

Original Paper

Prevalence of Occupational Stress among Secondary School Teachers in Public Schools in the District of Colombo, Sri Lanka

Wickramasinghe, EP^{1*}, Seneviratne, R DE A², Gunawardana, NS³, Sumathipala, A⁴ & Mallen, CD⁵

¹ Consultant Community Physician, Directorate of Estate & Urban Health, Ministry of Health, Sri Lanka. 455 Thimbrigasyaya Road Colombo 05, Sri Lanka

Telephone No: +94777257525 ORCID: <https://orcid.org/0000-0003-2129-5496>

² Senior Professor in Community Medicine, Faculty of Medicine, General Sir John Kotelawala Defence University, Moratuwa, Sri Lanka

³ National Professional Officer (Health Systems Analysis and Evidence), World Health Organization Country Office for Sri Lanka, WHO, Colombo 04, Sri Lanka

⁴ Emeritus Professor of Psychiatry, Director, National Institute of Fundamental Studies and Former Director, Internationalisation, Research Institute for Primary Care and Health Sciences, Faculty of Medicine, Keele University, Staffordshire, ST5 5BG, United Kingdom

⁵ Dean, Institute of Primary Care and Health Sciences, Faculty of Medicine, Keele University, Staffordshire, ST5 5BG, United Kingdom

Received: June 6, 2022

Accepted: June 19, 2022

Online Published: July 18, 2022

doi:10.22158/rhs.v7n3p12

URL: <http://dx.doi.org/10.22158/rhs.v7n3p12>

Abstract

Teacher occupational stress is increasing globally. We aimed to determine the prevalence of occupational stress among secondary teachers, to advocate policies for prevention of occupational stress among teachers in Sri Lanka. A cross-sectional study included 1426 secondary teachers, selected using multistage cluster sampling from public schools of Colombo, Sri Lanka. Validated Teacher Stress Inventory-Sinhala (TSI-Sinhala) assessed occupational stress. Prevalence of high [15.9% (95% CI: 14.0%-17.8%)] and moderate [67.5% (95% CI: 65.1%-69.9%)] occupational stress among secondary teachers, resulted an overall high prevalence of 83.4% (95%CI: 81.4%-85.3%). Moderate occupational stress among female teachers (68.6%, 95% CI: 65.7-71.5%) was significantly higher than males (61.9%, 95% CI: 58.9-64.9%). Urgent attention to preventative interventions for occupational stress among teachers in Sri Lanka is recommended.

Keywords

TSI-Sinhala, secondary teacher, occupational stress

1. Introduction

Teachers play an important role in a student's life by educating, nurturing and mentoring students to achieve their goals. Despite the common view in Sri Lanka that teaching as a stress-free regular job; it is identified as one of the most stressful occupations across the world ¹. In UK, among high work stress occupations teaching ranks the third ². High levels of occupational stress among Malaysian and Indian secondary teachers also indicate that teacher stress is an issue in Asia Pacific region ³. Prevalence of burnout: a chronic sequel of occupational stress, was found to be 11.56% among primary teachers in Southern Province of Sri Lanka in year 2007 ⁴. Considerably high levels of burnout among primary teachers in the Southern province of Sri Lanka ⁴ indicates that Sri Lanka is no exception with regards to occupational stress among teachers.

Teachers in Sri Lanka usually starts work before 7 am and stays at school for more than 7 hours a day, five days per week, bearing the primary responsibility of managing 30 to 40 students in a class ⁴. In Sri Lanka, the secondary grades range from year 6 to 13, with students aged from 11 to 19 years ⁵. Together with colleagues and school administrators, teachers play multiple roles such as an educator, second parent, mentor, counsellor, after school club coordinator, first aider and disciplinarian. Sri Lankan teachers are also faced with stressful circumstances such as dealing with unruly students, biased administration, frequent educational reforms, ever-increasing workloads, work demands & competition, poor working conditions while receiving low wages ⁴. Moreover, after work they have to deal with their own household chores making work-life balance an additional challenge. Stressed out teachers resort to reactive and excessive punitive responses disrupting the optimal classroom climate which negatively affects performance of both students and teachers and the relationship between them ⁶.

