

Original Research




Effectiveness of an intervention to manage occupational stress among bus drivers of Sri Lanka Transport Board in Colombo District, Sri Lanka

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Abstract

Introduction: Occupational stress among bus drivers is on the rise in the world. Mental health promotion programs can be effective in managing job stress in occupational groups.

Objectives: To assess the effectiveness of a multi-component intervention to manage occupational stress among bus drivers of Sri Lanka Transport Board of Colombo District

Methods: A cluster randomized control trial was performed to assess the effectiveness of the intervention. Drivers were selected by randomization from all 12 depots in Colombo District. The intervention was carried out in six depots and controlled in the other six depots. Both arms consisted of 72 drivers. The mental health promotion-stress management intervention package was delivered for six months. Outcomes were assessed based on pre- and post-test stress levels. Process indicators were also determined to assess the effectiveness of the intervention.

Results: All the participants were males. Response rate in the intervention group was 97.2%. Pre-intervention prevalence of occupational stress in the intervention group was 50% (n=36) and it was 58.33% (n=42) in the control group. This difference was not statistically significant (p=0.316). The post-intervention occupational stress level in the intervention group was 40.28% (n=29) and in the control group was 56.94% (n=41). This difference was statistically significant (p=0.045). In the intervention group, twelve drivers with occupational stress shifted to normal stress levels after the intervention, while five drivers who had normal stress levels, developed occupational stress afterwards (6.94%). This difference within the intervention group was not statistically significant (OR=2.4; 95% CI: 0.845, 6.81; p=0.145). Level of satisfaction on the overall programme was stated as excellent by 86% of the drivers in the intervention group.

Conclusions & Recommendations: Stress management intervention was effective in reducing occupational stress among drivers. Mental health promotion programs need to be conducted on the recruitment of bus drivers.

Keywords: job strain, mental health promotion, bus captain

Introduction

Bus driving can be regarded as a classic example of high-strain occupation (1). Operating public transport vehicles is amongst the most stressful and unhealthy modern occupations (2). Literature over the last four decades on bus drivers shows that, as compared to workers in other jobs, they are more likely to experience cardiovascular, gastrointestinal and musculoskeletal disorders, with occupational stress playing a significant role in causing them (3). Bus driving has high psychological demands and little decision-making control, in combination with low social support on the job. The main task of bus drivers is to drive safely and maintain a timely schedule, yet to accomplish one, the other may have to be compromised. The main job factors that contribute to developing stress in bus drivers are work shift schedule, irregular mealtimes and poor nutrition, traffic congestion, prolonged driving, constant visual and mental alertness and driving during night hours in bad weather conditions (4).

Social support helps to protect individuals from experiencing stress. However, bus driving interferes with social support in two ways. The job itself is solitary with little chance for face-to-face contact between co-workers and the work schedules disrupting family and social life. On the other hand, the design of the driver's cabin and how the work is scheduled accounts for musculoskeletal problems associated with bus driving and an indirect etiology for work stress. According to the Report on International Transport Worker's Federation in 2013, San Francisco bus drivers who were less than 50 years were found to be active and also in high job stress (5).

Bus drivers often have conflicts due to their work stressors while driving. It included physical violence within the bus, traffic congestion, risk of having passenger's ticket money inside the bus cabin, lack of knowledge about how their company is managed, time pressure to keep the daily targets.

A British researcher (6) showed that these conditions including peak traffic conditions were correlated with the increase of stress hormones during driving, which may be injurious to an individual's mental wellbeing. A Brazilian study showed that bus drivers had various job stress stages, while 75.6% of the participants were in the exhaustion stage of stress (7). Studies in Asia had similarly pointed out the injurious nature of occupational stress among bus drivers. Indian research showed government city bus drivers in Hubli having more than 80% of varying amounts of stress, where the author recommended to have attention on burnout from job stress (8). A Sri Lankan study showed the prevalence of occupational stress among bus drivers in Maharagama Municipal Council area of 34.1% (95% CI: 29.6, 38.8) (9). This study too pointed out that job strain can lead to unhealthy behaviors such as tobacco smoking and dietary habits (6-7).

