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Gender differences on perceived stress of physically active population during Covid-19 lockdown: A survey study in a population of urban subjects

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Abstract
Males and females differ in coping with stress and emotions. It is presumed that due to individual differences, there might be differences in perceiving stress that is influenced by one's gender. The present study aims to evaluate gender differences in perceived stress among a sample of subjects who are regularly yoga and are going through a transition period from unemployment to work during Covid-19 lockdown period. 80 participants, 46 men and 34 women, in the age group of 18 to 27 years were enrolled in this survey study, voluntarily. The Perceived Stress Scale (PSS) was being used for stress assessment. Overall, most of the participants (86.25%) showed low to medium perceived stress level. But upon break up on the basis of gender, 15.2% males showed high perceived stress level, 54.3% showed medium perceived stress and 30.4% showed low level of perceived stress. On the other hand, 11.8% females showed high perceived stress level, 55.9% showed medium perceived stress and 32.4% showed low level of perceived stress. No association between perceived stress and gender was found.

Keywords: perceived stress scale, gender, Covid-19

Introduction
Stress can be defined as a state of mental or emotional strain or tension resulting from adverse or very demanding circumstances [2]. Optimal level of stress can be useful as eustress but chronic stress levels can greatly impact the physical, emotional, and social functioning. The benefits of physical activities, especially indoor activities like yoga in relation to physical well-being and psycho-spiritual benefits, has been realized by masses during lockdown due to Covid-19 pandemic. Due to limitations of physical contact during the pandemic, online classes have become very popular and the self-reported stress levels of individuals are measured to not only prepare the detailed profiles of the participants but also to provide effective counseling. This study was being carried out to examine the level of reported (perceived) stress that individuals indicate who practices yoga only. The individuals who do not participate in other forms of exercise are being excluded. The working definition of Yoga is "any form of yoga that is practiced and it includes a standard protocol of prayer, warm up exercises, asana, pranayama followed by relaxation exercises.

A lot of researches have shown that women and men respond differently to stress and this sex difference could be explained in diverse ways. Women not only tend to experience more stressful life events [4] but they also have different coping strategies, that are defined as cognitive and behavioral processes used by an individual to deal with stressful conditions [1]. The gender differences have been reported to be linked to the genetic pre disposition present on sex chromosomes and gonadal hormones production.

Questionnaires such as Perceived Stress Scale (PSS) are often used to measure stress levels in different populations by researchers. It has been seen that the perception of work-related stress -as measured by this scale in terms of unpredictability, lack of control and overload- has a significant impact on the quality of life that can be evaluated upon responses that are limited only to the month immediately preceding the measurement. This is important because stress is a continually changing state [2].

Yoga comprises of series of postures and breathing exercises practiced to achieve control of the body and mind, tranquility. The exclusion of exercise has been made because exercise is limited to any physical workout training, for enhancing one's sports performance. Many research studies have illustrated that yoga decrease stress levels [6]. The current study is important due to the increase of individuals who report experiencing high levels of stress [3] especially when they are restricted to stay indoors due to inevitable reasons like pandemic and they need re-schedule their life style. The present study can be useful to coaches, yoga teachers and other health care workers who need to prepare gender based training schedules and provide feedback to their clients most effectively. This study has been delimited to measure the perceived stress of males and females and not the other widely studied parameters like anxiety, mood, and stress-hormones.

Procedure
The survey study was being carried out all over India with the sample size of 80 using convenient sampling method. Inclusive Criteria was as follows:

- Healthy males & females who are regularly doing yoga since at least last one month
- Age between 18 to 27 years
- Normal body weight and height ratio

Exclusive criteria was as follows

- Subjects with Locomotor & Musculoskeletal disability

- History of Cardiovascular disorder
- History of Respiratory disorders
- History of Diabetes mellitus, Hypertension
- History of Major surgery in the recent past
- History of Drug intake
- History of Alcohol & Smoking

Perceived stress scale (PSS-10) by Cohen S, Kamarck T, Mermelstein R. (1983) [2] was being used as tool to collect responses by preparing the online google form and circulating it throughout India using social media because of covid-19 lockdown. Internal consistency reliability of the total perceived stress scale (PSS-10) scores by Cohen S, Kamarck T, Mermelstein R. (1983) [2] was good (α =.78) that supports the use of the PSS-10 among Indian population.

Results and Discussion

Objective of this study was to see whether there are gender differences in perceived stress scores on Perceived Stress Scale (PSS) variable. The PSS variable is a score derived from responses to 10 items Likert scale on the magnitude of perceived stress.