National Institute of Occupational Safety & Health of United States of America defines 'occupational stress' as the 'harmful physical, emotional, behavioural and cognitive responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the worker' ⁷. Hans Selye described the term 'eustress' as healthy, positive & constructive results of stressful events and stress response' ⁸ making a distinction between eustress and distress. Teacher stress is defined as 'an experience by a teacher of unpleasant emotions such as tension, frustration, anger, anxiety and depression, resulting from aspects of work as a teacher' where unique individual factors interact with sources of work stress in the manifestation of distress ⁹.

In Sri Lanka, of the 4,028,651 public employees 5.8% are teachers, the fourth largest worker group in public sector in the country, of ¹⁰. Out of which highest number of schools and teachers are in Colombo district ⁵. Teachers teaching in secondary grades in Sri Lanka bear additional academic and work demands because two competitive state examinations: General Certificate Examination (G.C.E.) Ordinary and Advanced level in Sri Lanka are held within secondary grades ⁵. Moreover, secondary teachers manage adolescents, who are in a unique period of life; where many physical, intellectual and moral developmental changes take place within them ¹¹ adding more to the job demand of the teachers. Therefore, particularly secondary teachers in Colombo district can be considered as having higher work

demands. Knowledge on magnitude and determinants of occupational stress among secondary teachers is yet unknown in Sri Lanka, but warrants exploration for necessary preventive measures. Also, it is cost effective and beneficial to capture the issue, at the stage of occupational stress, before progressing to burnout which is a clinical entity¹². Preventing manifestation of burnout is important as it a range of personal, organizational and societal consequences¹².

1.1 Objective

With this backdrop, we aimed to determine the prevalence of occupational stress and factors associated with it, among secondary school teachers in the public schools in Colombo district of Sri Lanka. Results of the study will allow to provide platform for evidence-based policy decisions for implementation of occupational stress prevention interventions with primary and secondary preventative strategies for educators in Sri Lanka. Description of the associated factors will be dealt in a subsequent publication.

2. Methodology

We conducted a cross-sectional descriptive study in government schools having secondary grades (6 to 13) in the District of Colombo, Sri Lanka. The schools in Sri Lanka are categorised into 4 sub-types namely Type 1AB, 1C, 2 and 3 according to the grades included. The types 1AB and 1C are the schools which have all the grades from year 1 to 13 including secondary grades (year 6 to 13). Type 2 and 3 schools only include grades up to year 8 and primary grades respectively. Therefore, we included only the Types 1AB and 1C schools, the only school types which have the whole range of secondary grades⁵.

2.1 Inclusion & Exclusion Criteria

The teachers currently teaching in government schools with secondary grades for six or more months were included. Those who were pregnant, on maternity leave or long leave at the time of survey; diagnosed as having a psychiatric disorder or unable to read and write in Sinhala language were excluded.

2.2 Sample Size

Sample size was calculated using standard formula for estimation of prevalence in surveys¹³. In the absence of prevalence data in Sri Lanka, expected prevalence of occupational stress was estimated as 34% based on the prevalence of occupational stress among secondary teachers in Malaysia³. Malaysia is a country with a similar educational system to Sri Lanka at the time of planning this study. We used a multi stage stratified cluster sampling method in selecting the study sample. To compensate for the cluster effect, a design effect was calculated and applied¹⁴. Final sample size of 1500 was calculated with a design effect of 3.9 based on a Rho value^{14,15} of 0.1, cluster size of 20 and a 10% adjustment for non-response.

2.3 Sampling

We used a three-stage stratified cluster sampling technique. Of the 403 schools in Colombo district, 151 (37.4 %) are type 1AB and 1C schools. The total teacher population of Colombo district is 15,635, of

which 10,940 (69.97%) are employed in types 1AB and 1C schools¹. In selecting the sample firstly, we selected three out of four educational zones: Colombo, Piliyandala and Sri Jayawardanapura in Colombo district randomly. More than 75% of the schools with secondary grades in Colombo district are found in these three zones. Secondly, 75 clusters with a cluster size of 20 were allocated to the selected three zones according to the probability proportionate to the size of the population of secondary teachers in each of these three zones^{5,10} (Colombo:37; Piliyandala:15; Sri Jayawardanapura:23). Thereafter, the respective schools were selected according to the number of clusters allocated to each zone. We obtained lists of schools of types 1AB and 1C, from the Department of Education in the three selected zones, along with the secondary teacher populations in each school. Based on these lists the schools were listed along with the secondary teacher populations and the cumulative populations of each school. First cluster location was determined by a computer-generated random number. Thereafter, clusters were allocated to the schools using the sampling interval, until the required number of clusters are allocated to schools in each zone separately. Once the schools are selected, the third stage involved selecting required number of teachers from each school. Considering the eligibility criteria, we selected the study participants on a random method from the teachers register at each respective school on the day of the survey.