The importance of looking into this health issue among bus drivers is invariably considered a crucial aspect of safety in a society. They have to be competent in multi-tasking to keep abreast of effective and efficient service provision. In particular, they are challenged by the necessity to comply with schedules under increasingly congested roads resulting in strain and pressure as a major contribution to occupational hazards. This, in turn, increases the risk of physical and psychosocial ailments in both the bus drivers and the community. To overcome the job stress in this occupation category, some interventional studies have been done globally. The job stress management interventions among bus drivers have been an integral part of health surveys in Western countries. However, there is a lack of research in the middle- and low-income countries. Thus, the objective of this study was to assess the effectiveness of a multi-component intervention package which was applied to manage the occupational stress among bus drivers of Sri Lanka Transport Board (SLTB) in Colombo District.

Methods

Development of the intervention

As part of the study, an intervention programme was designed, blending the concepts of mental health promotion and emotional intelligence (EI). In doing so, three action areas of health promotion in Ottawa Charter (10), namely creating a supportive environment, strengthening community action and developing personal skills were incorporated. These concepts were converted into action by including them in the model of EI consisting of self-awareness, self-management, community/social awareness and community/social management concepts (11).

Action area of developing personal skills was inbuilt in the concepts of self-awareness and self-management, while the action area of strengthening community action was inbuilt in the concept of community/social awareness and community/social management (Table 1). The action area of creating supportive environment was stand alone with the activities directed at the identification of available assets and strengths. The amalgamation of health promotion and EI enabled us to reach a bottom-up approach with life skills to manage occupational stress in bus drivers. The final objectives of the intervention were as follows:

- Development of personal skills by self-awareness and self-management
- Strengthening of individual's actions in the community through community/social awareness and community/social management skills
- Enhance creating a supportive environment for the individual by identifying available assets and strengths

The intervention package was tailor-made into modules to be delivered within a period of six months. Several modes were used to deliver each module and to reach the target group. The intervention package was pilot tested at Kalutara SLTB depots among 25 drivers. After the pilot-test, the package contents were more simplified, while the

time duration of each session was reduced. Also, the importance of adapting favorable methods to improve participation of the recruits was noticed in this pilot testing.

Implementation of the intervention

A cluster randomized controlled trial was conducted to assess the occupational stress management program. The study was implemented from May to November 2019. The sample consisted of bus drivers working full-time and permanent in the SLTB, Colombo District during the preceding six months. Those engaged in emergency services or luxury fleets and who have been already diagnosed of any mental illness were excluded from the study.

The sample size was calculated for an effect size of 20% reduction of stress levels after the intervention between the intervention and control groups at $\alpha=0.05$ and $\beta=10\%$. This effect size was considered based on previous stress management intervention studies (12-13). Allowance for non-response was assumed as 10%, after which the minimum sample required was 72 drivers for each control and intervention group.

To obtain the sample, cluster randomization method was used. The sampling frame used was the name register book with the driver's salary number available in each of the 12 SLTB depots in Colombo District. There were 1271 bus drivers listed. A depot was considered as a cluster. Since it was practical only to release 12 drivers from each depot, the cluster size was taken as 12 and the number of clusters per group considered as 6, accounting for a total of 144 drivers. To maintain the drivers' equal distribution, it was decided to group them into two sets, according to the distance of the depots to the head office (more than 13 km and less than 13 km to the head office). Within these two groups, three clusters each were randomized into intervention and control arms. After the randomization, six depots were included in each of the intervention and control groups.

The intervention group participated in the intervention activities several days per month. The venue was the SLTB head office premises, as per convenience of infrastructure management. The activities were adjusted in means of minimal disruption to their daily routine (driver's running chart/running timetable given by SLTB). It was pre-scheduled and pre-planned to involve the same drivers to receive the intervention throughout six months duration. The intervention activities were delivered by a team consisted of a consultant psychiatrist, sociologist, a counsellor, a health education officer, a health education nursing officer and two members who has practiced and followed the entire intervention in a reputed meditation organization with the PI. On ethical grounds, one mental health promotion session was conducted for the drivers in the control group at the completion of data collection.

