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## Magnitude of resilience among Grade 10 Adolescents of State Schools in the District of Gampaha, Sri Lanka

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**Abstract:** Resilience is the process of adapting well in the face of adversity. Objective was to determine magnitude of resilience among Grade 10 Sinhala conversant adolescents in state schools of Gampaha district. A descriptive cross sectional study was conducted. Computed final sample size was 1380. All three stages of cluster sampling were conducted applying probability sampling techniques to obtain the final sample. Study instrument comprised 14-Item Resilience Scale-Sinhala version. Magnitude of resilience was described as proportions and expressed as percentages and 95% confidence intervals (CI). Overall resilience score ranged from 15 to 98. The median was 79.00 (IQR: 70.00-86.00). Levels of magnitude were: High 11.6% (n=159; 95%CI=9.9–13.3), Moderately high 29.3% (n=405; 95%CI=27.0-31.8), Moderate 25.5% (n=352; 95%CI=23.2-27.9), Lower end 20.2% (n=279; 95%CI=18.2–22.5), Low 7.8% (n=108; 95%CI=6.4–9.3) and Very low 5.6% (n=77; 95%CI=4.4-6.9). Latter three low levels together comprised one third of the adolescents. Recommend a psycho-behavioral intervention to enhance resilience.

**Keywords:** Adolescents, 14-Item Resilience Scale, Psycho-behavioral intervention, Resilience, Resilience levels

### 1. Introduction

Resilience is considered a complex phenomenon and therefore different authors have come up with definitions which differ to a certain extent. However, most of those include common features such as adaptation, competence, balance, acceptance and determination. In the process of evolution of the definition, the role of physiological responses and behavioural changes related to resilience also had come into the limelight (Wagnild, 2009).

As defined by psychologists "Resilience is the process of adapting well in the face of adversity, trauma, tragedy, threats, or significant sources of stress such as family and relationship problems, serious health problems, or workplace and financial stressors". In addition to "bouncing back" from difficult situations, resilience can lead to immense personal growth (American Psychological Association [APA], 2014).

As described by Luthar et al. (2000) "resilience is a dynamic process allowing for positive adaptation in a context of significant adversity". Those who are less resilient are likely to develop psychiatric conditions including post-traumatic stress disorder and major depressive illness in the presence of adversity (Wagnild, 2009).

Wagnild and Young (1993) described five core characteristics of resilience. These are 1) purpose/meaningful life (one's own meaning and purpose in life) 2) perseverance (continuous effort to do or achieve something despite difficulties, discouragement and disappointment) 3) equanimity (avoidance of extreme responses which are skewed with an out of balance view of life during difficult situations/having balance and harmony), 4) self-reliance (having a clear understanding of one's capabilities and limitations), and 5) existential aloneness (becoming one's own best friend and being alone in the choices one makes despite solid personal relationships). First one of the five is considered as laying the foundation for the rest of the four (Wagnild, 2009; Abiola & Udofila, 2011).



High resilience is associated with positive outcomes. In a concept analysis, Earvolino- Ramirez (2007) described effective coping, possessing great skills and positive adaptation as main positive outcomes of high resilience. Macleod et al. (2016) mentioned low level of depression, longevity and successful aging also as positive outcomes. According to the Zolkoski and Bullock (2012), "Resilient adolescents are certain to enter adulthood with a positive mental health". Good mental health, functional capacity and social competence were explained as resilient outcomes by Olsson et al. (2003). Research evidence also shows that high resilience buffer the negative impact of traumatic events (Lee et al., 2018), anxiety (Scali et al., 2012) and depression (Wagnild, 2009). All these emphasize the fact that resilience is a process which enables individuals to be more productive and beneficial for him/herself and society.

Adolescence has been described in the Cambridge dictionary as the "the period of time in a person's life when they are developing into an adult". It reflects, the transition between childhood and adulthood. Accordingly, 10 – 19 year-old persons are classified as adolescents. During this period, they experience growth spurts and development of secondary sexual characteristics and undergo psychological/emotional changes related to these. They become curious, anxious and stressed over these biological changes that they have never experienced before (e.g., night emissions in boys and menstruation in girls). They also develop "desire for greater autonomy, exploration of sexual/self-identity, and increased access to and use of technology" (WHO, 2019).