2.4 Study Instrument

A self-administered questionnaire (SAQ) consisting the Teacher Stress Inventory-Sinhala (TSI-Sinhala) and sections on socio-demographic and other relevant individual and work-related data was used as the study instrument. Culturally adapted and validated TSI-Sinhala¹⁶, is a 49-item teacher specific self-administered tool to assess occupational stress among secondary teachers in our study. The two-factor model of original TSI: sources and manifestations of stress¹⁷ was proven valid and reliable in measuring occupational stress in secondary teachers of Sri Lanka, in a previous validation study carried out by the same authors of this paper¹⁶. The 49 items of TSI-Sinhala are spread across ten sub-domains under the two main domains: Sources and manifestations of teacher stress¹⁷. Each item in TSI-Sinhala is marked on a 5-point likert scale of 1 to 5. We printed the different sections of the questionnaire in contrasting colours to reduce monotony and improve response. We pilot tested the questionnaire among a group of 25 secondary teachers from a school not selected for the main study, prior to data collection. According to the pilot study, few modifications to the sections on socio-demographic and other related questions were made to improve clarity, comprehensibility and response.

2.5 Data Collection

Principal Investigator (PI) along with a field assistant (FA) assimilated data. We met the principals of selected schools by prior appointment on a suitable day for recruitment of participants and data collection without disturbing the routine teaching schedules. On the day of data collection, based on the eligibility criteria, study units were selected from the teachers' register of respective school. If an eligible teacher was absent on that day, the respective teacher was contacted later and invited to

participate. We obtained informed written consent from the study participants prior to data collection. Each questionnaire was inserted in a self-adhesive envelope before distribution. Strict measures were adhered to maintain anonymity, privacy and confidentiality of the study participants. All the completed questionnaires were collected in sealed envelopes on the same day by the PI. A serial number secured only with PI allowed to track the participants to signpost for necessary services based on findings. We followed necessary data protection mechanisms to secure gathered questionnaires and information. Only the PI had access to questionnaires and data, due to the confidential nature of the data.

2.6 Data Analysis

Categorization of stress levels was based on the scoring of original TSI guideline¹⁷. Each item of the TSI-Sinhala was scored on a 5-point likert scale. The TSI guideline¹⁷ identifies three categories of occupational stress: Mild, Moderate and High Stress. A total stress score of $\leq(-1SD)$ was considered as Eustress in the present study with the consensus of Psychological experts involved in the validation study of TSI by the same authors¹⁶. A total score between $>(-1SD)$ to $<+1SD$ was considered as having 'moderate stress', and 'high occupational stress' being $\geq+1SD$ ¹⁷. Prevalence of moderate and high stress were determined separately. With consensus of the psychological medicine experts, the secondary teachers categorised as having moderate or high levels of stress as measured in TSI-Sinhala were considered as having 'overall occupational stress' for this study. Prevalence of each category of occupational stress was given in percentage with 95% confidence interval and was disaggregated by sex and age category of the secondary teachers. The PI entered and analysed data using SPSS.20 software.

2.7 Ethics and Administrative Approval

We obtained official approval from the Department of Education & Ministry of Education during the planning stage of this study. The detailed protocol of the study was initially reviewed and approved by the Board of Study of Community Medicine of Post Graduate Institute of Medicine in the University of Colombo. Ethics approval was granted from the board of ethics of Faculty of Medicine (EC-12-187/16.01.2016), University of Colombo Sri Lanka before data collection. Approval from the respective education zonal directors and the principals of selected schools was obtained before recruitment of participants.

3. Results

Of the 1500 secondary teachers, invited to participate in the study 11 (0.7%) teachers did not consent and another 63 (4.2%) questionnaires were discarded due to incomplete information. Thus, 1426 completed questionnaires were analysed giving a response rate of 95.06%.

