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"A cross sectional cohort study on stress from traffic and effect of relaxation techniques"

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I. INTRODUCTION:

Stress is a pivotal component of today's life. Stress affects all people from morning to night in various modalities and in various aspects of day to day's life[1]. One among the many modalities is arising from traffic. National surveys have found around 40 – 80% of stressful events occur during traffic[2]. Many problems keep arising with regards of wrong driving, stagnant vehicles, and road block and so on. Everyone has faced some issue out of traffic in some form or other.

At present, trend following eastern culture the practices of mindfulness and yoga are on the rise. Such practices are implicated in managing work, interpersonal issues and other problems[1-3]. Such practices can be applied for controlling traffic related stress. There are numerous studies on noise pollution, air pollution from traffic and their related health issues[4]. But very fewer studies have studied about stress and mental health issues[5].

Thus this study tries to analyze the stress from day today traffic and techniques which can help to reduce them.

Aim:

To assess stress out of traffic and role of psychotherapeutic techniques in reducing the stress.

Objectives:

1. To determine the stress out of traffic in general public.

2. To teach mindfulness, breathing exercises and muscle relaxation techniques to them and the effect of the practices on stress management.

II. MATERIALS AND METHODS:

Site: The study was conducted in Chennai city

Timeline: The study was conducted for a period of 3 months from October to December 2019 through internet based questionnaires circulated for 1 month and reviewed after a period of 1 month

Ethical approval was obtained from institutional ethics committee

Subjects

Inclusion criteria

1) Adults of age 20 – 60
2) People who know driving vehicle or who has been a passenger in two wheeler or four wheeler vehicle
3) People who cross signals at least once in 2 working days

Exclusion criteria

1) People who are not willing to participate in the survey
2) People who are unable to give a valid informed consent
3) People with known mental illness or physical conditions which will not enable them to drive.

III. TOOLS

A semi structured proforma for capturing the socio demographic details of the participants. A questionnaire generated by the examiner to capture the frequency of people travelling in roadways and factors annoying them while driving vehicles[6,7]. The questionnaire was circulated to general population through emails and what's app and data collected. There were 7 questions for socio demographic profile, 5 questions to analyze frequency of riding on roadways and crossing traffic signals, 8 questions to analyze the factors annoying the riders on road and extent of stress from such happenings, a total of 20 questions in the survey[8-11]. The entire survey would take about 15 minutes to complete. These questions were chosen from previous national wide surveys related to traffic related problems faced by public. In order to find out the factors which annoy the participants the most, participants were asked to rate the level of distress they feel from each kind of traffic problem in a scale of 1 to 5 on a likert scale.

The tool was first generated reviewing previous literature and circulated among experts. The feedback was obtained from the professionals and our tool was altered accordingly. It was then circulated among professionals and analysed. Then the tool was approved and then used in study.

IV. STATISTICAL ANALYSIS:

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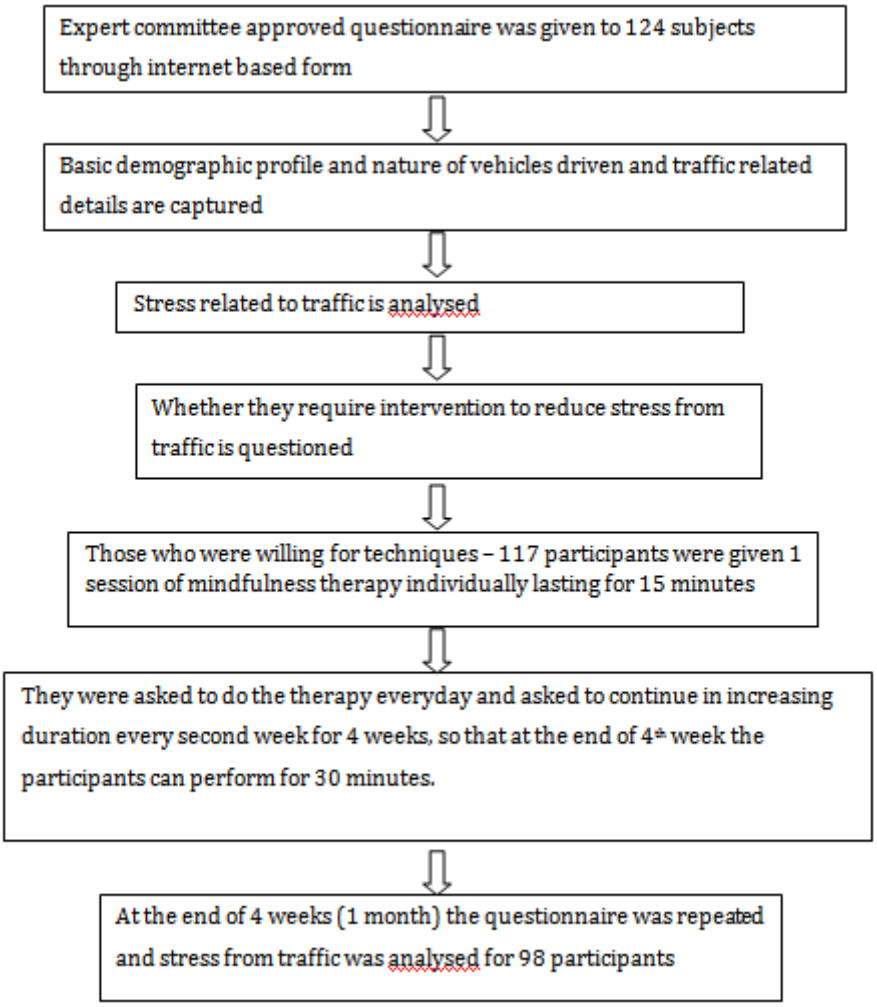
Mean and standard deviation was used to analyse the extent of stress from traffic related problems.

