



## Adolescents' Health Education Literacy Level of Stress Due Cognitive, Emotional and Physical Factors

**Bebeley Samuel Joseph**

Department of Human Kinetics and Health Education, School of Education, Njala University, PMB Freetown, Sierra Leone

### ABSTRACT

**Study Focus:** This study only focused on the evaluation and assessment of adolescents' health education literacy level of stress due cognitive, emotional and physical factors, cased at four selected senior high schools in Bo Sierra Leone.

**Methods:** The restructured adolescents' health education literacy level survey questionnaire (AHL SQ) was the measuring instrument adopted, and the variables were scaled using One-sample t-Test of IBM-SPSSv.23 Statistics. A sampled size of [120] participants, mean age of [16.0±3.0] ranged from (13-19) years, were selected using the systematic and simple random sampling methods.

**Results:** The compared health education literacy due stress statistical test results showed significance difference in mean average scores for all tested variables with emotional factors scored highest 32.5±7.4 (27.1%) in table 4 and cognitive factors scored lowest 24.5±6.1 (20.4%) in table 2. The results were scaled @ 2-tailed significance of \*p<0.000.

**Conclusion and Recommendation:** A significant difference was observed among the scores for all tested variables with emotional factors emerging highest and cognitive factors emerging lowest in health education literacy of stress as slated in their mean scores, percentages, grouped frequencies and 95% confidence interval difference scores. The inclusion of health education literacy as an integral prime factor in the curriculum of health and physical education in all senior high schools, was strongly recommended.

### KEYWORDS

Health Education Literacy, Stress, Cognitive, Emotional and Physical Factors

### Introduction:

Stress has a likely connection with illness, which theories of the stress-illness link suggests that both acute and chronic stress can cause illness, and several studies found such a link, Schneiderman, N. et al. (2005), which according to those theories, both kinds of stress can lead to changes in behaviour and in physiology. Behavioural changes could be such as, smoking and eating habits and physical activity; and physiological changes could be such as, changes in sympathetic activation or hypothalamic pituitary adrenocorticoid activation, and immunological function, Herbert, T. B. et al. (1993). However, there is much variability in the link between stress and illness, Ogden, J. (2007). Selye demonstrated that stress decreases adaptability of an organism and proposed to describe the adaptability as a special resource adaptation energy, Selye, H. (1938a and b) and Gorban, A. N. et al. (2016).

Stress can make the individual more susceptible to physical illnesses like the common cold, Cohen, S. et al. (2007). Stressful events, such as job changes, may result in insomnia, impaired sleeping, and health complaints, Greubel, J. et al. (2011). Research indicates the type of stressor (whether it's acute or chronic) and individual characteristics such as age and physical well-being before the onset of the stressor can combine to determine the effect of stress on an individual, Schneiderman, N. et al. (2005). An individual's personality characteristics (such as level of neuroticism), Jeronimus, B. F. et al. (2014), genetics, and childhood experiences with major stressors and traumas, Jeronimus, B. F. et al. (2013), may also dictate their response to stressors, Schneiderman, N. et al. (2005). Chronic stress and a lack of coping resources available or used by an individual can often lead to the development of psychological issues such as depression and anxiety, Schlotz, W. et al. (2011), which is particularly true regarding chronic stressors, which are stressors that may not be as intense as an acute stressor like a natural disaster or a major accident, but they persist over longer periods of time, which tend to have a more negative impact on health because they are sustained and thus require the body's physiological response to occur daily. This depletes

the body's energy more quickly and usually occurs over long periods of time, especially when these micro-stressors (e.g. stress of living in a dangerous neighborhood) cannot be avoided. Studies have found that, caregivers particularly those of dementia patients, have higher levels of depression and slightly worse physical health than non-caregivers, Pinquart M. et al. (2003).

