

## WORK-RELATED TRAUMA: THE UPSHOT OF CIRCULO-RESPIRATORY RESPONSIVENESS DURING DIDACTIC ON SCHOOL TEACHERS

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### ABSTRACT

Teaching and handling school children are becoming a challenging task for the school teachers and ultimately stress is the gift they receive. This has led to many of the teaching fraternity suffering from heart problems and they have to undergo bypass graft. The main aim of this investigation was to evaluate the circulo-respiratory responsiveness (CRR) as a contributing factor to stress in teachers. 33 primary school teachers from the rural area who had no health issues were selected as subjects whose ages ranged between 22 to 32 years. These teachers were working for 6 to 8 hours per day and had an experience of around 5 years in the profession. Pulse rate and hypertension at rest, and pulse rate and hypertension during teaching hours at the start and end of the class were measured by Omron M2 Blood Pressure Monitor (Automatic). RPE scale was utilized for measuring the physical exertion at the end of the class. The results of the research exhibited a noteworthy greater heartbeat and hypertension after the class than at the start. On the contrary, the physical exertion was quite less at the end of the day. The result observed that CRR during the classes could be the result of unexpected hypertension and heartbeats. It was concluded that CRR during taking the classes could be because of the sympathetic drive and stress caused due to yelling to discipline the packed classes. Sustained exposure to such stress without managing approaches may crop up as a probable risk factor for blood pressure and cardiac diseases.

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### Introduction

Stress is the gift of this millennium and school teachers are no exception to this negative phenomenon [1]. It is the most common emotional reaction [2, 3] and can lead to adverse effects on individuals [4, 5]. These teachers face many hardships while taking classes of upcoming young students. It was observed that the students in the present scenario give a very hard time for the teachers due to which their anxiety levels reach a high level. Besides, in developing countries especially in rural areas, the scene is completely different from the urban settings [6]. Youngsters start at a ripe age due to many unavoidable circumstances in these settings, which give rise to many complications in the classes. The teachers have challenging tasks and awkward moments in their classes. All the above result in exerting a lot of pressure on the teachers who have to stand for long hours on their feet, demanding vocal communications, extraordinary capacity of workload to deal with these types of students [7]. The literature has clearly indicated that due to the above-stated conditions, the teachers have been suffering from Hypokinetic diseases like cardiovascular, cancer, renal failure, vehicular accidents, etc. It was indicated that the resultant circulo-respiratory responsiveness leads to a surge in hypertension, heartbeat problems thus elevating stress that consequently is the impending risk element for high blood pressure and coronary artery problems (unpublished data). In one of the recent studies, it was indicated that a large number of these teachers faced health issues and have undertaken open-heart surgery [8].

This apart, the teachers in the rural areas still use the traditional method of teaching which has a style of passive teaching, and educationalists believe that it does not affect learning [9]. They believe that actively engaged class supports a rise in the turnout, engagement, and motivation of the students in these settings [10]. The ability of the teachers in their capacity and capability may differ in the degree of preparation and familiarity of a particular topic and students probably understand some lessons that are taught more smoothly. They form an opinion of a particular teacher the way he has come down to their level

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and has delivered the lessons and openly express their preferences. This also leads to many complications and disarray among the teaching community thereby putting a lot of stress that leads to many health issues [11].

Keeping the above factors in mind, this study is an attempt to gauge the rate of heartbeat, hypertension, and judge the circulo-respiratory responsiveness in the teaching fraternity during instruction hours in schools.

## Method

The sample size for this study was 20 female and 12 male primary school teachers. All the selected samples did not possess any hypokinetic diseases like diabetes, blood pressure, high cholesterol, and smoking complications. The age of the subjects ranged from 22 to 32 years and they were working in their occupation for around 5 years or more and had a workload of 6 to 8 hours each day. These teachers were serving in the primary schools situated in rural areas. The subjects were asked to record their resting heart rate (RHR) by themselves in the morning at the radial artery point for one minute for 3 days continuously and the average of the 3 days was calculated as the subjects resting heart rate. Omron M2 Blood Pressure Monitor (Automatic) made in China was utilized to measure the teaching blood pressure (BP1) and the heart rate (HR1) at the commencement of the first class in the morning. The final measurement of the teaching (HR2) and (BP2) was recorded after the last class in the evening. Rated Perceived Scale (RPE) that measures the physical exertion was employed to note the physical exertion rate of the teachers at the start and completion of the class. Mean, standard deviation, and p values were calculated as the statistical tool to analyze the data. The significance level was fixed at 0.05.