3.1 Socio-demographic Data

The mean and median age of the study sample was 44 years ($SD\pm 8.9$) and 44 years (IQR=37 to 51 years), respectively. Majority of 84.4% ($n=1203$) were females, married (84.8%, $n=1209$), and having one or more children (79.4%, $n=1132$). Monthly family income was more than Rs.40, 000.00

(£166.00/\$222.22) in 76.8% (n=1096). More than half had a level of education with a basic degree (24.4%, n=491) or post graduate qualification (29.5%, n=421).

3.2 Prevalence of Occupational Stress among Secondary Teachers in Public Schools of Colombo District

Identification of secondary teachers with occupational stress was based on total stress score obtained by them for TSI- Sinhala. The minimum and maximum scores obtained by a secondary school teacher was 1 and 4.26 respectively. Mean and median total stress scores were 2.26 (SD= +/-0.62) and 2.22 (IQR=1.8-2.22). A score of 1.64 was identified as at the minus one standard deviation (-1SD) point, and 2.88 at the plus one standard deviation (+1SD) point. Table 1 depicts the cut off values and levels of occupational stress in the current study.

Table 1. Cut off Values for Occupational Stress Levels in the Study Sample

Mean score	Level of occupational stress	
≤1.64	Eustress	Eustress
>1.64 to <2.88	Moderate stress	Overall occupational stress
≥2.88	High stress	

The prevalence of occupational stress according to its level of severity, sex and age are shown in Tables 2, 3 & 4 respectively.

Table 2. The Prevalence of Occupational Stress among Secondary School Teachers according to Level of Severity

Level of severity of occupational stress	Frequency (No.)	Percentage (%)	95% Confidence Interval
Moderate stress	963	67.5	65.1- 69.9
High stress	227	15.9	14.0- 17.8
Overall occupational stress	1190	83.4	81.4-85.3

Prevalence of overall occupational stress among secondary school teachers was 83.4% (95%CI-81.4-85.3%). Prevalence of moderate occupational stress among secondary teachers was 67.5% (95% CI-65.1-69.9%) while the prevalence of high occupational stress was 15.9% (95% CI-14.0-17.8%).

Table 3. Prevalence of Occupational Stress among Secondary School Teachers According to the Sex

Occupational stress	Female (N=1203)			Male (N=223)		
	No.	%	95%CI	No.	%	95%CI
Moderate stress	825	68.6	65.7-71.5	138	61.9	58.9-64.9
High stress	189	15.7	13.5-17.9	38	17.0	14.8-19.4
Overall occupational stress	1014	84.3	82.1-86.5	176	78.9	72.9-85.0

Prevalence of overall occupational stress among female secondary school teachers was 84.3% (95%CI:82.1-86.5%) and was similar to the corresponding prevalence among male secondary school teachers (78.9%, 95%CI:72.9-85.0%). The prevalence of moderate occupational stress among female secondary teachers (68.6%, 95%CI-65.7-71.5%) was significantly higher than that of males 61.9% (95%CI-58.9-64.9%) while the difference in prevalence of high occupational stress among females and male secondary teachers was non-significant (females - 15.7%, 95% CI-13.5-17.9%; males- 17.0 %, 95%CI-14.8-19.4%).

Table 4. Prevalence of Occupational Stress among Secondary School Teachers according to the Age Category

Occupational stress	Age category											
	20-30 years (N=121)			31-40 years (N=409)			41-50 years (N=514)			51-60 years (N=382)		
	No.	%	95%CI	No.	%	95%CI	No.	%	95%CI	No.	%	95%CI
Moderate stress	84	69.4	61.5-77.3	266	65.0	61.1-68.9	357	69.5	66.3-72.7	256	67.0	62.9-71.0
High stress	19	15.7	9.5-21.9	76	18.6	15.4-21.8	84	16.3	13.7-18.8	48	12.6	9.7-15.4
Overall stress	103	85.1	79.0-91.2	342	83.6	80.6-86.6	441	85.8	83.4-88.2	304	79.6	76.1-83.1

Prevalence of overall occupational stress was highest among 41-50 year-old secondary school teachers and was 85.8% (95%CI:83.4%-88.2%). This was similar to the corresponding prevalence among 20-30 year-old (85.1%, 95%CI:79.0%-91.2%) and 31-40 year old (83.6%, 95%CI:80.6%-86.6%) secondary school teachers. The 51-60-year-old secondary teacher category had a significantly lower prevalence of overall occupational stress (79.6%, 95%CI: 76.1%-83.1%). Prevalence of moderate and high occupational stress were highest among 41-50 year (69.5%, 95%CI: 66.3%-72.7%) and 31-40 year (18.6%, 95%CI:15.4%-21.8%) age categories respectively. There was no significant difference seen among the other categories of age.