V. METHODOLOGY:



Among the 124 subjects who participated in the study 117 opted interventions to reduce the stress from traffic. Of them, 98 participants followed the methods and completed the study.

Interventions for stress management:

The techniques focused were mindfulness, breathing exercises and muscle relaxation. Mindfulness was taught to be done by closing eyes and focusing on one particular thing. It was coupled with breathing exercise. The subject was asked to have deep inhalation and exhalation and the focus was supposed to be at only air breaths taken. This was taught for 5 minutes. In addition muscle relaxation to be followed for another 5 minutes was taught. First arm muscles were made to get tensed and then were asked to relax them. The technique was limited to relaxation of both hands only and were not progressed as subjects were having only less time to practice the techniques, especially while it had to deal with traffic. They practiced in their homes for 5 – 10 minutes. On facing issues during traffic like loud horns they were advised to implement mindfulness by focusing only on their driving or accompanying and take 5 breaths. These techniques were to be performed by individuals whenever they feel the heightened distress while driving or accompanying. For example subject A might feel most stress from loud horns. In that case he would have to apply focus on 5 breaths while hearing a horn. The other mindfulness techniques were mindful observation, awareness, listening, immersion and appreciation. These exercises were to be practiced in leisure time at home. Mindful observation involves focus of an

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object in immediate environment without thinking or doing anything but merely focusing. Mindful observation is to observe positive things like how our hands move whenever negative thoughts come. Mindful listening is to simply let a music flow in ourself without judging the music. Mindfulness immersion is to work our routine without being in a hurry to finish it. Mindful appreciation is to note down simple things like how electricity powers various things and appreciating it. These other home based techniques were to be performed at home for a period of 15 min a day. Home based breathing exercise involves pranayama with first both nostrils open and then one nostril closed. This breathing exercise is practised for 15 min a day. Thus 30 min a day of home based exercise was advised and the subjects were asked to follow them regularly and daily. Likewise the study was conducted and results were analysed.

VI. RESULTS:

Table 1 – socio demographic profile of participants.

Sex % (n)	Age % (n)	Educational qualification % (n)	Socio economic status % (n)	Occupation % (n)
Males 52.5% (65) Females 47.5% (59)	20 - 25 27.41% (34) 26 – 30 22.6% (28) 31 – 35 10.47% (13) 36 – 40 4.8% (6) 41 – 45 6.5% (8) 45 – 50 28.22% (35)	Bachelors' degree 25% (31) Masters' degree 30% (37) Professional 45% (56)	Upper middle 47% (58) Middle higher 29% (36) Higher 24% (30)	Clerical 3.6% (4) Semi profession 11.6% (14) Profession 57.6% (71) Corporate 25% (31) Home maker 2.2% (4)

The study population included a majority of men with age groups falling on the youngest and oldest population selected. The study was conducted in people with a god educational and socio economic background as it was targeted through internet based questions.

Table -2 questions and the mean of responses obtained.

Question	Mean of the scores provided by the responders (n) %
Talking on phone while driving	3.45 (69%)
Stopping unexpectedly in busy road	3.98 (79.6%)
Honking on a red signal	4.68 (93.6%)
Starting to drive before green signal	3.56 (71.2%)