In addition, this is a period where they have to experience novel life events/challenges and stressors like facing competitive examinations, meeting new friends and being subjected to peer pressure, and being involved in romantic relationships. Many adolescents live in adverse economic conditions (with the need to assist the impoverished families with financial support) and therefore, there are times that they assume the role of an adult as well. As above challenges require considerable adjustment, it is not possible to underestimate the degree of stress that some of these adolescents undergo. As a consequence, they may become rebellious and resort to unhealthy behaviors such as unsafe sexual practices and substance abuse. They are also likely to distance themselves from parents and the family and get closer to peers, who may or may not be those equipped with positive thinking and capabilities of helping their friends if and when they need such support.

All changes that occur in adolescence as described above, makes them vulnerable to many risks which lead to threaten their development and psychological balance. If they lack resilience, they are likely to deviate and be subjected to psychological vulnerability in their adulthood as well. Therefore, the objective of this study was to assess the magnitude of resilience among Grade10 adolescents of state schools in the District of Gampaha, Sri Lanka.

## 2. Methods

This was a cross sectional descriptive study. The study sample consisted of adolescents who were studying in Grade 10 and conversant in Sinhala, selected from 338 schools which are secondary schools stratified into three types. Types 1AB and 1C schools have classes up to Grade 13. Type 1AB schools offer subjects at General Certificate of Education Advanced Level (GCE A/L) in science, commerce and arts. Type 1C schools provide subjects at GCE A/L in arts and commerce. Type 2 schools have classes only up to Grade 11 and thus offer subjects up to General Certificate of Education Ordinary Level.

Exclusion criteria considered was presence of physical and mental disabilities which were excluded based on information provided by parents and confirmed by the class teacher. However, none of the students had to be excluded based on the above criteria.

The computed sample size was 1380 determined by applying the formula for the computation of sample size for a population proportion which was inflated applying a design effect of 3.8, to enable conducting cluster sampling. As the cluster size was 15, a total of 92 classes/clusters were needed. The total number of schools required from each stratum was determined based on probability proportionate to size (PPS) of its Grade 10 students. The number of schools determined from each stratum based on above were selected applying systematic sampling. One class from each chosen school was selected by applying simple random sampling.

Due to ethical concerns, all the adolescents in the selected classes were administered the questionnaire. There was a total of 3496 eligible adolescents in the 92 classes, but on the day of data collection, there were 106



absentees and thus the balance remaining was 3390. For the statistical analysis the required number of 15 questionnaires from each class were selected applying simple random sampling.

The study instrument used for collecting data was the 14-Item Sinhala Resilience Scale (14-Item SRS) which was a translation of the original scale developed by Wagnild & Young. It was a self-administered questionnaire and as the name implied there were 14 questions/items. The English version was adapted and translated. The responses were marked on a seven point Likert scale ranging from 1 (totally disagree) to 7 (totally agree). The total score ranged from 14 to 98 with higher scores indicating higher resilience. Internal consistency of the tool yielded a Cronbach's alpha of 0.9 indicating excellent internal consistency. Application of exploratory and confirmatory factor analysis (CFA) generated a two-factor structure (personal characteristics and personal confidence). Both composite reliability and construct validity were also assessed applying CFA which established a high composite reliability and satisfactory convergent and high divergent validity confirming construct validity of the tool. It was anonymized and pre tested before executing study proper. The principal investigator along with two trained data assistants visited the schools on pre specified dates for data collection.

The data were analyzed using Statistical Package for Social Sciences (SPSS) software version 22.0. All the categorical variables were computed as proportions and expressed as percentages and respective 95% confidence intervals (95% CI). Quantitative data which were not normally distributed were summarized as median with its inter-quartile ranges (IQR) and those which were normally distributed as mean and standard deviations (SD). According to the scoring system, each respondent's total resilience score was calculated in terms of item specific and domain specific scores. Six levels of magnitude of resilience were determined as described by Wagnild and Young (1993).