Psychological stress may directly contribute to the disproportionately high rates of coronary heart disease morbidity and mortality and its etiologic risk factors, specifically, acute and chronic stress which have been shown to raise serum lipids and are associated with clinical coronary events, Calderon, R. et al. (1999). It is important to note, however, that everyone experiences some level of stress, and diagnosis of stress disorders can only be performed by a licensed practitioner, Association with Health and Morbidity, (2012).

This study only focused on the evaluation and assessment of adolescents' health education literacy level of stress due cognitive, emotional and physical factors, cased at four selected senior high schools in Bo, Southern Sierra Leone.

### Materials and Methods

#### Participants:

The researcher interviewed mainly senior high school pupils with a sampled size of one hundred and twenty (n=120), a mean and standard deviation age of [16.0±3.0] ranged from (13-19) years, were selected using the systematic and simple random sampling methods.

#### Instrument:

The restructured adolescents' health education literacy level survey questionnaire (AHL SQ) was validated and adopted as a research instrument for testing the parameters formally used by Bebeley, et al. (2016), which was pre-tested on forty pupils (n=40) from USS Njala, using the test-retest analysis of variance (ANOVA) technique, yielding an intra-class correlation coefficient reliability (ICCR) of 0.79-0.85.

**Procedure:**

The sampled participants (n=120), were each issued with a questionnaire and instructed to strictly mark [√] for a simple [Yes] and/or [x] for a simple [No] against each option during the evaluation and assessment process regarding their health education literacy level about the variables under investigation on their schools' premises adopting classroom face-to-face method.

**Analysis:**

The frequency, percentage, standard deviation, mean, 95% confidence interval difference and One-Sample t-Test of IBM-SPSSv.23 Statistics, were used to compute, analyze and compare the results of the finding, which were scaled @ 2-tailed significance of \*p<0.000, with test-value of 0.05.

**Results:**

**Table 1: Adolescents' Literacy Level of Stress Due Cognitive Factors [n=120]**

Do you Know that Stress Due Cognitive Factors can be Linked to:	Yes		No	
	n	%	n	%
Memory Problems?	27	23	93	78
Inability to Concentrate?	35	29	85	71
Poor Judgment of Situation(s)?	22	18	98	82
Pessimistic Approach and/or Thoughts?	20	17	100	83
Anxious and/or Racing Thoughts?	18	15	102	85
Constant Worrying?	25	21	95	79

**Table 2: One-Sample t-Test for Stress Literacy Level Due Cognitive Factors [n=120]**

Vab (V)	Grouped		Grouped		Test Scores	Sig. 2-tailed	95%CID	
	Freq.	%	Mean	Std. Dev.			Lower	Upper
Yes	147	20.4	24.5000	6.09098	09.833	0.000	18.0579	30.8421
No	573	79.6	95.5000	6.09098	38.385	0.000	89.0579	101.8421

**Note: 95%CID = 95% Confidence Interval Difference; df=5; n=6; Test-Value=0.05; Vab=Variable**

**Table 3: Adolescents' Literacy Level of Stress Due Emotional Factors [n=120]**

Do you Know that Stress Due Emotional Factors can be Linked to:	Yes		No	
	n	%	n	%
Individual Moodiness?	32	27	88	73
Irritability and/or Short Temper?	36	30	84	70
Agitation and Inability to Relax?	27	23	93	78
Feeling Overwhelmed?	21	18	99	83
Sense of Loneliness and Isolation?	38	32	82	68
Depression or General Unhappiness?	41	34	79	66

**Table 4: One-Sample t-Test for Stress Literacy Level Due Emotional Factors [n=120]**

Vab (V)	Grouped		Grouped		t-Test Scores	Sig. 2-tailed	95%CID	
	Freq.	%	Mean	Std. Dev.			Lower	Upper
Yes	195	27.1	32.5000	7.44983	10.669	0.000	24.6319	40.2681
No	525	72.9	87.5000	7.44983	28.753	0.000	79.6319	95.2681