Table 1: Descriptive statistics showing age and total score on Perceived Stress Scale (PSS) (N=80)

		Age	PSS_Total_score
N	Valid	80	80
	Missing	0	0
Mean		22.3750	19.0375
Std. Deviation		2.10710	6.36534
Minimum		18.00	10.00
Maximum		27.00	32.00
Percentiles	25	21.0000	13.0000
	50	23.0000	19.0000
	75	24.0000	24.0000

Table-1 shows the mean, standard deviation, minimum maximum and percentile scores of age and perceived stress scores (PSS) total of the participants (N=80). Mean age was 22.37 ± 2.10 and mean PSS was 19.03 ± 6.36.

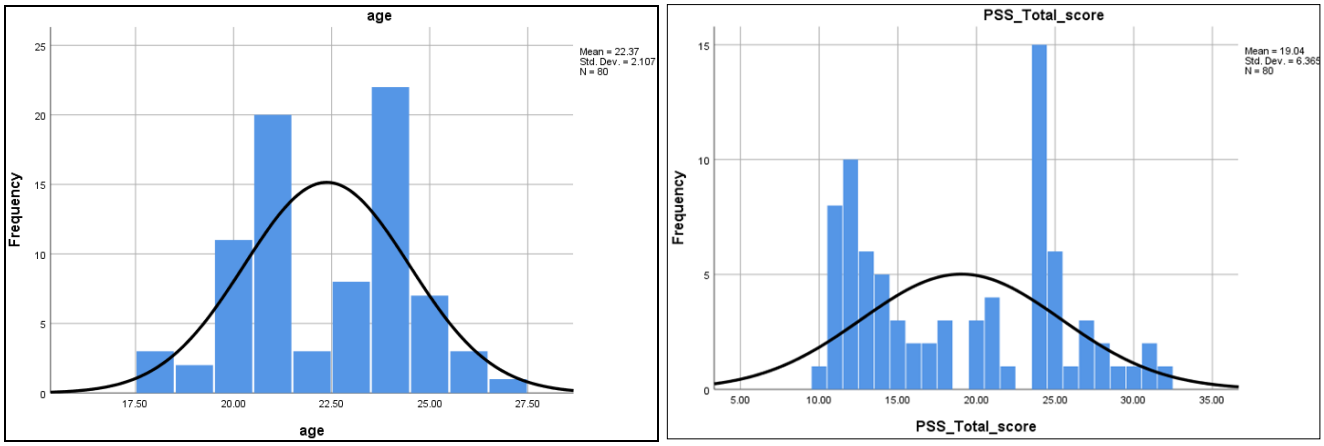

Fig 1 & 2: Histogram with normality curve

Fig-1 &2 show histograms with normality plot of age and PSS. Age is normally distributed but the PSS score is not adhering to the normality assumption.

Fig.-2: Histogram showing gender comparison of PSS values

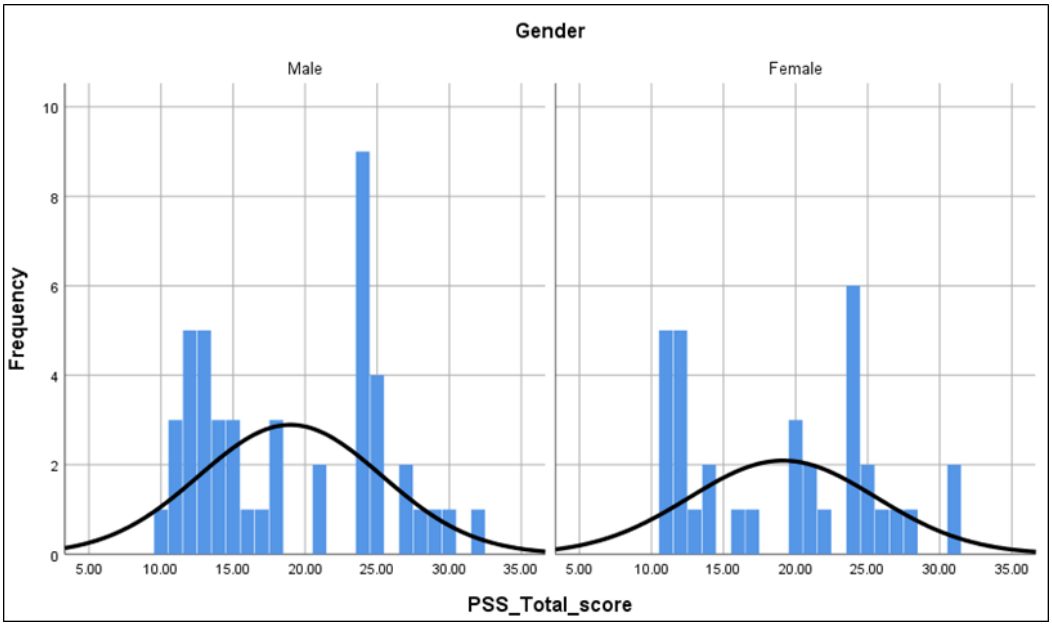

Fig 3: shows that the PSS values were not normally distributed when the data was analyzed upon splitting for gender.