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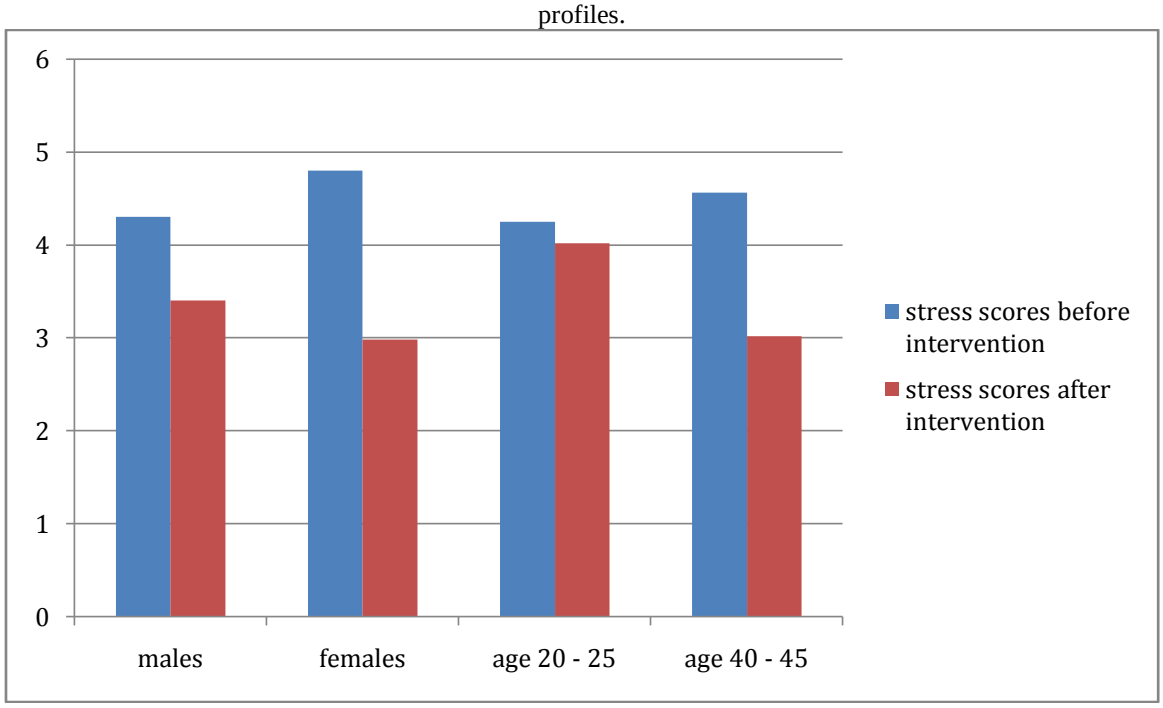
Left side of taking over a vehicle	2.98 (59.6%)
Not indicating on turns or wrong use of indicators	4.02 (84%)
More speed than the set limit	4.49 (89.8%)

As one part of the study aims to examine the factors causing maximum stress related to traffic, it was found that honking on a red signal causes maximum stress and a taking over of left causes the least stress in the population surveyed.

Graph – 1: analysis of levels of stress before and after intervention compared in various socio demographic profiles.



Among the various socio demographic details analysed, considerable variation in stress tolerance were seen with age and gender. The other variables showed insignificant variations. The over all variation was showing a positive reduction in stress.

VII. DISCUSSION:

The study aimed to find stress out of traffic as first aim. It was found that the perception of stress was different across age, gender and occupation[4,5]. Among the people who scored lesser on the spectrum of stress from traffic 7 of them chose to not have interventions. People who scored to be stressed with score more than 2.98 were opting for interventions. The people who lost to follow up had different scores of mean stress ranging from 2.98 to 4.61. a definite correlation for the attrition and score of stress was not present. The reasons for attrition were no belief in the therapeutic technique, unable to sustain them, unable to find a subjective difference.

Considering the level of stress from the likert scale administered, the option of nil stress was noted in two circumstances where the individuals were of age 20 – 25 with varying qualifications. There is a statistical correlation for lesser age and perception of lesser stress from traffic and that stress increases with age. But the correlation is weak. As the population is mostly distributed around people from upper middle socio economic status the effect of traffic was uniform among the different strata.

Adherence to intervention was observed to be better and more successful among women of all age groups. Among the 7 people who opted for no intervention 6 (85.7%) were men and 1 (14.3%) was woman. Among the 19 people lost to follow up, 13 (68.4%) were men and 6 (31.5%) were women. These findings were statistically and clinically significant.

The population who completed the survey had themselves acknowledged the differences in their perception of traffic which again was clinically and statistically significant.

From this study we find that like previous studies carried out stress happens to be from various issues and also from traffic[9]. Though the perception of stress may vary the concept is universal. In lines with the national reports and various other articles traffic has an important impact on everyday life[10]. Various people have stress from different problems in traffic[9,10]. Mindfulness which is emerging as a strategy to overcome many problems is getting explored in many aspects but less in traffic related stress[12].Mindfulness is a key strategy to overcome stress. There are various modalities of mindfulness, a few key pratices being explored in or study based on evidences from other studies[13,14]. The few simple ew simple exercises suggested and used in our studyare components adaped from previous stress management techniques[15]. Although we have not completely explored all the techniques, the techniques we have used have been beneficial in our study[16,17]. Our aim of exploring the usage of mindfulness based techniques and its impat on traffic has signifiantly shown improvement.

Limitations of the study:

1. Population was approached through internet. People of lower socio economic and educational strata were not included.
2. The questions framed although were consented with expert committee there are still many other troubles from traffic which are not covered.
3. As there are no pre designed scales for traffic related stress a standardized tool is not employed. Our tool was standardized for the population included in the study only.
4. The techniques administered are given for a duration for 1 month only. As traffic is an ongoing problem the long term effects are not known through our study

VIII. CONCLUSION:

This study is a basic study trying to cover traffic related issues. With the results obtained and analysed the interventions show benefits. But the sustainability of the effects are not covered by the study. In order to develop further we would like to expand the population studied and the duration of follow up.

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