4. Discussion

Among the plethora of work-related data from western world (6,8,9), findings of current study in a lower middle-income country, adds value to limited information available on teacher stress from this part of the world as the educational and school environments differ across cultures. Evidence from elsewhere suggests teacher stress and wellbeing has a direct relationship with poor performance of both students and teachers and classroom management ⁶. Therefore, with the recent educational reforms, ever-growing competition and the trends of unacceptable levels of punitive disciplinary measures seen in schools of Sri Lanka ^{4,5}, the findings of this study indicate urgent attention to the issue of occupational stress among educators in Sri Lanka. Results also point towards the need for exploration of possible associated factors for high teacher stress levels observed, in order to prevent or control this important public health issue in Sri Lanka.

Colombo being the most densely populated district in Sri Lanka and having the highest number of schools with secondary grade teachers who are challenged with highest education competitiveness in Sri Lanka, supported the choice of selecting Colombo schools for the current study to generate information much needed. However, findings cannot be generalized to private sector schools as present study was carried out only in public schools.

Inclusion of teachers conversant in Sinhala language as only the Sinhalese version of TSI was validated, in the first phase of the study, can be considered a limitation in estimating prevalence of occupational stress. However, less than 1-3% of the teachers in the public schools ⁵ that were selected in the present study were non-Sinhalese in ethnicity indicating that the influence of this limitation to prevalence estimates presented were minimal.

This study scientifically estimated sample size using locally relevant estimates and accounted for design effect in sampling technique minimising the random error. Though the study utilized a cluster sampling technique, the clustering effect ¹⁴, was minimized by using a large number of small clusters and accounting for the cluster effect in sample size estimation ¹⁵. Sample size was based on an expected prevalence of occupational stress of 34% estimated by Hadi and the team ³ in Malaysia while the actual overall prevalence of occupational stress in the present study was 83.4%. This indicates adequacy of sample size to capture prevalence of occupational stress within the expected 95% confidence level with a 5% precision, confirming internal validity of the study.

We adopted a multi-stage cluster sampling method with probability proportionate to the size of secondary teacher population of each zone and type of school. Moreover, teachers from each school were selected randomly enabling the included sample to be representative of the secondary school teachers in Colombo district. Hence, sampling was done using probability techniques eliminating selection bias and minimizing the role of chance in the generated results confirming internal and external validity ¹⁸. This enables the findings to be generalized to all secondary teachers in public schools in the district.

Provision of adequate information about the importance of this study, maintaining confidentiality of information and further follow-up if required as part of the informed consent process was carried out. Distribution of the self-administered tool inserted in an envelope to reinforce the assurance of confidentiality were adopted. Furthermore, printing different sections of the self-administered questionnaire in contrasting colours was another measure taken to improve response rate. The response rate of 95.06% gives evidence for the effectiveness of these measures to minimize non-response strengthening interval validity. Use of a SAQ in the present study enabled gathering honest information while eliminating interviewer bias, ensuring sense of confidentiality among participants.

In the present study, occupational stress was assessed using culturally adopted and validated TSI-Sinhalese with confirmed high validity and reliability¹⁶ ensuring that influence of information bias in the estimates of occupational stress was minimal. However, cut-off points not being decided through a criterion validity process due to the absence of gold standard clinical diagnostic criteria for occupational stress in either of the ICD-10, ICD-11 or DSM-IV classifications may have resulted in a degree of misclassification, which is a limitation of the current study.

In our study the overall prevalence of occupational stress among secondary school teachers in public schools in Colombo district was as high as 83.4% (95%CI: 81.4, 85.3%), with moderate occupational stress of 67.5% (95% CI: 65.1-69.9) while the prevalence of high occupational stress was 15.9% (95% CI: 14.0-17.8). Prevalence of overall occupational stress was similar between male and female teachers and between young (20-40 years) and old (41-60 years) categories. However, moderate occupational stress among female teachers was significantly higher compared to that of male teachers.