Evaluation of the intervention

Data collection was done at baseline and post-intervention during 1-2 weeks after completion of the intervention (May-November 2019). Both groups underwent the assessments simultaneously, by applying the same questionnaire by field data collectors. They had a medical and social background to capture the work and were trained for the event priority.

Data on occupational stress were acquired in both groups using the self-administered Effort–Reward–Imbalance (ERI) questionnaire. This has been validated to local context (14) priority, and for this professional group by the PI. Reliability of ERI-Sinhala was assessed by internal consistency and test-retest reliability methods. Internal consistency was assessed by calculating the Cronbach's alpha coefficient (15), which were 0.821, 0.832 and 0.751 for Effort, Reward & Over-commitment subscales respectively and were considered satisfactory (16). Test-retest reliability was measured through Pearson's correlation coefficient, which showed 0.7 or above values that were considered as good level of

agreement (17) (efforts 0.846, rewards 0.821 and over-commitment 0.834).

The response rate of completion of each item of the filled questionnaires was calculated to assess the acceptability, which was 100%. The mean time taken to complete all sections was 19 (SD=3) minutes. All the participants were fluent in Sinhala, therefore only the ERI-Sinhala version was used in this study. The same questionnaire was used for the post-test as well.

Process indicators such as the reach, fidelity, context, dose delivered, dose received and level of satisfaction on the overall programme were also measured to assess the effectiveness of the programme. They were used in between the intervention process twice (after four months and six months).

Data analysis

Basic characteristics of the intervention and control groups were compared to the comparability of the two groups. The effectiveness of the mental health promotion programme was evaluated through between-group as well as within-group comparisons made on the status of occupational stress. Between-groups comparisons were made before and after the intervention were assessed using Chi-squared test at 5% significance level. Within-group comparisons were made before and after the intervention using McNemar test at 5% significance level.

Results

There were two dropouts (one driver not feeling well and another leaving to attend to a family matter) in the intervention arm at the end of six months. Response rate remained 100% in the control arm. Therefore, intention-to-treat analysis was incorporated (18-19), with the final number of participants in each group remaining unchanged. The two drivers who were lost to follow up, were substituted by their baseline data in the post-test. The pre-intervention assessment of the selected socio-demographic and socio-economic characteristics,

Table 1: Activity plan of the stress management intervention package delivered for the SLTB bus drivers

The concept of health promotion & EI	Activity	Mode of delivery	Materials developed & used	Timeline
Module 1- Self-awareness	Identify emotions from pictures of faces	Discussion and group work	Picture cards with various emotional faces e.g., happy, sad, anger	1 st month
	Group interaction with shared experiences of moods/emotions	Presentation and discussion	Power point presentation (PPT)	
	Identify in given scenario what triggers an emotional reaction in oneself	Discussion and group work	Five case scenarios	
	Stress identification, report outcomes	Presentation and discussion by a consultant psychiatrist	PPT	
	Keeping an emotional diary	Discussion and group work	Pocket notebooks to each driver	
Module 2- Self management	Communication skills	Presentation and discussion by a health education officer	PPT and a video clip on effective communication	2 nd month
	Anger management and empathy training to reduce road rage	Role play and lecture discussion by a sociologist	Single page coloured paper on tips to reduce anger and a video clip	
	Practising healthy coping styles and relaxation and physical exercises	Practical session on relaxation exercises Gallery walk with group	Video clip on relaxation exercises	
	Discussion on chronic NCD risk factors and healthy dietary habits	Discussion with the YouTube video on food panel by a health education nursing officer	IEC material from NCD unit and food panel	
Module -3	Personality trait identification	Lecture discussion and group work by a sociologist	Printed page with symbols for the group work	3 rd month
Module -3	Identification of other's emotions	Presentation and discussion by	Selected movie clips, PPT on verbal and non-verbal	