In addition to written informed consent of parents, assent (verbal) from all the study participants was obtained. Ethical approval for the study was obtained from the Ethical Review Committee, University of Kelaniya, Sri Lanka.

### 3. Results

#### 3.1 General

The response rate was 97% (n=3390) for the initial collection of data recruiting all the adolescents in the selected classes. Mean age of the study participants was 15.8 years (SD = 0.89). The proportion of females was 53.3% (n =735). Majority were Sinhala (97.6%, n=1347) and Buddhists (87.2%; n=1203).

#### 3.2 Assessment of Overall Magnitude of Resilience

The Kolmogorov- Smirnov test and Shapiro -Wilk tests gave a significant  $p$  value of  $< 0.01$  suggesting non normal distribution of resilience scores. The overall median for the 14-Item SRS was 79.0 (IQR: 70.0 – 86.0) [Table 1].

#### 3.3 Assessment of Core Characteristics of Resilience

As described above, the 14-Item SRS is based on five core characteristics. Among them self-reliance" had the highest number of items (n=5) with a median score of 28.0 (IQR = 24.5 - 30.0). "Perseverance", "equanimity" and "existential aloneness" had the lowest number of items (n=2) and among them equanimity had a lower median score of (11.0; IQR: 9.0-12.0) than the other two (Table 1).

A proportion of 39.6% (n = 546) was observed to have obtained a score of  $\geq 75\%$  for the core characteristic "equanimity", which was the highest among all five core characteristics. The lowest proportion (31.9%; n = 440) who gained a score of  $\geq 75\%$  was observed for "self-reliance (Table 1)



**Table 1.** Summary Statistics of Core Characteristic Scores and Overall Resilience Score of Grade 10 Adolescents

| Core Characteristics<br>(No. of Items) | Scores Obtained By Adolescents (N=1380) |                         |                               |
|--|---|-------------------------|-------------------------------|
|  | Range                                   | Median (IQR)            | Number Who Scored $\geq 75\%$ |
| <b>Purpose (3)</b>                     | 3-21                                    | 17.0 (15.0-19.0)        | 488 (35.4%)                   |
| <b>Perseverance (2)</b>                | 2-14                                    | 12.0 (10.0-13.0)        | 481(34.9%)                    |
| <b>Equanimity (2)</b>                  | 2-14                                    | 11.0 (09.0-12.0)        | 546 (39.6%)                   |
| <b>Self-reliance (5)</b>               | 5-35                                    | 28.0 (24.5-30.0)        | 440 (31.9%)                   |
| <b>Existential aloneness (2)</b>       | 2-14                                    | 12.0 (10.0-13.0)        | 507 (36.7%)                   |
| <b>Overall</b>                         | <b>15-98</b>                            | <b>79.0 (70.0-86.0)</b> | <b>364 (26.4%)</b>            |

The maximum possible scores for individual core characteristics ranged from 1.9% (n = 26) to 23.0% (n = 318). Highest proportion was for "perseverance" and the lowest for "self-reliance". Proportion of adolescents who obtained a minimum score ranged from 0.2% (n = 3) to 1.4% (n = 20). Highest minimum proportion was for "existential aloneness" and lowest for "self-reliance" (Table 2).

**Table 2.** Distribution of Grade 10 Adolescents Based on Maximum and Minimum Scores Obtained for Core Characteristics

| Core Characteristics with<br>Total Number of Items<br>(Possible Range for Scores) | Scores Gained<br>Range | Frequency of Adolescents (N=1380) |                   |
|---|------------------------|-----------------------------------|-------------------|
|   |                        | Maximum Score                     | Minimum Score     |
| <b>Purpose-3 (3-21)</b>   | 3 - 21                 | 166 (12.0%)                       | 14 (01.0%)        |
| <b>Perseverance-2 (2-14)</b>  | 2 -14                  | 318 (23.0%)                       | 16 (01.2%)        |
| <b>Equanimity-2 ( 2-14)</b>   | 2 -14                  | 153 (11.1%)                       | 16 (01.2%)        |
| <b>Self-reliance-5 (5-35)</b>   | 5- 35                  | 026 (01.9%)                       | 03 (00.2%)        |
| <b>Existential aloneness-2 (2-14)</b>   | 2 - 14                 | 305 (22.1%)                       | 20 (01.4%)        |
| <b>Overall Score-14 (14-98)</b>   | <b>15 -98</b>          | <b>011 (00.8%)</b>                | <b>01 (00.1%)</b> |

### 3.4 Levels of Resilience

Highest (29.3%; n=405) proportion of adolescents had moderately high resilience. Those having resilience scores on the lower end, low and very low levels were 279 (20.2%), 108 (7.8%) and 77 (5.6%) respectively.