Compared to other occupational groups studied in Sri Lanka^{19,20} findings of current study support the evidence stated in the report on Stress by International Labour Organization²¹ indicating that teachers are among the occupational categories which are subjected to very high occupational stress in the world.

Study by Shetageri and Gopalakrishnan²² in Bangalore among 105 teachers using TSI found the prevalence of high stress to be 20% and another 46.7% had moderate stress. Njoroge²³, in Kenya estimated an overall stress of 67.27% using TSI to measure occupational stress among 267 public primary teachers. The reason for the lower prevalence of occupational stress in these two studies compared to current study may be as they included schoolteachers of all grades while the present study included only secondary grade teachers. Similar findings in these above presented studies could be due to the commonality of competitive nature of the education system in these countries. The education system in India is similarly competitive as in Sri Lanka, and the teaching conditions are unsatisfactory²² explaining high levels of occupational stress in that setting.

The study performed by Samad and the team²⁴, consisted of base population with similar socio-demographic characteristics to the present study other than the fact that they studied on primary school teachers. In their study, prevalence of moderate stress was as high as 71.7%, which is a value higher than the present study. Even though the education systems of Malaysia and Sri Lanka have

similar characteristics, Malaysia being a developed country with much better school and teaching conditions, there could be other reasons. Parental high expectations, administrative issues or high interschool competition for better achievement could be reasons for the observed high prevalence rates of stress in primary teachers in Malaysia.

In contrast to the high estimates of prevalence of occupational stress discussed thus far, Hanif and Pervez²⁵ estimated a much lower moderate level of 32% of occupational stress among primary and secondary teachers in Pakistan using the Urdu version of TSI. The prevalence was approximately half of that of the present study. However, despite the study having strong methodological features such as 100% response rate and having used culturally validated TSI, the sample size being 200 and using both primary and secondary teachers preclude the comparability of the results.

The estimates of occupational stress by Hadi and colleagues³, in Kota Baru district, Malaysia (34%), and Kew and Moy²⁶ in Selangor Malaysia (18.9%) using Depression Anxiety Stress Scale-21 as the instrument were much lower than the prevalence estimates by Samad and the team²⁴ in Malaysia. Understanding the widely varying pattern of occupational stress in Malaysia from the three cited studies needs exploration of the differences in the study settings, school systems and other background characteristics of the teachers.

Recent study in Kenya²⁷ showed very high levels of high occupational stress of 33.2% and 56.7%, respectively in comparison to the prevalence of high stress of 15.9% in the present study in Sri Lanka. Differences of instruments used to measure occupational stress and absence of standard selection criteria of study participants of these two studies compared to the present study, meaningful comparisons cannot be done. However, Kosovo being an Eastern European country which faced economic recession and Kenya an under developed country, the high prevalence rates of occupational stress observed among secondary teachers may be an explanation in the contextual background where everyone must be achievement oriented in education as educational achievements provide the key, to stepping into developed world.

Jonas study²⁸ & study by Van Zyl and Peterson cited in Steyn & Kamper²⁹ state female educators have higher work stress levels, as they must be the homemaker, a supportive wife and mother and at the same time a competent professional educator. The current study identified significantly higher levels of moderate occupational stress among female teachers. Conforming to the possible explanation of high educator stress among those married and having children, as majority of study participants were married and having one or more children in our study.

4.1 Occupational Stress and Age

The 'mid-life crisis' described in Steyn & Kamper²⁹ states that mid-life has an effect in increasing a person's sensitivity to stress regardless of occupation. In the present study sample, the secondary teachers between 20 to 30 and 41 to 50 years had highest prevalence of occupational stress. Study by Jona²⁸ also confirms that the younger teachers having higher levels of stress. On the other hand, a study done in Western Cape among secondary teachers reveals that the teacher stress decreases with

chronological age³⁰. Similarly, 51 to 60-year-old secondary teachers in the present study had significantly lower levels of occupational stress.

5. Conclusion and Recommendations

Prevalence of overall occupational stress was high among secondary teachers in public schools of Colombo, Sri Lanka. Urgent attention should be given to this important public health issue taking necessary actions by addressing the underlying reasons.