Community awareness		a health education officer	communication	
Module- 4 Community management	Emotional display-role play	Role play by divided groups of six	Structured scripts under six topics (e.g., rapport building, respecting others, social bonds, connectedness, equity, making smart decisions)	4 th month
	Modified role plays after feed back	Replay of the role play after discussion	Structured scripts under six topics	
	Case scenarios with group work	Group work and discussion with a psychological counsellor	Case scenarios	
Module -5 Sustainability	Practising mindfulness/meditation	Power point presentation and a practical session by a meditation trainer and PI	PPT on mindfulness	5 th month
	Breathing exercises	Practical session on breathing exercises	Video clip on breathing exercises	
	Music meditation	Practical session on music meditation	Video clip and audio clips on music meditation	
Module-6 Creating supportive environment	Using of existing assets for mental health promotion	Discussion on user-friendly material available for mental health promotion	Existing IEC materials for mental wellbeing	6 th month
	Engage in leisure activities through 3D mapping technique	Practical session on 3D mapping	3D mapping boards	
	How to use time management matrix	Awareness and practical session on time management	Time management matrix	

health-related behaviors and work-related factors between the intervention and the control groups demonstrated no statistically significant differences between the two groups.

Pre-interventional prevalence of occupational stress in the intervention group was 50% and in control group, it was 58.33%. This difference was not statistically significant ($p=0.32$). Post-intervention prevalence of occupational stress in the intervention group was 40.28% and in the control group, it was 56.94%. The observed difference between groups was statistically significant ($p=0.045$) (Table 2).

In the intervention group, twelve drivers with occupational stress shifted to normal stress levels in the post-intervention analysis. Five drivers who had normal stress levels, developed occupational stress after the intervention (6.94%). This difference within the intervention group was not statistically significant (OR=2.4; 95% CI: 0.85, 6.81; $p=0.15$). Three drivers with occupational stress shifted to normal stress level in the post-intervention analysis of the control group. A couple of drivers who had normal stress levels, affected with occupational stress after the duration of the intervention. This difference within the control group was not statistically significant (OR=1.5; 95% CI: 0.25, 8.97; $p=1.0$).

The process indicator on the overall satisfaction of the programme was shown to be 'excellent' among 86% while the rest commented on it as a 'good' programme. The reach showed that the number of bus drivers participating in the intervention out of the planned number to be recruited was 97.2% ($n=70$) at the end. Dose received showed that the number and percentage of the bus drivers who attended all 19 sessions among the recruited bus drivers was similar. The context showed that the level of support from the depot management to the delivery of the intervention was stated as 'excellent'. This showed self-determination and good motivation towards the stress management journey among the bus drivers. In

addition, this reflected the organizational support and attitude toward this programme. Improvement on work performance (reduction of road rage) of the bus drivers after this intervention, was measured as a secondary outcome (findings not discussed in this paper).

Discussion

Stress management interventions are of several categories, namely those based on organizational, individual and mixed: along with primary, secondary and tertiary level (20-23). The current study adhered to individual-level stress management program, falling in to primary and secondary levels. This initiation tallied with findings (24) about individual-level interventions of the Dutch study, where 81 organizations with various types of careers were incorporated. It showed that the organizations who practiced this type of approach on person directedness targeted on individual's characteristics were more successful. Individuals who had good stress responses lead to a positive work environment. The process indicators of level of satisfaction on the overall programme, reach and dose received showed the self-determination and good motivation towards the stress management journey among the bus drivers. In addition, this reflected the organizational support and attitude toward this programme. Additionally, these interventions are customarily aimed at employees performing a particular task or only at employees who show signs of stress or are performing poorly, hence the purpose of this intervention was intended specifically for the drivers and their performance improvement. Critically, a systematic review on job stress intervention reported that individual-focused, low-rated approaches were effective at the individual level leading to favorable outcomes but tend not to have favorable impacts at the organizational level. Individual-only approaches scored low ratings here, while combination approaches had high ratings (25). Hence, a limitation of the current intervention was that it did not contain

segments for the organizational approach in designing and conducting the program.