**Note: 95%CID = 95% Confidence Interval Difference; df=5; n=6; Test-Value=0.05; Vab=Variable**

**Table 5: Adolescents' Literacy Level of Stress Due Physical Factors [n=120]**

Do you Know that Stress Due Physical Factors can be Linked to:	Yes		No	
	n	%	n	%
Aches and Pains?	33	28	87	73
Diarrhea and/or Constipation?	31	26	89	74
Increased Frequency of Urination?	26	22	94	78
Indigestion and Frequent Colds?	23	19	97	81
Nausea and Dizziness?	29	24	91	76
Rapid Heartbeat and Chest pain?	30	25	90	75

**Table 6: One-Sample t-Test for Stress Literacy Level Due Physical Factors [n=120]**

Vab. (V)	Grouped		Grouped		t-Test Scores	Sig. 2-tailed	95%CID	
	Freq.	%	Mean	Std. Dev.			Lower	Upper
Yes	172	23.9	28.6667	3.61478	19.392	0.000	24.8232	32.4102
No	548	76.1	91.3333	3.61478	61.856	0.000	87.4898	95.0768

**Note: 95%CID = 95% Confidence Interval Difference; df=5; n=6; Test-Value=0.05; Vab=Variable**

**Discussion:**

Studies according to Schechter, D. S. et al. (2015), have shown that severe psychological stress resulting in post-traumatic stress disorders (PTSD) can also significantly affect parenting perception, behaviour, neural activity and hypothalamic pituitary adrenal axis (HPA-axis) physiology in response to stressful parent-infant interactions.

Results from the comparative finding of the grouped frequency, percentage, mean and standard deviation values of respondents' health education literacy level of all tested variables during the evaluation and assessment process for stress due cognitive factors viewed in table 2, emotional factors viewed in table 4 and physical factors viewed in table 6, showed a significance difference in scores with emotional factors scored highest and cognitive factors scored lowest.

The significant difference in the t-Test scores and 95% confidence interval difference scores displayed among the three variable factors, clearly pointed out the low level of adolescents' health education literacy of stress, referencing the tested option variables among the sampled participants during the assessment and evaluation process, evidenced with individually computed, analysed and compared scores and percentages slated in tables 1, 3 and 5 respectively, in affirmation to the considerable low level of adolescents' health education literacy of stress due cognitive, emotional and physical factors.

In another research finding, Jeronimus, B. F. et al. (2014), and Cohen, S. et al. (2007) reported that, when humans are under chronic stress, permanent changes in their physiological, emotional, and behavioral responses are most likely to occur, which could lead to disease, and that chronic stress results from stressful events that persist over a relatively long period of time, such as brief focal events that continue to be experienced as overwhelmingly long after they are over, like experiencing a sexual assault.

According to Cohen, S. et al. (2007), even though psychological stress is often connected with illness or disease, most healthy individuals can still remain disease-free after confronting chronic stressful events. And that, people who do not believe that stress will affect their health do not have an increased risk of illness, disease, or death, which interpret the fact that, there are individual differences in vulnerability to the potential pathogenic effects of stress due genetic, psychological and age factors.

However, according to Miller, G. et al. (2009), chronic stress at a young age can have lifelong impacts on the biological, psychological, and behavioral responses to stress later in life.

#### Conclusion and Recommendation:

Based on the results of the finding, it was concluded that, a significant difference was observed among the scores for all tested variables with emotional factors emerging highest and cognitive factors emerging lowest in health education literacy of stress as slated in their mean scores, percentages, grouped frequencies, 95% confidence interval difference scores and calculated t-values.

However, it was strongly recommended by the researcher that, health education literacy as an integral prime factor be included in the curriculum of health and physical education in all senior high schools within and outside the study scope to help enhance the efficiency level of health education literacy among adolescents.