Table 2: Tests of Normality

Dependant Variable	Gender	Mean ± Standard Deviation	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
			Statistic	Df	Sig.	Statistic	Df	Sig.
Perceived Stress Score (PSS)-Total	Male (N=46)	18.98±6.34	.199	46	.000	.904	46	.001
	Female (N=34)	19.12±6.48	.167	34	.017	.899	34	.004
A. Lilliefors Significance Correction								

Further the PSS values were analyzed using SPSS-26 version. Mean PSS value of male participants was 18.98±6.34 and 19.12±6.48 for females. Table-2 shows that there were No missing values. For the male group: The Shapiro-Wilk test has degrees of freedom which equals the number of data points, namely 46. Here we see that the p value is.001 (p <.05). We therefore have significant evidence to reject the null hypothesis that the PSS variable follows a normal distribution. For the female group: The Shapiro-Wilk test has degrees of freedom which equals the number of data points, namely 34. Here we see that the p value is.004 (p <.05). We therefore have significant evidence to reject the null hypothesis that the PSS variable follows a normal distribution.

Since the data violates the normality assumption, therefore, the non-parametric Mann Whitney test is being used. As per table-3 this test has constructed a ranked list of the observations labeled in their two groups (Male/Female). The statistics required for the test are constructed from the ranks and shown in the table-3. Here we see that for GENDER category Male we have 46 observations whose total sum of ranks is 1883.00. This results in a mean rank of 40.93. By contrast for GENDER category Female we have 34 observations whose total sum of ranks is 1357.00. This results in a mean rank of 39.91. So GENDER category Male has a larger mean rank than GENDER category Female and thus tends to take larger values.

Table 3: Mann Whitney test Ranks

	Gender	N	Mean Rank	Sum of Ranks
Perceived Stress Score (PSS)-Total	Male	46	40.93	1883.00
	Female	34	39.91	1357.00
	Total	80		

The Mann Whitney test shall further decide on whether this difference in mean ranks is significant or not as is illustrated in the table-4.

Table 4: Test Statistics[a]

	Perceived Stress Score (PSS)-Total
Mann-Whitney U	762.000
Wilcoxon W	1357.000
Z	-.196
Asymp. Sig. (2-tailed)	.845
	Grouping Variable: Gender

A comparison of the mean of the distribution of the variable PSS was desired for GENDER categories Female and Male but due to the non-normality of the variable a Mann Whitney test was carried out. GENDER category Male (N= 46) has a larger mean rank (40.93) than GENDER category Female (N= 34) with mean rank (39.91) and thus tends to take larger values. However, statistically non-significant difference was found (U = 762.000, p >.05).

The results indicate that males and females tend to perceive equal amount of stress during covid-19 lockdown, a difference that is statistically non-significant. We therefore have significant evidence to reject the null hypothesis that the distribution of perceived stress score is the same in the two groups. Table-5 shows cross tabulation and chi-square test results between two categorical variables namely perceived Stress score (3 different levels) and Gender

Table 5: Total PSS Score * Gender Cross-tabulation

			Gender		Total
			Male	Female	
Total PSS Score	Low perceived stress	Count	14	11	25
		Expected Count	14.4	10.6	25.0
	Medium perceived stress	Count	25	19	44
		Expected Count	25.3	18.7	44.0
	High perceived stress	Count	7	4	11
		Expected Count	6.3	4.7	11.0
Total		Count	46	34	80
		Expected Count	46.0	34.0	80.0

Maximum number of participants fell in the medium stress category followed by low and high perceived stress.

Table 6: Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.201[a]	2	.904
Likelihood Ratio	.203	2	.903
Linear-by-Linear Association	.133	1	.716
N of Valid Cases	80		
A. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 4.68.			

Table-6 shows that since the p-value is greater than our chosen significance level ($\alpha = 0.05$), we do not reject the null hypothesis. Rather, we conclude that there is not enough evidence to suggest an association between gender and perceived stress. No association was found between gender and level of perceived stress (X^2 (2)> =.201, p = 0.904).

Unlike this study, most of the studies have reported significant statistical differences in the scores of perceived stress amongst men and women, with statistics mainly skewed towards females perceiving more stress suggesting that more attention should be given towards women mental health as compared to men's mental health. Lauren A. *et al.* (2007) [5] found that women reported higher overall perceived stress levels, but there was no difference in the experienced social stressors and health stressors between genders. Men perceived more stress from personal factors. There were no gender differences in the perceived ability to cope with stress.

Conclusion

Most of the studies have shown that females have increased perception about stress as compared to males, but in the present exploratory study it was found that the Indian males and females in the age group of 18 to 27 years did not differ on perceived stress scores (PSS-100) during covid-19 lockdown period in the month of May –June 2021

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