This intervention was tailor-made for bus drivers, with simple language, modules with short sessions. The USA guideline on best practices for improvement of bus operator’s health, convinced, that specific programs for this category helped to achieve their health goals (26). This research was done in five major metropolitan transport agencies. The health promotion programme was customized for the bus drivers similarly to the present study. Coaching sessions, physical & health activities, conflict resolution skills, mindfulness were some categories in the set-up. Improved outcomes such as less absenteeism, sick leave and job stress were evident after the programme. A German study which was conducted as a short-term stress reduction intervention using positive psychology and biofeedback methods (continued relaxation) over bus captains, showed results similar to the current research.

The post-test evaluation visualized a marked improvement in stress levels (27). Fifty-four highly stressed male inner-city bus drivers were recruited for an occupational stress management intervention

in Germany. The intervention included relaxation, coping with anger and excessive work commitment (high need for control), management of conflicts with superiors and recommendations for structural changes at work, similar to the present programme. After 12 weeks, the mean level of need for control, critical health adverse style of coping with job demands and level of job strain were significantly reduced in the study group compared to the control group and this effect persisted after three months. The conclusion supported that theory-based stress management program in an occupational risk group was feasible and showed beneficial psychological effects (28).

Post intervention analysis showed shifting of five drivers with normal stress levels to job strain within the intervention group. This was probably due to the perceived uncertainty of the practicality of healthy dietary plans, weight management and physical activity as challenging self-care behaviors. If the duration of the intervention was longer, this shift would have been lower or none, as it would give adequate time to change practice. Within the control group, this shift was smaller.

Table 2: Comparison of bus drivers in intervention and control groups with regards to the presence of occupational stress before & after the intervention using ERI questionnaire

Occupational stress	Before the intervention, No. %				After the intervention, No. %			
	Intervention group (n=72)		Control group (n=72)		Intervention group (n=72)		Control group (n=72)	
Present	36	50.0	42	58.33	29	40.28	41	56.94
Absent	36	50.0	30	41.67	43	59.72	31	43.06

There were a few studies available in the local context on job stress management interventions, but not in the transport industry. A study done on bankers in Colombo District (12) did not show a significant difference between or within groups after the stress reduction intervention. In contrast to this finding, the present intervention showed a statistically significant

difference in stress levels ($p < 0.05$) between groups in the post-intervention. Both this study (12) and the present study did not show a significant stress reduction within the intervention group, which can be due to the short time duration of the intervention and follow-up.

A study in Jaffna done among schoolteachers and bank staff found that the stress management was reduced in moderate intensity among them, with a moderate positive relationship between emotional intelligence and stress management of schoolteachers (29). The findings were compatible with the effectiveness of the EI component in the present study.

Strengths & limitations

Globally recognized novel concepts were used to design the intervention package, with the contribution of local experts, previous evidence from literature and qualitative methods. The two groups were comparable with similarities shown between the intervention and control groups related to basic sociodemographic characteristics. Further, all possible biases were identified, and measures were taken to address them during the study's design, implementation and analysis. Selection bias was managed by selecting the study participants using a simple random sampling method. The attrition bias was addressed by using pre-scheduled timetables, reminder calls, more group activities rather than lectures and shorter sessions. Allowance given for non-respondents when calculating sample size and adaptation of intention-to-treat analysis further minimized attrition bias. Information bias was reduced by using uniform methods to assess outcomes in both groups. The non-response rate was very low in both arms, and this along with representative sampling, enabled generalizing the results to all SLTB bus drivers island wide.

Even though the intervention was proven effective in reducing occupational stress levels within six months, the long-term effects could not be assessed in the current study. Also, a pool of resource was involved in this study which can be a limitation for its replicability. It could have been better, if the organizational approach was added as a combination approach, but the current study gave more emphasis

to person directedness.