For analytical purposes, "very low, "low" and "on the lower end" categories were amalgamated and considered as "low" (score of 14 – 73) resilience level. "Moderate" (score of 74 -81) and "Moderately high" (score of 82 – 90) categories combined together was named as "moderate" and "high" (score of 91 -98) as high level of resilience. Accordingly, the proportion of Grade 10 adolescents who had a low level of resilience was 33.6% (n= 464), a moderate level was 54.9% (n = 757), and a high level was 11.6% (n=159) [Table 3].



**Table 3.** Magnitude of Resilience Scores Among Grade 10 Adolescents by Levels

| Levels of Resilience    |                       | Resilience Scores Range <sup>a</sup> | Adolescents (N=1380) |                   |
|-------------------------|-----------------------|--------------------------------------|----------------------|-------------------|
|                         |                       |                                      | n                    | % (95% CI)        |
| <b>High</b>             | High                  | 91 - 98                              | 159                  | 11.6 (09.9-13.3%) |
| <b>Moderately high</b>  | Moderate <sup>b</sup> | 82 - 90                              | 405                  | 29.3 (27.0-31.8%) |
| <b>Moderate</b>         |                       | 74 - 81                              | 352                  | 25.5 (17.9-23.2%) |
| <b>On the lower end</b> | Low <sup>c</sup>      | 65 - 73                              | 279                  | 20.2 (18.2-22.5%) |
| <b>Low</b>              |                       | 57 - 64                              | 108                  | 07.8 (06.4-09.3%) |
| <b>Very low</b>         |                       | 14 -56                               | 077                  | 05.6 (04.4-06.9%) |

a Possible range: 14-98

b Moderate = 405+352 = 757 (54.9%);

c Low = 279+108+77 = 464 (33.6%)

### 3.5 Resilience Scores by School Type

The highest median score of 80.0 (IQR: 73.0 - 87.0) was observed in Type 1C schools, the second highest of 78.0 (IQR: 70.0 – 86.0) in 1AB schools and the lowest of 77.0 (IQR = 69.0 – 85.0) in Type 2 schools.

## 4. Discussion

According to the results, one third (33.6%) of adolescents had low, more than half (54.9%) moderate and just over 10% (11.6%) high levels of resilience. The results were assessed based on the 14-Item Resilience Scale developed by Wagnild and Young (1993) which has been recognized as having satisfactory psychometric properties to capture the construct of resilience (Wagnild, 2009; Abiola & Udofia, 2011). The translated version of the tool also revealed highly favourable psychometric properties as described above. Hence the results of this study are considered distinctly reliable and valid.

The median for overall resilience scores (77.0 – 80.0) observed for the three types of schools namely IAB, IC and II were almost similar despite the different compositions related to the grades and study streams available. Hence it may be inferred that the adolescents of Grade 10 classes have the same tendency to bounce back in the face of adversity regardless of the latter differences.

It is not possible to compare the median scores of individual core characteristics as the number of items and thus the total possible scores were not the same except for “perseverance”, “equanimity” and “existential aloneness” (Table 1). The latter three had almost similar (11 and 12) median scores. The fact that there were adolescents who obtained the maximum possible scores for all individual core characteristics is noted as a positive finding (Table 2).