We recommend planning and implementation of occupational stress prevention interventions for primary and secondary level teachers in Sri Lanka. Exploration of determinants of occupational stress among teachers in further studies would facilitate the focus, cost effectiveness and benefit of such interventions. Including teacher wellbeing assessments during the school medical inspections by the area public health teams would facilitate early interventions, and providing necessary psychosocial support for teachers. Increasing the accessibility for teachers to the available island wide mental health services is also recommended, by strengthening the link between education and health sectors of Sri Lanka.

Public Health Implications

- High prevalence of occupational stress among secondary teachers in Colombo district indicates need for stress prevention interventions for teachers as it can affect teacher health and performance.
- Further studying on root causes or associated factors for teacher stress would pave path for possible solutions.
- Including teacher wellbeing assessments and support in the existing school medical inspections by the Ministry of Health would facilitate early interventions.

Acknowledgement

Authors acknowledge the participants, Education department & school administrators, experts participated in cultural adaptation, translation and judgmental validation process of the tool. The team of educators who helped in the planning stage are also acknowledged.

Ministry of Health for providing the research allowance for the corresponding author which reduced the burden of the principal investigator as the project was personally funded.

CDM is funded by the National Institute for Health Research (NIHR) Collaborations for Leadership in Applied Health Research and Care West Midlands, the NIHR School for Primary Care Research and an NIHR Research Professorship in General Practice (NIHR-RP-2014-04-026). The views expressed in this paper are those of the authors and do not necessarily represent those of the National Health Service, NIHR or DHSC.

AS is funded by the Midlands Partnership NHS Foundation Trust, Staffordshire UK.

Author Declaration

Competing interests: There was no competing interests in this study

Ethics approval and consent to participate: Ethics approval was obtained from the Board of Ethics of Faculty of Medicine, University of Colombo (EC-12-187/16.01.2016) prior to conduct of the study. Permission to access school premises was obtained by the Provincial and Divisional Education Directors. Informed written consent was obtained from participants before collection of data.

Funding: Self-funded

Author contributions: EP was involved in the design of the study, data collection, data analysis and drafting the manuscript. RS and NG supervised the whole project and reviewing the manuscript. AS and CM were involved in drafting and reviewing the manuscript. All authors read and approved the final manuscript.

Data Sharing

The data gathered in this study consists of sensitive emotional content. Therefore, maintaining the confidentiality of provided information was confirmed to the study participants in the information sheets. Hence, data of this research are not shared, due to the confidential nature of information.

References

- Baraza, O. T., Simatwa, E. M. W., & Gogo, J. O. (2016). Levels of stress among Secondary Teachers and its implication on Students' Academic Performance in Kenya: A case study of Kakamega North Sub County. *Greener Journal of Educational Research*, 6(2), 52-66. <http://doi.org/10.15580.032816069>
- Bearschank, D., & Keslop, K. (2010). Sources of Stress for Teachers at High Risk Secondary Schools in the Western Cape. Mini-thesis submitted in partial fulfilment of the requirements for the degree of Magister Commercii in the Department of Industrial Psychology, Faculty of Economic and Management Sciences, University of the Western Cape, 2010.
- Bennet, S., & Woods, T. (1991). A simplified general method for cluster-sample surveys of health in developing countries. *WHO Statistics Quarterly*, 44, 98-106.
- Bhuin, P. K. (2016). Is Teaching Stressful? A review of literature on global higher education sector. *Asian Journal of Management Research*, 6(3), 599-609.
- Blakemore, S., & Choudhury, S. (2006). Development of the adolescent brain: Implications for executive function and social cognition. *Journal of Child Psychology and Psychiatry*, 47(3/4), 296-312.
- De Silva, P. V., Hewage, C. G., & Fonseka, P. (2015). Prevalence of burnout and its correlates among female primary school teachers in the Southern Province of Sri Lanka. *European Journal of Preventive Medicine*, 3(2-1), 9-14.
- Department of Census and Statistics. National Census of Health Manpower. Department of Census and Statistics, Sri Lanka, 2015.