Conclusions & Recommendations

The study highlights the effectiveness of the stress management intervention on SLTB bus drivers to overcome their occupational stress. In the individual analysis, the intervention showed a statistically significant difference between the intervention and the control group ($p=0.045$) on occupational stress levels. Mental wellbeing promotion programs can be done, on recruitment phase of the drivers. These activities can be linked with the network of Medical Officers of Mental Health and primary healthcare system in the country and the transport sector to provide necessary mental wellbeing services for bus drivers at district levels. Apart from that, the organizational level workplace health promotion programs (e.g., depot wise) can be established or introduced such as healthy canteen policy and adequate restroom facilities. This could be advantaged and benefited by all the bus drivers in the country, especially those who work on night shifts. The proper recruitment system and retirement schemes need to be reshuffled within the administrative arena. There is room for adaptation of these wellbeing programs for the findings need to be private bus drivers in the country as well. mental Road Passenger Transport Authority needs to be advocated on these interventions.

Author Declarations

Competing interests: The authors declare that they have no competing interests.

Ethics approval and consent to participate: Ethics clearance was granted by the Ethics Review Committee of the faculty of medicine, University of Colombo. Informed written & verbal consent was obtained from each participant prior to data collection.

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Public Health Implications

- Almost half (52.1%) of the bus drivers who participated were stressed at work. Unaddressed job strain can end up with burnout, if not successfully managed.
- In light of the effectiveness of the stress management intervention, as shown between the two groups in the present study, the findings can be generalized to all island SLTB depots. Such programs can be identified by public health professionals and relevant transport administration to apply to drivers' new recruitment process.

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References

1. Durgamini I, Suresh R, Sethuraman G. Occupational stress among private bus drivers and conductors in Thanjavur district. *Int J Pure Appl Math* 2016; 119(10): 289-304. <https://doi.org/10.12732/ijpam>.
2. Taklikar S. Occupational stress and its associated health disorders among bus drivers. *Int J Community Med Public Health* 2016; 3(1): 208-211. <https://doi.org/10.18203/2394-6040.ijcmph20151564>.
3. Scandal P, Dobson M, Roskam E, Elling R, Landsbergis. *Unhealthy work, causes, consequences, cures* (2nd edition). New York: Milton Park, 2017.
4. Kompier M. *Bus Drivers: Occupational Stress and Stress Prevention: A Manual for Bus Drivers*. Geneva: International Labor Organization, 1996. Available from: <http://www.ilo.int>.
5. Spooner D & Whelligen. *The power of informal transport*. Global Labor Institute, 2017. Available from: <https://www.itfglobal.org/media/1691170/informal-transport-workers.pdf>.
6. Evans E. *Job-related factors that predict the psychological health and well-being of urban taxi drivers*. PhD Thesis (Psychology). Melbourne: Australian Catholic University, 2010.
7. Medeiros S, Aquino J, Frazao I, Monteiro E, Andrade M, Gomez B. Stress and stressors in bus drivers. *J Nur* 2017; 6(1): 101-110. <https://doi.org/10.12707/2182.2883>.
8. Bathija G, Dattatraya D, Bant S, Itagimath L, Lokare M, Godbole M, Reddi M.A study on stress among government city bus drivers in Hubli. *Int J Biomed Res* 2014; 5(2): 102-104. <https://doi.org/10.7439/ijbr.v5i2.503>.
9. Illangasinghe D & Arnold SM. Occupational stress, associated factors, and coping strategies among bus drivers in buses commencing from Maharagama Municipal Council area. *J Coll Community Physicians Sri Lanka* 2015; 21 (supp 1): 49. <http://doi.org/10.4038/jccpsl.v21i2.8097>.
10. World Health Organization. *Ottawa charter for health promotion*. 1st International Conference on Health Promotion, Ottawa, Canada, 1986.
11. Gardner L. *Emotional intelligence and occupational stress*. PhD thesis (Psychology). Swinburne. Swinburne University, 2005.
12. Suraweera S. *Prevalence and correlates of occupational stress and the effectiveness of an intervention to manage occupational stress among selected categories of employees in domestic commercial banks in the district of Colombo*. MD thesis (Community Medicine). Colombo: Postgraduate Institute of Medicine, 2009.
13. Poulsen B. The Healthy Bus project in Denmark: Need for an action potential assessment. *Health Promot Int* 2004; 19(2): 205-213. <https://doi.org/10.1093/heapro/dah208>.
14. Gamage A & Hanna S. *Adaptation and validation of efforts reward imbalance model to evaluate occupational stress among Sri Lankan employees*.