Measurement and thus comparison of magnitude of resilience has been made difficult due to lack of consensus regarding the definitions (Leys et al., 2020). There was only one study in Sri Lanka related to resilience among adolescents (Munasinghe, 2012). The tool used was 25 Resilience Scale and the three tiers identified were low (22%), moderate (52%) and high (26%) where no indication was given with regard to the cut off values considered. In addition, resilience scores in this study had been summarized as mean, thus making comparisons impracticable. With regard to the foreign studies too, making direct comparisons were precluded, either because the study population recruited were those under special care (Nourian et al.,2016) or the study tools and summary statistics used differed from study to study (Gomez et al., 2013; Mestre et al., 2017; Damasio et al., 2011; Nishi et al., 2010; Aiena et al., 2015). It was proven that the resilience scores of the present study were skewed and thus the results were expressed as median. Despite above shortfalls, a study from Canada (Dumont & Provost 1999)



revealed that 16% of the study participants were resilient among 8<sup>th</sup> and 11<sup>th</sup> grade adolescents (by comparing groups with different levels of daily hassles and depression) which was consistent with findings of the present study regarding proportions with high resilience. A study done in Nepal (Singh *et al.*, 2019), using the Adolescent Resilience Questionnaire has shown a prevalence of 15.4% of high, 17.5% of low and 67.1% of moderate resilience among adolescents, where findings related to high levels once more are almost closer to that of the present study.

## 5. Strengths and Limitations

Although the Gampaha district was chosen purposively, cluster sampling was the technique used for the study which is a probability sampling technique. All the three stages of the above sampling procedure required with in the Gampaha district was conducted applying systematic and simple random sampling. Therefore, it may be inferred that the results of this study can be applied to all the Grade 10 class adolescents of the Gampaha district. The latter as well as the high response rate (97%) obtained are considered as strengths of this study.

Excluding the absentees (n=106, 3%) would have led to a selection bias, because except for those who were absent due to illness and reasons not related to resilience, it would have been likely that the balance was those with personal problems which are likely to be associated with lack of resilience. The inability to include the latter group of adolescents is considered a limitation of the study.

## 6. Conclusion and Recommendations

One third of the adolescents was observed to possess a low level of resilience. More than half (54.9%) of the adolescents had moderate and 11.6% high levels of resilience. The latter is not considered a personality trait/attribute which cannot be reformed and therefore involves a dynamic developmental process. As it is part and parcel of both mental and physical health of an individual, high levels of low and moderate resilience (88%) needs to be considered seriously. This necessitates identifying a suitable intervention that leads to the development of skills to enhance the magnitude of resilience.

It is essential to focus on the results of the core characteristics when developing interventions. As described above, of the five core characteristics which define resilience, "purpose" is regarded as the most important, which lays the foundation for the development of the rest of the four. However, the proportion of adolescents who gained a score of  $\geq 75\%$  for the five core characteristics ranged between 31.9% (self-reliance) to 39.6% (equanimity) which is a disturbing finding. Therefore, enhancing all five core characteristics should be considered important and meticulously planned during development of interventions. The lowest proportion of 31.9% (n=440) for those who scored  $\geq 75\%$ , as well as the lowest percentage (1.9%) who obtained the maximum score was for "self-reliance". The latter refers to the ability to identify one's capabilities and limitations which is an important facet of life and thus this should be designed in an appealing manner during the planning stage of the intervention to capture the attention of the adolescents.

Lack of an intent to apply a suitable intervention is likely to debar them from reforming themselves and thereby leading to a future generation without the necessary skills to handle the adversities they are likely to experience in everyday life, at home and at the workplace. The consequences of this on the individual affected will be psychological unbalance requiring psychiatric treatment as well as resorting to unhealthy behaviours. Further, all above can affect the peace, harmony and income status of the family. Concerning the country, this will exert a negative impact on its development. Therefore, recommend adoption of a relevant intervention related to psychobehavioural therapy at the school level at least on an annual basis, to enhance their level of resilience, and make them productive individuals who feel worthy of themselves by contributing to boost the economy of the country.

Concerning future research, it is suggested to carry out similar studies especially among Grade 10 adolescents in the more rural districts, as well as among Grades 11 and 12 adolescents (selected from both urban and rural sectors) who are preparing themselves to sit the GCE A/L which is the entry examination to the university, as this period is considered to be highly stressful.



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**Does this article screen for similarity?** Yes

**Conflict of Interest:** The Authors have no conflicts of interest to declare that they are relevant to the content of this article.

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