- Department of Education. School Census Preliminary Reports. Ministry of Education, 2016; http://www.moe.gov.lk/english/images/Statistics/stat2015-16/2016_new3.pdf
- Fimian, M J. (1984). The development of an instrument to measure occupational stress in teachers: The Teacher Stress Inventory. *Journal of Occupational Psychology*, 57(4), 277-293.
- Hadi, A. A., Naing, N. N., Nordin, R. A. D., & Sulong, M. R. (2009). Prevalence and factors associated with stress among Secondary School Teachers in Kota Bharu, Kelantan, Malaysia. *South East Asian J Trop Med Public Health*, 40(6), 1359-1370.
- Hanif, R., & Pervez. (2003). Levels and sources of work stress among women schoolteachers. *Pakistan Journal of Psychological Research*, 18(3-4): 97-108.
- Health & Safety Executive, UK. 2018, <http://www.hse.gov.uk/legislation/hswa.htm>
- Hully, S. B., Cummings, S. R., & Browner, W. S. (2001). Designing Clinical Research, Lippincott Williams & Wilkins, 2001.
- International Labour Organization. Workplace Stress: A collective challenge. International Labour Office, Geneva, Switzerland, 2016.
- Jonas, M. N. (2001). Relationship between perceived social support, stress levels and general health of black teachers: A descriptive study. Magister Atrium in Clinical Psychology thesis. University of Port Elizabeth, 2001.
- Kew, Y., & Moy, F. M. (2016). Factors Associated with Stress among Secondary School Teachers In A Middle Income Country. Dissertation of Masters in Public Health, University of Malaya, 2016.
- Kuprianov, R., & Zhdanov, R. (2014). The Eustress Concept: Problems and Outlooks. *World Journal of Medical Sciences*, 11(2):179-185.
- Kyriacou, C. (1987). Teacher stress and burnout: An international review. *Educational Research*, 29(2), 146-152.
- Kyriacou, C. (2001). Teacher stress: directions for future research. *Educational Review*, 53, 27-35.
- Lwanga, S. K., & Lemeshow, S. (1991). Sample Size determination in health studies: A practical manual. World Health Organization, Geneva: World Health Organization, 1991.
- Moser, C., & Kalton, G. (1971). Survey Methods in Social Investigation. London, Heinemann Educational Books Ltd, London, 1971.
- National Institute of Occupational Safety and Health. Psychosocial Occupational Health. National Institute of Occupational Safety and Health, Washington, 1999.
- Njoroge, S. M. (2015). Prevalence and correlates of stress among teachers in mixed day public primary schools in Nairobi county. Dissertation submitted in partial fulfilment of degree of Master of Science, in Clinical Psychology, University of Nairobi, 2015.
- Palagolla, WVNCK, & Wickramasinghe, VM. (2008). Occupational stress among university academics in Sri Lanka, 2008. ebookbrowse.com/causes-and-consequences-french-pdf-d27968710
- Samad, N. I. A., Hashim, Z., & Moin, S. (2010). Assessment of Stress and Its Risk Factors among Priary School Teachers in the Klang Valley, Malaysia. *Global Journal of Health Science*, 2(2),

163-171.

- Samaranayake, DBDL, & Senevirathne, R. (2010). Burnout among nursing officers: Prevalence, correlates and association with Nursing performance. Thesis submitted for the degree of Doctor of Medicine in Community Medicine, Post Graduate Institute of Medicine, Colombo, Sri Lanka, 2010.
- Shethageri, VN, & Gopalakrishnan, G. (2016). A cross sectional study of depression and stress levels among schoolteachers of Bangalore. *IOSR Journal of Dental and Medical Sciences*, 15(3), 21-27.
- Steyn, G. M., & Kamper, G. D. (2006). Understanding occupational stress among educators: an overview. *Africa Education Review*, 3(1), 113-133.
- Suraweera, SAIK, & Senevirathne, R. (2009). Prevalence and correlates of occupational stress and the effectiveness of an intervention to manage occupational stress among selected categories of employees in the domestic commercial Banks in the District of Colombo. Thesis submitted for the degree of Doctor of Medicine in Community Medicine, Post Graduate Institute of Medicine, Colombo, Sri Lanka, 2009.
- Wickramasinghe, E. P., Senevirathne, R., Gunawardena, N. S., Sumathipala, A., & Mallen C. Validity (2022). Reliability of Teacher Stress Inventory-Sinhala to measure occupational stress among secondary school teachers in Sri Lanka. *Journal of College of Community Physicians of Sri Lanka*, 28(1). 532-540. <https://doi.org/10.4038/jccpsl.v28il.8442>