- International Congress for Occupational Health & Psychological factors (ICOH-WOPS), Adelaide, 17-19 Sep 2014.
15. Cronbach, L. Coefficient alpha and the internal structure of tests. *Psychometrika* 1951; 16(3): 297-334. <https://doi.org/10.1007/BF02310555>.
 16. Nunnally J, Bernstein I. Psychometric Theory. *Am Educ Res J* 1994; 5(3): 431. <https://doi.org/10.2307/1161962>.
 17. Litwin.M. *How To Measure Survey Reliability and Validity* (1st edition). Los Angeles: Sage Publications, 1995.
 18. Murray D, Varnell S, Blitstein, J. Design and analysis of group randomized trials: a review of recent methodological developments. *Am J Public Health* 2004; 94(3): 423-432. <https://doi.org/10.2105/AJPH.94.3.423>.
 19. Armijo-Olivo S, Warren S, Magee D. Intention to treat analysis, compliance, dropouts and how to deal with missing data in clinical research: a review. *Phys Ther Rev* 2009; 14(1): 36-49. <https://doi.org/10.1179/174328809X405928>.
 20. Sonnentage D & Frese M. Stress in organizations. *Int J Manag Organ* 2020; 12(1): 67-80. <https://doi.org/10.4324/9781003000587-23>.
 21. Cox T, Griffiths A, Gonzale R. *Research on work-related stress* (5th edition). Belgium: GranVia, 2000.
 22. Bohle P, Quinlan M, Kennedy D, Williamson A. Working hours, work-life conflict and health in precarious and “permanent” employment. *Rev Saude Publica* 2004; 38(Suppl): 19-25. <https://doi.org/10.1590/s0034-89102004000700004>.
 23. Riva S, Chinyio E. Stress factors and stress management interventions: the heuristic of “bottom up” an update from a systematic review. *Occup Health Sci* 2018; 2(2): 127-155. <https://doi.org/10.1007/s41542-018-0015-7>.
 24. Taris T, Kompier M, Geurts S, Schreurs G, Schaufeli B, De Boer E. Stress management interventions in the Dutch domiciliary care sector: findings from 81 organizations. *Int J Stress Manag* 2003; 10(4): 297-325. <https://doi.org/10.1037/1072-5245.10.4.297>.
 25. La Montagne D, Keegel T, Louie M, Ostry A, Landsbergis A. A systematic review of the job-stress intervention evaluation literature, 1990-2005. *Int J Occup Environ Health* 2007; 13(3): 268-280. <https://doi.org/10.1179/oe.2007.13.3.268>.
 26. Gillespie M, Wang X, Brown B. *Improving the health and safety of transit workers with corresponding impacts on the bottom line* (6th edition). Washington DC: The National Academies Press, 2020.
 27. Krahn S, Günther B, Leiber P. Evaluation of two short-term stress interventions in the context of mobility. *J Transp Res Part F: Traffic Psychol Behav* 2000; 8(4): 155-164. <https://doi.org/10.1016/j.trf.2021.11.00>.
 28. Aust B, Kompier M, Berg A, Segrist J. Stress prevention in bus drivers: evaluation of 13 natural experiments. *J Occup Health Psychol* 2000; 5(1): 11-31. <https://doi.org/10.1037/1076-8998.5.1.11>.
 29. Mayuran, L. Impact of Emotional Intelligence on Stress Management: Study of Schools with Banks in Jaffna District. *Glob J Comm Manag Perspective* 2013; 2(6): 67-71. Available from: <https://www.longdom.org/articles-pdfs/impact-of-emotional-intelligence-on-stres-management-study-of-schools-with-banks-in-jaffna-district.pdf>.