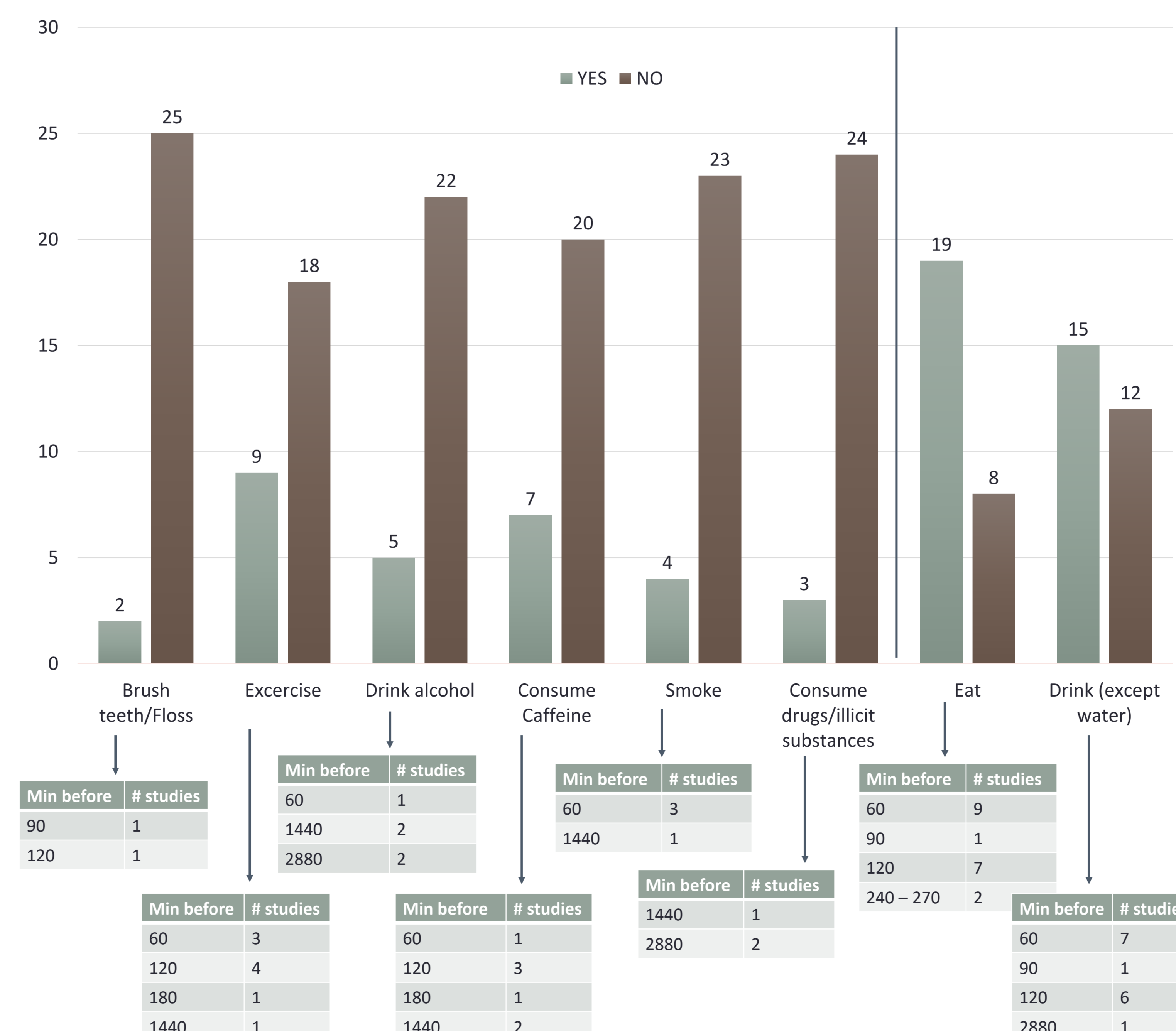


Figure 2. Frequency of Activities That Were Not Allowed for Participants Before the TSST Among the Sample



## DISCUSSION

Considering the impact of each exclusion criteria on the HPA axis activation, a specific focus will be made in trying to determine which ones should always be considered part of a study in addition to any other exclusion criteria based on the specificity of the study.

### Exclusion criteria used for the sample selection

- 211 exclusion criteria were noted for the 27 articles. In average, studies reported 7.81 (So: 3.13) exclusion criteria.
- The most common exclusion criteria and their use rate are: (a) Medication Intake (92.59%), (b) Drug abuse (55.55%), (c) Mental disorders (51.85%), (d) Nicotine/Tobacco intake (48.18%), (e) Contraception (48.18%), (f) Chronic Diseases (33.33%), (g) Body Mass Index (33.33%), (h) Pregnancy or Lacting (29.63%), (i) Poor Health (25,93%), (j) Cardiovascular Disorder (25,93%).
- For medication intake, the variability among the drugs that were allowed or not is extremely high and can be explained by the specificity of each study. Therefore, the different drugs mentioned as exclusion criteria in the studies were not reported.

### Exclusion criteria used for TSST protocol application

- The most common exclusion criteria were: (a) Eating with a use rate of 70.37% and (b) Drinking (except water) with a use rate of 55.56%.
- As for the other 6 exclusion criteria, the opposite occurs, their non-use rate (ranging between 66.66% and 93.86%) is much higher than their use rate.

### Exclusion criteria in general

- Not only there seems to be a lack of consistency in the selection of the exclusion criteria, but also in their application: Among the 27 studies, several exclusion criteria had more than one application: (a) BMI (3) – ( $\bar{x}$ : 18.36 ; So: 4.28) and ( $\bar{x}$ : 30.44; So: 5.52), (b) Nicotine/tobacco (3), (c) Brush teeth/floss (2) – ( $\bar{x}$ : 105 min ; So: 10.25), (d) Exercise (4) – ( $\bar{x}$ : 253.33 min ; So: 15.92), (e) Drink alcohol (3) – ( $\bar{x}$ : 1740 min ; So: 41.71), (f) Consume caffeine (4) – ( $\bar{x}$ : 497.14 min ; So: 22.30), (g) Smoke (2) – ( $\bar{x}$ : 405 min ; So: 20.12), (h) Consume drugs/ illicit substances (2) – ( $\bar{x}$ : 2400 min ; So: 48.99), (i) Eat (5) – ( $\bar{x}$ : 104.21 min ; So: 10.21), (j) Drinking (except water) (4) – ( $\bar{x}$ : 274 min ; So: 16.55).

## CONCLUSION

Two recommendations regarding the use of exclusion criteria in the TSST protocol are being made:

- Although every study has their own specified inclusion/exclusion criteria depending on the variables being studied, the following should always be reported as a part of the methodology:
  - Drug abuse,
  - Nicotine/Tobacco intake,
  - Contraception,
  - Chronic Disease,
  - Body Mass Index range (BMI),
  - Pregnancy or Lacting,
  - Poor Health,
  - Cardiovascular Diseases,
  - Type of medication.
- In terms of the participant activity prior to the TSST, it should always be reported whether the following activities were allowed as well as their time limit prior to the TSST:
  - Brushing teeth/flossing,
  - Exercising,
  - Eating,
  - Drinking (excluding water),
  - Drinking alcohol,
  - Caffeine,
  - Smoking,
  - Consuming drugs/illicit substances.