#### Acknowledgement:

The author expresses thanks and appreciation to all staff and pupils of the four selected senior high schools in Bo, Sierra Leone, whose immense co-operation rendered this study to fruition.

#### References:

1. Association with health and morbidity (2012). Does the perception that stress affects health matter? *Health Psychol* 31: 677–84.
2. Bebeley, S. J. et al. (2016). Knowledge of Njala Campus Athletes about Abstinence from Diseases Associated with Unsafe Sexual Practices such as Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS), Gonorrhoea (GR) and Syphilis (SP), aimed as Primary Prevention Strategy in Minimizing the Process of Ageing. *Journal of Exercise Science and Physiotherapy*: 12 (1): 42-56.
3. Calderon, R., Schneider, R. H., Alexander, C. N., Myers, H. F., Nidich, S. I. and Haney, C. (1999). "Stress, stress reduction and hypercholesterolemia in African Americans: a review". *Ethnicity & Disease* 9: 451–462. ISSN 1049-510X.
4. Cohen, S; Janicki-Deverts, D. and Miller, G. E. (2007). Psychological Stress and Disease (PDF). *JAMA* 298(14): 1685–1687.
5. Gorban, A. N., Tyukina, T. A., Smirnova, E. V. and Pokidysheva, L. I. (2016). Evolution of adaptation mechanisms: adaptation energy, stress, and oscillating death, *J. Theor. Biol.* <http://www.dx.doi.org/10.1016/j.jtbi.2015.12.017>.
6. Greubel, J. and Kecklund, G. (2011). The Impact of Organizational Changes

on Work Stress, Sleep, Recovery and Health. *Industrial Health*. Department for Psychology, University of Fribourg. Epub: 49(3):353-64.

7. Herbert, T. B. and Cohen, S. (1993). "Stress and immunity in humans: a meta-analytic review". *Psychosomatic Medicine* 55(4): 364–379.
8. Jeronimus, B. F., Ormel, J., Aleman, A., Penninx, B. W. J. H. and Riese, H. (2013). Negative and positive life events are associated with small but lasting change in neuroticism. *Psychological Medicine* 43(11): 2403–15.
9. Jeronimus, B. F., Riese, H., Sanderman, R. and Ormel, J. (2014). Mutual Reinforcement Between Neuroticism and Life Experiences. *Journal of Personality and Social Psychology* 107 (4): 751–64.
10. Miller, G., Chen, E. and Cole, S. W. (2009). "Health psychology: Developing biologically plausible models linking the social world and physical health". *Annual Review of Psychology* 60: 501–524.
11. Ogden, J. (2007). *Health Psychology: a textbook* (4th ed.), pages 281–282 New York: McGraw-Hill ISBN 0335214711
12. Pinquart, M. and Sörensen, S. (2003). "Differences between caregivers and noncaregivers in psychological health and physical health: a meta-analysis". *Psychology and aging* 18(2): 250–267.
13. Schechter, D. S., Moser, D. A. and Giacobino, A. et al. (2015). Methylation of NR3C1 is related to maternal PTSD, parenting stress and maternal medial prefrontal cortical activity in response to child separation among mothers with histories of violence exposure. <http://www.journal.frontiersin.org/article/10.3389/fpsyg.2015.00690/abstract>
14. Schlotz, W., Yim, I. S., Zoccola, P. M., Jansen, L. and Schulz, P. (2011). The perceived stress reactivity scale: Measurement invariance, stability, and validity in three countries. *Psychol Assess.* (pp. 80–94).
15. Schneiderman, N.; Ironson, G.; Siegel, S. D. (2005). Stress & health: psychological, behavioral, and biological determinants. *Annual Review of Clinical Psychology* 1: 607–628.
16. Selye, H. (1938a). Adaptation Energy, *Nature Am. J. Physiol.* 141(3577), 926.
17. Selye, H. (1938b). Experimental evidence supporting the conception of "adaptation energy", *Am. J. Physiol.* 123(1938), 758-765.