## Results

**Table 1.** Physical features of subjects (n= 33, M-13, W-22).

Age- Yrs	22-31
Height /cm	152-173
Body mass /kg	56-81
Heart beat at rest (HBR/m)	59-72
Hypertension at rest (BPR/mm Hg)	
Pressure Systole (sleeping)	90-121
Pressure Diastole (sleeping)	66-77

The investigation revealed that in the rural area schools the women teachers outnumber the men. The heartbeat and hypertension recorded for all the subjects were in standard ranges. It was observed that the HB and hypertension tested at the start of the first class were slightly above the resting levels (Table 1).

The data in table 2 indicates that the heart bet at the start of the first class was  $89 \pm 12.5$  and was  $132 \pm 9.9$  after the last class of the day that was significant at 0.005 level. The SBP and DBP readings were  $112 \pm 16$ ,  $140 \pm 7.9$  and  $76 \pm 7.9$ ,  $80 \pm 8.9$  at the start and end of the first and last class which was noteworthy at 0.005 and 0.05 level of confidence respectively. The evaluations with regard to the RPE scale did not elicit any remarkable change as the physical exertion of the subjects recorded at the start and end of the first and last class was 6.1 and 7.1 that was considered as far less in the rated scale.

**Table 2.** The correlation of CRR at the start and end of the classes.

Components recorded	Start of first class (M $\pm$ SD)	End of last class (M $\pm$ SD)	Significance P
Heart Beat (b/m)	$89 \pm 12.5$	$132 \pm 9.9^{***}$	0.005
Systolic BP (mm/Hg)	$112 \pm 16$	$140 \pm 7.9^{**}$	0.005
Diastolic BP (mm/Hg)	$76 \pm 7.9$	$80 \pm 8.9^*$	0.05
RPE	6.1	7.1 Much less	NS

## Discussion

The main aim of this study was to find out the work-related trauma on circulo-respiratory responsiveness during teaching on school educators at the primary level. The viciousness associated in the school environment by students can have a physical influence and can result in psychological anguish, enduring physical incapacity, and lasting physically or emotionally ill health. The teachers who are the target are probably inert and exceedingly watchful and restrain themselves in expressing their sufferings freely. These teachers undergo tremendous stress leading to many complications physically and physiologically [12]. The teachers of primary school whose voiced communicate and yelling leads to a negative effect on their hypertension and pulse rate [13, 14].

A lot of researchers undertook investigations on the effect of speech on hypertension and heartbeat in different environments and detected that the SBP, DBP, and the heartbeat vary more than 20% within 30 seconds of commencing a speech. Some of the authors observed that the teachers who had greater baseline hypertension showed surges during conversion than those of the subjects with lower pressures. In one such study, the two variables had an upsurge ranging between 20-40% within half a minute of the start of discourse [15]. In this study, hypertension and heartbeats in the lab, medical clinic, classroom, and in

the house were recorded and it was found to have a noteworthy progressive relationship between the level of inactive pressure and the degree of rising in pressure while communicating. The observation gives rise to the conclusion that primary school teachers experience reasonable to high stress during their teaching hours that endanger the health leading to circulo-respiratory responsiveness without much physical exertion. The present investigation observed noteworthy increases in the heartbeats and hypertension of the primary school teachers from the start until the conclusion of the classes. These results are supported by the research observations stated above and also the research works of Lodge et al. (2017), Adams et al. (2013), Roseman (1994), and Chida & Steptoe (2009) [14, 16-18].

The rated perceived exertion scale (RPE) is utilized to measure the amount of difficulty in completing the physical tasks and has a range from 6 to 20 (with 6 being no exertion at all and 20 being the all-out work). This scale compares with an individual's heart rate or how hard one experiences the work. When this scale was applied in the present study to elicit the exertion rate of teachers, almost all the teachers expressed a low perceived minimal physical exertion during comprehensive instruction classes. These results are in line with the investigations of Crawford et al. (2018), Thorpe et al. (2016), and Saw et al. (2015) [19-21].

Numerous issues such as fitness intensities, the workload on a person's disposition that can sway the circulo-respiratory responsiveness were not studied in this investigation, which is one of the shortcomings.

## Conclusion

The present study has thrown some interesting results in pinpointing that the school teachers working in the primary section experience circulo-respiratory responsiveness while teaching especially after the last class of the day. Protracted experience to such circulo-respiratory responsiveness may result in the risk of heart diseases. To overcome these risk factors must exercise skills that can relieve stress and practice relaxation techniques.

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